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# Apple I Reference Manual

January 1978

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Manual Reference

# APPLE II Reference Manual

January 1978

APPLE Computer Inc. 10260 Brandley Dr. Cupertino, CA 95014

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#### Unpacking

Don't throw away the packing material. Save it for the unlikely event that you may need to return your Apple II for warrantee repair. If you bought an Apple II Board only, see hardware section in this manual on how to get started. You should have received the following:

- 1. Apple II system including mother printed circuit board with specified amount of RAM memory and 8K of ROM memory, switching power supply, keyboard, and case assembly.
- 2. Accessories Box including the following:
  - a. This manual including warranty card.
  - b. Pair of Game Paddles
  - c. A.C. Power Cord
  - d. Cassette tape with "Breakout"on one side and "Color Demos" on the other side.
  - e. Cassette recorder interface cable (miniature phone jack type)
- 3. If you purchased a 16K or larger system, your accessory box should also contain:
  - a. 16K Startrek game cassette with High Resolution Graphics Demo ("HIRES") on the flipside.
  - b. Applesoft Floating Point Basic Language Cassette with an example program on the other side.
  - c. Applesoft reference manual
- 4. In addition other items such as a vinyl carrying case or hobby board peripherial may have been included if specifically ordered as "extras".

Notify your dealer or Apple Computer, Inc. immediately if you are missing any items.

Warranty Registration Card

Fill this card out immediately and completely and mail to Apple in order to register for one year warranty and to be placed on owners club mailing list. Your Apple II's serial number is located on the bottom near the rear edge. You model number is:

A2SØØMMX

MM is the amount of memory you purchased. For Example:

## A2SØØØ8X

is an 8K Byte Apple II system.

#### Check for Damage

Inspect the outside case of your Apple for shipping damage. Gently lift up on the top rear of the lid of the case to release the lid snaps and remove the lid. Inspect the inside. Nothing should be loose and rattling around. Gently press down on each integrated circuit to make sure that each is still firmly seated in its socket. Plug in your game paddles into the Apple II board at the socket marked "GAME I/O" at location J14. See hardware section of this manual for additional detail. The white dot on the connector should be face forward. Be careful as this connector is fragile. Replace the lid and press on the back top of it to re-snap it into place.

#### Power Up

First, make sure that the power ON/OFF switch on the rear power supply panel on your Apple II is in the "OFF" position. Connect the A.C. power cord to the Apple and to a 3 wire 120 volt A.C. outlet. Make sure that you connect the third wire to ground if you have only a two conductor house wiring system. This ground is for your safety if there is an internal failure in the Apple power supply, minimizes the chance of static damage to the Apple, and minimizes RFI problems.

Connect a cable from the video output jack on the back of the Apple to a TV set with a direct video input jack. This type of set is commonly called a "Monitor". If your set does not have a direct video input, it is possible to modify your existing set. Write for Apple's Application note on this. Optionally you may connect the Apple to the antenna terminals of your TV if you use a modulator. See additional details in the hardware section of this manual under "Interfacing with the Home TV".

Now turn on the power switch on the back of the Apple. The indicator light (it's not a switch) on the keyboard should now be ON. If not, check A.C. connections. Press and release the "Reset" button on the keyboard. The following should happen: the Apple's internal speaker should beep, an asterisk ("\*") prompt character should appear at the lower left hand corner of your TV, and a flashing white square should appear just to the right of the asterisk. The rest of the TV screen will be made up of radom text characters (typically question marks).

If the Apple beeps and garbage appears but you cannot see an "\*" and the cursor, the horizontal or vertical height settings on the TV need to be adjusted. Now depress and release the "ESC" key, then hold down the "SHIFT" key while depressing and releasing the P key. This should clear your TV screen to all black. Now depress and release the "RESET" key again. The "\*" prompt character and the cursor should return to the lower left of your TV screen.

#### Apple Speaks Several Languages

The prompt character indicates which language your Apple is currently in. The current prompt character, an asterisk ("\*"), indicates that you are in the "Monitor" language, a powerful machine level language for advanced programmers. Details of this language are in the "Firmware" section of this manual.

#### Apple Integer BASIC

Apple also contains a high level English oriented language called Integer BASIC, permanently in its ROM memory. To switch to this language hold down the "CTRL" key while depressing and releasing the "B" key. This is called a control-B function and is similiar to the use of the shift key in that it indicates a different function to the Apple. Control key functions are not displayed on your TV screen but the Apple still gets the message. Now depress and release the "RETURN" key to tell Apple that you have finished typing a line on the keyboard. A right facing arrow (">") called a caret will now appear as the prompt character to indicate that Apple is now in its Interger BASIC language mode.

#### Running Your First and Second Program

Read through the next three sections that include:

- 1. Loading a BASIC program Tape
- 2. Breakout Game Tape
- 3. Color Demo Tape

Then load and run each program tape. Additional information on Apple II's interger BASIC is in the next section of this manual.

#### Running 16K Startrek

If you have 16K Bytes or larger memory in your Apple, you will also receive a "STARTREK" game tape. Load this program just as you did the previous two, but <u>before</u> you "RUN" it, type in "HIMEM: 16384" to set exactly where in memory this program is to run.

#### INTRODUCTION

This section describes a procedure for loading BASIC programs successfully into the Apple II. The process of loading a program is divided into three section; System Checkout, Loading a Tape and What to do when you have Loading Problems. They are discussed below.

When loading a tape, the Apple II needs a signal of about 2 1/2 to 5 volts peak-to-peak. Commonly, this signal is obtained from the "Monitor" or "earphone" output jack on the tape recorder. Inside most tape recorders, this signal is derived from the tape recorder's speaker. One can take advantage of this fact when setting the volume levels. Using an Apple Computer pre-recorded tape, and with all cables disconnected, play the tape and adjust the volume to a loud but un-distorted level. You will find that this volume setting will be quite close to the optimum setting.

Some tape recorders (mostly those intended for use with hi-fi sets) do not have an "earphone" or high-level "monitor" output. These machines have outputs labeled"line output" for connection to the power amplifier. The signal levels at these outputs are too low for the Apple II in most cases.

Cassette tape recorders in the \$40 - \$50 range generally have ALC (Automatic Level Control) for recording from the microphone input. This feature is useful since the user doesn't have to set any volume controls to obtain a good recording. If you are using a recorder which must be adjusted, it will have a level meter or a little light to warn of excessive recording levels. Set the recording level to just below the level meter's maximum, or to just a dim indication on the level lamp. Listen to the recorded tape after you've saved a program to ensure that the recording is "loud and clear".

Apple Computer has found that an occasional tape recorder will not function properly when both Input and Output cables are plugged in at the same time. This problem has been traced to a ground loop in the tape recorder itself which prevents making a good recording when saving a program. The easiest solution is to unplug the "monitor" output when recording. This ground loop does not influence the system when loading a pre-recorded tape.

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Tape recorder head alignment is the most common source of tape recorder problems. If the playback head is skewed, then high frequency information on pre-recorded tapes is lost and all sorts of errors will result. To confirm that head alignment is the problem, write a short program in BASIC. >10 END is sufficient. Then save this program. And then rewind and load the program. If you can accomplish this easily but cannot load pre-recorded tapes, then head alignment problems are indicated.

Apple Computer pre-recorded tapes are made on the highest quality professional duplicating machines, and these tapes may be used by the service technician to align the tape recorder's heads. The frequency response of the tape recorder should be fairly good; the 6 KHz tone should be not more than 3 db down from a 1 KHz tone, and a 9 KHz tone should be no more than 9 db down. Note that recordings you have made yourself with mis-aligned heads may not not play properly with the heads properly aligned. If you made a recording with a skewed record head, then the tiny magnetic fields on the tape will be skewed as well, thus playing back properly only when the skew on the tape exactly matches the skew of the tape recorder's heads. If you have saved valuable programs with a skewed tape recorder, then borrow another tape recorder, load the programs with the old tape recorder into the Apple, then save them on the borrowed machine. Then have your tape recorder properly aligned.

Listening to the tape can help solve other problems as well. Flaws in the tape, excessive speed variations, and distortion can be detected this way. Saving a program several times in a row is good insurance against tape flaws. One thing to listen for is a good clean tone lasting for at least 3 1/2 seconds is needed by the computer to "set up" for proper loading. The Apple puts out this tone for anout 10 seconds when saving a program, so you normally have 6 1/2 seconds of leeway. If the playback volume is too high, you may pick up tape noise before getting to the set-up tone. Try a lower playback volume.

#### SYSTEM CHECKOUT

A quick check of the Apple II computer system will help you spot any problems that might be due to improperly placed or missing connections between the Apple II, the cassette interface, the Video display, and the game paddles. This checkout procedure takes just a few seconds to perform and is a good way of insuring that everything is properly connected before the power is turned on.

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- 1. POWER TO APPLE check that the AC power cord is plugged into an appropriate wall socket, which includes a "true" ground and is connected to the Apple II.
- 2. CASSETTE INTERFACE check that at least one cassette cable double ended with miniature phone tip jacks is connected between the Apple II cassette Input port and the tape recorder's MONITOR plug socket.
- 3. VIDEO DISPLAY INTERFACE
  - a) for a video monitor check that a cable connects the monitor to the Apple's video output port.
  - b) for a standard television check that an adapter (RF modulator) is plugged into the Apple II (either in the video output (K 14) or the video auxiliary socket (J148), and that a cable runs between the television and the Adapter's output socket.
- 4. GAME PADDLE INTERFACE if paddles are to be used, check that they are connected into the Game I/O connector (J14) on the right-hand side of the Apple II mainboard.
- 5. POWER ON flip on the power switch in back of the Apple II, the "power" indicator on the keyboard will light. Also make sure the video monitor (or TV set) is turned on.

After the Apple II system has been powered up and the video display presents a random matrix of question marks or other text characters the following procedure can be followed to load a BASIC program tape:

- Hit the RESET key. An asterick, "\*", should appear on the lefthand side of the screen below the random text pattern. A flashing white cursor will appear to the right of the asterick.
- Hold down the CTRL key, depress and release the B key, then depress the "RETURN" key and release the "CTRL" key. A right facing arrow should appear on the lefthand side of the screen with a flashing cursor next to it. If it doesn't, repeat steps 1 and 2.
- 3. Type in the word "LOAD" on the keyboard. You should see the word in between the right facing arrow and the flashing cursor. Do not depress the "RETURN" key yet.
- 4. Insert the program cassette into the tape recorder and rewind it.
- If not already set, adjust the Volume control to 50-70% maximum. If present, adjust the Tone control to 80-100% maximum.

- 6. Start the tape recorder in "PLAY" mode and now depress the "RETURN" key on the Apple II.
- 7. The cursor will disappear and Apple II will beep in a few seconds when it finds the beginning of the program. If an error message is flashed on the screen, proceed through the steps listed in the Tape Problem section of this paper.
- A second beep will sound and the flashing cursor will reappear after the program has been successfully loaded into the computer.
- 9. Stop the tape recorder. You may want to rewind the program tape at this time.
- 10. Type in the word "RUN" and depress the "RETURN" key.

The steps in loading a program have been completed and if everying has gone satisfactorily the program will be operating now.

#### LOADING PROBLEMS

Occasionally, while attempting to load a BASIC program Apple II beeps and a memory full error is written on the screen. At this time you might wonder what is wrong with the computer, with the program tape, or with the cassette recorder. Stop. This is the time when you need to take a moment and checkout the system rather than haphazardly attempting to resolve the loading problem. Thoughtful action taken here will speed in a program's entry. If you were able to successfully turn on the computer, reset it, and place it into BASIC then the Apple II is probably operating correctly. Before describing a procedure for resolving this loading problem, a discussion of what a memory full error is in order.

The memory full error displayed upon loading a program indicates that not enough (RAM) memory workspace is available to contain the incoming data. How does the computer know this? Information contained in the beginning of the program tape declares the record length of the program. The computer reads this data first and checks it with the amount of free memory. If adequate workspace is available program loading continues. If not, the computer beeps to indicate a problem, displays a memory full error statement, stops the loading procedure, and returns command of the system to the keyboard. Several reasons emerge as the cause of this problem.

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#### Memory Size too Small

Attempting to load a 16K program into a 4K Apple II will generate this kind of error message. It is called loading too large of a program. The solution is straight forward: only load appropriately sized programs into suitably sized systems.

Another possible reason for an error message is that the memory pointers which indicate the bounds of available memory have been preset to a smaller capacity. This could have happened through previous usage of the "HIMEN:" and "LOMEN:" statements. The solution is to reset the pointers by BC (CTRL B) command. Hold the CTRL key down, depress and release the B key, then depress the RETURN key and release the CTRL key. This will reset the system to maximum capacity.

#### Cassette Recorder Inadjustment

If the Volume and Tone controls on the cassette recorder are not properly set a memory full error can occur. The solution is to adjust the Volume to 50-70% maximum and the Tone (if it exists) to 80-100% maximum.\*

A second common recorder problem is skewed head azimuth. When the tape head is not exactly perpendicular to the edges of the magnetic tape some of the high frequency data on tape can be skipped. This causes missing bits in the data sent to the computer. Since the first data read is record length an error here could cause a memory full error to be generated because the length of the record is inaccurate. The solution: adjust tape head azimuth. It is recommended that a competent technician at a local stereo shop perform this operation.

Often times new cassette recorders will not need this adjustment.

\*Apple Computer Inc. has tested many types of cassette recorders and so far the Panasonic RQ-309 DS (less than \$40.00) has an excellent track record for program loading. Tape Problems

A memory full error can result from unintentional noise existing in a program tape. This can be the result of a program tape starting on its header which sometimes causes a glitch going from a nonmagnetic to magnetic recording surface and is interpreted by the computer as the record length. Or, the program tape can be defective due to false erasure, imperfections in the tape, or physical damage. The solution is to take a moment and listen to the tape. If any imperfections are heard then replacement of the tape is called for. Listening to the tape assures that you know what a "good" program tape sounds like. If you have any questions about this please contact your local dealer or Apple for assistance.

If noise or a glitch is heard at the beginning of a tape advance the tape to the start of the program and re-Load the tape.

Dealing with the Loading Problem

With the understanding of what a memory full error is an efficient way of dealing with program tape loading problems is to perform the following procedure:

- Check the program tape for its memory requirements. Be sure that you have a large enough system.
- 2. Before loading a program reset the memory pointers with the  $B_C$  (control B) command.
- 3. In special cases have the tape head azimuth checked and adjusted.
- 4. Check the program tape by listening to it.
  - a) Replace it if it is defective, or
  - b) start it at the beginning of the program.

5. Then re-LOAD the program tape into the Apple II.

In most cases if the preceeding is followed a good tape load will result. UNSOLVED PROBLEMS

If you are having any unsolved loading problems, contact your nearest local dealer or Apple Computer Inc.

#### PROGRAM DESCRIPTION

Breakout is a color graphics game for the Apple II computer. The object of the game is to "knock-out' all 160 colored bricks from the playing field by hitting them with the bouncing ball. You direct the ball by hitting it with a paddle on the left side of the screen. You control the paddle with one of the Apple's Game Paddle controllers. But watch out: you can only miss the ball five times:

There are eight columns of bricks. As you penetrate through the wall the point value of the bricks increases. A perfect game is 720 points; after five balls have been played the computer will display your score and a rating such as "Very Good". "Terrible!", etc. After ten hits of the ball, its speed with double, making the game more difficult. If you break through to the back wall, the ball will rebound back and forth, racking up points.

Breakout is a challenging game that tests your concentration, dexterity, and skill.

#### REQUIREMENTS

This program will fit into a 4K or greater system. BASIC is the programming language used.

#### PLAYING BREAKOUT

- 1. Load Breakout game following instructions in the "Loading a BASIC Program from Tape" section of this manual.
- 2. Enter your name and depress RETURN key.
- 3. If you want standard BREAKOUT colors type in Y or Yes and hit RETURN. The game will then begin.
- 4. If the answer to the previous questions was N or No then the available colors will be displayed. The player will be asked to choose colors, represented by a number from Ø to 15, for background, even bricks, odd bricks, paddle and ball colors. After these have been chosen the game will begin.

5. At the end of the game you will be asked if they want to play again. A Y or Yes response will start another game. A N or No will exit from the program.

NOTE: A game paddle (150k ohm potentiometer) must be connected to PDL (0) of the Game I/O connector for this game.

#### COLOR DEMO TAPE

#### PROGRAM DESCRIPTION

COLOR DEMO demonstrates some of the Apple II video graphics capabilities. In it are ten examples: Lines, Cross, Weaving, Tunnel, Circle, Spiral, Tones, Spring, Hyperbola, and Color Bars. These examples produce various combinations of visual patterns in fifteen colors on a monitor or television screen. For example, Spiral combines colorgraphics with tones to produce some amusing patterns. Tones illustrates various sounds that you can produce with the two inch Apple speaker. These examples also demonstrate how the paddle inputs (PDL(X)) can be used to control the audio and visual displays. Ideas from this program can be incorporated into other programs with a little modification.

#### REQUIREMENTS

4K or greater Apple II system, color monitor or television, and paddles are needed to use this program. BASIC is the programming language used.

#### BREAKOUT GAME PROGRAM LISTING

#### PROGRAM LISTING

5 GOTO 15

- 10 Q=( PDL (0)-20)/6: IF Q<0 THEN Q=0: IF Q>=34 THEN Q=34: COLOR= D: YLIN Q.Q+5 AT 0: COLOR=A: IF P>Q THEN 175: IF Q THEN VLIN 0.0-1 AT 0:P=0:RETURN
- 15 DIM A\$(15).B\$(10):A=1:B=13: C=9:D=6:E=15: TEXT : CALL -936: YTAB 4: TAB 10: PRINT \*\*\*\* BREAKOUT \*\*\*\*:PRINT
- 28 PRINT ' OBJECT IS TO DESTROY ALL BRICKS': PRINT : INPUT 'HI, WHAT'S YOUR NAME? ',A\$
- 25 PRINT 'STANDARD COLORS ';A\$ :: INPUT "Y/N? ",B\$: GR: CALL -936: IF B\$(1.1)#"N" THEN 40 : FOR I=0 TO 39: COLOR=I/2\* (I(32): ¥LIN 0,39 AT I
- 30 NEXT I: POKE 34,20: PRINT : PRINT : PRINT : FOR I=0 TO 15: ¥TAB 21+I MOD 2: TAB I+ I+1: PRINT I;: NEXT I: POKE 34,22: YTAB 24: PRINT : PRINT \*BACKGROUND\*:
- 35 GOSUB 95:A=E: PRINT 'EVEN BRICK' 88 V=-V ::GOSUB 95:B=E: PRINT 'ODD BRIC K':: GOSUB 95:C=E: PRINT 'PADDLE ';: GOSUB 95:D=E: PRINT 'BALL' ::GOSUB 95
- 40 POKE 34,20: COLOR=A: FOR I= 0 TO 39: YLIN 0.39 AT I: NEXT I: FOR I=20 TO 34 STEP 2: TAB I+1: PRINT I/2-9:: COLOR=8: YLIN 0,39 AT I: COLOR=C: FOR J=I MOD 4 TO 39 STEP 4

- 45 YLIN J,J+1 AT I: NEXT J, I: TAB 180 IF N THEN Y= ABS (Y): YLIN 5: PRINT 'SCORE =0':PRINT : PRINT : POKE 34,21:S=0:P= S:L=S:X=10:Y=10:L=6
- 50 COLOR=A: PLOT X,Y/3:X=19:Y= RND (128):V=-1:W= RND (5)-2:L=L-1: IF L<1 THEN 120: TAB 6: IF L>1 THEN PRINT L:"BALLS L EFT
- 55 IF L=1 THEN PRINT 'LAST BALL, ' ;A\$: PRINT : FOR I=1 TO 100 : GOSUB 10: NEXT I:M=1:N=0
- 60 J=Y+W: IF J≻=0 AND J≺120 THEN 65:₩=-₩:J=Y: FOR I-1 TO 6:K= PEEK (-16336): NEXT I
- 65 I-X+V: IF I<0 THEN 180: GOSUB 178: COLOR=A:K=J/3: IF I>39 THEN 75: IF SCRH(I.K)=A THEN 85: IF I THEN 100:N=N+1:V=( N>5)+1:W=(K-P)\*2-5:M=1
- 70 Z= PEEK (-16336)-PEEK (-16336 )+ PEEK (-16336)- PEEK (-16336 )+ PEEK (-16336)- PEEK (-16336 )+ PEEK (-16336): GOTO 85
- 75 FOR I=1 TO 6:M= PEEK (−16336 ): NEXT I:I=X:M=0
- 85 PLOT X,Y/3: COLOR=E: PLOT I, K:X=I:Y=J: 60TO 60
- 98 PRINT 'INVALID, REENTER'; 95 INPUT ' COLOR (0, TO 15)',E: IF E<8 OR E>15 THEN 98: RETURN
- K/2\*2,K/2\*2+1 AT I:S=S+I/2-9: YTAB 21: TAB 13: PRING S 105 Q= PEEK (-16336)- PEEK (-16336 )+ PEEK (-16336)- PEEK (-16336 )+ PEEK (-16336)- PEEK (-16336) )+ PEEK (-16336)- PEEK (-16336) )+ PEEK (-16336)- PEEK (-16336) ) 110 IF S<720 THEN 80 115 PRINT "CONGRATULATONS. ":A\$ ;' YOU WIN!': GOTO 165 120 PRINT YOUR SCORE OF ':S:' IS ' ;: 60TO 125+(S∕100)\*5 125 PRINT "TERRIBLE!": GOTO 165 130 PRINT 'LOUSY.': GOTO 165 135 PRINT "POOR.": GOTO 165 140 PRINT 'GOOD.': GOTO 165 145 PRINT "VERY GOOD.": GOTO 165 155 PRINT 'EXCELLENT.': GOTO 165 160 PRINT 'NEARLY PERFECT.' 165 PRINT "ANOTHER GAME ";A\$;" (Y/N) ":: INPUT A\$: IF A\$(1.1)="Y" THEN 25: TEXT : CALL -936: YTAB 10: TAB 10: PRINT 'GAME OV ER": END 170 Q=( PDL (0)-20)/6: IF Q<0 THEN 0=0: IF 0>=34 THEN 0=34: COLOR= D: VLIN 0,0+5 AT 0: COLOR=A: IF P>0 THEN 175: IF 0 THEN YLIN 0,0-1 AT 0:P=0: RETURN 175 IF P=0 THEN RETURN : IF 0\*84
  - THEN YLIN 0+6,39 AT 0:P=0: RETURH
  - 180 FOR I=1 TO 80:0= PEEK (-16336 ): NEXT I: GOTO 50

#### PROGRAM LISTING

- 10 DIM C(4): POKE 2.173: POKE 3.48: POKE 4,192: POKE 5,165 : POKE 6,8: POKE 7,32: POKE 8,168: POKE 9,252: POKE 10, 165: POKE 11.1: POKE 12,208
- 20 POKE 13,4: POKE 14,198: POKE 15,24: POKE 16,240: POKE 17 ,5: POKE 18,198: POKE 19,1: POKE 28,76: POKE 21,2: POKE 22.0: POKE 23,96
- 30 TEXT : CALL -936: VTAB 4: TAB 8: PRINT \*4K COLOR DEMOS\*: PRINT : PRINT \*1 LINES\*: PRINT \*2 CROS S": PRINT "3 WEAVING"
- 48 PRINT \*4 TUNNEL\*: PRINT \*5 CIRCL 580 2=20: GOTO 980 E\*: PRINT \*6 SPIRAL \*\*\*: PRINT 600 COLOR= RND (16): FOR I=0 TO "7 TONES \*\* ": PRINT "8 SPRING"
- 58 PRINT "9 HYPERBOLA": PRINT \*10 COLOR BARS\*: PRINT : PRINT \*\*\* NEEDS PDL(0) CONNECTED\* : PRINT
- 60 PRINT "HIT ANY KEY FOR HEW DEMO" :Z=0: PRINT : INPUT "WHICH DENO \$ ".I: GR : IF I)0 AND I(11 THEN GOTO 100+1: GOTO 30
- 70 INPUT "WHICH DEMO WOULD YOU LIKE ",I: GR : IF I AND IK20 THEN GOTO 109\*1: GOTO 30
- 108 I=1+I MOD 79: J=1+(1)39)\*(79 -I-I): GOSUB 2000: GOSUB 10000 : GOTO 100
- 200 I=1+I MOD 39:J=I: GOSUB 2000 :J=39-1: GOSUB 2000: GOSUB 18888: GOTO 208

- 300 J=J+1:J=J MOD 22+1: FOR I=1 TO 1295: COLOR=1 MOD J+7: PLOT (2\*1) MOD 37,(3\*1) MOD 35: NEXT I: GOSUB 10000: GOTO 300 488 FOR 1=1 TO 4:C(1)= RND (16)
  - : NEXT 1
  - 410 FOR 1=3 TO 1 STEP -1:C(1+1) =C(I): NEXT I:C(1)= RND (16 ): FOR 1=1 TO 5: FOR J=1 TO 4
  - 420 COLOR=C(J):L=J\*5+14+1:K=39-L: HLIN K,L AT K: YLIN K,L AT L: HLIN K,L AT L: VLIN K,L AT K: NEXT J,I: GOSUB 10000: GOTO 418
  - 18 STEP 2: J=39-1: HLIN 1, J AT I: GOSUB 640: YLIN I,J AT J: GOSUB 648
  - 610 HLIN 1+2, J AT J: GOSUB 640: VLIN 1+2, J AT 1+2: GOSUB 640 : HEXT I
  - 620 COLOR= RND (16): FOR I=18 TO 0 STEP -2: J=39-1: VLIN I+2, J AT I+2: GOSUB 640: HLIN I+ 2, J AT J: GOSUB 640
- 638 YLIN I, J AT J: GOSUB 648: HLIN 1,J AT 1: GOSUB 640: NEXT I: GOSUB 10000: GOTO 600
- 648 K=1+7:L=K\*K\*5+K\*26+70:L=32767 /L\*( PDL (8)/18): POKE 8.K: POKE 1,L MOD 256: POKE 24, L/256+1: CALL 2: RETURN

- 788 I= RND (38)+3; J=I\*I\*5+1\*26+ 70:K=32767/J\*( PDL (0)/10): POKE 0,1: POKE 1,K MOD 256 : POKE 24,(K)255)+1: CALL 2 : GOSUB 10000: GOTO 700
  - 800 X=3:A=1880:P=A:L=20:W=4:Y=8 :J=1: COLOR=6: HLIN 0,39 AT 4: COLOR=9: GOSUB 880: COLOR= 12: YLIN 5,M-2 AT X
  - 810 N=2\*A-P-A/W: COLOR=0: GOSUB 880: VLIN 5,39 RT X:X=X+1: IF X(39 THEN 820:X=3: VLIN 5,39 AT 1: YLIN 5,39 AT 2
  - 828 P=A:A=N:Y=A/108: COLOR=12: GOSUB 888: COLOR=9: VLIN 5,M-2 AT X: COLOR=15: PLOT X-2,M: FOR I=0 TO J: NEXT I: GOSUB 10000 : GOTO 810
- 880 M=L-Y:L1=M-1:L2=M+1: VLIN L1, L2 AT X-1: YLIN L1,L2 AT X: VLIN L1, L2 AT X+1: RETURN
- 900 I=1+I MOD 15: FOR Y=0 TO 39 : FOR X=0 TO 39: COLOR=I+( ABS (28-X)-Z)\*( RB5 (28-Y)-Z)/25 : PLOT X,Y: NEXT X,Y: GOSUB 18888: GOTO 988
- 1880 CALL -936
- 1010 J=1+J NOD 32: COLOR=J/2: YLIH 8,39 RT 3+J: YTAB 21+(J/2) NOD 2: TAB 3+J: IF J MOD 2 THEN PRINT J/2;: GOSUB 10000: GOTO 1010
- 2000 COLOR= RND (16); HLIN 8,39 AT
- J: COLOR= RND (16): VLIN 0,
  - 39 AT J: RETURN
- 10000 IF PEEK (-16384)(128 THEN RETURN
  - : POKE -16368.0: POP : GOTO

30

THIS IS A SHORT DESCRIPTION OF HOW TO PLAY STARTREK ON THE APPLE COMPUTER. THE UNIVERSE IS MADE UP OF 64 QUADRANTS IN AN 8 BY 8 MATRIX. THE QUADRANT IN WHICH YOU THE ENTERPRISE ' ARE, IS IN WHITE, AND A BLOW UP OF THAT QUADRANT IS FOUND IN THE LOWER LEFT Corner. Your space ship status is found in a table to THE RIGHT SIDE OF THE QUADRANT BLOW UP. THIS IS A SEARCH AND DESTROY MISSION. THE OBJECT IS TO LONG-RANGE SENSE FOR INFORMATION AS TO WHERE KLINGONS (K) ARE MOVE TO THAT QUADRANT, AND DESTROY. AND DESTROY. NUMBERS DISPLAYED FOR EACH QUADRANT DENOTE: \* OF STARS IN THE ONES PLACE \* OF BASES IN THE TENS PLACE \* OF KLINGONS IN THE HUNDREDS PLACE AT ANY TIME DURING THE GAME, FOR INSTANCE BEFORE ONE TOTALLY RUNS OUT OF ENERGY, OR NEEDS TO REGENERATE ALL SYSTEMS, ONE MOVES TO A QUADRANT WHICH INCLUDES A BASE, IONS NEXT TO THAT BASE (B) AT WHICH TIME THE BASE SELF-DESTRUCTS AND THE ENTERPRISE (E) HAS ALL SYSTEMS 'GO' AGAIN. TO PLAY: 1. THE COMMANDS CAN BE OBTAINED BY TYPING A '0' (ZERO) AND RETURN. THEY ARE: 1. PROPULSION 2. REGENERATE 3. LONG RANGE SENSORS 5. PHOTON TORPEDOES 4. PHASERS 6. GALAXY RECORD 8. PROBE 7. COMPUTER . SHIELD ENERGY 10.DAMAGE REPORT 11.LOAD PHOTON TORPEDOES 11.LOAD PHOTON TORPEDOES 2.THE COMANDS ARE INVOKED BY TYPING 1HE NUMBER REFERING TO THEM FOLLOWED BY A 'RETURN'. A.IF RESPONSE IS 1 THE COMPUTER WILL ASK WARP OR ION AND EXPECTS 'W' IF ONE WANTS TO TRAVEL IN THE GALAXY BETWEEN QUADRANTS AND AN 'I' IF ONE WANTS ONLY INTERNAL QUADRANT TRAVEL. DURATION OF WARP FACTOR IS THE NUMBER OF SPACES OR QUADRANTS THE ENTERPRISE WILL MOVE. COURSE IS COMPASS READING IN DEGREES FOR THE DESI-RED DESTINATION. B.A 2 REGENERATES THE ENERGY AT 1HE EXPENSE OF TIME. C.A 3 GIVES THE CONTENTS OF THE IMMEDIATE. ADJACENT QUADRANTS. THE GALAXY IS WRAP-AROUND IN ALL DIRECTIONS. D.4 FIRES PHASERS AT THE EXPENSE OF AVAILABLE ENERGY. D. 4 FIRES PHASERS AT THE EXPENSE OF AVAILABLE ENERGY. E.5 INITIATES A SET OF QUESTIONS FOR TORPEDO FIRING. They can be fired automatically if they have been locked on target while in the computer mode, or may be fired manually if the tragectory angle ISKNOWN. F.6, 8 AND 18 ALL GIVE INFORMATION ABOUT THE STATUS OF THE SHIP AND ITS ENVIRONMENT. G.9 SETS THE SHIELD ENERGY/AVAILABLE ENERGY RATIO. H.11 ASKS FOR INFORMATION ON LOADING AND UNLOADING OF PHOTON TORPEDOES AT THE ESPENSE OF AVAILABLE ENERGY. THE ANSWER SHOULD BE A SIGNED NUMBER. FOR EXAMPLE +5 OR -2. I. 7 ENTERS A COMPUTER WHICH WILL RESPOND TO THE FOLLOWING INSTRUCTIONS: 1. COMPUTE COURSE 2.LOCK PHASERS 3.LOCK PHOTON TORPEDOES 4.LOCK COURSE 5. COMPUTE TREJECTORY 7. RETURN TO COMAND MODE 6.STATUS IN THE FIRST FIVE ONE WILL HAVE TO GIVE COORDINATES. COORDINATES ARE GIVEN IN MATHMATICAL NOTATION WITH THE EXCEPTION THAT THE 'Y' VALUE IS GIVEN FIRST. AN EXAMPLE WOULD BE 'Y,X' COURSE OR TRAJECTORY: А 270-----90 180 -.-.- THIS EXPLANATION WAS WRITTEN BY ELWOOD -.-.-.-.-.-. Not responsible for ERRORS

#### PROCEDURE

- Power up system turn the AC power switch in the back of the Apple II on. You should see a random matrix of question marks and other text characters. If you don't, consult the operator's manual for system checkout procedures.
- 2. Hit the RESET key. On the left hand side of the screen you should see an asterisk and a flashing cursor next to it below the text matrix.
- 3. Insert the HI-RES demo tape into the cassette and rewind it. Check Volume (50-70%) and Tone (80-100%) settings.
- 4. Type in "CØØ.FFFR" on the Apple II keyboard. This is the address range of the high resolution machine language subprogram. It extends from \$CØØ to \$FFF. The R tells the computer to read in the data. Do not depress the "RETURN" key yet.
- 5. Start the tape recorder in playback mode and depress the "RETURN" key. The flashing cursor disappears.
- A beep will sound after the program has been read in. STOP the tape recorder. Do not rewind the program tape yet.
- 7. Hold down the "CTRL" key, depress and release the B key, then depress the "RETURN" key and release the "CTRL" key. You should see a right facing arrow and a flashing cursor. The Bc command places the Apple into BASIC initializing the memory pointers.
- Type in "LOAD", restart the tape recorder in playback mode and hit the "RETURN" key. The flashing cursor disappears. This begins the loading of the BASIC subprogram of the HI-RES demo tape.
- 9. A beep will sound to indicate the program is being loaded.

- A second beep will sound, and the right facing arrow will reappear with the flashing cursor. STOP the tape recorder. Rewind the tape.
- 11. Type in "HIMEM:8192" and hit the "RETURN" key. This sets up memory for high resolution graphics.
- 12. Type in "RUN" and hit the "RETURN" key. The screen should clear and momentarily a HI-RES demo menu table should appear. The loading sequence is now completed.

SUMMARY OF HI-RES DEMO TAPE LOADING

- 1. RESET
- 2. Type in CØØ.FFFR
- 3. Start tape recorder, hit RETURN
- 4. Asterick or flashing cursor reappear Bc (CTRL B) into BASIC
- 5. Type in "LOAD", hit RETURN
- 6. BASIC prompt (7) and flashing cursor reappear. Type in "HIMEN:8192", hit RETURN
- 7. Type in "RUN", hit RETURN
- 8. STOP tape recorder, rewind tape.

# **APPLE II INTEGER BASIC**

- 1. BASIC Commands
- 2. BASIC Operators
- 3. BASIC Functions
- 4. BASIC Statements
- 5. Special Control and Editing
- 6. Table A Graphics Colors
- 7. Special Controls and Features
- 8. BASIC Error Messages
- 9. Simpfilied Memory Map
- 10. Data Read Save Subroutines
- **11.** Simple Tone Subroutires
- 12. High Resolution Graphics
- 13. Additional BASIC Program Examples

#### BASIC COMMANDS

Commands are executed immediately; they do not require line numbers.Most Statements (see Basic Statements Section) may also be used as commands. Remember to press Return key after each command so that Apple knows that you have finished that line. Multiple commands (as opposed to statements) on same line separated by a ": " are NOT allowed.

#### COMMAND NAME

| <u>AUTO</u> num        | Sets automatic line numbering mode. Starts at line<br>number <i>num</i> and increments line numbers by 10. To<br>exit AUTO mode, type a control X*, then type the<br>letters "MAN" and press the return key.   |
|------------------------|--|
| <u>AUTO</u> num1, num2 | Same as above execpt increments line numbers by number <i>num2</i> .   |
| CLR                    | Clears current BASIC variables; undimensions arrays.<br>Program is unchanged.  |
| <u>CON</u>             | Continues program execution after a stop from a control C*. Does not change variables.   |
| <u>DEL</u> numl,       | Deletes line number num1.  |
| <u>DEL</u> num1, num2  | Deletes program from line number <i>numl</i> through line number <i>num2</i> .   |
| <u>DSP</u> var         | Sets debug mode that will display variable <i>var</i> every<br>time that it is changed along with the line number<br>that caused the change. (NOTE: RUN command clears<br>DSP mode so that DSP command is effective only if<br>program is continued by a CON or GOTO command.) |
| HIMEM expr             | Sets highest memory location for use by BASIC at<br>location specified by expression <i>expr</i> in <u>decimal</u> .<br>HIMEM: may not be increased without destroying program.<br>HIMEM: is automatically set at maximum RAM memory when<br>BASIC is entered by a control B*. |
| <u>GOTO</u> expr       | Causes immediate jump to line number specified by expression <i>expr</i> .   |
| <u>GR</u>              | Sets mixed color graphics display mode. Clears screen<br>to black. Resets scrolling window. Displays 40x40<br>squares in 15 colors on top of screen and 4 lines of text<br>at bottom.  |
| LIST                   | Lists entire program on screen.  |
| LIST numl              | Lists program line number <i>num1</i> .  |
| LIST num1, num2        | Lists program line number numl through line number num2.   |

LOAD expr. Reads (Loads) a BASIC program from cassette tape. Start tape recorder before hitting return key. Two beeps and a " > " indicate a good load. "ERR" or "MEM" FULL ERR" message indicates a bad tape or poor recorder performance. Similar to HIMEM: except sets lowest memory location LOMEM: expr available to BASIC. Automatically set at 2048 when BASIC is entered with a control B\*. Moving LOMEM: destroys current variable values. Clears AUTO line numbering mode to all manual line MAN numbering after a control C\* or control X\*. NEW Clears (Scratches) current BASIC program.

NO DSP var Clears DSP mode for variable var.

NO TRACE Clears TRACE mode.

- <u>RUN</u> Clears variables to zero, undimensions all arrays and executes program starting at lowest statement line number.
- <u>RUN</u> expr Clears variables and executes program starting at line number specified by expression expr.
- SAVE Stores (saves) a BASIC program on a cassette tape. Start tape recorder in record mode prior to hitting return key.
- <u>TEXT</u> Sets all text mode. Screen is formated to display alpha-numeric characters on 24 lines of 40 characters each. TEXT resets scrolling window to maximum.
- <u>TRACE</u> Sets debug mode that displays line number of each statement as it is executed.

Control characters such as control X or control C are typed by holding down the CTRL key while typing the specified letter. This is similiar to how one holds down the shift key to type capital letters. Control characters are NOT displayed on the screen but are accepted by the computer. For example, type several control G's. We will also use a superscript C to indicate a control character as in  $X^C$ .

# BASIC Operators

| <u>Symbol</u> | Sample Statement  | Explanation   |
|---------------|---|---|
| Prefix (      | )perators   |   |
| ( )           | 10 X = 4*(5 + X)  | Expressions within parenthesis ( )<br>are always evaluated first.   |
| +             | 2Ø X= 1+4*5   | Optional; +1 times following expression.  |
| -             | 3Ø ALPHA =<br>-(BETA +2)  | Negation of following expression.   |
| NOT           | 40 IF A NOT B THEN<br>200   | Logical Negation of following expression;<br>Ø if expression is true (non-zero), l<br>if expression is false (zero).                  |
| Arithme       | etic Operators  |   |
| 1             | $6\emptyset \ Y = X \ 3$  | Exponentiate as in X $^3$ . NOTE: $\uparrow$ is shifted letter N.   |
| *             | 7Ø LET DOTS=A*B*N2  | Multiplication. NOTE: Implied multi-<br>plication such as (2 + 3)(4) is not<br>allowed thus N2 in example is a variable<br>not N * 2. |
| ,             | 80 PRINT GAMMA/S  | Divide  |
| /<br>MOD      | 90 X = 12 MOD 7<br>100 X = X MOD(Y+2)                                       | Modulo: Remainder after division of first expression by second expression.  |
| +             | 110 P = L + G   | Add   |
| -             | 120 XY4 = H-D   | Substract   |
| =             | 130 HEIGHT=15<br>140 LET SIZE=7*5<br>150 A(8) = 2<br>155 ALPHA\$ = "PLEASE" | Assignment operator; assigns a value to<br>a variable. LET is optional  |

### Relational and Logical Operators

The numeric values used in logical evaluation are "true" if non-zero, "false" if zero.

| <u>Symbol</u> | Sample Statement   | Explanation  |
|---------------|--|--|
| =             | 160 IF D = E<br>THEN 500   | Expression "equals" expression.  |
| =             | 17Ø IF A\$(1,1)=<br>"Y" THEN 5VV   | String variable "equal'string variable.  |
| # or < >      | 18Ø IF ALPHA #X*Y<br>THEN 500  | Expression "does not equal" expression.  |
| #             | 19Ø IF A\$ <b># "</b> NO <b>"</b><br>THEN 5ØØ  | String variable "does not equal" string<br>variable. NOTE: If strings are not<br>the same length, they are considered<br>un-equal. < > not allowed with strings. |
| >             | 200 IF A>B<br>THEN GO TO 50  | Expression "is greater than" expression.   |
| <             | 210 IF A+1 <b-5<br>THEN 100</b-5<br>   | Expression "is less than" expression.  |
| >=            | 220 IF A>=B<br>THEN 100  | Expression "is greater than or equal to" expression.   |
| <=            | 230 IF A+1<=B-6<br>THEN 200  | Expression "is less than or equal to" expression.  |
| AND           | 24Ø IF A>B AND<br>C <d 200<="" td="" then=""><td>Expression l "and" expression 2 must<br/>both be "true" for statements to be true.</td></d> | Expression l "and" expression 2 must<br>both be "true" for statements to be true.  |
| OR            | 250 IF ALPHA OR<br>BETA+1 THEN 200   | If either expression 1 or expression 2 is "true", statement is "true".   |

#### BASIC FUNCTIONS

Functions return a numeric result. They may be used as expressions or as part of expressions. PRINT is used for examples only, other statements may be used. Expressions following function name must be enclosed between two parenthesis signs. FUNCTION NAME

| ABS (expr)                 | 300               | PRINT                   | ABS(X)       | Gives absolute value of the expression $expr$ .   |
|----------------------------|-------------------|-------------------------|--------------|---|
| ASC (str\$)<br>LEN (str\$) | 320<br>330<br>335 | PRINT<br>PRINT<br>PRINT | ASC(3\$)     | Gives decimal ASCII value of designated<br>string variable str. If more than one<br>character is in designated string or<br>sub-string, it gives decimal ASCII<br>value of first character.<br>Gives current length of designated<br>string variable str\$;i.e., number of  |
|                            |                   |                         |              | characters.   |
| PDL ( <i>expr</i> )        | 350               | PRINT                   | PDL(X)       | Gives number between Ø and 255 corresponding<br>ponding to paddle position on game paddle<br>number designated by expression expr and must<br>be legal paddle (Ø,1,2,or 3) or else 255 is<br>returned.  |
| PEEK ( <i>expr</i> )       | 360               | PRINT                   | PEEK(X)      | Gives the decimal value of number stored<br>of decimal memory location specified by<br>expression <i>expr</i> . For MEMORY locations<br>above 32676, use negative number; i.e.,<br>HEX location FFFØ is -16   |
| RND (expr)                 | 370               | PRINT                   | RND(X)       | Gives random number between V and<br>(expression expr -1) if expression expr<br>is positive; if minus, it gives random<br>number between Ø and (expression expr +1).  |
| SCRN(exprl,<br>expr2)      | 380               | PRINT                   | SCRN (X1,Y1) | OGives color (number between Ø and 15) of<br>screen at horizontal location designated<br>by expression <i>exprl</i> and vertical<br>location designated by expression <i>expr2</i><br>Range of expression <i>exprl</i> is Ø to 39. Range<br>of expression expr2 is Ø to 39 if in standar<br>mixed colorgraphics display mode as set by<br>GR command or Ø to 47 if in all color mode<br>set by POKE -16304 ,Ø: POKE - 16302,Ø'. |
| SGN ( <i>expr</i> )        | 39Ø               | PRINT                   | SGN(X)       | Gives sign (not sine) of expression <i>expr</i><br>i.e., -1 if expression <i>expr</i> is negative,zero<br>zero and +1 if <i>expr</i> is positive.   |

#### BASIC STATEMENTS

Each BASIC statement must have a line number between Ø and 32767. Variable names must start with an alpha character and may be any number of alphanumeric characters up to 1ØØ. Variable names may not contain buried any of the following words: AND, AT, MOD, OR, STEP, or THEN. Variable names may not begin with the letters END, LET, or REM. String variables names must end with a \$ (dollar sign). Multiple statements may appear under the same line number if separated by a : (colon) as long as the total number of characters in the line (including spaces) is less than approximately 15Ø characters Most statements may also be used as commands. BASIC statements are executed by RUN or GOTO commands.

NAME

| <u>CALL</u> expr                                  | 10 CALL-936   | Causes execution of a machine level<br>language subroutine at <u>decimal</u> memory<br>location specified by expression <i>expr</i><br>Locations above 32767 are specified using<br>negative numbers; i.e., location in<br>example 10 is hexidecimal number \$FC53   |
|---|---|--|
| <u>COLOR</u> =expr                                | 30 COLOR=12   | In standard resolution color (GR)<br>graphics mode, this command sets screen<br>TV color to value in expression <i>expr</i><br>in the range Ø to 15 as described in<br>Table A. Actually expression <i>expr</i> may be<br>in the range Ø to 255 without error message<br>since it is implemented as if it were<br>expression <i>expr</i> MOD 16.   |
| DIM varl (expr1)<br>str\$ (expr2)<br>var2 (expr3) | 50 DIM A(20),B(10)<br>60 DIM B\$(30)<br>70 DIM C (2)<br>Illegal:<br>80 DIM A(30)<br>Legal:<br>85 DIM C(1000)          | The DIM statement causes APPLE II to<br>reserve memory for the specified variables.<br>For number arrays APPLE reserves<br>approximately 2 times <i>expr</i> bytes of memory<br>limited by available memory. For string<br>arrays <i>-str\$-(expr)</i> must be in the range of<br>1 to 255. Last defined variable may b'e<br>redimensioned at any time; thus, example<br>in line is illegal but 85 is allowed. |
| <u>DSP</u> var                                    | Legal:<br>90 DSP AX: DSP L<br>Illegal:<br>100 DSP AX,B<br>102 DSP AB\$<br>104 DSP A(5)<br>Legal:<br>105 A=A(5): DSP A | Sets debug mode that DSP variable <i>var</i> each<br>time it changes and the line number where the<br>change occured.  |

| NAME                                    | EXAMPLE   | DESCRIPTION   |
|---|---|---|
| END                                     | 11Ø END   | Stops program execution. Sends carriage<br>return and "> " BASIC prompt) to screen.   |
| FOR var=<br>exp'21 T0expr2<br>STEPexpr3 | 110 FOR L=0 to 39<br>120 FOR X=Y1 TO Y3<br>130 FOR 1=39 TO 1<br>150 GOSUB 100 *J2 | Begins FORNEXT loop, initializes<br>variable var to value of expression <i>expr1</i><br>then increments it by amount in expression<br><i>expr3</i> each time the corresponding "NEXT"<br>statement is encountered, until value of<br>expression <i>expr3</i> is reached. If STEP <i>expr3</i><br>is omitted, a STEP of +1 is assumed. Negative<br>numbers are allowed.  |
| <u>GOSUB</u> expr                       | 14Ø GOSUB 5ØØ   | Causes branch to BASIC subroutine starting<br>at legal line number specified by expression<br><i>expr</i> Subroutines may be nested up to<br>16 levels.   |
| <u>GOTO</u> expr                        | 16Ø GOTO 2ØØ<br>17Ø GOTO ALPHA+1ØØ  | Causes immediate jump to legal line number specified by expression <i>expr</i> .  |
| <u>GR</u>                               | 180 GR<br>190 GR: POKE -16302,0   | Sets mixed standard resolution color<br>graphics mode. Initializes COLOR = Ø<br>(Black) for top 4Øx4Ø of screen and sets<br>scrolling window to lines 21 through 24<br>by 4Ø characters for four lines of text<br>at bottom of screen. Example 19Ø sets<br>all color mode (4Øx48 field) with no text<br>at bottom of screen.  |
| <u>HLIN</u> expr1,<br>expr2ATexpr3      | 200 HLIN 0,39 AT 20<br>210 HLIN Z,Z+6 AT I  | In standard resolution color graphics mode,<br>this command draws a horizontal line of a<br>predefined color (set by COLOR=) starting<br>at horizontal position defined by expression<br>exprl and ending at position expr2 at<br>vertical position defined by expression<br>expr3.expr1 and $expr3$ must be in the range<br>of Ø to 39 and $expr1 \le expr3$ . $expr3$<br>be in the range of Ø to 39 (or Ø to 47 if not<br>in mixed mode). |
| Note:                                   |   | zontal line at the top of the screen  |

HLIN Ø, 19 AT Ø is a horizontal line at the top of the screen extending from left corner to center of screen and HLIN 20,39 AT 39 is a horizontal line at the bottom of the screen extending from center to right corner.

|                                   | 220 IF A> B THEN<br>PRINT A<br>230 IF X=0 THEN C=1<br>240 IF A#10 THEN<br>GOSUB 200<br>250 IF A\$(1,1)# "Y"<br>THEN 100<br>legal:<br>260 IF L> 5 THEN 50:<br>ELSE 60<br>egal:<br>270 IF L> 5 THEN 50 | If expression is true (non-zero) then<br>execute statement; if false do not<br>execute statement. If statement<br>is an expression, then a GOTO expr<br>type of statement is assumed to be implied.<br>The "ELSE" in example 260 is illegal but<br>may be implemented as shown in example 270.  |
|-----------------------------------|--|---|
| <u>INPUT</u> varl,<br>var2, str\$ | GO TO 6Ø<br>280 INPUT X,Y,Z(3)<br>290 INPUT "AMT",<br>DLLR<br>300 INPUT "Y or N?", A\$   | Enters data into memory from I/O<br>device. If number input is expected,<br>APPLE wil output "?"; if string input is<br>expected no "?" will be outputed. Multiple<br>numeric inputs to same statement may be<br>separated by a comma or a carriage return.<br>String inputs must be separated by a<br>carriage return only. One pair of " " may<br>be used immediately after INPUT to output<br>prompting text enclosed within the quotation<br>marks to the screen. |
| <u>IN#</u> expr                   | 310 IN# 6<br>320 IN# Y+2<br>330 IN# 0  | Transfers source of data for subsequent<br>INPUT statements to peripheral I/O slot<br>(1-7) as specified as by expression <i>expr.</i><br>Slot Ø is not addressable from BASIC.<br>IN#Ø (Example 33Ø) is used to return data<br>source from peripherial I/O to keyboard<br>connector.   |
| <u>LET</u>                        | 340 LET X=5  | Assignment operator. "LET" is optional  |
| LIST num1,<br>num2                | 350 IF X>6 THEN  | Causes program from line number <i>numl</i> through line number num2 to be displayed on screen.   |
| NEXT varl,<br>var2                | 360 NEXT I<br>370 NEXT J,K   | Increments corresponding "FOR" variable<br>and loops back to statement following<br>"FOR" until variable exceeds limit.   |
| <u>NO DSP</u> var                 | 380 NO DSP I   | Turns-off DSP debug mode for variable   |
| <u>NO TRACE</u>                   | 390 NO TRACE   | Turns-off TRACE debug mode  |

| PLOT expr1, expr2             | 400 PLOT 15, 25<br>400 PLT XV,YV   | In standard resolution color<br>graphics, this command plots a small<br>square of a predefined color (set<br>by COLOR=) at horizontal location<br>specified by expression <i>exprl</i> in<br>range Ø to 39 and vertical location<br>specified by expression <i>exprl</i> in range<br>Ø to 39 (or Ø to 47 if in all graphics<br>mode) NOTE: PLOT Ø Ø is upper left<br>and PLOT 39, 39 (or PLOT 39, 47) is<br>lower right corner. |
|-------------------------------|--|---|
| POKE expr1, expr2             | 420 POKE 20, 40<br>430 POKE 7*256,<br>XMOD25E  | Stores <u>decimal</u> number defined by<br>expression <i>expr</i> 2 in range of Ø<br>255 at <u>decimal</u> memory location<br>specified by expression <i>exprl</i><br>Locations above 32767 are specified<br>by negative numbers.   |
| POP                           | 44Ø POP  | "POPS" nested GOSUB return stack<br>address by one.   |
| <u>PRINT</u> var1, var, str\$ | 450 PRINT L1<br>460 PRINT L1, X2<br>470 PRINT "AMT=";DX<br>480 PRINT A\$;B\$;<br>490 PRINT<br>492 PRINT "HELLO"<br>494 PRINT 2+3 | Outputs data specified by variable<br>var or string variable str\$ starting<br>at current cursor location. If there<br>is not trailing "," or ";" (Ex 450)<br>a carriage return will be generated.<br>Commas (Ex. 460) outputs data in 5  |
|                               |  | left justified columns. Semi-colon<br>(Ex. 470) inhibits print of any spaces.<br>Text imbedded in " " will be printed<br>and may appear multiple times.   |
| <u>PR#</u> expr               | 500 PR# 7  | Like IN#, transfers output to I/O<br>slot defined by expression <i>expr</i> PR#<br>Ø is video output not I/O slot Ø.  |
| REM                           | 510 REM REMARK   | No action. All characters after REM<br>are treated as a remark until terminated<br>by a carriage return.  |
| <u>RETURN</u>                 | 520 RETURN<br>530 IFX= 5 THEN<br>RETURN  | Causes branch to statement following<br>last GOSUB; i.e., RETURN ends a<br>subroutine. Do not confuse "RETURN"<br><u>statement</u> with Return <u>key</u> on keyboard.  |

| TAB expr                      | 530 TAB 24<br>540 TAB 1+24<br>550 IF A#B THEN<br>TAB 20 | Moves cursor to absolute horizontal<br>position specified by expression<br><i>expr</i> in the range of 1 to 40. Position<br>is left to right                              |
|-------------------------------|---|---|
| <u>TEXT</u>                   | 550 TEXT<br>560 TEXT: CALL-936                          | Sets all text mode. Resets<br>scrolling window to 24 lines by 4Ø<br>characters. Example 56Ø also clears<br>screen and homes cursor to upper left<br>corner                |
| <u>TRACE</u>                  | 570 TRACE<br>580 IFN >32000                             | Sets debug mode that displays each<br>line number as it is executed.<br>THEN TRACE  |
| VLIN exprl, expr2<br>AT expr3 | 590 VLIN Ø, 39AT15<br>600 VLIN Z,Z+6ATY                 | Similar to HLIN except draws vertical line starting at <i>exprl</i> and ending at <i>expr2</i> at horizontal position <i>expr3</i> .                                      |
| <u>VTAB</u> expr              | 610 VTAB 18<br>620 VTAB Z+2                             | Similar to TAB. Moves cursor to<br>absolute vertical position specified<br>by expression expr in the range 1 to<br>24. VTAB 1 is top line on screen;<br>VTAB24 is bottom. |

#### SPECIAL CONTROL AND EDITING CHARACTERS

"Control" characters are indicated by a super-scripted "C" such as  $G^C$ . They are obtained by holding down the CTRL key while typing the letter. Control characters are NOT displayed on the TV screen. B and C must be followed by a carriage return. Screen editing characters are indicated by a sub-scripted "E" such as D<sub>E</sub>. They are obtained by pressing and releasing the ESC key then typing specified letter. Edit characters send information only to display screen and does not send data to memory. For example, U<sup>C</sup> moves to cursor to right and copies text while A<sub>E</sub> moves cursor to right but does not copy text.

| <u>CHARACTER</u> | DESCRIPTION OF ACTION   |
|------------------|---|
| RESET key        | Immediately interrupts any program execution and resets<br>computer. Also sets all text mode with scrolling window<br>at maximum. Control is transfered to System Monitor and<br>Apple prompts with a "*" (asterisk) and a bell. Hitting<br>RESET key does NOT destroy existing BASIC or machine<br>language program. |
| Control B        | If in System Monitor (as indicated by a "*"), a control<br>B and a carriage return will transfer control to BASIC,<br><u>scratching (killing) any existing BASIC program</u> and set<br>HIMEM: to maximum installed user memory and LOMEM:<br>to 2048.  |
| Control C        | If in BASIC, halts program and displays line number<br>where stop occurred*. Program may be continued with a<br>CON command. If in <u>System</u> Monitor, (as indicated by "*"),<br>control C and a carraige return will enter BASIC <u>without</u><br>killing current program.                                       |
| Control G        | Sounds bell (beeps speaker)   |
| Control H        | Backspaces cursor and deletes any overwritten characters<br>from computer but not from screen. Apply supplied<br>keyboards have special key "÷" on right side of keyboard<br>that provides this functions without using control button.   |
| Control 3        | Issues line feed only   |
| Control V        | Compliment to H <sup>C</sup> . Forward spaces cursor and copies over<br>written characters. Apple keyboards have H-O key on<br>right side which also performs this function.  |
| Control X        | Immediately deletes current line.   |
| *                | If BASIC program is expecting keyboard input, you will have to hit carriage return key after typing control C.  |

<u>CHARACTER</u>

#### DESCRIPTION OF ACTION

| A <sub>E</sub> | Move cursor to right                                   |
|----------------|--|
| BE             | Move cursor to left                                    |
| C <sub>E</sub> | Move cursor down                                       |
| D <sub>E</sub> | Move cursor up   |
| E              | Clear text from cursor to end of line                  |
| F E            | Clear text from cursor to end of page                  |
| @<br>E         | Home cursor to top of page, clear text to end of page. |

Table A: APPLE II COLORS AS SET BY COLOR =

Note: Colors may vary depending on TV tint (hue) setting and may also be changes by adjusting trimmer capacitor C3 on APPLE II P.C. Board.

| 0 | = | Black        | 8 =  | _ | Brown      |
|---|---|--------------|------|---|------------|
|   |   | Magnenta     |      |   | Orange     |
| 2 | = | Bark Blue    | 10 : | - | Grey       |
| 3 | = | Light Purple | 11 : | - | Pink       |
| 4 | = | Dark Green   | 12 : | - | Green      |
| 5 | = | Grey         | 13 : | - | Yellow     |
| 6 | = | Medium Blue  | 14 : | - | Blue/Green |
| 7 | = | Light Blue   | 15 : | - | White      |

| <u>Hex</u>                           | BASIC Example  | Description  |  |  |  |  |  |
|--------------------------------------|--|--|--|--|--|--|--|
| Display Mode Controls                |  |  |  |  |  |  |  |
| C05Ø<br>C051<br>C052<br>C053<br>C054 | 10 POKE -16304,0<br>20 POKE -16303,0<br>30 POKE -16302,0<br>40 POKE -16301,0<br>50 POKE -16300,0 | Set color graphics mode<br>Set text mode<br>Clear mixed graphics<br>Set mixed graphics (4 lines text)<br>Clear display Page. 2 (BASIC commands<br>use Page 1 only)               |  |  |  |  |  |
| C055<br>C056<br>C057                 | 6Ø POKE -16299,Ø<br>7Ø POKE -16298,Ø<br>8Ø POKE -16297,Ø   | Set display to Page 2 (alternate)<br>Clear HIRES graphics mode<br>Set HIRES graphics mode  |  |  |  |  |  |
| TEXT Mode Controls                   |  |  |  |  |  |  |  |
| 0020                                 | 90 POKE 32,L1  | Set left side of scrolling window<br>to location specified by Ll in<br>range of Ø to 39.   |  |  |  |  |  |
| ØØ21                                 | 100 POKE 33,W1   | Set window width to amount specified<br>by WI. Ll+W1<40. Wl>Ø  |  |  |  |  |  |
| ØØ22                                 | 110 POKE 34,11   | Set window top to line specified<br>by Tl in range of Ø to 23  |  |  |  |  |  |
| ØØ23                                 | 120 POKE 35,B1   | Set window bottom to line specified<br>by Bl in the range of Ø to 23. B1>T1  |  |  |  |  |  |
| ØØ24                                 | 130 CH=PEEK(36)<br>140 POKE 36,CH<br>150 TAB(CH+1)   | Read/set cusor horizontal position<br>in the range of Ø to 39. If using<br>TAB, you must add "1" to cusor positior<br>read value; Ex. 14Ø and 15Ø perform<br>identical function. |  |  |  |  |  |
| ØØ25                                 | 16Ø CV=PEEK (37)<br>17Ø POKE 37,CV<br>18Ø VTAB(CV+1)   | Similar to above. Read/set cusor vertical position in the range Ø to 23.   |  |  |  |  |  |
| ØØ32                                 | 190 POKE 50,127<br>200 POKE 50,255   | Set inverse flag if 127 (Ex. 190)<br>Set normal flag if 255(Ex. 200)   |  |  |  |  |  |
| FC58                                 | 210 CALL -936  | (@ <sub>E</sub> ) Home cusor, clear screen   |  |  |  |  |  |
| FC42                                 | 220 CALL -958  | (F <sub>E</sub> ) Clear from cusor to end of page  |  |  |  |  |  |

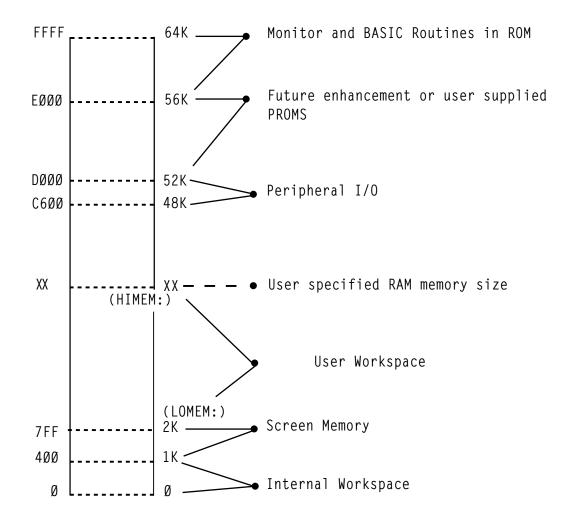
| <u>Hex</u> | BASIC Example | Description                          |
|------------|---------------|--------------------------------------|
| FC9C       | 230 CALL -868 | (EE) Clear from cusor to end of line |
| FC66       | 240 CALL -922 | (J <sup>C</sup> ) Line feed          |
| FC7Ø       | 250 CALL -912 | Scroll up text one line              |

# <u>Miscellaneous</u>

| CØ3Ø | 36Ø X=PEEK(-16336)<br>365 POKE -16336,Ø | Toggle speaker   |
|------|---|--|
| CØØØ | 37Ø X=PEEK(-16384                       | Read keyboard; if X>127 then key was<br>pressed.                 |
| CØ1Ø | 380 POKE -16368,0                       | Clear keyboard strobe – always after<br>reading keyboard.        |
| CØ61 | 39Ø X=PEEK(16287)                       | Read PDL(Ø) push button switch. If<br>X>127 then switch is "on". |
| CØ62 | 400 X=PEEK(-16286)                      | Read PDL(1) push button switch.                                  |
| CØ63 | 41Ø X=PEEK(-16285                       | Read PDL(2) push button switch.                                  |
| CØ58 | 420 POKE -16296,0                       | Clear Game I/O ANØ output  |
| CØ59 | 430 POKE -16295,0                       | Set Game I/O ANØ output  |
| CØ5A | 440 POKE -16294,0                       | Clear Game I/O AN1 output  |
| CØ5B | 450 POKE -16293,0                       | Set Game I/O AN1 output  |
| CØ5C | 460 POKE -16292,0                       | Clear Game I/O AN2 output  |
| CØ5D | 470 POKE -16291,0                       | Set Game I/O AN2 output  |
| CØ5E | 480 POKE -16290,0                       | Clear Game I/O AN3 output  |
| CØ5F | 490 POKE -16289,0                       | Set Game I/O AN3 output  |

# APPLE II BASIC ERROR MESSAGES

| *** | SYNTAX ERR     | Results from a syntactic or typing error.   |
|-----|----------------|---|
| *** | > 32767 ERR    | A value entered or calculated was less than<br>-32767 or greater than 32767.  |
| *** | > 255 ERR      | A value restricted to the range Ø to 255 was outside that range.  |
| *** | BAD BRANCH ERR | Results from an attempt to branch to a non-<br>existant line number.  |
| *** | BAD RETURN ERR | Results from an attempt to execute more RETURNs<br>than previously executed GOSUBs.   |
| *** | BAD NEXT ERR   | Results from an attempt to execute a NEXT state-<br>ment for which there was not a corresponding<br>FOR statement.                          |
| *** | 16 GOSUBS ERR  | Results from more than 16 nested GOSUBs.  |
| *** | 16 FORS ERR    | Results from more than 16 nested FOR loops.   |
| *** | NO END ERR     | The last statement executed was not an END.   |
| *** | MEM FULL ERR   | The memory needed for the program has exceeded the memory size allotted.  |
| *** | TOO LONG ERR   | Results from more than 12 nested parentheses or<br>more than 128 characters in input line.  |
| *** | DIM ERR        | Results from an attempt to DIMension a string<br>array which has been previously dimensioned.   |
| *** | RANGE ERR      | An array was larger than the DIMensioned<br>value or smaller than 1 or HLIN,VLIN,<br>PLOT, TAB, or VTAB arguments are out of<br>range.      |
| *** | STR OVFL ERR   | The number of characters assigned to a string exceeded the DIMensioned value for that string.   |
| *** | STRING ERR     | Results from an attempt to execute an illegal string operation.   |
|     | RETYPE LINE    | Results from illegal data being typed in response<br>to an INPUT statement. This message also requests<br>that the illegal item be retyped. |



# READ/SAVE DATA SUBROUTINE

# INTRODUCTION

Valuable data can be generated on the Apple II computer and sometimes it is useful to have a software routine that will allow making a permanent record of this information. This paper discusses a simple subroutine that serves this purpose.

Before discussing the Read/Save routines a rudimentary knowledge of how variables are mapped into memory is needed.

Numeric variables are mapped into memory with four attributes. Appearing in order sequentually are the Variable Name, the Display Byte, the Next Variable Address, and the Data of the Variable. Diagramatically this is represented as:

| ΥN | DSP | NVA | DATA(0) | DATA(1)        | , | DATA(N) |
|----|-----|-----|---------|----------------|---|---------|
| 1  |     |     | h<br>1  | h <sub>2</sub> |   | hn+1    |

VARIABLE NAME - up to 100 characters represented in memory as ASCII equivalents with the high order bit set.

DSP (DISPLAY) BYTE - set to 01 when DSP set in BASIC initiates a process that displays this variable with the line number every time it is changed within a program.

NVA (NEXT VARIABLE ADDRESS) - two bytes (first low order, the second high order) indicating the memory location of the next variable.

DATA - hexadecimal equivalent of numeric information, represented in pairs of bytes, low order byte first. String variables are formatted a bit differently than numeric ones. These variables have one extra attribute - a string terminator which designates the end of a string. A string variable is formatted as follows:

| VN | DSP | NVA                    | DATA(Ø)  | DATA(1)  | DATA(n)          | ST |
|----|-----|------------------------|--|--|------------------|----|
| 1  |     |                        | hı   | h2   | h <sub>n+l</sub> |    |
|    |     | represent              | ted in memory  | 100 characters<br>as ASCII equi-<br>order bit set.                 |                  |    |
|    |     | DSP set i<br>that disp | in BASIC, init<br>blays this var<br>ber every time                 | et to Øl when<br>iates a proces<br>iable with the<br>it is changed | <u>j</u>         |    |
|    |     | bytes (fi<br>high orde | 「VARIABLE ADD<br>irst low order<br>er) indicating<br>of the next v | , the second<br>the memory   |                  |    |
|    |     | DATA - AS<br>order bit | SCII equivalen<br>t set.   | ts with high   |                  |    |
|    |     |                        | ERMINATOR (ST)<br>t set characte<br>tring.                         |  |                  |    |

There are two parts of any BASIC program represented in memory. One is the location of the variables used for the program, and the other is the actual BASIC program statements. As it turns out, the mapping of these within memory is a straightforward process. Program statements are placed into memory starting at the top of RAM memory\* unless manually shifted by the "HIMEM:." command, and are pushed down as each new (numerically larger) line numbered statement is entered into the system. Figure la illustrates this process diagramatically. Variables on the other hand are mapped into memory starting at the lowest position of RAM memory - hex \$800 (2048) unless manually shifted by the"LOMEM:" command. They are laid down from there (see Figure 1b) and continue until all the variables have been mapped into memory or until they collide with the program statements. In the event of the latter case a memory full error will be generated

\*Top of RAM memory is a function of the amount of memory. 16384 will be the value of "HIMEM:" for a 16K system. The computer keeps track of the amount of memory used for the variable table and program statements. By placing the end memory location of each into \$CC-CD(204-205) and \$CA-CB(203-204), respectively. These are the BASIC memory program pointers and their values can be found by using the statements in Figure 2. CM defined in Figure 1 as the location of the end of the variable tape is equal to the number resulting from statement a of Figure 2. PP, the program pointer, is equal to the value resulting from statement 2b. These statements(Figure 2) can then be used on any Apple II computer to find the limits of the program and variable table.

#### FINDING THE VARIABLE TABLE FROM BASIC

First, power up the Apple II, reset it, and use the CTRL B (control B) command to place the system into BASIC initializing the memory pointers. Using the statements from Figure 2 it is found that for a 16K Apple II CM is equal to 2048 and PP is equal to 16384. These also happen to be the values of OMEN and HIMEN: But this is expected because upon using the Bc command both memory pointers are initialized indicating no program statements and no variables.

To illustrate what a variable table looks like in Apple II memory suppose we want to assign the numeric variable A (C1 is the ASCII equivalent of a with the high order bit set) the value of -1 (FF FF in hex) and then examine the memory contents. The steps in this process are outlined in example I. Variable A is defined as equal to -1 (step 1). Then for convenience another variable - B is defined as equal to 0 (step 2). Now that the variable table has been defined use of statement 2a indicates that CM is equal to 2060 (step 3). LOMEN has not been readjusted so it is equal to 2060 (88C). Depressing the "RESET" key places the Apple II into the monitor mode (step 4).

We are now ready to examine the memory contents of the variable table. Since the variable table resides from \$800 hex to \$80C hex typing in "800.80C" and then depressing the "RETURN" key (step 5) will list the memory contents of this range. Figure 3 lists the contents with each memory location labelled. Examining these contents we see that Cl is equal to the variable name and is the memory equivalent of "A" and that FF FF is the equivalent of -1. From this, since the variable name is at the beginning of the table and the data is at the end, the variable table representation of A extends from \$800 to \$805. We have then found the memory range of where the variable A is mapped into memory. The reason forthis will become clear in the next section.

# READ/SAVE ROUTINE

The READ/SAVE subroutine has three parts. The first section (lines  $\emptyset$ -1 $\emptyset$ ) defines variable A and transfers control to the main program. Lines 2 $\emptyset$  through 26 represents the Write data to tape routine and lines 3 $\emptyset$ -38 represent the Read data from tape subroutine. Both READ and SAVE routines are executable by the BASIC "GOSUB X" (where X is 2 $\emptyset$  for write and 3 $\emptyset$  is for read) command. And as listed these routines can be directly incorporated into almost any BASIC program for read and saving a variable table. The limitation of these routines is that the whole part of a variable table is processed so it is necessary to maintain exactly the dimension statements for the variables used.

The variables used in this subroutine are defined as follows:

| A = | record length, must be the first variable defined |
|-----|---|
| CM= | the value obtained from statement a of figure 2   |
| LW= | is equal to the value of "LOMEM:"                 |
|     | Nominally 2048                                    |

#### SAVING A DATA TABLE

The first step in a hard copy routine is to place the desired data onto tape. This is accomplished by determining the length of the variable table and setting A equal to it. Next within the main program when it is time to write the data a GOSUB2Ø statement will execute the write to tape process. Record length, variable A, is written to tape first (line 22) followed by the desired data (line 24). When this process is completed control is returned to the main program.

# READING A DATA TABLE

The second step is to read the data from tape. When it is time a GOSUB3Ø statement will initiate the read process. First, the record length is read in and checked to see if enough memory is available (line 32-34). If exactly the same dimension statements are used it is almost guaranteed that there will be enough memory available. After this the variable table is read in (line 34) and control is then returned to the main program (line 36). If not enough memory is available then an error is generated and control is returned to the main program (line 38)

# EXAMPLE OF READ/SAVE USAGE

The Read/Save routines may be incorporated directly into a main program. To illustrate this a test program is listed in example 2. This program dimensions a variable array of twenty by one, fills the array with numbers, writes the data table to tape, and then reads the data from tape listing the data on the video display. To get a feeling for how to use these routines enter this program and explore how the Read/Save routines work.

# CONCLUSION

Reading and Saving data in the format of a variable table is a relatively straight forward process with the Read/Save subroutine listed in figure 4. This routine will increase the flexibility of the Apple II by providing a permanent record of the data generated within a program. This program can be reprocessed. The Read/Save routines are a valuable addition to any data processing program.

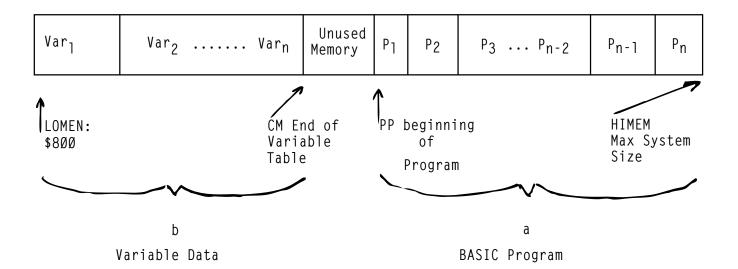


Figure 1

| a) | PRINT | PEEK(2Ø4) | + | PEEK(2Ø5)*256 | PP |
|----|-------|-----------|---|---------------|----|
| b) | PRINT | PEEK(202) | + | PEEK(2Ø3)*256 | СМ |



| 800 | 8Ø1 | 8Ø2 | 8Ø3 | 8Ø4           | 8Ø5 | 8Ø6 | 8Ø7 | 808 | 8Ø9 | 8ØA           | 8ØB | 8ØC |
|-----|-----|-----|-----|---------------|-----|-----|-----|-----|-----|---------------|-----|-----|
| C1  | ØØ  | Ø6  | Ø8  | FF            | FF  | C2  | ØØ  | 0C  | Ø8  | ØØ            | ØØ  | ØØ  |
|     |     | L   | Н   | L             | Н   |     |     | L   | Н   |               |     |     |
| VAR | DSP | Ν   | VA  | DA            | TA  | VAR | DSP | Ν   | VA  | DA            | TA  |     |
| NAM |     | •   | V   |               |     | NAM |     | N   | !   |               |     |     |
|     |     |     | 1   |               |     | 1   |     |     |     |               |     | 1   |
|     |     |     |     | $\rightarrow$ |     |     |     | T   |     | $\rightarrow$ |     |     |

Figure 3 \$800.80C rewritten with labelling

FIGURE 4b

| REA | D/SAVE PROGRAM   | COMMENTS  |
|-----|--|---|
| Ø   | A=Ø  | This must be the first statement in the<br>program. It is initially Ø, but if data<br>is to be saved, it will equal the length<br>of the data base. |
| 1Ø  | GOTO 100   | This statement moves command to the main program.   |
| 2Ø  | PRINT "REWIND TAPE THEN<br>START TAPE RECORDER":<br>INPUT "THEN HIT RETURN",<br>B\$  | Lines 20-26 are the write data to tape subroutine.  |
| 22  | A=CM-LM: POKE 60,4:<br>POKE 61,8: POKE 62,5:<br>POKE 63,8: CALL -307   |   |
| 24  | POKE 60,LM MOD 256:<br>POKE 61, LM/256:<br>POKE 62, CM MOD 256:<br>POKE 63, CM/256:<br>CALL -307   | Writing data table to tape  |
| 26  | PRINT "DATA TABLE SAVED":<br>RETURN  | Returning control to main program.  |
| 3Ø  | PRINT "REWIND THE TAPE<br>THEN START TAPE RECORDER":<br>INPUT "AND HIT RETURN",<br>B\$   | Lines 30-38 are the READ data from tape subroutine.   |
| 32  | POKE 60,4: POKE 61,8:<br>POKE 62,5: POKE 63,8:<br>CALL -259  |   |
| 34  | IF A<01 THEN 38: P=LM+A:<br>IF P>HM THEN 38: CM=P:<br>POKE 6Ø, LM MOD 256:<br>POKE 61, LM/256: POKE 52,<br>CM MOD 256: POKE 63, CM/256:<br>CALL -259 | Checking the record length (A) for memory<br>requirements if everything is satisfactory<br>the data is READ in.                                     |
| 36  | PRINT "DATA READ IN":<br>RETURN  |   |
| 38  | PRINT "***TOO MUCH DATA<br>BASE***": RETURN  | Returning control to main program.  |

NOTE: CM, LM and A must be defined within the main program.

| 1   | >A=1<br>>                               | Define variable A=-1, then hit RETURN                  |
|-----|---|--|
| 2   | B=Ø<br>>                                | Define variable B=Ø, then hit RETURN                   |
| 3   | >PRINT PEEK (204) + PEEK<br>(205) * 256 | Use statement 2a to find the end of the VARIABLE TABLE |
|     | computer responds with=<br>2060         |  |
| 4   | ><br>*                                  | Hit the RESET key, Apple moves into<br>Monitor mode.   |
| 5   | *800.80C                                | Type in VARIABLE TABLE RANGE and HIT the RETURN KEY.   |
| Com | puter responds with:                    |  |
|     | 10- C1 00 86 08 FF FF C2 00             |  |
| Ø80 | 00 00 00 00 00 00 00 00 00 00 00 00 00  |  |

Example 1

# Example 2

XLIST

# 0 A=0

- 18 GOTO 188
- 20 REM WRITE DATA TO TAPE ROUTINE 22 A=CN-LM: POKE 60,4: POKE 61
- ,8: POKE 62,5: POKE 63,8: CALL
- -387
- 24 POKE 60,LM MOD 256: POKE 61 ,LM/256: POKE 62,CM MOD 256 : POKE 63, CM/256: CALL -307
- 26 RETURN
- 30 REM READ DATA SUBROUTINE
- 32 POKE 60,4: POKE 61,8: POKE 62,5: POKE 63,8: CALL -259
- 34 IF A<0 THEN 38:P=LM+A: IF P> HM THEN 38: CM=P: POKE 60,LM MOD 256: POKE 61,LM/256: POKE 62 ,CM MOD 256: POKE 63,CM/256 : CALL - 259
- 36 RETURN
- 38 PRINT \*\*\*\* TOO MUCH DATA BASE \*\* \*':END
- 100 DIM A\$(1),X(20)
- 105 FOR I=1 TO 20:X(I)=I: NEXT I
- 108 LM=2048:CM=2106:A=58:HM=16383

110 PRINT '20 NUMBERS GENERATED'

- 120 PRINT 'NOW WE ARE GOING TO SAVE THE DATA': PRINT 'WHEN YOU ARE R EADY START THE RECORDER IN RECOR D MORE': INPUT 'AND HIT RETURN' ,A\$
- 130 CALL -936: PRINT 'NOW WRITING DA TA TO TAPE': GOSUB 20
- 135 PRINT "NOW THE DATA IS SAVE"
  - 140 PRINT "NOW WE ARE GOING TO CLEAR THE X(20) TABLE AND READ THE DA TA FROM TAPE"
- 150 FOR I=1 TO 20:X(I): NEXT I
- 160 PRINT 'NOW START TAPE RECORDER' INPUT 'AND THEN HIT RETURN' ,A\$
- 165 PRINT 'A ',A
- 170 GOSUB 30
- 188 PRINT 'ALL THE DATA READ IN'
- 198 FOR I-1 TO 28: PRINT 'X(';I; ')=';X(I): NEXT I 195 PRINT 'THIS IS THE END' 288 END

# A SIMPLE TONE SUBROUTINE

# INTRODUCTION

Computers can perform marvelous feats of mathematical computation at well beyond the speed capable of most human minds. They are fast, cold and accurate; man on the other hand is slower, has emotion, and makes errors. These differences create problems when the two interact with one another. So to reduce this problem humanizing of the computer is needed. Humanizing means incorporating within the computer procedures that aid in a program's usage. One such technique is the addition of a tone subroutine. This paper discusses the incorporation and usage of a tone subroutine within the Apple II computer.

## Tone Generation

To generate tones in a computer three things are needed: a speaker, a circuit to drive the speaker, and a means of triggering the circuit. As it happens the Apple II computer was designed with a two-inch speaker and an efficient speaker driving circuit. Control of the speaker is accomplished through software.

Toggling the speaker is a simple process, a mere PEEK - 16336 (\$CØ3Ø) in BASIC statement will perform this operation. This does not, however, produce tones, it only emits clicks. Generation of tones is the goal, so describing frequency and duration is needed, This is accomplished by toggling the speaker at regular intervals for a fixed period of time. Figure 1 lists a machine language routine that satisfies these requirements.

#### Machine Language Program

This machine language program resides in page  $\emptyset$  of memory from \$92 (2) to \$14 (2 $\emptyset$ ). \$ $\emptyset\emptyset$  ( $\emptyset\emptyset$ ) is used to store the relative period (P) between toggling of the speaker and \$ $\emptyset$ 1 ( $\emptyset$ 1) is used as the memory location for the value of relative duration ( $\emptyset$ ). Both P and D can range in value from \$ $\emptyset\emptyset$  ( $\emptyset$ ) to \$FF (255). After the values for frequency and duration are placed into memory a CALL2 statement from BASIC will activate this routine. The speaker is toggled with the machine language statement residing at \$ $\emptyset$ 2 and then a

delay in time equal to the value in \$00 occurs. This process is repeated until the tone has lasted a relative period of time equal to the duration (value in \$01) and then this program is exited (statement \$14).

# Basic Program

The purpose of the machine language routine is to generate tones controllable from BASIC as the program dictates. Figure 2 lists the appropriate statement that will deposit the machine language routine into memory. They are in the form of a subroutine and can be activated by a GOSUB 32000 statement. It is only necessary to use this statement once at the beginning of a program. After that the machine language program will remain in memory unless a later part of the main program modifies the first 20 locations of page 0.

After the GOSUB 32000 has placed the machine language program into memory it may be activated by the statement in Figure 3. This statement is also in the form of a GOSUB because it can be used repetitively in a program. Once the frequency and duration have been defined by setting P and D equal to a value between Ø and 255 a GOSUB 25 statement is used to initiate the generation of a tone. The values of P and D are placed into \$00 and \$01 and the CALL2 command activates the machine language program that toggles the speaker. After the tone has ended control is returned to the main program.

The statements in Figures 2 and 3 can be directly incorporated into BASIC programs to provide for the generation of tones. Once added to a program an infinite variety of tone combinations can be produced. For example, tones can be used to prompt, indicate an error in entering or answering questions, and supplement video displays on the Apple II computer system.

Since the computer operates at a faster rate than man does, prompting can be used to indicate when the computer expects data to be entered. Tones can be generated at just about any time for any reason in a program. The programmer's imagination can guide the placement of these tones.

## CONCLUSION

The incorporation of tones through the routines discussed in this paper will aid in the humanizing of software used in the Apple computer. These routines can also help in transforming a dull program into a lively one. They are relatively easy to use and are a valuable addition to any program.

| 8888- |    |    |    | 222  |        |
|-------|----|----|----|------|--------|
| 0000- |    |    |    | 222  |        |
| 0002- | ΑD | 30 | CØ | LDA  | \$0030 |
| 0005- | 88 |    |    | DEY  |        |
| 0006- | 00 | 84 |    | BHE  | \$000C |
| 0008- | C6 | 81 |    | DEC  | \$01   |
| 000A- | FØ | 88 |    | BEQ  | \$8814 |
| 000C- | CA |    |    | DEX  |        |
| 0000- | 00 | FS |    | BHE  | \$0005 |
| 000F- | A6 | 00 |    | LDX  | \$88   |
| 0011- | 40 | 02 | 00 | .JMP | \$8882 |
| 0014- | 68 |    |    | RTS  |        |

# FIGURE 1. Machine Language Program adapted from a program by P. Lutas.

32000 POKE 2,173: POKE 3,48: POKE 4,192: POKE 5,136: POKE 6,208 : POKE 7,4: P0KE 8,198: POKE 9,1: POKE 10,240 32005 POKE 11,8: POKE 12,202: POKE 13,208: POKE 14,246: POKE 15 ,166: POKE 16,0: POKE 17,76 : POKE 18,2: POKE 19,0: POKE 20,96: RETURN

# FIGURE 2. BASIC "POKES"

25 POKE 0,P: POKE 1,D: CALL 2: RETURN

# FIGURE 3. GOSUB

These subroutines were created to make programming for High-Resolution Graphics easier, for both BASIC and machine. language programs. These subroutines occupy 757 bytes of memory and are available on either cassette tape or Read-Only Memory (ROM). This note describes use and care of these subroutines.

There are seven subroutines in this package. With these, a programmer can initialize High-Resolution mode, clear the screen, plot a point, draw a line, or draw and animate a predefined shape. on the screen. There are also some other general-purpose subroutines to shorten and simplify programming.

BASIC programs can access these subroutines by use of ,the CALL statement, and can pass information by using the POKE statement. There are special entry points for most of the subroutines that will perform the same functions as the original subroutines without modifying any BASIC pointers or registers. For machine language programming, a JSR to the appropriate subroutine address will perform the same function as a BASIC CALL.

In the following subroutine descriptions, all addresses given will be in decimal. The hexadecimal substitutes will be preceded by a dollar sign (\$). All entry points given are for the cassette tape subroutines, which load into addresses CØØ to FFF (hex). Equivalent addresses for the ROM subroutines will be in *italic type face*.

INIT Initiates High-Resolution Graphics mode. From BASIC: CALL 3072 (or CALL -12288) From machine language: JSR \$C00 (or JSR \$D000)

This subroutine sets High-Resolution Graphics mode with a 280 x 160 matrix of dots in the top portion of the screen and four lines of text in the bottom portion of the screen. INIT also clears the screen.

<u>CLEA</u>R Clears the screen. From BASIC: CALL 3886 (or CALL -12274) From machine language: JSR SCOE (or JSR \$L000E)

This subroutine clears the High-Resolution screen without resetting the High-Resolution Graphics mode.

<u>PLO</u>T Plots a point on the screen. From BASIC: CALL 3780 (or CALL -21589) From machine language: JSR \$C7C (or JSR \$L107C)

This subroutine plots a single point on the screen. The X and Y coodinates of the point are passed in locations 800, 801, and 802 from BASIC, or in the A, X, and Y registers from machine language. The Y (vertical) coordinate can be from 0 PLOT (continued)

(top of screen) to 159 (bottom of screen) and is passed in location 802 or the A-register; but the X (horizonțal) coordinate can range from \$\$ (left side of screen) to 279 (right side of screen) and must be split between locations 8\$\$\$ (X MOD 256) and 8\$\$\$ (X/256).or, from machine language, between registers X (X LO) and Y (X HI). The color of the point to be plotted must be set in location 812 (\$32C). Four colors are possible: \$\$ is BLACK, 85 (\$55) is GREEN, 17\$\$\$ (\$AA) is VIOLET, and 255 (\$FF) is WHITE.

<u>POSN</u> Positions a point on the screen. From BASIC: CALL 3761 (or CALL -11599] From machine language: JSR \$C26 (or JSR \$D\$/26)

This subroutine does all calculations for a PLOT, but does not plot a point (it leaves the screen unchanged). This is useful when used in conjumction with LINE or SHAPE (described later). To use this subroutine, set up the X and Y coordinates just the : same as for PLOT. The color in location 812 (\$326) is ignored.

LINE Draw a line on the screen.

# High-Resolution Operating Routines

LINE Draws a line on the screen.

From BASIC: CALL 3786 (or CALL -11574) From machine language: JSR \$C95 (or JSR \$DØ95)

This subroutine draws a line from the last point PLOTted or POSN'ed to the point specified. One endpoint is the last point PLOTted or POSN'ed; the other endpoint is passed in the same manner as for a PLOT or POSN. The color of the line is set in location 812 (\$32C). After the line is drawn, the new endpoint becomes the base endpoint for the next line drawn.

SHAPE Draws a predefined shape on the screen.
From BASIC: CALL 38\$5 (or CALL -11555)
From machine language: JSR \$DBC (or JSR \$DIBC)

This subroutine draws a predefined shape on the screen at the point previously PLOTted or POSN\*ed. The shape is defined by a *table. of vectors* in memory. (How to create a vector table will be described later). The starting address of this table should be passed in locations 804 and 805 from BASIC or in the Y and X registers from machine language. The color of the shape should be passed in location 28 (\$1C).

There are two special variables that are used only with shapes: the <u>scaling factor</u> and the <u>rotation factor</u>. The scaling factor determines the relative size of the shape. A scaling factor of

# SHAPE (continued)

X

6

1 will cause the shape to be drawn true size, while a scaling factor of 2 will draw the shape double size, etc. The scaling factor is passed in location 806 from BASIC or \$32F from machine language. The rotation factor specifies one of 64 possible angles of rotation for the shape. A rotation factor of  $\beta$  will cause the shape to be drawn right-side up, where a rotation factor if 16 will draw the shape rotated 90° clockwise, etc. The rotation factor is passed in location 807 form BASIC of in the A-register from machine language.

The table of vectors which defines the shape to be drawn is a series of bytes stored in memory. Each byte is divided into three sections, and each section specifies whether or not to plot a point and also a direction to move (up, down, left, or right). The SHAPE subroutine steps through the vector table byte by byte, and then through each byte section by section. When it reaches a \$\$\$ byte, it is finished.

The three sections are arranged in a byte like this: T 00= 00 Move 5 6 n Ŀ D 4 ۰1 Section 2. 5 c. 2410-Sector 3 Each bit pair DD specifies a direction to move, and the two bits P specify whether or not to plot a point before moving. Notice that the last section (most significant bits) does not have a P field, so it can only be a move without plotting. The SHAPE

SHAPE (continued)

subroutine processes the sections from right to left (least significant bit to most significant bit). IF THE REMAINING SECTIONS OF THE BYTE ARE ZERO, THEN THEY ARE IGNORED. Thus, the byte cannot end with sections of \$\$ (move up without plotting).

Here is an example of how to create a vector table:

Suppose we want to draw a shape like this:

First, draw it on graph paper, one dot per square. Then decide where to start drawing the shape. Let's start this one in the center. Next, we must draw a path through each point in the shape, using

only 90° angles on the turns:



Next, re-draw the shape as a series of vectors, each one moving one place up, down, left, or right, and distinguish the vectors that plot a point before moving:

| J            |   | -  | -7  | 14  |           |
|--------------|---|----|-----|-----|-----------|
| $\mathbf{T}$ |   |    |     | Ψ   |           |
| 4            |   | -1 |     | 2   | _         |
|              |   |    |     |     |           |
| 5            | Z |    | 1   | t C | r -       |
| 14           | 5 |    | -5- |     | <b>بد</b> |

Now "unwrap" those vectors and write them in a straight line.

Now draw a table like the one in Figure 1. For each vector in the line, figure the bit code and place it in the next available section in the table. If it will not fit or is a \$\$\$ at the end of a byte, then skip that section and go on to the next. When you have finished

# SHAPE (continued)

coding all vectors, check your work to make sure it is accurate. Then make another table (as in figure 2) and re-copy the coded vectors from the first table. Then decode the vector information into a series of hexadecimal bytes, using the hexidecimal code table in figure 3. This series of hexidecimal bytes is your shape definition table, which you can now put into the Apple II's memory and use to draw that shape on the screem.

Shape vectors: CODES START A CBA B C  $\overline{\Psi}$ ØØ Ø ØØ F 个 01 0 1 0 010 Ø ٥ ١ <del>44</del> ) 001 t 111 ١. 1 ٦ Ť T ſΦ î 2 Ø | Ø 000 00 ۱ 3 11 → 1 1 t 0 I I 01 100 00 ١ 4 Ô ۱ ۱ οl 岭 ۱ T 5 100 L ۱ 01 0 0 IØI \$ J っ L ٢ Ô L ١ O 7 L 11 Ø ١ **€**↓ 01 1 L O 8 4 L t 000 ۱ ۱ L P Emptri 000 0 00 ð O (This vector cannot be a plot vector Figure 1. A Move Up (1) 90 B Hex-becimal Codes < 12 = 0001 ØOI æ φ 3 F 0000  $\rightarrow$ 0,0 L ۱ ۱ l ۱ 0 1 ١. 0001 ÷ 00 1 0 O. 000 ZΦ t Z ~> 64 0010 2 01100 3 1 00 3 2 D 4 001 ラ 1 001 0 l L 01 15 ラ ٩ 0100 5 0001 0 0 I ł 36 5 01 ~> O t 001 U 0 l 10 6 ١E 0110 ラ 6 0001 ł Ł 10 7 00000 7 Ø 7 シ 8 11 01 L ł ł 8 1000 ⇒ 00000000 O \$ + Entri ٩ denotes end of vector table. 00 1 → ٩ ·L 2. A Figure 1010 ~ マ οιι B t 00 -7 C ١ ⇒ ٤ υι Ď 7 E 10 I F -> t t l t

TALL A STATE A STATE A STATE

>REM HIRES DEMO-BASIC LISTING

#### X157

- 1 INIT=3072:CLEAR=3086:PO5N=3761 :PLOT=3780:LINE=3786:SHAPE= 3805:FIND=3667:SINTBL=3840
- 5 0IK X(10),Y(10)
- 18 TEXT : CALL -936: VTAB 4: TAB
   18: PRINT "\*\*\* 16K APPLE II \*\*\*"
   PRINT " \*\*\* HIGH RESOLUTION G
   RAPKICS DENOS \*\*\*": PRINT
- 15 PRINT "1 RANDON LINE DRAW AT BRS IC SPEED": PRINT "2 RANDON SWAPE PROJECTED INTO CORNER"
- 20 FRINT "3 CHRIS' NAD FOLLY": PRINT "4 RANDOM SHAPE SPIRALING INTO POINT": PRINT "5 SPIROGRAP H"
- 25 PRINT "6 HI-RES DONUT": PRINT 17 RANDOM WAYE FORM": PRINT "8 SUM OF TWO SINE WAYES"
- 38 PRINT : PRINT "HIT ANY KEY FOR N EW DEMC": PRINT "TYPE 'CONTROL C ' ; RETURN BUITON THEN TYPE 'T EXT AND RETURN BUITON TO STOP"
- 50 PRINT : INPUT "WHICH DEMO # 50 Y OU WANT ",X1
- 90 IF XIXI OR X1/8 THEN 10: CALL INIT: GOTO 100\*X1
- 108 CALL INIT:X=40:7=X: 59508 2000 : POKE 812,255: CALL PLOT
- 110 X= RKD (200):Y= RHD (160): GOSUB 2000: CALL LINE: IF NOT RHD (200) THEN POKE 23,( PEEK ( 20)+ RHD (3)+1) MOD 4+85: GOSUB-3000: GOTO 110
- 200 GOSUB 1000:X= RNG (2)\*279:Y= RND (2)\*159: CALL PLOT: FOR J=1 TO 30: FOR I=1 TO R: POKE 800,X(I) MOD 256: POKE 801, X(I))255: POKE 802,Y(I): CALL LINE

530 IF RND (500)(C THEN POK<u>e</u> 28 , RHD (4)≭85;¥=Y+YDIR≉B; IF Y>=9 AND Y<166 THEN 519:YD18= -YDIR:Y=-Y: IF YK® THER Y=Y+ 318: GOSU**G 3000:** GOTO 510 600 POKE -16302.0: POKE 768.5: POKE 769,0: POKE 880,148: POKE 801 ,0: POKE 802,0: POKE 804,9; POKE 805.3: POKE \$12.255: CALL POSN 618 FOR R=0 TO 4160: POKE 807.R MOD 64: POKE 306,2+6\* NOT (R MCD 65): CALL SHAPE: NEXT R: GOSUB 3080: 69T0 610 700 J= RND (10)+ RND (10);K= RND (33)+ 別級 (31)+ 別級 (68):1= RND (9)/8: PRINT "FRED#1= " ;;;\* FRE8≇2= \*;K 710 SOSU8 4000: GOSUB 3000: GOTO 760 800 INPUT "REL FREQ \$1=",1: INPUT \*REL FRER #2=\*,K; INPUT \*MODE (0 =SOLID, 1=POINTS>".L 816 GOSUB 4000: GOSUB 3000: GOTO 89R 1000 CALL CLEAR: POKE 812, RND ( 3)#85+85;R= RND (3)+2+ RND (2); FOR I=1 TO R:X(I)= RND (160):Y(I)= RND (160): HEXT 1 1818 X=X(1):Y=Y(1): GOSUE 2008: RETURN 2000 POKE 800.X NOD 256: POKE 801 .X>255: POKE 882.Y: RETURN 3000 IF PEEK (~16384)(128 THEN RETURN : POXE -16368.0: POP : GOTO 10 4000 CALL INIT: POKE 812,255;8=0 :8=6: FOR 1=0 TO 279:A=(A+J) MOD 256:8=(8+%) MOD 256:Y= ( PEEK (SINTBL+A)+ PEEK (SINTBL+ 8))#5/16

4010 POKE 800,1 HOD 256: POKE 801 ,1)255: POKE 802,Y: CALL LINE-64( NOT 1 OR L): NEXT 1: RETURN

- 218 X(I)=(X(I)-X)\*9/10+X:Y(I)=(
   Y(I)-Y)\*9/10+Y: NEXT I,J: GOSUB
   3000: GOTO 200
  308 CALL INIT:X= RND (24)\*10+20
   :Y= RND (14)\*10+20: POKE 812
   , RND (3)\*85+85: GOSUB 2000
   : CALL PLOT
  310 IF RND (1000)(1 THEN 300: IF
   HOT RND (200) THEN 90KE 20,
   RND (4)\*85
  320 X1=X+( RND (3)-1)\*25:Y1=Y+(
   RND (3)-1)\*15: IF X1(0 OR
   X1)279 OR Y1(0 OR Y1)159.THEN
   320
- 338 X=X1:Y=Y1: GOSU8 2008; CALL LINE: GOSU8 3000; GOTO 310
- 400 GOSUB 1000: POKE 812, RHD ( 3)+85+85: CALL PLOT
- 410 FOR J=1 TO 25: FOR I=1 TO R: POKE 800,X(I) MOD 255: FOKE 881,X)255: POKE 802,Y(I): CALL LINE
  - 428 X=(X(I)-88+(Y(I)-80)/8)\*9/10 +88:Y(I)=(Y(I)-88-(X(I)-80) /8)\*9/10+88:X(I)=X: NEXT I, J: GOSUB 2008: GOTC 400
  - 500 CALL INIT: POKE 899,9: CALL PLOT:X=0:Y=0:XDIR=1:YDIR=1: R=5:8=3:C=8
  - 510 POKE 800,0: POKE 801,0: POKE 802,Y: CALL LINE: POKE 800, (279-X) MOD 256: POKE 801,X( 24: POKE 802,159: CALL LINE: POKE 800,23: POKE 801,1: POKE 802,159-Y: CALL LINE
- 515 IF RND (\$00) THEN 520:R=1+ RND (13):B=2+ RND (8):C=4+ RND (7)
- 520 POKE 800,X MOD 236: POKE 801 ,X>255: POKE 802,0: CALL LINE: X=X+XDIR\*8: IF X>=0 RND X<280 THEN 530:XDIR=-XDIR:X=-X: IF X<0 THEN X=X+358

# ROD'S COLOR PATTERN

## PROGRAM DESCRIPTION

ROD'S COLOR PATTERN is a simple but eloquent program. It generates a continuous flow of colored mosaic-like patterns in a 40 high by 40 wide block matrix. Many of the patterns generated by this program are pleasing to the eye and will dazzle the mind for minutes at a time.

# REQUIREMENTS

4K or greater Apple II system with a color video display. BASIC is the programming language used.

# PROGRAM LISTING

100 GR 105 FOR 0=3 TO 50 110 FOR I=1 TO 19 115 FOR J=0 TO 19 120 K=I+J 130 COLOR=J+3/(I+3)+I×W/12 135 PLOT I,K: PLOT K,I: PLOT 40 -I,40-K 136 PLOT 40-K,40-I: PLOT K,40-I: PLOT 40-I,K: PLOT I,40-K: PLOT 40-K,I 140 MEXT J,I 145 MEXT W: GOTO 105

5 REH PONG BY WENDELL BITTER 128 IF Y=PP+3 THEN V=-1: IF Y=PP+ 235 IF H THEN 245:P(1)=(( PDL ( 10 REM 77777 15 REM PRODLE SWITCHES CONTROL PADDLE SIZE AFTER A MISS OR DURING & HIT 20 GR 25 DIM P(3): DIM HP\$(10) 30 A=38:8=1:C=-1 35 COLOR=13: HLIN 1,38 AT 0: HLIN 140 IF X=0 THEN VVO= AB5 (V) 1,38 RT 39 49 CALL -936: VTAB 23: INPUT "HANDB ALL OR PONG ? ".₩P\$ 45 INPUT \*PADDLE SIZE (1-6) \*, 155 IF PEEK (-16287))127 AND 50 PS: IF PS(1 OR PS)6 THEN 45 :5=85-1 58 CALL -936 55 IF HP\$(1)&"H" THEN 205 60 H=1: COLOR=13: VLIN-0.33 AT 39: 5070 205 65 FOR X≠A TO 8 STEP C 70 Y=YY+V: 17 Y>1 AND YKO8 THEN THEH Y=38 75 V=-V: FOR T=1 TO 5:M= PEEK 185 VTAB 23: TAB 7: PRINT SL;: TAB 260 PRINT \*\*: 200 (-16336): NEXT T 80 TF X=C OR X=39+C THEN 85: COLOR= 8: PLOT X-C.YY: COLGR=15: PLOT 8.8 85 YY=Y: IF X NOD 2=8 THEN GOSUB 235: NEXT X 98 GOSVB 235 95 IF SCRNCX,Y+V+(7+V(40 AND Y+ )127 AND S#5 THEN S=S+1: IF ÿ>-1))=0 THEN 165 100 FOR T=1 TO 10:M= PEEK (-16336 ): WEXT T 105 IF H RND C>8 THEN 136 119 PP=P(%/38) 115 IF Y=PP THEN V=3: IF Y=PP+1 THEN V=2: IF Y=PP+2 THEN V= i

4 THEN V=+2; IF Y=PP+5 THEN ¥=-3 125 IF S=8 THEN V=3- RND (7) 138 COLOR=0: PLOT X-C.Y 135 IF (K AND C)0) OR (VYO= ABS 240 COLOR=6; VLIN P(1),P(1)+5 AT (V) AND X=8) THEN V=4- RND (9) 145 8=39-8:B=39-8:C=-C 158 IF PEEK (-16286)>127 RNC S# 245 P(0)=(( POL (0)-24)#20)/115 5 THEN S=S+i 0 THEN 5-5-1 160 GOTO 65 165 COLOR=0: FLOT X-C,Y 170 COLOR=15: PLOT X,Y+Y\*(Y+V)-1 AND Y+V(40) 175 FOR T=1 TC 75:M= PEEK (-16336 )+ PEEK (-16336)- PEEK (-16336 255 COLOR=0: IF P(0))P(2) THEN >: NEXT T 88: IF Y(1 THEN Y=1: IF Y)38 188 IF X=8 THEN SR=SR+1: IF X=39 (P(2) THEN VLIN P(6)+5+1,39 THEM SL=SL+1 33: PRINT SR 198 COLOR=8: PLOT X-C,Y 195 IF SL=15 OR SR=15 THEN 260 200 COLOR=0: PLOT X, Y+V+(Y+V)-1 AND 7+VY(48) 205 FOR T=1 TO 75: IF T MOD 5#0 THEN 218: IF PEEK (-16286) PEEK (-16287))127 AND 580 THEN S≠S+1 218 GOSUB 235: NEXT T 215 YY=P(8): IF X=0 THEN YY=P(1 ) 220 IF H THEN YY= RHD (37)+1 225 ¥=1- RND (3) 238 6070 65

- 1)-24)+29)/115: IF P(1)=P(3 ) THEN 245; IF P(1)(8 THEN P(1)=0: IF P(1)+S>39 THEN P( 1)=39-5
- 39: COLOR=8: IF P(1)>P(3) THEN VLIN 0.P(1)-1 AT 39: IF P(1 XP(3) THEN VLIN P(1)+5+1,39 AT 39:P(3)=P(1)
- : IF P(0)X0 THEN P(0)=0: IF P(8)=P(2) THEN RETURN : IF P(0)+S>39 THEN P(0>=39-S
- 250 COLOR=6: VLIN P(0),P(0)+S AT 0: COLOR=0: IF P(0))P(2) THEN VLIH 8,P(0)-1 AT 8: IF P(0) (P(2) THEN VLIN P(0)+5+1.39 AT 9
  - VLHH 8.P(0)-1 AT 9: IF P(8) 87 9:P(2)=P(0): RETURN
- 265 END

# PROGRAM DESCRIPTION

Color Sketch is a little program that transforms the Apple II into an artist's easel, the screen into a sketch pad. The user as an artist has a 40 high by 40 wide (1600 blocks) sketching pad to fill with a rainbow of fifteen colors. Placement of colors is determined by controlling paddle inputs; one for the horizontal and the other for the vertical. Colors are selected by depressing a letter from <u>A</u> through <u>P</u> on the keyboard.

An enormous number of distinct pictures can be drawn on the sketch pad and this program will provide many hours of visual entertainment.

REQUIREMENTS This program will fit into a 4K system in the BASIC mode.

5 POKE 2,173: POKE 3,48: POKE 4,192: POKE 5,165: POKE 6,8 : POKE 7,32: POKE 8,168: POKE 9,252: POKE 10,165: POKE 11 ,1: POKE 12,208; POKE 13,4 18 POKE 14,198: POKE 15,24: POKE 16,248: POKE 17,5: POKE 18. 198: POKE 19,1: POKE 28.76: POKE 21,2: POKE 22,0: <del>"</del>POKE 23,96 15 DIN B\$(40); TEXT : CALL -936 : GOTO 90 28 CALL -936: 6010 98 25 A= LEN(B\$): FOR Z=1 TO A: GOSUB 65: PRINT B\$(Z,Z);: #EXT 2: GOSUE 76: RETURN 35 B‡="COLOR SKETCH": RETURN 48 B\$="COPYRIGHT APPLE COMPUTER 197 7°: RETURN 45 B\$="THIS PROGRAM ALLOUS YOU TO " RETURN 58 S\$="SKETCH COLORED FIGURES IN" : RETURN 55 8\$="LOW RESOLUTION GRAPHICS WITH PRODLES": RETURN 68 KK=28:TOH=28: GOSUB 85: RETURN 65 KK=10:TOH=10: GOSUB 85: RETURN 70 KK=20:TON=50: GDSUB 85:KK=30 :TON=90: GOSUB 85: RETURN 75 KK=28:TON=28: GOSUB 85: RETURN 88 KK=8:TON=250: G850B 85:KK=9 :TON=259: GOSUB 85: RETURN

85 POKE 1,TON MOD 256: POKE 24 ,TON/256+1: POKE 0,KK: CALL 2: RETURN 98 605UB 38: 605UB 25: PRINT : 788 13: 60568 35: 60568 25 : PRINT : 605UB 30: 605UB 25 : PRINT : THE 5: GOSUE 40: GOSUE 25: PRINT : GOSUB 30: 60508 25 95 PRINT : GOSUB 70: GOSUB 45: GOSUB 25: PRINT : GOSUB 58 : GOSUB 25: PRINT : GOSUB 55 : GOSUB 25: PRINT 100 PRINT : PRINT : GOSUB 70: INPUT \*#HEN RERDY HIT RETURN\*,B\$ 185 GR 118 B\$="ABCDEFGHIJKLANDP": CALL -936 115 FOR 2=8 TO 15: COLOR=Z: PLOT 2+2+4,39: YTAB 21: GOSUB 75 : TAB Z#2+5: PRINT B\$(2+1.2+ 1):: GOSU8 75: NEXT 2: TAB 1 120 YTAB 22:8\$="TYPE A LETTER TO CH ANGE COLOR.": GOSUB 25: PRINT :B\$="TYPE SPACE BAR TO STOP PLAT .\*: GOSUB 25: PRINT 125 Y= PDL (1)#38/255;X= PDL (0 )#39/255: VTAB 24: TAB 1: PRINT "CURSOR POSITION: X=";X;" Y=" <u>بر</u> ۱۳ 138 1F PEEK (~16384))127 THEN 145 : IF X1=X AND Y1=Y THEN 125 : COLOR=C2: PLOT X1.Y1: IF NOT FLAG THEN 135: COLOR=C: PLOT X.Y

135 C2= 5CRH(X,Y):C3=15: IF C2= 15 THEN C3=5: COLOR=C3: PLOT X,Y:X1=X:Y1=Y

# 148 GOTO 125

- 145 IF PEEK (-16384)#160 THEN 155 :Flag=0: Poke -16368,0: Poke 34,28: Color=0: Hlin 0,39 At 39: Crll -936
- 150 PRINT :B\$="CONTINUE OR STOP" : VTAB 24: GOSUB 25: INPUT " (C/S) ",B\$: IF B\$(1,1)="C" THEN 110: PRINT "END": END
- 155 FLAG=1:C= PEEK (~16384)-193 : POKE -16368,0: GOTO 125

#### MASTERMIND PROGRAM

## PROGRAM DESCRIPTION

MASTERMIND is a game of strategy that matches your wits against Apple's. The object of the game is to choose correctly which 5 colored bars have been secretly chosen by the computer. Eight different colors are possible for each bar - Red (R), Yellow (Y), Violet (V), Orange (O), White (W), and Black (B). A color may be used more than once. Guesses for a turn are made by selecting a color for each of the five hidden bars. After hitting the RETURN key Apple will indicate the correctness of the turn. Each white square to the right of your turn indicates a correctly colored and positioned bar. Each grey square acknowledges a correctly colored but improperly positioned bar. No squares indicate you're way off.

Test your skill and challenge the Apple II to a game of MASTERMIND.

REQUIREMENTS 8K or greater Apple II computer system. BASIC is the programming language.

```
0 REN GAME OF MASTERNIND 8-25-77
      ¥OZ (APPLE COMPUTER)
   10 DIM R(E),C(8),D(5),X(8),X$(
      8):X(1)=2:X(2)=12:X(3)=1:X(
      4)=13:X(5)=3:X(6)=9:X(7)=15
     :X(8)=5:X$="66RYY0¥X"
   20 TEXT : CALL -936: PRINT "
  ¥E1.00
      ME TO THE GRME OF NASTERMIND!
      YOUR OBJECT IS TO GUESS 5 COLOR
     S (WHICH*
   30 PRINT "I WILL MAKE UP) IN THE MJ
      NIMUN NUMBER OF GUESSES. THER
     E ARE EIGHT DIFFERENT COLORS TO
     CHOSE FROM."
   46 PRINT "
FEWER THRM 7 GUESSES--EXC
     ELLENT": PRINT " 7 TO 9 GUESSE
     S----GOOD": PRINT " 10 TO 14 G
     UESSES----AVERAGE"
   59 PRINT "NORE THAN 14 GUESSES--POC
     Ē
": CALL -384; TAB 7: PRINT
     "HIT ANY KEY TO BEGIN FLAY"
  188 CALL -386: IF PEEK (-16384)
     <132 THEN 180: POKE -16368,
     8: GR : PRINT : FOR I=1 TO
     8:0(1)= RND (8)+1: COLOR=X(
     i): WLIN I*4-2,I*4 AT 39: PRINT
     " ";X$(I,I);: HEXT I
 110 TRY=0: PRINT : PRINT " LETTER
     KEYS FOR COLOR CHANGE"; PRINT
     * ARROW KEYS FOR ADVANCE AND BA
     CK": PRINT " HIT RETURN TO ACC
     EPT QUESS #":
```

208 Y=TRY\*2 HOD 36+1:TRY=TRY+1; TRE 32: PRINT TRY:: COLOR= 0: KLIN 0,39 BT Y;FLASH=1; FOR N=1 TO 5:A(X)=8: GOSUB 1000 : NEXT H:H=1 300 FOR WAIT=1 TO 10:KEY= PEEK (-16384): IF KEY(132 THEN 310 : POKE -16368.0:FLASH=1: FOR I=1 TO S: IF KEY() ASC(X\$(I) ) THEN HEXT I: IF I=9 THEN 310;A(N)=1:KEY=149 310 GOSUS 1000: IF KEY=141 THEN 400: IF KEY=136 AND H>1 OR KEY=149 AND AGG THEN N=N+KEY/ 5-28: NEXT WAIT:FLASH=1-FLASH: 6070 588 488 COLOR=15:X=0: FOR I=1 TO 5: D(1)=C(1);J=1: G05UB 2000: NEXT I: IF M=5 THEN 580: COLOR=5 : FOR J=1 70 5: FOR I=1 TO 5: GOSUB 2000; NEXT I.J: GOTO 268 500 PRINT : PRINT " YOU GOT IT IN " ;TRY;" TRIES (";: IF TRY(7 THEN PRINT "EXCELLENT": IF TRY> 6 BHD TRYVIN THEN PRINT "GOOD" Ĵ 519 IF TRY>9 AND TRY(15 THEN PRINT "AVERAGE";: 1F TRY>14 THEN PRINT "POOR";: PRINT ")": CALL -384: TRE 5: PRINT \*HIT ANY KEY TO PLAY AGAIN": GOTO 100 1888 IF H=6 THEN RETURN : COLOR= X(A(N))\*FLASH: HLIN N\*4-2.H\* 4 AT Y: RETURN 2000 IF A(I)()D(J) THEN RETURN ; N=M+1: PLOT 21+M+N,Y: PRINT \*\*;:A(1)=0:D(1)=9: RETURN

3000 REN CALL -384 SETS INVERSE VID 3010 REN CALL -380 SETS NORMAL VID 3020 REM PEEK(-16384) IS KRD (ASC11) (IF ) 127 THEN STROBE SET) 3830 REN POKE-16368 CLRS KBD STROBE 3040 REN CALL-936 CLEARS SCREEN AND TABS CURSOR TO UPPER LEFT. 3050 REM IN 310, KEY/5-28= -1 OR +1 (ARPOW KEY=136 OR 149 ASCII) 4000 REN STNTS 10-50 INTRO-4818 REN STHTS 196-118 NEW SETUP 4820 REN STHT 200 NEW GUESS 4830 REN STNTS 300-318 USER INPUT 4040 REN STAT 400 GUESS EVAL 4058 REN STATS 509-518 WIN 4868 REN SUBR 1808 COLOR LINE 4873 REN SUBR 2000 NRTCH TEST

#### PROGRAM DESCRIPTION

This program plots three Biorhythm functions: Physical (P), Emotional (E), and Mental (M) or intellectual. All three functions are plotted in the color graphics display mode.

Biorhythm theory states that aspects of the mind run in cycles. A brief description of the three cycles follows:

# Physical

The Physical Biorhythm takes 23 days to complete and is an indirect indicator of the physical state of the individual. It covers physical well-being, basic bodily functions, strength, coordination, and resistance to disease.

#### Emotional

The Emotional Biorhythm takes 28 days to complete. It indirectly indicates the level of sensitivity, mental health, mood, and creativity.

# Mental

The mental cycle takes 33 days to complete and indirectly indicates the level of alertness, logic and analytic functions of the individual, and mental receptivity.

#### Biorhythms

Biorhythms are thought to affect behavior. When they cross a "baseline" the functions change phase - become unstable - and this causes Critical Days. These days are, according to the theory, our weakest and most vulnerable times. Accidents, catching colds, and bodily harm may occur on physically critical days. Depression, quarrels, and frustration are most likely on emotionally critical days. Finally, slowness of the mind, resistance to new situations and unclear thinking are likely on mentally critical days.

## REQUIREMENTS

This program fits into a 4K or greater system. BASIC is the programming language used.

#### PROGRAM LISTING: BIORHYTHM

5 POKE 2,173: POKE 3,48: POKE 4,192: POKE 5,165: POKE 6,8 : POKE 7,32: POKE 8,168: POKE 9,252: POKE 10,165: POKE 11 ,1: POKE 12,208: POKE 13,4 18 POKE 14.198: POKE 15.24: POKE 16,240: POKE 17,5: POKE 18, 198: POKE 19,1: POKE 28,75: POKE 21,2: POKE 22,8: POKE 23,96. 15 GOTO 85 20 TT=3: G05UB 30: RETURN 38 KK=8:TON=589: GOSUB 45: RETURN 35 KK=8:TOH=258: GOSØ8 45: RETURN 40 KK=8:TON=250: GOSUB 45:KK=9 :TON=250: GOSUB 45: RETURN 45 POKE 1, TON MOD 256: POKE 24 ,TON/256+1: POKE 8,KK: CALL 2: RETURN 50 a=(19-(P\*B(1)/100))\*(P\*100( C(1))+(P+18B)C(1))+(P+108(= 34C(1))4((P\*100-C(1))/100\*B(

55 A=A+(P\*100)3\*C(1))\*(38-((P\*
100~3\*C(1))/100\*8(1)/100));
A=39\*(A)39)\*A\*(A(40); RETURN

I)/100)

60 KK=8:TN=500: GOSUB 70:KK=9: TN=250: GOSUB 70: RETURH 65 KK=7:TN=10: GOSUB 70: RETURN 70 POKE 1,TN NOD 256: POKE 24, TM/256+1: POKE 0,KK: CHLL 2 : RETURN 75 GOSUB 60: INPUT "DATE (M,D,Y) "

- 3 60508 601 10701 "DALE (A,D,T)" ,N,D,Y:Y=Y+(Y(100)\*1988
- 80 A=Y-(M(3):N=Y MOD 58\*365-Y/ 58\*82+A/4-A/400+M\*31-H/12-M/ 7-N/5-3\*(M)2)+D: IF N(0 THEN N=H+21252: RETURN
- 85 DIN H\$(10),B\$(3),B(3),C(3), BY(3):B(1)=348:B(2)=286:B(3 )=242:C(1)=575:C(2)=708:C(3 )=825:BY(1)=23:BY(2)=28
- 98 BW(3)=33: TEXT : CALL -936: POKE 34,20: GOSUB 26: GOSUB 25: GOSUB 20: FRINT : TAB 10 : PRINT "APPLE II BIORNYTHM (4K) ": TAB 15: PRINT
- 95 GOSUB 25: TAB 5: PRINT "COPYRIGH I 1977 APPLE COMPUTER INC." : POKE 34,24: VTAB 24 100 GOSUB 60: INPUT "NRME ",N\$:
- VTAB 22: PRINT N\$: VTAB 24 : PRINT "BIRTH ";: GOSUB 75 : VTAB 22: TAB 21: PRINT "BIRTH DATE ";N;",";D;",";Y: VTAB 24:N1=N: CALL -868 105 PRINT "FORECAST ";: GOSUB 75 :N=N-N1: IF N<0 THEN N=N+21252 - (100 02) TAB 40 OPTIME 150000
- : VTAB 23: TAB 18: PRINT "FORECA St date ";m;",";d;",";y: vtab 24: Call -068

- 110 J=1: GR : POKE 34,23: FOR X= 18 TO 20: COLOR=3: HLIN 0,31 AT X: NEXT X; HLIN 1,3 AT 3: HLIN 1,3 AT 37: VLIN 2,4 AT 2: VTAB 21
- 115 FOR Y=1 TO 31 STEP 3: PRINT Y;: IF Y(10 THEN PRINT \* "; : PRINT " ";: NEXT Y: PRINT " P E N": VTAB 24
- 120 VTAB 23: PRINT "DAYS LIVED " ;N: FOR I=1 TO 3: COLOR=1\*( I=1)+6\*(I=2)+3\*(I=3): VLIN 0,39 AT 33+1+1: VTAB 24
- 125 FOR X=0 TO 31:P=(N HOD 8V(I) +X) HOD 8V(I): GOSUB 50: PLOT X,A: GOSUB 65: NEXT X: HEXT I
  - 130 PRINT : INPUT "ANOTHER PLOT (Y/H ) ",8\$: IF 8\$(1,1)="Y\* THEN 90: END

Þ

# PROGRAM DESCRIPTION

DRAGON MAZE is a game that will test your skill and memory. A mazeis constructed on the video screen. You watch carefully as it is completed. After it is finished the maze is hidden as if the lights were turned out. The object of the game is to get out of the maze before the dragon eats you. A reddish-brown square indicates your position and a purple square represents the dragon's.\* You move by hitting a letter on the keyboard; U for up, D for down, R for right, and L for left. As you advance so does the dragon. The scent of humans drives the dragon crazy; when he is enraged he breaks through walls to get at you. DRAGON MAZE is not a game for the weak at heart. Try it if you dare to attempt out-smarting the dragon.

# REQUIREMENTS

8K or greater Apple II computer system. BASIC is the programming language.

\* Color tints may vary depending upon video monitor or television adjustments.

1 TEXT : CALL -936 2 PRINT "WELCOME TO THE DRAGON'S M 8751 3 PRINT "YOU MAY WATCH WHILE I BUI LD A MAZE." 4 PRINT "BUT WHEN IT'S COMPLETE, I 'LL FRASE\* 5 PRINT "THE PICTURE. THEN YOU'LL OHLY SEE THE WALLS AS YOU BUMP I NTG THEM." 6 PRINT "TO NOVE, YOU HIT 'R' FOR RIGHT, \* 7 PRINT "'L' FOR LEFT, 'U' FOR UP, AND" . 8 PRINT "'D' FOR DOWN. DO NOT HIT RETURN! " 9 PRINT 18 PRINT "THE OBJECT. IS FOR YOU (TH E GREEN DOT" 11 PRINT "TO GET TO THE DOOR ON THE RIGHT SIDE" 12 PRINT "BEFORE THE DRAGON (THE RE 0 DOT) EATS" 13 PRINT "YOU." 14 PRINT "BEWARE!!!!!!!! SOMETIMES THE DREGON" 15 PRINT "GETS REAL MAD, AND CLIMBS OVER A WALL," 16 PRINT "BUT NOST OF THE TIME. HE CAN'T GO OVER" 17 PRINT "AND HAS TO GO AROUND," 18 PRINT 19 PRINT \*(WINT: YOU CRN OFTEN TELL

WHERE A WALL\*

20 PRINT PIS. EVEN BEFORE YOU CAN S 1998 Q=R+D+L+U EE IT, BYª 21 PRINT "THE FACT THAT THE DRAGON CBN'T GET" 22 PRINT "THROUGH IT!)" 23 PRINT 89 DIN 8\$(3) 90 PRINT "TYPE 'GO' TO BEGIN " :: INPUT AS 180 GR : COLOR=15 195 CALL -936; PRINT "DRAGON WAZE" :: TAB (25): PRINT "GARY J. SHAN KON™ 110 FOR 1=0 TO 39 STEP 3: VLIN 8,39 AT I: HLIN 8,39 AT I: HEXT 1146 GOTO 1035 Ī 120 COLOR=# 130 S=1008 1000 DIN N(169),T(169) 1981 FOR I=1 TO 169;T(I)=8; NEXT Ţ 1010 FOR I=1 TO 169:1X(I)=11: NEXT // 1165 HLIN 3\*X-2,3\*X-1 AT 3\*Y: 60TO I 1838 X= RND (13)+1;Y= RND (13)+1 1178 X= RND (13)+1;Y= RND (13)+1 :0=169 1035 IF C=1 THEN 1200 1040 R=0:D=8:L=0:U=0:K=X+13\*(Y-1 ):N(K)=- ABS (N(K)):C=C+1 1050 IF X=13 THEH 1060:R=N(K+1)> ŝ 1960 IF Y=13 THEN 1978:D=WK+13) }₿ 1070 IF X=1 THEN 1080:L=N(K-1))@ 1089 IF Y=1 THEN 1099:0=N(K-13)> ü

1108 IF (Q(3 AND RND (18)(2) OR Q=0 THEN 1170 1118 DR= RND (4) 1120 GOTO 1130+16\*DR 1130 IF NOT & THEH 1110:N(K)=N(K) +1+X=X+1 1135 VLIN 3\*Y-2.3\*Y-1 AT 3\*(X-1) 1136 GOTO 1935 1140 IF NOT D THEN 1110:M(K)=H(K) +10:Y=Y+1 1145 HLIN 3#X-2,3\*X-1 8T 3\*(Y-1) 1150 IF NOT L THEN 1110:N(K-1)=N( K-1)-1:X=X-1 1155 YLIN 3\*Y-2.3\*Y-1 AT 3\*X 1156 6070 1935 1160 IF NOT U THEN 1110:N(K-13)= M(K-13)-18:Y=7-1 1835 1180 IF N(X+13\*(Y-1))>0 THEN 1170 1198 C=C+1: GOID 1035 1200 GOSUB 5000: PRINT "THE MAZE IS R EADAu 1285 GR : COLOR=15 1210 VLIN 0.39 AT 6: VLIN 0.39 AT 🔆 39: HLIN 8,39 AT 8: KLIN 9, 39 87 39 1220 X=1:Y= RND (13)+1; COLOR=8; PLOT 3#X-2,3\*Y-2

1225 HX=3\*X-2;HY=3\*Y-2 1230 ¥Y= RND (13)+1 1240 COLOR=0: YLIN 3\*8Y-2,3+8Y-1 AT 39 1250 SX=13:SY=#Y 1268 QX=3\*5X-2:QY=3\*5Y-2 1278 RD=1 1500 K= PEEK (-16384): IF K(128 THEm 1599 1518 POKE -16368,8 1515 QQ=K: GOSUB 7060:K=QQ 1516 IF SX=X AND SY=Y THEN 8006 1520 IF K= RSC("R") THEN 2000 1530 IF K= ASC("L") THEN 2500 1540 IF K= ASC("U") THEN 3000 1550 IF K= ASC("D") THEN 3500 1569 GOSUB 5980: GOTO 1580 2000 DX=1:DY=0 2010 IF M(X+13\*(Y-1)) MOD 10 THEN 49392020 FX=3\*X-2:FY=3\*Y-2: FOR I=1 TO 3 2038 FX=FX+DX:FY=FY+DY 2840 COLOR=9 2060 FOR K=0 TO 1: FOR L=0 TO 1: PLOT HX+K,HY+L: HEXT L,K: COLOR= 4320 HLIN 3\*(X-1),5\*X AT 3\*Y 8: FOR K=0 TO 1: FOR L=0 TO 1: PLOT FX+K,FY+L: NEXT L,K: 8X=FX;8Y=FY 2110 NEXT I 2115 X=X+DX:Y=Y+DY 2116 IF X=13 AND Y=NY THEN 6000 2128 6010 1589 2500 DX=-1:0Y=0 2518 IF N(X+13\*(Y-1)-L) NOD 10 THEN 4100

2520 5078 2028 3000 DX=0:DY=-1 3018 IF W(X+13+(Y-2))/10 THEN 4200 3828 6010 2828 3588 0X=0:0Y=1 3510 IF N(X+13+(Y-1))/10 THER 430s 3528 GOTO 2629 4888 GOSUB 5888 4010 COLOR=15 4926 VLIH 3\*(Y-1),3\*Y AT 3\*X 4939 6010 1598 4180 50508 5989 4118 COLOR=15 4120 YLIN 3#(Y-1),3#Y AT 3#(X-1) 4138 GOTO 1588 4288 GOSUB 5868 4218 COLOR=15 4220 HLIN 3\*(X-1),3\*X BT 3\*(Y-1) 4230 6010 1588 4388 50SUB 5888 4318 COLOR=15 4338 GOT0 1566 5000 S=S-1: FOR I=1 TO 20:9= PEEK (-16336)+ PEEK (-16336)+ PEEK (-16336)+ PEEK (-16336): #EXT I: RETURN 6060 PRINT "YOU WIN!" 6810 GOSUE 5000: GOSUE 5000: GOSUE 5888 6020 PRINT "SEORE=":5+3

7000 IF XXSX THEN 7005: IF YXSY THEN 7858 7001 IF K(SX THEN 7100: IF Y(SY THEN 7158 7005 IF SX=13 THEN 7050; IF T(SX+ 13\*(5Y-1)))9 THEN 7018: IF N(SX+13+(SY-1)) HOD 10 THEN 76567018 DX=1:DY=0 7028 COLOR=8 7822 RX=3\*5X-2:RY=3\*5Y-2 7023 FOR I=1 TO 3: RX=RX+DX: RY=RY+ Ŵ٧ 7824 COLOR=9 7025 FOR K=0 TO 1: FOR L=0 TO 1: PLOT \$X+K, \$Y+L: HEXT L.K; COLOR= RD: FOR K=8 TO 1: FOR L=0 TO 1: PLOT RX+K, RY+L: NEXT L.K: QX=RX:QY=RY 7638 REXT 1 7835 SX=SX+DX: SY=SY+DY 7848 T(SX+13\*(SY-1))=T(SX+13\*(SY-1))+i 7845 RETURN 7858 IF SY=13 THEN 7188: IF T(5X+ 13\*(5Y-1))>9 THEN 7060: 1F N(SX+13+(SY-1))/18 THEN 7100 7868 DX=8:DY=1: 6010 7628 7100 IF SX=1 THEN 7150: IF T(SX+ 13\*(5Y-1))>9 THEN 7110: IF

H(5X+13+(5Y-1)-1) NOD 10 THEN

7158

6038 END

# DRAGON MAZE cont.

7110 DX=-1:DY=0: GOTO 7020 7150 IF SY=1 THEN 7005: IF T(SX+ 13\*(SY-1)))0 THEN 7160: IF M(SX+13\*(SY-1)-13)/10 THEN 7005 7160 DX=0:DY=-1: GOTO 7020 8000 GOSUB 5000: GOSUB 5000: GOSUB 5000: GOSUB 5000: PRINT "THE DRA GON GOT YOU!"

# **APPLE II FIRMWARE**

- **1.** System Monitor Commands
- 2. Control and Editing Characters
- **3. Special Controls and Features**
- 4. Annotated Monitor and Dis-assembler Listing
- 5. Binary Floating Point Package
- 6. Sweet 16 Interpreter Listing
- 7.6502 Op Codes

#### System Monitor Commands

Apple II contains a powerful machine level monitor for use by the advanced programmer. To enter the monitor either press RESET button on keyboard or CALL-151 (Hex FF65) from Basic. Apple II will respond with an "\*" (asterisk) prompt character on the TV display. This action will not kill current BASIC program which may be re-entered by a C<sup>C</sup> (control C). NOTE: "adrs" is a four digit hexidecimal number and "data" is a two digit hexidecimal number. Remember to press "return" button at the end of each line.

| Command Format         | Example   | Description  |
|------------------------|---|--|
| Examine Memory         |   |  |
| adrs                   | *CØF2   | Examines (displays) single memory<br>location of (adrs)  |
| adrsl.adrs2            | *1024.1048  | Examines (displays) range of memory<br>from (adrsl) thru (adrs2)   |
| (return)               | *(return)   | Examines (displays) next 8 memory<br>locations.  |
| .adrs2                 | *.4096  | Examines (displays) memory from current<br>location through location (adrs2)   |
| Change Memory          |   |  |
| adrs:data<br>data data | *A256:EF 2Ø 43  | Deposits data into memory starting at location (adrs).   |
| :data data<br>data     | *:FØ A2 12  | Deposits data into memory starting<br>after (adrs) last used for deposits.   |
| Move Memory            |   |  |
| adrsl≺adrs2.<br>adrs3M | *100 <b010.b410m< td=""><td>Copy the data now in the memory range<br/>from (adrs2) to (adrs3) into memory<br/>locations starting at (adrsl).</td></b010.b410m<>   | Copy the data now in the memory range<br>from (adrs2) to (adrs3) into memory<br>locations starting at (adrsl).   |
| Verify Memory          |   |  |
| adsr1≺adrs2<br>adrs3V  | *100 <b010.b410v< td=""><td>Verify that block of data in memory<br/>range from (adrs2) to (adrs3) exactly<br/>matches data block starting at memory<br/>location (adrsl)and displays<br/>differences if any.</td></b010.b410v<> | Verify that block of data in memory<br>range from (adrs2) to (adrs3) exactly<br>matches data block starting at memory<br>location (adrsl)and displays<br>differences if any. |

| <u>Command Format</u>                  | Example        | Description   |
|--|----------------|---|
| <u>Cassette I/O</u>                    |                |   |
| adrsl.adrs2R                           | *300.4FFR      | Reads cassette data into specified<br>memory (adrs) range. Record length<br>must be same as memory range or an<br>error will occur.   |
| adrsl.adrs2W                           | *800.9FFW      | Writes onto cassette data from speci-<br>fied memory (adrs) range.  |
| Display                                |                |   |
| Ι                                      | *I             | Set inverse video mode. (Black characters<br>on white background)   |
| М                                      | *N             | Set normal video mode. (White characters<br>on black background)  |
| Dis-assembler                          |                |   |
|  |                |   |
| adrsL                                  | *C800L         | Decodes 20 instructions starting at<br>memory (adrs) into 6502 assembly<br>nmenonic code.   |
| L                                      | *L             | Decodes next 2Ø instructions starting at current memory address.  |
| <u>Mini-assembler</u>                  |                |   |
| (Turn-on)                              | *F666G         | Turns-on mini-assembler. Prompt<br>character is now a "!" (exclamation<br>point).   |
| \$(monitor:<br>command)                | \$C800L        | Executes any monitor command from mini-<br>assembler then returns control to mini-<br>assembler. Note that many monitor<br>commands change current memory address<br>reference so that it is good practice<br>to retype desired address reference<br>upon return to mini-assembler. |
| adrs:(65Ø2<br>MNEMONIC<br>instruction) | !CØ10:STA 23FF | Assembles a mnemonic 6502 instruction<br>into machine codes. If error, machine<br>will refuse instruction, sound bell,<br>and reprint line with up arrow under<br>error.  |

| Command Format                            | <u>Example</u>   | Description   |
|---|------------------|---|
| (space) (65Ø2<br>mnemonic<br>instruction) | ! STA Ø1FF       | Assembles instruction into next<br>available memory location. (Note<br>space between "f" and instruction) |
| (TURN-OFF)                                | ! (Reset Button) | Exits mini-assembler and returns to system monitor.   |

#### Monitor Program Execution and Debuging

| adrsG       | *300G  | Runs machine level program starting at memory (adrs).  |
|-------------|--------|--|
| adrs⊤       | *800T  | Traces a program starting at memory<br>location (adrs) and continues trace<br>until hitting a breakpoint. Break<br>occurs on instruction ØØ (BRK), and<br>returns control to system monitor.<br>Opens 6502 status registers (see note 1) |
| asrdS       | *CØ5ØS | Single steps through program beginning<br>at memory location (adrs). Type a<br>letter S for each additional step<br>that you want displayed. Opens 6502<br>status registers (see Note 1).  |
| (Control E) | *EC    | Displays 6502 status registers and opens them for modification (see Note 1)  |
| (Control Y) | *γC    | Executes user specified machine<br>language subroutine starting at<br>memory location (3F8).   |

Note 1:

6502 status registers are open if they are last line displayed on screen. To change them type ":" then "data" for each register.

Example: A = 3C X = FF Y = ØØ P = 32 S = F2 \*: FF Changes A register only \*: FF ØØ 33 Changes A, X, and Y registers

To change S register, you must first retype data for A, X, Y and P.

| Hexidecimal | Arithmetic |  |
|-------------|------------|--|
| datal+data2 | *78+34     | Performs hexidecimal sum of datal<br>plus data2.         |
| datal-data2 | *AE-34     | Performs hexidecimal difference of<br>datal minus data2. |

| <u>Command Format</u> | Example | Description   |
|-----------------------|---------|---|
| Set Input/Output      | Ports   |   |
| (X) (Control P)       | *5PC    | Sets printer output to I/O slot<br>number (X). (see Note 2 below) |
| (X) (Control K)       | *2KC    | Sets keyboard input to I/O slot<br>number (X). (see Note 2 below) |

Note 2:

Only slots 1 through 7 are addressable in this mode. Address Ø (Ex:  $ØP^C$  or  $ØK^C$ ) resets ports to internal video display and keyboard. These commands will not work unless Apple II interfaces are plugged into specificed I/O slot.

Multiple Commands

| *100L 400G AFFT | Multiple monitor commands may be<br>given on same line if separated by<br>a "space". |
|-----------------|--|
| *LLLL           | Single letter commands may be repeated without spaces.                               |

#### SPECIAL CONTROL AND EDITING CHARACTERS

"Control" characters are indicated by a super-scripted "C" such as  $G^C$ . They are obtained by holding down the CTRL key while typing the specified letter. Control characters are NOT displayed on the TV screen.  $B^C$  and  $C^C$  must be followed by a carriage return. Screen editing characters are indicated by a sub-scripted "E" such as  $D_C$ . They are obtained by pressing <u>and releasing</u> the ESC key then typing specified letter. Edit characters send information only to display screen and does not send data to memory. For example,  $U^C$  moves to cursor to right and copies text while  $A_E$  moves cursor to right but does not copy text.

| <u>CHARACTER</u> | DESCRIPTION OF ACTION  |
|------------------|--|
| RESET key        | Immediately interrupts any program execution and resets<br>computer. Also sets all text mode with scrolling window<br>at maximum. Control is transferred to System Monitor and<br>Apple prompts with a "*" (asterisk) and a bell. Hitting<br>RESET key does NOT destroy existing BASIC or machine<br>language program. |
| Control B        | If in System Monitor (as indicated by a "*"), a control<br>B and a carriage return will transfer control to BASIC,<br><u>scratching (killing) any existing BASIC program</u> and set<br>HIMEM: to maximum installed user memory and LOMEM:<br>to 2048.   |
| Control C        | If in BASIC, halts program and displays line number<br>where stop occurred*. Program may be continued with a<br>CON command. If in <u>System</u> Monitor, (as indicated by "*"),<br>control C and a carriage return will enter BASIC <u>without</u><br>killing current program.  |
| Control G        | Sounds bell (beeps speaker)  |
| Control H        | Backspaces cursor and deletes any overwritten characters<br>from computer but not from screen. Apply supplied<br>keyboards have special key "4" on right side of keyboard<br>that provides this functions without using control button.  |
| Control J        | Issues line feed only  |
| Control V        | Compliment to H <sup>C</sup> . Forward spaces cursor and copies over<br>written characters. Apple keyboards have "+" key on<br>right side which also performs this function.   |
| Control X        | Immediately deletes current line.  |
|                  | * If BASIC program is expecting keyboard input, you will have  |

## SPECIAL CONTROL AND EDITING CHARACTERS

### (continued)

| CHARACTER | DESCRIPTION OF | ACTION |
|-----------|----------------|--------|
|-----------|----------------|--------|

- A<sub>F</sub> Move cursor to right
- B<sub>E</sub> Move cursor to left
- C<sub>F</sub> Move cursor down
- D<sub>F</sub> Move cursor up
- E<sub>F</sub> Clear text from cursor to end of line
- F<sub>E</sub> Clear text from cursor to end of page

| Hex                                  | BASIC Example  | Description  |  |
|--------------------------------------|--|--|--|
| Display Mode Controls                |  |  |  |
| C05Ø<br>C051<br>C052<br>C053<br>C054 | 10 POKE -16304,0<br>20 POKE -16303,0<br>30 POKE -16302,0<br>40 POKE -16301,0<br>50 POKE -16300,0 | Set color graphics mode<br>Set text mode<br>Clear mixed graphics<br>Set mixed graphics (4 lines text)<br>Clear display Page 2 (BASIC commands<br>use Page 1 only)                |  |
| C055<br>C056<br>C057                 | 6Ø POKE -16299,Ø<br>7Ø POKE -16298,Ø<br>8Ø POKE -16297,Ø   | Set display to Page 2 (alternate)<br>Clear HIRES graphics mode<br>Set HIRES graphics mode  |  |
| TEXT Mode                            | Controls   |  |  |
| 0020                                 | 90 POKE 32,L1  | Set left side of scrolling window<br>to location specified by Ll in<br>range of Ø to 39.   |  |
| ØØ21                                 | 100 POKE 33,W1   | Set window width to amount specified<br>by Wl. Ll+Wl<4Ø. Wl>Ø  |  |
| ØØ22                                 | 110 POKE 34,11   | Set window top to line specified<br>by Tl in range of Ø to 23  |  |
| ØØ23                                 | 120 POKE 35,B1   | Set window bottom to line specified<br>by Bl in the range of Ø to 23. B1>T1  |  |
| 0024                                 | 130 CH=PEEK(36)<br>140 POKE 36,CH<br>150 TAB(CH+1)   | Read/set cusor horizontal position<br>in the range of Ø to 39. If using<br>TAB, you must add "1" to cusor position<br>read value; Ex. 14Ø and 15Ø perform<br>identical function. |  |
| ØØ25                                 | 160 CV=PEEK(37)<br>170 POKE 37,CV<br>180 VTAB(CV+1)  | Similar to above. Read/set cusor<br>vertical position in the range Ø to<br>23.   |  |
| ØØ32                                 | 190 POKE 50,127<br>200 POKE 50,255   | Set inverse flag if 127 (Ex. 190)<br>Set normal flag if 255(Ex. 200)   |  |
| FC58                                 | 210 CALL -936  | (@ <sub>E</sub> ) Home cusor, clear screen   |  |
| FC42                                 | 220 CALL -958  | (F <sub>E</sub> ) Clear from cusor to end of page  |  |

| <u>Hex</u> | BASIC Example | Description                                       |
|------------|---------------|---|
| FC9C       | 230 CALL -868 | (E <sub>E</sub> ) Clear from cusor to end of line |
| FC66       | 240 CALL -922 | (J <sup>C</sup> ) Line feed                       |
| FC7Ø       | 250 CALL -912 | Scroll up text one line                           |

# <u>Miscellaneous</u>

| CØ3Ø | 36Ø X=PEEK(-16336)<br>365 POKE -16336,Ø | Toggle speaker   |
|------|---|--|
| CØØØ | 37Ø X=PEEK(-16384                       | Read keyboard; if X>127 then key was<br>pressed.                 |
| CØ1Ø | 380 POKE -16368,0                       | Clear keyboard strobe – always after<br>reading keyboard.        |
| CØ61 | 39Ø X=PEEK(16287)                       | Read PDL(Ø) push button switch. If<br>X>127 then switch is "on". |
| CØ62 | 400 X=PEEK(-16286)                      | Read PDL(1) push button switch.                                  |
| CØ63 | 410 X=PEEK(-16285                       | Read PDL(2) push button switch.                                  |
| CØ58 | 420 POKE -16296,0                       | Clear Game I/O ANØ output  |
| CØ59 | 430 POKE -16295,0                       | Set Game I/O ANØ output  |
| CØ5A | 440 POKE -16294,0                       | Clear Game I/O ANl output  |
| CØ5B | 450 POKE -16293,0                       | Set Game I/O AN1 output  |
| CØ5C | 460 POKE -16292,0                       | Clear Game I/O AN2 output  |
| CØ5D | 470 POKE -16291,0                       | Set Game I/O AN2 output  |
| CØ5E | 480 POKE -16290,0                       | Clear Game I/O AN3 output  |
| CØ5F | 490 POKE -16289,0                       | Set Game I/O AN3 output  |

| ******                 | *****      | ******       | * * * *          |          |
|------------------------|------------|--------------|------------------|----------|
| *                      |            |              | *                |          |
| *                      | APPLE      | II           | *                |          |
|                        | STEM M     | ONITOR       | *                |          |
| *                      |            |              | *                |          |
|                        |            | 1977 BY      |                  |          |
| * APPL<br>*            | E COMP     | UTER, INC    | · * *            |          |
|                        | RIGHTS     | RESERVED     |                  |          |
| *                      |            |              | *                |          |
| *                      | s. WOZ     | NIAK         | *                |          |
| *                      | A. BA      | UM           | *                |          |
| *                      |            |              | *                |          |
|                        | TITLE      | *******      | "APPLE II SYSTEM | MONTTODU |
| LOC0                   | EPZ        | \$00         | AFFDE II DIDIEM  | MONTION  |
| LOC1                   |            | \$01         |                  |          |
| WNDLFT                 | EPZ        | \$20         |                  |          |
| WNDWDTH                |            | \$21         |                  |          |
| WNDTOP<br>WNDBTM       | EPZ        | \$22         |                  |          |
|                        |            |              |                  |          |
| CH<br>CV               | EPZ<br>EPZ | \$24<br>¢25  |                  |          |
| GBASL                  |            | \$25<br>\$26 |                  |          |
|                        |            |              |                  |          |
| GBASH<br>BASL          | EPZ        | \$28         |                  |          |
| BASH                   | EPZ        | \$29         |                  |          |
|                        | EPZ        |              |                  |          |
| BAS2H                  |            | \$2B         |                  |          |
| H2<br>LMNEM            | EPZ<br>EPZ | \$2C         |                  |          |
| RTNL                   | EPZ        | \$2C<br>\$2C |                  |          |
| V2                     | EPZ        |              |                  |          |
| RMNEM                  |            | \$2D         |                  |          |
| RTNH                   |            |              |                  |          |
| RTNH<br>MASK<br>CHKSUM | EPZ<br>EPZ |              |                  |          |
|                        | EPZ        | \$2E         |                  |          |
| FORMAT                 |            |              |                  |          |
| LASTIN                 |            | \$2F         |                  |          |
| LENGTH<br>SIGN         | EPZ        | \$2F         |                  |          |
| COLOR                  | EPZ        | \$30         |                  |          |
| MODE                   | EPZ        | \$31         |                  |          |
| INVFLG                 | EPZ        | \$32         |                  |          |
| PROMPT                 | EPZ<br>EPZ | \$33         |                  |          |
| YSAV                   |            |              |                  |          |
| YSAV1<br>CSWL          | EPZ<br>EPZ | \$35<br>\$36 |                  |          |
| CSWH                   | EPZ        | \$37         |                  |          |
| KSWL                   |            |              |                  |          |
| KSWH                   | EPZ<br>EPZ | \$39         |                  |          |
| PCL                    | EPZ        | \$3A         |                  |          |
| PCH                    | EPZ        |              |                  |          |
| XQT                    | EPZ        | \$3C         |                  |          |
| A1L<br>A1H             | EPZ<br>EPZ | \$3C<br>\$3D |                  |          |
| AIH<br>A2L             | EPZ        | \$3D<br>\$3E |                  |          |
| A2H                    | EPZ        | \$3F         |                  |          |
| A3L                    | EPZ        | \$40         |                  |          |
| A3H                    | EPZ        | \$41         |                  |          |
| A4L                    | EPZ        | \$42         |                  |          |
| A4H                    | EPZ        | \$43         |                  |          |
| A5L<br>A5H             | EPZ<br>EPZ | \$44<br>\$45 |                  |          |
| АЭП                    | БГД        | 940          |                  |          |
|                        |            |              |                  |          |

|  | ACC   | EQU  | \$45   |   |
|--|---|--|--|---|
|  |   | EQU  | \$46   |   |
|  |   | EQU  |  |   |
|  |   |  |  |   |
|  |   | EQU  | \$48<br>\$49   |   |
|  |   | EQU  |  |   |
|  |   |  | \$4F   |   |
|  |   | EQU  |  |   |
|  |   |  | \$51   |   |
|  |   | EQU  |  |   |
|  |   | EQU  |  |   |
|  |   | EQU  | \$54   |   |
|  |   | EQU  |  |   |
|  |   |  | \$95<br>\$95   |   |
|  |   | EQU  |  |   |
|  | USRADR  |  |  |   |
|  |   |  | \$03FB   |   |
|  | IRQLOC  |  |  |   |
|  |   |  | \$C000   |   |
|  |   |  | \$C000   |   |
|  | KBDSTRB   |  |  |   |
|  | TAPEOUT   |  |  |   |
|  | SPKR  |  |  |   |
|  |   |  | \$C050   |   |
|  | TXTSET  |  |  |   |
|  | MIXCLR  | EOU  | \$C052   |   |
|  | MIXSET  |  |  |   |
|  | LOWSCR  |  |  |   |
|  |   |  | \$C055   |   |
|  | LORES   | EQU  | \$C056   |   |
|  | HIRES   | EQU  | \$C057   |   |
|  | TAPEIN  | EQU  | \$C060   |   |
|  | PADDL0  | EQU  | \$C064   |   |
|  | PTRIG   | EQU  | \$C070   |   |
|  | BASIC   | EQU  | \$E000   |   |
|  | BASIC2  | EQU  | \$E003   |   |
|  |   | ORG  |  | ROM START ADDRESS   |
| F800: 4A   | PLOT  | LSR  |  | Y-COORD/2   |
| F801: 08   |   | PHP  |  | SAVE LSB IN CARRY   |
| F802: 20 47 F8   |   |  |  | CALC BASE ADR IN GBASL,H  |
| F805: 28   |   | PLP  |  | RESTORE LSB FROM CARRY  |
| F806: A9 0F  |   |  |  | MASK \$0F IF EVEN   |
|  |   |  |  |   |
| F808: 90 02  |   |  | RTMASK<br>#CRO   | MACK CEO IE ODD   |
| F80A: 69 E0  |   | ADC  | #\$E0  | MASK \$F0 IF ODD  |
| F80A: 69 E0<br>F80C: 85 2E   | RTMASK  | ADC<br>STA   | #\$E0<br>MASK  |   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26  |   | ADC<br>STA<br>LDA  | #\$E0<br>MASK<br>(GBASL),Y   | DATA  |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30   | RTMASK  | ADC<br>STA<br>LDA<br>EOR   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR  | DATA<br>EOR COLOR   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26  | RTMASK  | ADC<br>STA<br>LDA<br>EOR<br>AND  | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK  | DATA<br>EOR COLOR   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E  | RTMASK  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26   | RTMASK  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y   | DATA<br>EOR COLOR<br>AND MASK   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26  | RTMASK<br>PLOT1   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F818: 60  | RTMASK<br>PLOT1   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y<br>(GBASL),Y  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA  |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F818: 60<br>F819: 20 00 F8  | RTMASK<br>PLOT1<br>HLINE  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y<br>(GBASL),Y<br>PLOT  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F818: 60<br>F819: 20 00 F8<br>F819: C4 2C   | RTMASK<br>PLOT1<br>HLINE  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?  |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F818: 60<br>F819: 20 00 F8<br>F81C: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8  | RTMASK<br>PLOT1<br>HLINE  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y<br>(GBASL),Y<br>PLOT<br>H2<br>RTS1  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F816: 91 26<br>F819: 20 00 F8<br>F81C: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F824: 90 F6  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y<br>(GBASL),Y<br>PLOT<br>H2<br>RTS1<br>PLOT1<br>HLINE1   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F816: 91 26<br>F818: 60<br>F819: 20 00 F8<br>F81C: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F824: 90 F6<br>F824: 69 01   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ  | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F816: 91 26<br>F818: 60<br>F819: 20 00 F8<br>F81C: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F8221: 20 0E F8<br>F824: 90 F6<br>F826: 69 01<br>F828: 48  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK  |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F816: 91 26<br>F818: 60<br>F819: 20 00 F8<br>F812: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F821: 20 0E F8<br>F824: 90 F6<br>F826: 69 01<br>F828: 48<br>F829: 20 00 F8  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F814: 51 26<br>F818: 60<br>F819: 20 00 F8<br>F812: 20 00 F8<br>F821: 20 0E F8<br>F821: 20 0E F8<br>F824: 90 F6<br>F826: 69 01<br>F828: 48<br>F829: 20 00 F8<br>F822: 68  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PLA   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01<br/>PLOT</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE   |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F814: 51 26<br>F816: 91 26<br>F819: 20 00 F8<br>F819: 20 00 F8<br>F811: 60 11<br>F820: C8<br>F821: 20 0E F8<br>F821: 20 0E F8<br>F824: 90 F6<br>F826: 69 01<br>F828: 48<br>F829: 20 00 F8<br>F822: 68<br>F82D: C5 2D   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE   | ADC<br>STA<br>LDA<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PLA<br>CMP   | #\$E0<br>MASK<br>(GBASL),Y<br>COLOR<br>MASK<br>(GBASL),Y<br>(GBASL),Y<br>PLOT<br>H2<br>RTS1<br>PLOT1<br>HLINE1<br>#\$01<br>PLOT<br>V2  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?  |
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| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F818: 60<br>F819: 20 00 F8<br>F810: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F824: 90 F6<br>F824: 90 F6<br>F822: 48<br>F829: 20 00 F8<br>F822: 69<br>F822: 69<br>F822: 68<br>F821: 50<br>F831: 60<br>F832: A0 2F<br>F834: D0 02<br>F836: A0 27<br>F83A: A0 27   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRTOP<br>CLRSC2             | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>STY<br>FOR<br>LDY<br>LDY  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$2F<br/>CLRSC2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>RIGHTMOST X-COORD (COLUMN)  |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F818: 60<br>F819: 20 00 F8<br>F816: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F824: 90 F6<br>F824: 90 F6<br>F826: 69 01<br>F828: 48<br>F829: 20 00 F8<br>F820: C5 2D<br>F821: 60<br>F832: A0 2F<br>F831: 60<br>F832: A0 27<br>F838: A0 27<br>F83A: A0 27  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRTOP<br>CLRSC2             | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>ENE<br>LDY<br>STY<br>FOR<br>STA  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$2F<br/>CLRSC2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>K</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS  |
| F80A: 69 E0<br>F80C: 85 2E<br>F80E: B1 26<br>F810: 45 30<br>F812: 25 2E<br>F814: 51 26<br>F818: 60<br>F819: 20 00 F8<br>F816: C4 2C<br>F81E: B0 11<br>F820: C8<br>F821: 20 0E F8<br>F824: 90 F6<br>F824: 90 F6<br>F826: 69 01<br>F828: 48<br>F829: 20 00 F8<br>F829: 20 00 F8<br>F820: C5 2D<br>F82F: 90 F5<br>F831: 60<br>F832: A0 2F<br>F834: D0 02<br>F834: A0 27<br>F838: 84 2D<br>F83A: A0 27<br>F83A:   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRTOP<br>CLRSC2             | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>ENE<br>LDY<br>STY<br>FOR<br>STA  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$2F<br/>CLRSC2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)  |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       45       30         F812:       25       2E         F814:       51       26         F814:       51       26         F814:       51       26         F815:       91       26         F818:       60       F819:       20       00       F8         F812:       20       00       F8       F821:       20       0E       F8         F822:       20       02       F8       F822:       68       F822:       68         F822:       20       00       F8       F822:       62       F8         F822:       62       50       F5       F831:       60       F8         F832:       A0       2F       F834:       D0       02       F834:       A0       27         F833:       A0       27       F833:       A0       27       F832:       A0       27         F833:       A0       27       F835:       30       F840:       20       28       58 </td <td>RTMASK<br/>PLOT1<br/>HLINE<br/>HLINE1<br/>VLINEZ<br/>VLINE<br/>RTS1<br/>CLRSCR<br/>CLRTOP<br/>CLRSC2</td> <td>ADC<br/>STA<br/>LDA<br/>EOR<br/>AND<br/>EOR<br/>STA<br/>RTS<br/>JSR<br/>CPY<br/>BCS<br/>JSR<br/>BCC<br/>ADC<br/>ADC<br/>ADC<br/>PHA<br/>JSR<br/>PLA<br/>CMP<br/>BCC<br/>RTS<br/>LDY<br/>BNE<br/>LDY<br/>STY<br/>FOR<br/>LDY<br/>LDY<br/>LDY<br/>STA<br/>STA<br/>STA</td> <td><pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS</pre></td> <td>DATA<br/>EOR COLOR<br/>AND MASK<br/>XOR DATA<br/>TO DATA<br/>PLOT SQUARE<br/>DONE?<br/>YES, RETURN<br/>NO, INCR INDEX (X-COORD)<br/>PLOT NEXT SQUARE<br/>ALWAYS TAKEN<br/>NEXT Y-COORD<br/>SAVE ON STACK<br/>PLOT SQUARE<br/>DONE?<br/>NO, LOOP<br/>MAX Y, FULL SCRN CLR<br/>ALWAYS TAKEN<br/>MAX Y, TOP SCREEN CLR<br/>STORE AS BOTTOM COORD<br/>RIGHTMOST X-COORD (COLUMN)<br/>TOP COORD FOR VLINE CALLS<br/>CLEAR COLOR (BLACK)<br/>DRAW VLINE</td>   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRTOP<br>CLRSC2             | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>JSR<br>BCC<br>ADC<br>ADC<br>ADC<br>PHA<br>JSR<br>PLA<br>CMP<br>BCC<br>RTS<br>LDY<br>BNE<br>LDY<br>STY<br>FOR<br>LDY<br>LDY<br>LDY<br>STA<br>STA<br>STA  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE  |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       45       30         F812:       25       2E         F814:       51       26         F814:       51       26         F815:       20       00       F8         F819:       20       00       F8         F815:       60       F8       F8         F812:       20       00       F8         F821:       20       02       F8         F822:       68       F822:       68         F822:       60       F5       F831:       60         F832:       A0       27       F8334:       A0       27         F833:       A0       27       F8335:       A2       D         F83A:       A0       27       F8335:       30       F840:       20         F843:       85       30       F840:       20       28       F8   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRTOP<br>CLRSC2             | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>JSR<br>BCC<br>ADC<br>ADC<br>ADC<br>PHA<br>JSR<br>PLA<br>CMP<br>BCC<br>RTS<br>LDY<br>BNE<br>LDY<br>STY<br>FOR<br>LDY<br>LDY<br>LDY<br>STA<br>STA<br>STA  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD  |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F810:       45       30         F812:       25       2E         F814:       51       26         F814:       21       20       00         F812:       20       02       F8         F821:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F831:       60       F5       F831:         F832:       A0       27       F833:         F834:       D0       22       F834:       20         F833:       A0       27       F833:       84         F834:       A0       27       F834:       20  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRTOP<br>CLRSC2             | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>STY<br>FOR<br>LDY<br>LDY<br>LDA<br>STA<br>DEY<br>BPL<br>RTS  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$27<br/>*\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE<br/>CLRSC3</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD  |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       25       2E         F814:       51       26         F814:       51       26         F814:       51       26         F814:       51       26         F815:       91       26         F818:       60       F819:       20       00       F8         F812:       20       00       F8       F821:       20       02       F824:       90       F6         F824:       90       F6       F826:       69       01       F826:       68       F8220:       C5       2D         F825:       20       00       F8       F821:       20       00       F8         F826:       60       F5       F831:       60       F8       F834:       D0       27         F833:       A0       27       F833:       84       2D       F8       F843:       88         F844:       A0       27       F835:       30       F842:       88       F844:       10       F6   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINE2<br>VLINE2<br>VLINE<br>RTS1<br>CLRSCR<br>CLRSC2<br>CLRSC3   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>BNE<br>LDY<br>STY<br>FOR<br>STA<br>JSR<br>DEY<br>BDA<br>STA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LSR  | <pre>#\$E0 MASK (GBASL),Y COLOR MASK (GBASL),Y (GBASL),Y PLOT H2 RTS1 PLOT1 HLINE1 #\$01 PLOT V2 VLINEZ #\$2F CLRSC2 #\$27 V2 VLINE CALLS #\$27 V2 VLINE CALLS #\$27 V2 CLRSC3</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE   |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       45       30         F812:       25       2E         F814:       51       26         F814:       51       26         F815:       60       F819:       20         F814:       51       26         F815:       60       F819:       20         F812:       20       00       F8         F821:       20       02       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F821:       50       F5       F831:       60         F832:       A0       27       F833:       84       20         F833:       A0       27       F833:       84       20         F833:       A0       27       F833:       85       30         F844:       A0       27       F835:       30         F843: <td< td=""><td>RTMASK<br/>PLOT1<br/>HLINE<br/>HLINE1<br/>VLINE2<br/>VLINE2<br/>VLINE<br/>RTS1<br/>CLRSCR<br/>CLRSC2<br/>CLRSC3</td><td>ADC<br/>STA<br/>LDA<br/>EOR<br/>AND<br/>EOR<br/>STA<br/>RTS<br/>JSR<br/>CPY<br/>BCS<br/>INY<br/>JSR<br/>BCC<br/>ADC<br/>PHA<br/>JSR<br/>PHA<br/>LDY<br/>STY<br/>FOR<br/>LDY<br/>STY<br/>LDY<br/>LDA<br/>STA<br/>JSR<br/>PIA<br/>LDY<br/>STA<br/>LDY<br/>LDA<br/>STA<br/>LDY<br/>LDA<br/>STA<br/>LDY<br/>LDA<br/>STA<br/>ADC<br/>RTS<br/>LDY<br/>LDA<br/>STA<br/>LDY<br/>LDA<br/>STA<br/>ADC<br/>RTS<br/>LDY<br/>LDA<br/>STA<br/>LDY<br/>LDA<br/>STA<br/>ADC<br/>RTS<br/>LDY<br/>R<br/>STA<br/>ADC<br/>RTS<br/>LDY<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>R<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA</td><td><pre>#\$E0 MASK (GBASL),Y COLOR MASK (GBASL),Y (GBASL),Y PLOT H2 RTS1 PLOT H2 RTS1 PLOT1 HLINE1 #\$01 PLOT V2 VLINEZ #\$2F CLRSC2 #\$27 V2 VLINE CALLS #\$27 #\$00 COLOR VLINE CLRSC3 #\$03</pre></td><td>DATA<br/>EOR COLOR<br/>AND MASK<br/>XOR DATA<br/>TO DATA<br/>PLOT SQUARE<br/>DONE?<br/>YES, RETURN<br/>NO, INCR INDEX (X-COORD)<br/>PLOT NEXT SQUARE<br/>ALWAYS TAKEN<br/>NEXT Y-COORD<br/>SAVE ON STACK<br/>PLOT SQUARE<br/>DONE?<br/>NO, LOOP<br/>MAX Y, FULL SCRN CLR<br/>ALWAYS TAKEN<br/>MAX Y, TOP SCREEN CLR<br/>STORE AS BOTTOM COORD<br/>S<br/>RIGHTMOST X-COORD (COLUMN)<br/>TOP COORD FOR VLINE CALLS<br/>CLEAR COLOR (BLACK)<br/>DRAW VLINE<br/>NEXT LEFTMOST X-COORD<br/>LOOP UNTIL DONE<br/>FOR INPUT 000DEFGH</td></td<> | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINE2<br>VLINE2<br>VLINE<br>RTS1<br>CLRSCR<br>CLRSC2<br>CLRSC3   | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>LDY<br>STY<br>FOR<br>LDY<br>STY<br>LDY<br>LDA<br>STA<br>JSR<br>PIA<br>LDY<br>STA<br>LDY<br>LDA<br>STA<br>LDY<br>LDA<br>STA<br>LDY<br>LDA<br>STA<br>ADC<br>RTS<br>LDY<br>LDA<br>STA<br>LDY<br>LDA<br>STA<br>ADC<br>RTS<br>LDY<br>LDA<br>STA<br>LDY<br>LDA<br>STA<br>ADC<br>RTS<br>LDY<br>R<br>STA<br>ADC<br>RTS<br>LDY<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>R<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA | <pre>#\$E0 MASK (GBASL),Y COLOR MASK (GBASL),Y (GBASL),Y PLOT H2 RTS1 PLOT H2 RTS1 PLOT1 HLINE1 #\$01 PLOT V2 VLINEZ #\$2F CLRSC2 #\$27 V2 VLINE CALLS #\$27 #\$00 COLOR VLINE CLRSC3 #\$03</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE<br>FOR INPUT 000DEFGH   |
| F80A:       69       E0         F80E:       B1       26         F80E:       B1       26         F811:       25       22         F814:       51       26         F815:       20       0         F816:       91       26         F812:       20       00       F8         F812:       20       00       F8         F812:       20       00       F8         F821:       20       00       F8         F822:       69       01       F8         F822:       69       01       F8         F822:       20       00       F8         F821:       20       00       F8         F822:       22       20       00       F8         F821:       60       F8       F834:       00         F834:       00       27       F838:       84       2D         F834:       A0       27       F838:       84       2D         F834:       A0       27       F838:       84       2D         F834:       A0       27       F838:       88   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRSC2<br>CLRSC3<br>GBASCALC | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CCPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PLA<br>CMP<br>BCC<br>RTS<br>LDY<br>STY<br>FOR<br>STY<br>FOR<br>STY<br>LDY<br>LDA<br>STY<br>FOR<br>STY<br>STY<br>STY<br>STY<br>STY<br>FOR<br>ADC<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY  | <pre>#\$E0 MASK (GBASL),Y COLOR MASK (GBASL),Y (GBASL),Y (GBASL),Y PLOT H2 RTS1 PLOT1 HLINE1 #\$01 PLOT V2 VLINE1 #\$01 PLOT V2 VLINE2 #\$27 #\$00 COLOR VLINE CLRSC3 #\$03 #\$04</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE   |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F810:       45       30         F812:       25       2E         F814:       51       26         F814:       21       20       00         F817:       20       00       F8         F821:       20       02       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F821:       20       00       F8         F822:       20       20       F8         F821:       60       F8       F8         F832:       A0       27         F833:       A0       27         F833:       A0       27         F834:       A0       27         F835:       30         F844:       10       F6  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>RTS1<br>CLRSCR<br>CLRSC2<br>CLRSC3<br>GBASCALC | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>STY<br>FOR<br>LDY<br>LDY<br>STY<br>FOR<br>STA<br>STA<br>STA<br>STA<br>STA  | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>*\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE<br/>CLRSC3<br/>#\$03<br/>#\$04<br/>GBASH</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE<br>FOR INPUT 000DEFGH |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       51       26         F812:       25       2E         F814:       51       26         F815:       20       00       F8         F817:       20       00       F8         F821:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F821:       20       02       F8         F831:       60       27       F838:         F834:       20       27         F833:       84       20         F834:       20       28         F844:       20       28         F844:       20 <td>RTMASK<br/>PLOT1<br/>HLINE<br/>HLINE1<br/>VLINEZ<br/>VLINEZ<br/>CLRSCR<br/>CLRSC2<br/>CLRSC3<br/>GBASCALC</td> <td>ADC<br/>STA<br/>LDA<br/>EOR<br/>AND<br/>EOR<br/>STA<br/>RTS<br/>JSR<br/>CCPY<br/>BCS<br/>INY<br/>BCC<br/>PHA<br/>JSR<br/>CMP<br/>BCC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>STY<br/>LDY<br/>LDY<br/>STY<br/>JSR<br/>CMP<br/>BCC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>LDY<br/>ENC<br/>RTS<br/>RTS<br/>RTS<br/>RTS<br/>RTS<br/>RTS<br/>RTS<br/>RTS<br/>RTS<br/>RTS</td> <td><pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE<br/>CLRSC3<br/>#\$03<br/>#\$04<br/>GBASH</pre></td> <td>DATA<br/>EOR COLOR<br/>AND MASK<br/>XOR DATA<br/>TO DATA<br/>PLOT SQUARE<br/>DONE?<br/>YES, RETURN<br/>NO, INCR INDEX (X-COORD)<br/>PLOT NEXT SQUARE<br/>ALWAYS TAKEN<br/>NEXT Y-COORD<br/>SAVE ON STACK<br/>PLOT SQUARE<br/>DONE?<br/>NO, LOOP<br/>MAX Y, FULL SCRN CLR<br/>ALWAYS TAKEN<br/>MAX Y, TOP SCREEN CLR<br/>STORE AS BOTTOM COORD<br/>S<br/>RIGHTMOST X-COORD (COLUMN)<br/>TOP COORD FOR VLINE CALLS<br/>CLEAR COLOR (BLACK)<br/>DRAW VLINE<br/>NEXT LEFTMOST X-COORD<br/>LOOP UNTIL DONE<br/>FOR INPUT 000DEFGH</td>   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINEZ<br>CLRSCR<br>CLRSC2<br>CLRSC3<br>GBASCALC        | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CCPY<br>BCS<br>INY<br>BCC<br>PHA<br>JSR<br>CMP<br>BCC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>STY<br>LDY<br>LDY<br>STY<br>JSR<br>CMP<br>BCC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>LDY<br>ENC<br>RTS<br>RTS<br>RTS<br>RTS<br>RTS<br>RTS<br>RTS<br>RTS<br>RTS<br>RTS   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE<br/>CLRSC3<br/>#\$03<br/>#\$04<br/>GBASH</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE<br>FOR INPUT 000DEFGH   |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       51       25       2E         F814:       51       26         F814:       50       F8         F812:       20       00       F8         F821:       20       02       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       02       F8         F831:       60       27       F838:         F834:       20       27       F835:         F834:       20       28       F8         F844:       10       F6       F845:         F844:       20       28<  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINEZ<br>CLRSCR<br>CLRSC2<br>CLRSC3<br>GBASCALC        | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>ENE<br>LDY<br>STY<br>FOR<br>STA<br>JSR<br>DEY<br>BNE<br>LDY<br>STY<br>STA<br>JSR<br>CPP<br>PHA<br>LDY<br>STA<br>STA<br>STA<br>STA<br>AND<br>STA<br>AND<br>STA<br>AND   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>V2<br/>VLINE CALLS</pre> | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE<br>FOR INPUT 000DEFGH |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       25       2E         F814:       51       26         F814:       51       26         F812:       25       2E         F814:       51       26         F815:       20       00         F818:       60         F819:       20       00         F812:       20       02         F821:       20       02         F822:       20       00         F822:       68         F822:       20       00         F825:       90         F834:       00         F834:       00         F834:       20         F834:       20         F834:       20         F835:       30         F843:       88         F844:       10         F843:       88         F844:       10         F844:       10         F844:       40         F844:       41         F844:       42   | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINEZ<br>CLRSCR<br>CLRSC2<br>CLRSC3<br>GBASCALC        | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>BCC<br>ADC<br>ADC<br>PHA<br>JSR<br>PLA<br>CMP<br>BCC<br>RTS<br>LDY<br>ENE<br>LDY<br>STY<br>LDY<br>ENE<br>LDY<br>STY<br>JSR<br>BRE<br>LDY<br>STY<br>STA<br>JSR<br>DEY<br>BPLA<br>STA<br>JSR<br>DEY<br>BPLA<br>STA<br>JSR<br>DEY<br>BNE<br>LDY<br>STA<br>JSR<br>ADD<br>STA<br>JSR<br>DEY<br>BA<br>STA<br>STA<br>JSR<br>DEY<br>BA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINEZ<br/>#\$2F<br/>CLRSC2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE<br/>CLRSC3<br/>#\$03<br/>#\$04<br/>GBASH<br/>#\$18<br/>GBCALC</pre>   | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE<br>FOR INPUT 000DEFGH |
| F80A:       69       E0         F80C:       85       2E         F80E:       B1       26         F811:       51       25       2E         F814:       51       26         F814:       50       F8         F812:       20       00       F8         F821:       20       02       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       00       F8         F822:       20       02       F8         F831:       60       27       F838:         F834:       20       27       F835:         F834:       20       28       F8         F844:       10       F6       F845:         F844:       20       28<  | RTMASK<br>PLOT1<br>HLINE<br>HLINE1<br>VLINEZ<br>VLINE<br>CLRSCR<br>CLRSCR<br>CLRSC3<br>GBASCALC         | ADC<br>STA<br>LDA<br>EOR<br>AND<br>EOR<br>STA<br>RTS<br>JSR<br>CCPY<br>BCS<br>INY<br>JSR<br>BCC<br>ADC<br>PHA<br>JSR<br>PHA<br>CMP<br>BCC<br>RTS<br>LDY<br>BNE<br>LDY<br>STY<br>FOR<br>STY<br>FOR<br>STY<br>STY<br>FOR<br>STY<br>STY<br>STY<br>ADC<br>STA<br>STA<br>AND<br>ORA<br>STA<br>AND<br>ORA<br>STA   | <pre>#\$E0<br/>MASK<br/>(GBASL),Y<br/>COLOR<br/>MASK<br/>(GBASL),Y<br/>(GBASL),Y<br/>PLOT<br/>H2<br/>RTS1<br/>PLOT1<br/>HLINE1<br/>#\$01<br/>PLOT<br/>V2<br/>VLINE2<br/>#\$2F<br/>CLRSC2<br/>#\$27<br/>V2<br/>VLINE CALLS<br/>#\$27<br/>#\$00<br/>COLOR<br/>VLINE<br/>CLRSC3<br/>#\$03<br/>#\$04<br/>GBASH<br/>#\$18<br/>GBCALC<br/>#\$7F</pre>  | DATA<br>EOR COLOR<br>AND MASK<br>XOR DATA<br>TO DATA<br>PLOT SQUARE<br>DONE?<br>YES, RETURN<br>NO, INCR INDEX (X-COORD)<br>PLOT NEXT SQUARE<br>ALWAYS TAKEN<br>NEXT Y-COORD<br>SAVE ON STACK<br>PLOT SQUARE<br>DONE?<br>NO, LOOP<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, FULL SCRN CLR<br>ALWAYS TAKEN<br>MAX Y, TOP SCREEN CLR<br>STORE AS BOTTOM COORD<br>S<br>RIGHTMOST X-COORD (COLUMN)<br>TOP COORD FOR VLINE CALLS<br>CLEAR COLOR (BLACK)<br>DRAW VLINE<br>NEXT LEFTMOST X-COORD<br>LOOP UNTIL DONE<br>FOR INPUT 000DEFGH |

| F858:   |   |  |                            |   |  | A  |   |
|---|---|--|----------------------------|---|--|--|---|
| F859:   | 0A  |  |                            |   | ASL  | A  |   |
| F85A:   | 05  | 26   |                            |   | ORA  | GBASL  |   |
| F85C:   |   |  |                            |   | STA  |  |   |
|   |   | 20   |                            |   |  | GDADD  |   |
| F85E:   |   |  |                            |   | RTS  |  |   |
|   |   | 30   |                            | NXTCOL  |  | COLOR  | INCREMENT COLOR BY 3  |
| F861:   | 18  |  |                            |   | CLC  |  |   |
| F862:   | 69  | 03   |                            |   | ADC  | #\$03  |   |
| F864:   | 29  | 0F   |                            | SETCOL  | AND  | #\$0F  | SETS COLOR=17*A MOD 16  |
| F866:   |   |  |                            |   |  | COLOR  |   |
| F868:   |   | 50   |                            |   |  |  | DOMU HALE DUMES OF GOLOD BOHAL  |
|   |   |  |                            |   | ASL  |  | BOTH HALF BYTES OF COLOR EQUAL  |
| F869:   |   |  |                            |   | ASL  |  |   |
| F86A:   | 0A  |  |                            |   | ASL  | A  |   |
| F86B:   | 0A  |  |                            |   | ASL  | A  |   |
| F86C:   | 05  | 30   |                            |   | ORA  | COLOR  |   |
| F86E:   | 85  | 30   |                            |   | STA  | COLOR  |   |
| F870:   |   |  |                            |   | RTS  |  |   |
|   |   |  |                            | SCRN  |  | 7  | READ SCREEN Y-COORD/2   |
|   |   |  |                            |   |  |  |   |
| F872:   |   |  | -                          |   | PHP  |  | SAVE LSB (CARRY)  |
| F873:   |   |  |                            |   |  |  | CALC BASE ADDRESS   |
| F876:   | В1  | 26   |                            |   | LDA  | (GBASL),Y  | GET BYTE  |
| F878:   | 28  |  |                            |   | PLP  |  | RESTORE LSB FROM CARRY  |
| F879:   | 90  | 04   |                            | SCRN2   | BCC  | RTMSKZ   | IF EVEN, USE LO H   |
| F87B:   |   |  |                            |   |  | A  |   |
| F87C:   |   |  |                            |   | LSR  |  |   |
|   |   |  |                            |   |  |  | CUITER UTCU UNTE DURE DOWN  |
| F87D:   |   |  |                            |   | LSR  |  | SHIFT HIGH HALF BYTE DOWN   |
| F87E:   |   |  |                            |   | LSR  |  |   |
|   |   | 0F   |                            | RTMSKZ  | AND  | #\$0F  | MASK 4-BITS   |
| F881:   | 60  |  |                            |   | RTS  |  |   |
| F882:   | A6  | 3A   |                            | INSDS1  | LDX  | PCL  | PRINT PCL,H   |
| F884:   |   |  |                            |   | LDY  |  |   |
| F886:   |   |  |                            |   |  | PRYX2  |   |
|   |   |  |                            |   |  |  |   |
| F889:   |   |  |                            |   |  |  | FOLLOWED BY A BLANK   |
| F88C:   | A1  |  |                            |   |  | (PCL,X)  | GET OP CODE   |
| F88E:   | A8  |  |                            | INSDS2  | TAY  |  |   |
| F88F:   | 4A  |  |                            |   | LSR  | A  | EVEN/ODD TEST   |
| F890:   | 90  | 09   |                            |   |  | IEVEN  |   |
| F892:   |   |  |                            |   | ROR  |  | BIT 1 TEST  |
|   |   | 10   |                            |   |  |  |   |
| F893:   |   |  |                            |   | BCS  |  | XXXXXX11 INVALID OP   |
| F895:   |   |  |                            |   | CMP  |  |   |
| F897:   | FO  | 0C   |                            |   | BEQ  |  | OPCODE \$89 INVALID   |
| F899:   | 29  | 87   |                            |   | AND  | #\$87  | MASK BITS   |
| F89B:   | 4A  |  |                            | IEVEN   | LSR  | A  | LSB INTO CARRY FOR L/R TEST   |
| F89C:   |   |  |                            |   | TAX  |  | · · · · , · ·   |
| F89D:   |   |  | FO                         |   |  | EMT1 V   | GET FORMAT INDEX BYTE   |
|   |   |  |                            |   |  |  |   |
| F8A0:   |   |  |                            |   |  |  | R/L H-BYTE ON CARRY   |
| F8A3:   |   |  |                            |   |  | GETFMT   |   |
| FONE.   | A0  | 80   |                            | ERR   | LDY  | #\$80  | SUBSTITUTE \$80 FOR INVALID OPS   |
| FORD:   |   |  |                            |   | LDA  |  | SET PRINT FORMAT INDEX TO 0   |
| F8A7:   | A9  |  |                            | GETFMT  |  |  |   |
| F8A7:   |   |  |                            |   | TAX  |  |   |
| F8A7:<br>F8A9:  | AA  |  |                            |   |  | FMT2 X   | INDEX INTO PRINT FORMAT TABLE   |
| F8A7:<br>F8A9:<br>F8AA:   | AA<br>BD  | A6   |                            |   | LDA  |  | INDEX INTO PRINT FORMAT TABLE   |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:  | AA<br>BD<br>85  | A6<br>2E   |                            |   | LDA<br>STA   | FORMAT   | SAVE FOR ADR FIELD FORMATTING   |
| F8A7:<br>F8A9:<br>F8AA:   | AA<br>BD<br>85  | A6<br>2E   |                            |   | LDA<br>STA<br>AND  | FORMAT<br>#\$03  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:  | AA<br>BD<br>85  | A6<br>2E   |                            |   | LDA<br>STA<br>AND  | FORMAT<br>#\$03  | SAVE FOR ADR FIELD FORMATTING   |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:  | AA<br>BD<br>85<br>29  | A6<br>2E<br>03   |                            |   | LDA<br>STA<br>AND  | FORMAT<br>#\$03  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:   | AA<br>BD<br>85<br>29<br>85  | A6<br>2E<br>03   |                            |   | LDA<br>STA<br>AND  | FORMAT<br>#\$03<br>(P=1 BYTE, 3  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:  | AA<br>BD<br>85<br>29<br>85<br>98  | A6<br>2E<br>03<br>2F   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA  | FORMAT<br>#\$03<br>(P=1 BYTE, 3  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)   |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B3:<br>F8B4:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29  | A6<br>2E<br>03<br>2F<br>8F   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND   | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST   |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B3:<br>F8B4:<br>F8B6:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA  | A6<br>2E<br>03<br>2F<br>8F   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX  | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B3:<br>F8B4:<br>F8B6:<br>F8B7:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98  | A6<br>2E<br>03<br>2F<br>8F   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA   | FORMAT<br>#\$03<br>(P=1 BYTE, 1<br>LENGTH<br>#\$8F   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST   |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B7:<br>F8B8:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0  | A6<br>2E<br>03<br>2F<br>8F   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY  | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B7:<br>F8B8:<br>F8BA:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B7:<br>F8B8:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ  | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8AD:<br>F8AF:<br>F8B1:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B7:<br>F8B8:<br>F8BA:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>03   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8A7:<br>F8AF:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B6:<br>F8B8:<br>F8BA:<br>F8BC:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT  |
| F8A7:<br>F8A9:<br>F8AA:<br>F8A7:<br>F8AF:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B6:<br>F8B8:<br>F8B4:<br>F8B2:<br>F8B2:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08   | F9                         |   | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN   |
| F8A7:<br>F8A9:<br>F8A7:<br>F8A7:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B6:<br>F8B7:<br>F8B8:<br>F8B8:<br>F8B2:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08   | F9                         | MNNDX1  | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE   |
| F8A7:<br>F8A9:<br>F8A7:<br>F8A7:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B7:<br>F8B8:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F822:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08   | F9                         | MNNDX1  | LDA<br>STA<br>AND<br>STA<br>AND<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>LSR   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX  |
| F8A7:<br>F8A9:<br>F8A7:<br>F8AF:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B2:<br>F8B2:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C2:<br>F8C3:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>4A<br>09  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08   | F9                         | MNNDX1  | LDA<br>STA<br>AND<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>LSR<br>ORA  | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX   |
| F8A7:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F827:<br>F8C2:<br>F8C5:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>F0<br>4A<br>90<br>4A<br>4A<br>09<br>88  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>08   | F9                         | MNNDX1  | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>DEY   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A<br>#\$20  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX  |
| F8A7:<br>F8A9:<br>F8AD:<br>F8AD:<br>F8AF:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C5:<br>F8C5:<br>F8C5:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>40<br>88<br>D0  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>08<br>20<br>FA   | F9                         | MNNDX1  | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BCC<br>LSR<br>DEY<br>BNE   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY01-&gt00110XXX<br>4) XXXYY100-&gt00100XXX   |
| F8A7:<br>F8A9:<br>F8A5:<br>F8A7:<br>F8B6:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8B7:<br>F8C2:<br>F8C3:<br>F8C5:<br>F8C6:<br>F8C8:<br>F8C8:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>40<br>88<br>D0<br>C8  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>08<br>20<br>FA   | F9                         | MNNDX1<br>MNNDX2  | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BECC<br>LSR<br>LSR<br>ORA<br>DEY<br>ENE<br>INY   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A<br>#\$20  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX  |
| F8A7:<br>F8A9:<br>F8AD:<br>F8AD:<br>F8AF:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C5:<br>F8C5:<br>F8C5:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>40<br>88<br>D0<br>C8  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>08<br>20<br>FA   | F9                         | MNNDX1  | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BECC<br>LSR<br>LSR<br>ORA<br>DEY<br>ENE<br>INY   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A<br>#\$20  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY01-&gt00110XXX<br>4) XXXYY100-&gt00100XXX   |
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| F8A7:<br>F8A9:<br>F8A9:<br>F8A7:<br>F8A7:<br>F8B1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B7:<br>F8B4:<br>F8B7:<br>F8B8:<br>F8B7:<br>F8B8:<br>F8B7:<br>F8B7:<br>F8C1:<br>F8C2:<br>F8C2:<br>F8C3:<br>F8C5:<br>F8C6:<br>F8C8:<br>F8C9:<br>F8C9:  | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>4A<br>09<br>88<br>D0<br>C8<br>88<br>D0  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA   | F9                         | MNNDX1<br>MNNDX2  | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEC<br>LSR<br>USR<br>DEY<br>BNE   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A<br>#\$20<br>MNNDX2  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY01-&gt00110XXX<br>4) XXXYY100-&gt00100XXX   |
| F8A7:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C3:<br>F8C4:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C2:<br>F8C2:<br>F8C2:   | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>4A<br>09<br>88<br>D0<br>C8<br>88<br>D0<br>60  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2   | F9                         | MNNDX1<br>MNNDX2<br>MNNDX3                                | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>CPX<br>BEQ<br>CPX<br>BEQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>DEY<br>BNE<br>INY<br>DEY<br>ENE<br>ENE<br>RTS   | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>#\$20<br>MNNDX2<br>MNNDX1  | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY100-&gt00100XXX<br>5) XXXXX000-&gt0000XXXXX   |
| F8A7:<br>F8A9:<br>F8A9:<br>F8A1:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C3:<br>F8C5:<br>F8C9:<br>F8C4:<br>F8C2:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5: | AA<br>BD<br>85<br>29<br>85<br>98<br>29<br>AA<br>98<br>A0<br>F0<br>4A<br>90<br>4A<br>4A<br>09<br>88<br>D0<br>C8<br>88<br>D0<br>C8<br>88<br>D0<br>FF  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>FF   | F9                         | MNNDX1<br>MNNDX2<br>MNNDX3                                | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>DCY<br>BNE<br>LSR<br>ORA<br>DEY<br>BNE<br>INY<br>BNE<br>RTS<br>DFB   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MINNDX3<br>A<br>MINNDX3<br>A<br>#\$20<br>MINNDX2<br>MINNDX1<br>\$FF,\$FF,\$FT   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX   |
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F8A7:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C9:<br>F8C4:<br>F8C2:<br>F8C4:<br>F8C2:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5: | AA<br>BD<br>85<br>29<br>AA<br>98<br>29<br>AA<br>90<br>F0<br>4A<br>90<br>4A<br>4A<br>90<br>88<br>80<br>C8<br>88<br>D0<br>C8<br>88<br>D0<br>FF<br>20  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>08<br>20<br>FA<br>F2<br>FF                                     | F9                         | MNNDX1<br>MNNDX2<br>MNNDX3                                | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>STA<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>BEQ<br>LSR<br>BEQ<br>DEY<br>BNE<br>INY<br>DEY<br>BNE<br>STA<br>STA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>CPX<br>BEQ<br>DY<br>STA<br>STA<br>AND<br>TAX<br>TYA<br>CPX<br>BEQ<br>DY<br>STA<br>STA<br>TAX<br>TYA<br>CPX<br>BEQ<br>DY<br>STA<br>STA<br>STA<br>STA<br>AND<br>TAX<br>TYA<br>AND<br>TAX<br>TYA<br>CPX<br>BEQ<br>DY<br>STA<br>STA<br>STA<br>TAX<br>TYA<br>CPX<br>BEQ<br>DY<br>STA<br>STA<br>STA<br>TAX<br>TYA<br>CPX<br>BEQ<br>DY<br>STA<br>STA<br>STA<br>TAX<br>TYA<br>STA<br>TAX<br>TYA<br>BEQ<br>DY<br>STA<br>STA<br>STA<br>TAX<br>TYA<br>STA<br>STA<br>TAX<br>TYA<br>STA<br>TAX<br>TYA<br>STA<br>STA<br>STA<br>TAX<br>TYA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MINNDX3<br>A<br>MINNDX3<br>A<br>#\$20<br>MINNDX2<br>MINNDX1<br>\$FF,\$FF,\$FT   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX   |
| F8A7:<br>F8A9:<br>F8A9:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F825:<br>F8C5:<br>F8C5:<br>F8C6:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3: | AA<br>BD<br>85<br>29<br>AA<br>98<br>29<br>AA<br>98<br>A0<br>F0<br>4A<br>90<br>4A<br>40<br>98<br>80<br>00<br>60<br>FF<br>20<br>48  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>F2<br>F7<br>82                               | F9<br>FF<br>F8             | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP                     | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>CPX<br>BEQ<br>LSR<br>BEQ<br>DEY<br>STA<br>TAX<br>TYA   | FORMAT<br>#\$03<br>P=1 BYTE, ::<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A<br>#\$20<br>MNNDX2<br>MNNDX1<br>\$FF, \$FF, \$FI<br>INSDS1   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX   |
| F8A7:<br>F8A9:<br>F8A9:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F825:<br>F8C5:<br>F8C5:<br>F8C6:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3: | AA<br>BD<br>85<br>29<br>AA<br>98<br>29<br>AA<br>98<br>A0<br>F0<br>4A<br>90<br>4A<br>40<br>98<br>80<br>00<br>60<br>FF<br>20<br>48  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>F2<br>F7<br>82                               | F9<br>FF<br>F8             | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP                     | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>CPX<br>BEQ<br>LSR<br>BEQ<br>DEY<br>STA<br>TAX<br>TYA   | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MINNDX3<br>A<br>MINNDX3<br>A<br>#\$20<br>MINNDX2<br>MINNDX1<br>\$FF,\$FF,\$FT   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX   |
| F8A7:<br>F8A9:<br>F8A9:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F825:<br>F8C5:<br>F8C5:<br>F8C6:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C2:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3:<br>F8C3: | AA<br>BD<br>85<br>29<br>AA<br>85<br>29<br>AA<br>85<br>29<br>AA<br>80<br>40<br>40<br>40<br>40<br>40<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>88<br>D0<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>08<br>08<br>20<br>FA<br>F2<br>F2<br>F2<br>3A                               | F9<br>FF<br>F8             | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP                     | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>CPX<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEQ<br>LSR<br>BEC<br>LSR<br>USR<br>DEY<br>BNE<br>RTS<br>DFB<br>JSR<br>PHA<br>LDA  | FORMAT<br>#\$03<br>P=1 BYTE, ::<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>MNNDX3<br>A<br>A<br>#\$20<br>MNNDX2<br>MNNDX1<br>\$FF, \$FF, \$FI<br>INSDS1   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX   |
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| F8A7:<br>F8A9:<br>F8A9:<br>F8A1:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C6:<br>F8C9:<br>F8C4:<br>F8C2:<br>F8C4:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5: | AA<br>BD<br>85<br>29<br>85<br>29<br>A0<br>E0<br>F0<br>4A<br>90<br>4A<br>90<br>4A<br>90<br>88<br>D0<br>C8<br>88<br>D0<br>C8<br>88<br>D0<br>60<br>FF<br>20<br>48<br>L0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>F2<br>F2<br>3A<br>DA<br>01                   | F9<br>FF<br>F8<br>FD       | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP           | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>DFB<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDX   | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MINNDX3<br>A<br>MINNDX3<br>A<br>#\$20<br>MINNDX1<br>\$FF,\$FF,\$FI<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01                                   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX   |
| F8A7:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C1:<br>F8C2:<br>F8C2:<br>F8C3:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5: | AA<br>BD<br>85<br>29<br>AA<br>98<br>A0<br>F0<br>40<br>40<br>40<br>40<br>88<br>D0<br>60<br>FF<br>20<br>48<br>BD<br>60<br>FF<br>20<br>48<br>20<br>20  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>FF<br>82<br>3A<br>01<br>4A                   | F9<br>FF<br>F8<br>FD       | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP           | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>DEY<br>BNE<br>INY<br>BNE<br>RTS<br>DFB<br>JSR<br>PHA<br>LDA<br>JSR<br>LDX<br>JSR   | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MINNDX3<br>A<br>MINNDX3<br>A<br>#\$20<br>MINNDX1<br>\$FF,\$FF,\$FI<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01<br>PRBL2                          | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX<br>F<br>GEN FMT, LEN BYTES<br>SAVE MNEMONIC TABLE INDEX<br>PRINT 2 BLANKS   |
| F8A7:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C2:<br>F8C3:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C5:<br>F8C6:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5:<br>F8C5: | AA<br>BD<br>85<br>29<br>AA<br>98<br>A0<br>F0<br>4A<br>40<br>88<br>D0<br>60<br>FF<br>20<br>48<br>BD<br>60<br>FF<br>20<br>48<br>B1<br>20<br>C4  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>FF<br>82<br>3DA<br>01<br>4A<br>2F            | F9<br>FF<br>F8<br>FD       | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP           | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>TYA<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>BCC<br>LSR<br>DEY<br>BNE<br>INY<br>DEY<br>BNE<br>INY<br>DFB<br>JSR<br>LDA<br>JSR<br>CPY  | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MINNDX3<br>A<br>MINNDX3<br>A<br>#\$20<br>MINNDX1<br>\$FF,\$FF,\$FI<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01<br>PRBL2                          | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt00100XXX<br>5) XXXXX000-&gt0000XXXX<br>5) XXXXX000-&gt000XXXXX<br>F<br>GEN FMT, LEN BYTES<br>SAVE MNEMONIC TABLE INDEX<br>PRINT 2 BLANKS<br>PRINT 1NST (1-3 BYTES)  |
| F8A7:<br>F8A9:<br>F8A8:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C5:<br>F8C5:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C7:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C7:<br>F8C62:<br>F8C7:<br>F8C7:<br>F8C7:<br>F8C8:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C   | AA<br>BD<br>85<br>29<br>AA<br>98<br>29<br>AA<br>98<br>40<br>40<br>40<br>40<br>40<br>88<br>D0<br>60<br>F<br>70<br>48<br>BD<br>20<br>20<br>48<br>B1<br>20<br>20<br>48<br>C<br>82<br>C<br>48<br>C<br>82<br>C<br>88<br>C<br>88<br>C<br>88<br>C<br>88<br>C   | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>0B<br>08<br>20<br>FA<br>F2<br>FF<br>82<br>3A<br>01<br>4A<br>2F             | F9<br>FF<br>F8<br>FD       | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP           | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>DEY<br>BNE<br>RTS<br>DFB<br>JSR<br>LDA<br>JSR<br>LDA<br>LSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA  | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>#\$20<br>MNNDX3<br>A<br>MNNDX1<br>\$FF,\$FF,\$FI<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01<br>PRB12<br>LENGTH                   | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00111XXX<br>3) XXXYYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt000XXXXX<br>F<br>GEN FMT, LEN BYTES<br>SAVE MNEMONIC TABLE INDEX<br>PRINT 2 BLANKS   |
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F8A7:<br>F8A9:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4: 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AA<br>BD<br>85<br>29<br>85<br>29<br>AA<br>98<br>40<br>40<br>40<br>40<br>40<br>80<br>60<br>60<br>60<br>88<br>00<br>60<br>88<br>00<br>60<br>57<br>20<br>48<br>80<br>60<br>67<br>20<br>48<br>20<br>20<br>48<br>50<br>20<br>48<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>20<br>40<br>40<br>20<br>40<br>40<br>20<br>40<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>40<br>20<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>20<br>40<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>08<br>08<br>20<br>FA<br>F2<br>F7<br>82<br>3A<br>DA<br>01<br>42F<br>F1      | F9<br>FF<br>F8<br>FD<br>F9 | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP           | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>BCQ<br>LSR<br>DEY<br>BNE<br>RTS<br>DFB<br>JSR<br>LDA<br>JSR<br>LDA<br>LSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA  | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>#\$20<br>MNNDX3<br>A<br>#\$20<br>MNNDX1<br>\$FF,\$FF,\$F<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01<br>PRBL2<br>LENGTH<br>PRNTOP | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00110XXX<br>4) XXXYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt00100XXX<br>5) XXXXX000-&gt0000XXXX |
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F8A7:<br>F8A9:<br>F8A8:<br>F8A7:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B5:<br>F8B5:<br>F8C5:<br>F8C5:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C7:<br>F8C62:<br>F8C62:<br>F8C62:<br>F8C7:<br>F8C62:<br>F8C7:<br>F8C7:<br>F8C7:<br>F8C8:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C9:<br>F8C   | AA<br>BD<br>85<br>29<br>85<br>29<br>AA<br>98<br>40<br>40<br>40<br>40<br>40<br>80<br>60<br>60<br>60<br>88<br>00<br>60<br>88<br>00<br>60<br>57<br>20<br>48<br>80<br>60<br>67<br>20<br>48<br>20<br>20<br>48<br>50<br>20<br>48<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>50<br>20<br>40<br>40<br>20<br>40<br>40<br>20<br>40<br>40<br>20<br>40<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>40<br>40<br>20<br>20<br>40<br>20<br>40<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>40<br>20<br>20<br>20<br>40<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>08<br>08<br>20<br>FA<br>F2<br>F7<br>82<br>3A<br>DA<br>01<br>42F<br>F1      | F9<br>FF<br>F8<br>FD<br>F9 | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP<br>PRNTBL | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCQ<br>CPX<br>LSR<br>CPY<br>LSR<br>DFB<br>USY<br>DEY<br>BNE<br>RTS<br>DFB<br>JSR<br>PHA<br>LDA<br>JSR<br>LDX<br>LDX<br>CPY<br>LDX<br>CPY<br>LDX<br>CPY<br>LDX  | FORMAT<br>#\$03<br>(P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>#\$20<br>MNNDX3<br>A<br>#\$20<br>MNNDX1<br>\$FF,\$FF,\$F<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01<br>PRBL2<br>LENGTH<br>PRNTOP | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt00100XXX<br>5) XXXXX000-&gt0000XXXX<br>5) XXXXX000-&gt000XXXXX<br>F<br>GEN FMT, LEN BYTES<br>SAVE MNEMONIC TABLE INDEX<br>PRINT 2 BLANKS<br>PRINT 1NST (1-3 BYTES)  |
| F8A7:<br>F8A9:<br>F8A9:<br>F8A1:<br>F8A1:<br>F8A1:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8B4:<br>F8C4:<br>F8C5:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4:<br>F8C4: 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AA<br>BD<br>85<br>29<br>85<br>29<br>AA<br>98<br>29<br>AA<br>98<br>29<br>40<br>F0<br>40<br>40<br>88<br>D0<br>60<br>FF<br>20<br>88<br>D0<br>60<br>FF<br>20<br>88<br>20<br>C8<br>80<br>C8<br>20<br>C8<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>A<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>A<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>A<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>AA<br>20<br>A<br>AA<br>20<br>A<br>AA<br>20<br>AA<br>AA<br>20<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA | A6<br>2E<br>03<br>2F<br>8F<br>03<br>8A<br>08<br>08<br>20<br>FA<br>F2<br>FF<br>82<br>3A<br>01<br>4A<br>2F<br>51<br>03 | F9<br>FF<br>F8<br>FD<br>F9 | MNNDX1<br>MNNDX2<br>MNNDX3<br>INSTDSP<br>PRNTOP<br>PRNTBL | LDA<br>STA<br>AND<br>STA<br>TYA<br>AND<br>TAX<br>LDY<br>LDY<br>CPX<br>BEQ<br>LSR<br>BCQ<br>CPX<br>LSR<br>CPY<br>LSR<br>DFB<br>USY<br>DEY<br>BNE<br>RTS<br>DFB<br>JSR<br>PHA<br>LDA<br>JSR<br>LDX<br>LDX<br>CPY<br>LDX<br>CPY<br>LDX<br>CPY<br>LDX  | FORMAT<br>#\$03<br>P=1 BYTE, :<br>LENGTH<br>#\$8F<br>#\$03<br>#\$8A<br>MNNDX3<br>A<br>#\$20<br>MNNDX3<br>A<br>MNNDX1<br>\$FF,\$FF,\$FI<br>INSDS1<br>(PCL),Y<br>PRBYTE<br>#\$01<br>PRBL2<br>LENGTH<br>PRNTOP<br>#\$03 | SAVE FOR ADR FIELD FORMATTING<br>MASK FOR 2-BIT LENGTH<br>1=2 BYTE, 2=3 BYTE)<br>OPCODE<br>MASK FOR 1XXX1010 TEST<br>SAVE IT<br>OPCODE TO A AGAIN<br>FORM INDEX INTO MNEMONIC TABLE<br>1) 1XXX1010-&gt00101XXX<br>2) XXXYYY01-&gt00110XXX<br>4) XXXYY10-&gt00110XXX<br>4) XXXYY10-&gt00100XXX<br>5) XXXXX000-&gt00100XXX<br>5) XXXXX000-&gt0000XXXX |

| <b>POP7</b> .   | 0.0  | ΕЭ   |  |  | DCC  | PRNTBL   |   |
|---|--|--|--|--|--|--|---|
| F8E7:<br>F8E9:  |  |  |  |  | PLA  |  | RECOVER MNEMONIC INDEX  |
| F8EA:   |  |  |  |  | TAY  |  | RECOVER MINEMONIC INDEX   |
| F8EB:   |  |  | τo   |  |  | MNEMT V  |   |
| F8EE:   |  |  |  |  | STA  | MNEML,Y<br>LMNEM<br>MNEMR,Y  | FETCH 3-CHAR MNEMONIC   |
| F8F0:   |  |  |  |  | TDA  | MNEMD V  | (PACKED IN 2-BYTES)   |
| F8F3:   |  |  |  |  | STA  | RMNEM  | (FACKED IN Z-BIIES)   |
|   |  |  |  | PRMN1  |  |  |   |
| F8F7:   |  |  |  |  | LDY  |  |   |
|   |  |  |  |  |  |  | SHIFT 5 BITS OF   |
| F8FB:   | 26   | 20   |  | PRMN2  | ROL  | LMNEM  | CHARACTER INTO A  |
| F8FD:   |  |  |  |  | ROL  | DUINISH  | (CLEARS CARRY)  |
| F8FE:   |  |  |  |  | DEY  |  | (ellinde ender)   |
| F8FF:   |  |  |  |  | BNF  | PRMN2  |   |
| F901:   |  |  |  |  | ADC  |  | ADD "?" OFFSET  |
| F903:   |  |  |  |  | TSR  | COUT   | OUTPUT A CHAR OF MNEM   |
| F906:   |  |  |  |  | DEX  | 0001   |   |
| F907:   |  |  |  |  |  | PRMN1  |   |
| F909:   |  |  |  |  |  |  | OUTPUT 3 BLANKS   |
| F90C:   |  |  |  |  |  | LENGTH   |   |
| F90E:   |  |  |  |  |  |  | CNT FOR 6 FORMAT BITS   |
| F910:   |  |  |  | PRADR1   |  |  |   |
| F912:   |  |  |  |  |  |  | IF X=3 THEN ADDR.   |
| F914:   | 06   | 2E   |  | PRADR2   | ASL  | FORMAT   |   |
| F916:   | 90   | 0E   |  |  | BCC  | PRADR3   |   |
| F918:   | BD   | В3   | F9   |  | LDA  | PRADR3<br>CHAR1-1,X<br>COUT  |   |
| F91B:   | 20   | ED   | FD   |  | JSR  | COUT   |   |
| F91E:   | BD   | В9   | F9   |  | LDA  | CHAR2-1,X  |   |
| F921:   | FO   | 03   |  |  |  | PRADR3   |   |
| F923:   | 20   | ED   | FD   |  | JSR  | COUT   |   |
| F926:   | CA   |  |  | PRADR3   | DEX  |  |   |
| F927:   | D0   | E7   |  |  | BNE  | PRADR1   |   |
| F929:   | 60   |  |  |  | RTS  |  |   |
| F92A:   | 88   |  |  | PRADR4   | DEY  |  |   |
| F92B:   | 30   | E7   |  |  |  | PRADR2   |   |
| F92D:   |  |  |  |  |  | PRBYTE   |   |
|   |  |  |  | PRADR5   | LDA  | FORMAT   |   |
| F932:   |  |  |  |  | CMP  | #\$E8  | HANDLE REL ADR MODE<br>SPECIAL (PRINT TARGET,   |
| F934:   |  |  |  |  | LDA  | (PCL),Y  | SPECIAL (PRINT TARGET,  |
| F936:   |  |  |  |  |  | PRADR4   | NOT OFFSET)   |
|   |  |  | F9   | RELADR   |  |  |   |
| F93B:   |  |  |  |  | TAX  |  | PCL, PCH+OFFSET+1 TO A, Y   |
| F93C:   | E8   |  |  |  | INX  |  |   |
|   | -  | ~ ~  |  |  |  |  |   |
| F93D:   |  |  |  |  | BNE  | PRNTYX   | +1 TO Y,X   |
| F93D:<br>F93F:  | C8   |  |  |  | BNE<br>INY   | PRNTYX   | +1 TO Y,X   |
| F93D:<br>F93F:<br>F940:   | C8<br>98   |  |  | PRNTYX   | BNE<br>INY<br>TYA  |  |   |
| F93D:<br>F93F:<br>F940:<br>F941:  | C8<br>98<br>20   | DA   | FD   | PRNTYX<br>PRNTAX   | BNE<br>INY<br>TYA<br>JSR   |  | OUTPUT TARGET ADR   |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:   | C8<br>98<br>20<br>8A   | DA   | FD   | PRNTYX<br>PRNTAX<br>PRNTX  | BNE<br>INY<br>TYA<br>JSR<br>TXA  | PRBYTE   |   |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F945:  | C8<br>98<br>20<br>8A<br>4C   | DA<br>DA   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP   | PRBYTE<br>PRBYTE   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN   |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F945:  | C8<br>98<br>20<br>8A<br>4C   | DA<br>DA   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP   | PRBYTE<br>PRBYTE   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT  |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F94A:  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>A9   | DA<br>DA<br>03<br>A0   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2   | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA   | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE  |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F94A:<br>F94C:   | C8<br>98<br>20<br>8A<br>4C<br>A2<br>A9<br>20   | DA<br>DA<br>03<br>A0<br>ED   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR  | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT  |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F94A:<br>F94C:<br>F94F:   | C8<br>98<br>20<br>8A<br>4C<br>A2<br>A9<br>20<br>CA   | DA<br>DA<br>03<br>A0<br>ED   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2   | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX   | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK  |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F94A:<br>F94C:<br>F94F:<br>F950:  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>A9<br>20<br>CA<br>D0   | DA<br>DA<br>03<br>A0<br>ED   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2   | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE  | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE  |
| F93D:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F948:<br>F947:<br>F947:<br>F947:<br>F947:<br>F950:   | C8<br>98<br>20<br>8A<br>4C<br>A2<br>A9<br>20<br>CA<br>D0<br>60   | DA<br>DA<br>03<br>A0<br>ED   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS   | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0  |
| F93D:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F94A:<br>F94C:<br>F94F:<br>F950:<br>F952:<br>F953:   | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38   | DA<br>DA<br>03<br>A0<br>ED<br>F8   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3<br>PCADJ   | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC  | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE  |
| F93D:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F948:<br>F947:<br>F947:<br>F947:<br>F947:<br>F950:   | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS   | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0  |
| F93D:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F94A:<br>F94C:<br>F94F:<br>F950:<br>F952:<br>F953:<br>F954:  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA   | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE  |
| F93D:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F948:<br>F947:<br>F947:<br>F950:<br>F952:<br>F953:<br>F953:<br>F954:<br>F956:  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY  | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE  |
| F93D:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F947:<br>F947:<br>F952:<br>F952:<br>F953:<br>F953:<br>F954:<br>F956:<br>F958:  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>10   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN  |
| F93D:<br>F940:<br>F941:<br>F941:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F946:<br>F950:<br>F952:<br>F952:<br>F952:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>20<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88   | DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ  | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL  | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)  |
| F93D:<br>F940:<br>F940:<br>F941:<br>F944:<br>F945:<br>F948:<br>F948:<br>F948:<br>F948:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>20<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88<br>65   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3                             | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)  |
| F93D:<br>F940:<br>F9440:<br>F9441:<br>F9442:<br>F9442:<br>F948:<br>F947:<br>F947:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:<br>F9502:   | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>20<br>CA<br>60<br>38<br>A5<br>A4<br>10<br>88<br>65<br>90   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3                             | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH   |
| F93D:<br>F940:<br>F9441:<br>F9442:<br>F9442:<br>F9442:<br>F9442:<br>F9442:<br>F9442:<br>F9502:<br>F9552:<br>F9554:<br>F9558:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9552:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:<br>F9555:  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88<br>65<br>90<br>C8   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3                             | BNE<br>INY<br>TYA<br>JSR<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A  |
| F93D:<br>F940:<br>F941:<br>F941:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F945:<br>F950:<br>F952:<br>F955:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88<br>65<br>90<br>C8   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBLNK<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3                   | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS   |
| F93D:<br>F940:<br>F941:<br>F941:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F945:<br>F950:<br>F952:<br>F955:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88<br>65<br>90<br>C8   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE  |
| F93D:<br>F940:<br>F941:<br>F941:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F945:<br>F950:<br>F952:<br>F955:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F959:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F950:<br>F  | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88<br>65<br>90<br>C8   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>* | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>INY<br>RTS<br>FMT1   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE  |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F944:<br>F944:<br>F948:<br>F947:<br>F947:<br>F947:<br>F950:<br>F9552:<br>F9554:<br>F9554:<br>F9558:<br>F9558:<br>F9552:<br>F9551:<br>F9560:<br>F961:  | C8<br>98<br>20<br>8A<br>4C<br>A9<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>A0<br>88<br>65<br>90<br>C8<br>60   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>BNE<br>RTS<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=   | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE  |
| F93D:<br>F93F:<br>F940:<br>F941:<br>F945:<br>F945:<br>F948:<br>F947:<br>F947:<br>F950:<br>F957:<br>F957:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958: | C8<br>98<br>20<br>8A<br>4C<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>A10<br>88<br>65<br>90<br>C8<br>60<br>04  | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01   | FD<br>FD   | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>LDA<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=                                    | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>-1  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)   |
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| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F948:<br>F948:<br>F948:<br>F948:<br>F954:<br>F950:<br>F950:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:  | C8<br>98<br>20<br>8A<br>4C<br>A9<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>10<br>88<br>65<br>90<br>C8<br>60<br>04<br>30<br>80   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>0D<br>04   | FD<br>FD<br>FD                                     | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y<br>IF Y<br>DFB                               | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>-1<br>\$04,\$20,\$54   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)   |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F948:<br>F948:<br>F947:<br>F947:<br>F950:<br>F950:<br>F9552:<br>F9554:<br>F9554:<br>F9558:<br>F9558:<br>F9558:<br>F9551:<br>F9561:<br>F9601:<br>F9622:<br>F9625:<br>F9655:<br>F9671:<br>F9643:   | C8<br>98<br>20<br>8A<br>4C<br>20<br>CA<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>A0<br>88<br>65<br>90<br>C8<br>60<br>04<br>30<br>80<br>03   | DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>0D<br>04<br>22   | FD<br>FD<br>54<br>90                               | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>LDA<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=                                    | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>-1  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)   |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F947:<br>F947:<br>F947:<br>F950:<br>F950:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9550:<br>F9560:<br>F9601:<br>F9602:<br>F967:<br>F967:<br>F967:<br>F967:<br>F967:<br>F967:  | C8<br>98<br>20<br>8A<br>4C<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>0D<br>04<br>22<br>33   | FD<br>FD<br>54<br>90                               | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB                      | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>1<br>\$04,\$20,\$54<br>\$80,\$04,\$90   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22   |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F945:<br>F948:<br>F947:<br>F947:<br>F947:<br>F950:<br>F957:<br>F957:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968:<br>F968: | C8<br>98<br>20<br>8A<br>4C<br>20<br>CA<br>D0<br>60<br>38<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>54<br>4<br>AA<br>10<br>88<br>65<br>90<br>C8<br>60<br>04<br>30<br>80<br>80<br>354<br>80   | DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>00<br>04<br>22<br>33<br>04   | FD<br>FD<br>54<br>90                               | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y<br>IF Y<br>DFB                               | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>-1<br>\$04,\$20,\$54   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22   |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F954:<br>F950:<br>F950:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F961:<br>F962:<br>F962:<br>F965:<br>F967:<br>F967:<br>F967:  | C8<br>98<br>20<br>8A<br>4C<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>90<br>C8<br>60<br>04<br>30<br>80<br>354<br>80<br>90<br>034<br>90   | DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>00<br>04<br>22<br>33<br>04<br>04   | FD<br>FD<br>54<br>90                               | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB                      | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>1<br>\$04,\$20,\$54<br>\$80,\$04,\$90<br>\$54,\$33,\$01  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22  |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F954:<br>F950:<br>F952:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F956:<br>F956:<br>F960:<br>F961:<br>F966:<br>F967:<br>F964:<br>F967:<br>F964:  | C8<br>98<br>20<br>8A<br>4C<br>20<br>CA<br>D0<br>60<br>83<br>84<br>A3<br>10<br>88<br>65<br>0<br>C8<br>60<br>04<br>30<br>80<br>03<br>54<br>90<br>54  | DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>0D<br>04<br>220<br>33<br>04<br>02<br>33<br>04<br>04<br>33  | FD<br>FD<br>54<br>90<br>20                         | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>JSR<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB                      | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>1<br>\$04,\$20,\$54<br>\$80,\$04,\$90   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22  |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F947:<br>F947:<br>F950:<br>F950:<br>F950:<br>F955:<br>F955:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F956:<br>F960:<br>F961:<br>F966:<br>F967:<br>F966:<br>F967:<br>F967:<br>F974:  | C8<br>98<br>20<br>8A<br>4C<br>20<br>CA<br>D0<br>60<br>83<br>85<br>A4<br>AD<br>20<br>CA<br>D0<br>60<br>88<br>60<br>03<br>80<br>03<br>54<br>80<br>03<br>54<br>00<br>54<br>00   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>0D<br>04<br>22<br>33<br>04<br>23<br>34<br>04<br>33<br>80   | FD<br>FD<br>54<br>90<br>20                         | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB<br>DFB               | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>=1<br>\$04,\$20,\$54<br>\$80,\$04,\$90<br>\$54,\$33,\$01<br>\$90,\$04,\$20  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22<br>0,\$80,\$04<br>0,\$54,\$33                               |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F947:<br>F947:<br>F947:<br>F950:<br>F950:<br>F955:<br>F955:<br>F958:<br>F958:<br>F958:<br>F958:<br>F956:<br>F956:<br>F960:<br>F961:<br>F966:<br>F966:<br>F967:<br>F967:<br>F967:<br>F976:<br>F976:  | C8<br>98<br>20<br>84<br>20<br>20<br>CA<br>20<br>CA<br>20<br>CA<br>20<br>60<br>38<br>A5<br>A4<br>AA<br>20<br>CA<br>50<br>60<br>04<br>380<br>90<br>C8<br>60<br>04<br>380<br>90<br>54<br>80<br>90<br>20<br>03<br>90<br>20<br>03<br>90<br>20<br>00<br>20<br>00<br>20<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>3A<br>01<br>20<br>0D<br>04<br>22<br>33<br>04<br>04<br>33<br>80<br>04   | FD<br>FD<br>54<br>90<br>00<br>200                  | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB                      | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>1<br>\$04,\$20,\$54<br>\$80,\$04,\$90<br>\$54,\$33,\$01  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22<br>0,\$80,\$04<br>0,\$54,\$33                               |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F945:<br>F948:<br>F948:<br>F947:<br>F947:<br>F950:<br>F957:<br>F957:<br>F957:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F957:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978: | C8<br>98<br>20<br>A2<br>A2<br>A9<br>20<br>CD0<br>60<br>38<br>A5<br>A4<br>A10<br>88<br>65<br>90<br>80<br>80<br>30<br>80<br>90<br>54<br>00<br>54<br>00<br>20   | DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>004<br>22<br>33<br>04<br>04<br>33<br>04<br>54  | FD<br>FD<br>54<br>90<br>00<br>200                  | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>LDA<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB<br>DFB<br>DFB        | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>\$04,\$20,\$54<br>\$80,\$04,\$90<br>\$54,\$33,\$01<br>\$90,\$04,\$20<br>\$04,\$20   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22<br>0,\$80,\$04<br>0,\$54,\$33<br>4,\$90,\$04                |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F947:<br>F947:<br>F947:<br>F950:<br>F950:<br>F955:<br>F955:<br>F958:<br>F958:<br>F958:<br>F958:<br>F956:<br>F956:<br>F960:<br>F961:<br>F966:<br>F966:<br>F967:<br>F967:<br>F967:<br>F976:<br>F976:  | C8<br>98<br>20<br>A2<br>A2<br>A9<br>20<br>CD0<br>60<br>38<br>A5<br>A4<br>A0<br>00<br>88<br>65<br>90<br>80<br>60<br>04<br>30<br>80<br>054<br>00<br>54<br>00<br>54<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00   | DA<br>03<br>A0<br>ED<br>F8<br>01<br>3A<br>01<br>20<br>00D<br>04<br>223<br>04<br>04<br>33<br>80<br>04<br>54<br>80   | FD<br>FD<br>54<br>90<br>0D<br>20<br>04<br>3B       | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>BNE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB<br>DFB               | PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>=1<br>\$04,\$20,\$54<br>\$80,\$04,\$90<br>\$54,\$33,\$01<br>\$90,\$04,\$20  | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXYO INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22<br>0,\$80,\$04<br>0,\$54,\$33<br>4,\$90,\$04                |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F954:<br>F950:<br>F950:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F9561:<br>F9661:<br>F9662:<br>F9662:<br>F9662:<br>F9662:<br>F9661:<br>F9662:<br>F9661:<br>F9671:<br>F9771:<br>F9771:<br>F9771:<br>F9775:<br>F9775:<br>F9775:<br>F9775:   | C8<br>98<br>20<br>84<br>20<br>CA<br>20<br>CA<br>20<br>38<br>A5<br>A4<br>AA<br>20<br>CA<br>38<br>60<br>CA<br>30<br>80<br>54<br>00<br>54<br>00<br>20<br>00<br>20<br>00<br>4  | DA<br>03<br>A0<br>ED<br>F8<br>01<br>3A<br>01<br>20<br>0D<br>04<br>222<br>33<br>04<br>54<br>33<br>80<br>04<br>54<br>90  | FD<br>FD<br>54<br>90<br>0D<br>20<br>04<br>3B       | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>LDA<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB<br>DFB<br>DFB        | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>\$04,\$20,\$54<br>\$80,\$04,\$90<br>\$54,\$33,\$01<br>\$90,\$04,\$20<br>\$04,\$20   | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22<br>0,\$80,\$04<br>0,\$54,\$33<br>4,\$90,\$04<br>3,\$0D,\$80 |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F944:<br>F954:<br>F956:<br>F955:<br>F955:<br>F955:<br>F955:<br>F955:<br>F956:<br>F956:<br>F961:<br>F966:<br>F967:<br>F966:<br>F966:<br>F966:<br>F967:<br>F964:<br>F976:<br>F976:<br>F976:<br>F976:<br>F977:<br>F977:<br>F977:<br>F977:<br>F977:<br>F977:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F968:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978: | C8<br>98<br>20<br>8AC<br>A2<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>20<br>CA<br>60<br>38<br>A5<br>60<br>C8<br>03<br>54<br>80<br>03<br>54<br>80<br>020<br>00<br>20<br>004<br>22  | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>01<br>3A<br>01<br>200<br>04<br>22<br>33<br>04<br>54<br>80<br>04<br>54<br>80<br>04<br>54<br>80<br>04<br>54<br>80<br>04<br>54<br>80<br>04<br>54<br>80<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>1 | FD<br>FD<br>54<br>90<br>0D<br>20<br>04<br>3B<br>00 | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>-1<br>\$04,\$20,\$54<br>\$80,\$04,\$20<br>\$54,\$33,\$01<br>\$90,\$04,\$20<br>\$54,\$33,\$01<br>\$90,\$04,\$20<br>\$54,\$33,\$01<br>\$90,\$04,\$20 | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$03,\$22<br>0,\$80,\$04<br>0,\$54,\$33<br>4,\$90,\$04<br>3,\$0D,\$80 |
| F93D:<br>F93F:<br>F940:<br>F944:<br>F944:<br>F944:<br>F944:<br>F947:<br>F957:<br>F957:<br>F957:<br>F957:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F958:<br>F961:<br>F961:<br>F967:<br>F967:<br>F967:<br>F967:<br>F967:<br>F968:<br>F977:<br>F977:<br>F977:<br>F977:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978:<br>F978: | C8<br>98<br>20<br>84C<br>A9<br>20<br>CA<br>D0<br>60<br>38<br>A5<br>A4<br>AA<br>00<br>38<br>65<br>90<br>C8<br>60<br>04<br>380<br>90<br>20<br>004<br>22<br>004<br>22<br>33   | DA<br>DA<br>03<br>A0<br>ED<br>F8<br>2F<br>3B<br>01<br>3A<br>01<br>20<br>004<br>223<br>33<br>04<br>04<br>54<br>80<br>04<br>54<br>80<br>04<br>54<br>80<br>04<br>04<br>00<br>04<br>04<br>04<br>04<br>04<br>04<br>0                                    | FD<br>FD<br>54<br>90<br>0D<br>20<br>04<br>3B<br>00 | PRNTYX<br>PRNTAX<br>PRNTX<br>PRBL2<br>PRBL3<br>PCADJ<br>PCADJ2<br>PCADJ3<br>PCADJ4<br>RTS2<br>*<br>*<br>*      | BNE<br>INY<br>TYA<br>JSR<br>TXA<br>JMP<br>LDX<br>LDA<br>DEX<br>ENE<br>RTS<br>SEC<br>LDA<br>LDY<br>TAX<br>BPL<br>DEY<br>ADC<br>BCC<br>INY<br>RTS<br>FMT1<br>IF Y=<br>IF Y=<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | PRBYTE<br>PRBYTE<br>#\$03<br>#\$A0<br>COUT<br>PRBL2<br>LENGTH<br>PCH<br>PCADJ4<br>PCL<br>RTS2<br>BYTES:<br>0<br>-1<br>\$04,\$20,\$54<br>\$80,\$04,\$20<br>\$54,\$33,\$01<br>\$90,\$04,\$20<br>\$54,\$33,\$01<br>\$90,\$04,\$20<br>\$54,\$33,\$01<br>\$90,\$04,\$20 | OUTPUT TARGET ADR<br>OF BRANCH AND RETURN<br>BLANK COUNT<br>LOAD A SPACE<br>OUTPUT A BLANK<br>LOOP UNTIL COUNT=0<br>0=1-BYTE, 1=2-BYTE<br>2=3-BYTE<br>TEST DISPLACEMENT SIGN<br>(FOR REL BRANCH)<br>EXTEND NEG BY DEC PCH<br>PCL+LENGTH(OR DISPL)+1 TO A<br>CARRY INTO Y (PCH)<br>XXXXXXY0 INSTRS<br>THEN LEFT HALF BYTE<br>THEN RIGHT HALF BYTE<br>(X=INDEX)<br>4,\$30,\$0D<br>0,\$54,\$33<br>4,\$90,\$04<br>3,\$0D,\$80<br>0,\$22,\$44                |

| F98A: 1  | 1 22  | 44   |         |  |  |  |
|--|---|--|---------|--|--|--|
| F98D: 3  | 3 0D  |  |         | DFB  | \$11,\$22,   | \$44,\$33,\$0D   |
| F98F: C  | 8 44  | A9   |         |  |  |  |
| F992: 0  | 1 22  |  |         | DFB  | \$C8,\$44,   | \$A9,\$01,\$22   |
| F994: 4  | 4 33  | 0D   |         |  |  |  |
| F997: 8  | 0 04  |  |         | DFB  | \$44,\$33,   | \$0D,\$80,\$04   |
| F999: 9  | 0 01  | 22   |         |  |  |  |
| F99C: 4  | 4 33  |  |         | DFB  | \$90,\$01,   | \$22,\$44,\$33   |
| F99E: 01   | D 80  | 04   |         |  |  |  |
| F9A1: 9  | 0   |  |         | DFB  | \$0D,\$80,   | \$04,\$90  |
| F9A2: 2  |   | 87   |         |  |  |  |
| F9A5: 92   |   |  |         | DFB  | \$26,\$31,   | \$87,\$9A \$ZZXXXY01 INSTR'S   |
| F9A6: 0  |   |  | FMT2    | DFB  | \$00   | ERR  |
| F9A7: 2  |   |  |         |  | \$21   | IMM  |
| F9A8: 8  |   |  |         | DFB  | \$81   | Z-PAGE   |
| F9A9: 8  |   |  |         | DFB  | \$82   | ABS  |
| F9AA: 0  |   |  |         |  | \$00   | IMPLIED  |
| F9AB: 0  |   |  |         | DFB  | \$00   | ACCUMULATOR  |
| F9AC: 5  |   |  |         | DFB  |  | (ZPAG,X)   |
| F9AD: 41   |   |  |         | DFB  | \$4D   | (ZPAG), Y  |
|  |   |  |         |  |  |  |
| F9AE: 9  |   |  |         | DFB  | \$91   | ZPAG,X   |
| F9AF: 9  |   |  |         |  | \$92   | ABS,X  |
| F9B0: 8  |   |  |         | DFB  | \$86   | ABS,Y  |
| F9B1: 4  |   |  |         | DFB  |  | (ABS)  |
| F9B2: 8  |   |  |         | DFB  | \$85   | ZPAG,Y   |
| F9B3: 91   |   |  |         | DFB  | 2AD  | RELATIVE   |
| F9B4: A  |   |  |         |  |  |  |
| F9B7: A  | 3 A8  | A4   |         |  |  |  |
|  |   |  | CHAR1   | ASC  | ",),#(\$"  |  |
| F9BA: D  |   |  |         |  |  |  |
| F9BD: A  | 4 A4  | 00   | CHAR2   | DFB  | \$D9,\$00,   | \$D8,\$A4,\$A4,\$00  |
|  |   |  | *CHAR2: | "Y",0,   | "X\$\$",0  |  |
|  |   |  | *       | MNEMI  |  | IS OF FORM:  |
|  |   |  | *       | (A) >  | XXXXX000   |  |
|  |   |  | *       | (B) X  | XXXYY100   |  |
|  |   |  | *       |  | LXXX1010   |  |
|  |   |  | *       |  | XXXYYY10   |  |
|  |   |  | *       |  | XXXYYY01   |  |
|  |   |  | *       |  | X=INDEX)   |  |
| F9C0: 1  | C 84  | 1C   |         | ,  |  |  |
|  |   |  | MNEML   | DFB  | \$1C \$8A  | \$1C,\$23,\$5D,\$  |
| F9C6: 11   |   |  |         | 212  | φ±0,φ011,  | <i>\\</i> 20 <i>/\</i> 20 <i>/\</i> 02 <i>/\</i>   |
| F9C9: 82   |   |  |         | DFB  | ¢18 ¢11  | \$9D,\$8A,\$1D,\$23  |
| F9CC: 91   |   |  |         | DFB  | γıd,γai,   | , , , , , , , , , , , , , , , , , , ,  |
| FUCC: 9  | л ор  | ΤD   |         |  |  |  |
|  | 1 00  | 20   |         |  |  | ¢15 ¢31 ¢00 ¢00  |
| F9CF: A  |   |  |         | DFB  | \$9D,\$8B,   | \$1D,\$A1,\$00,\$29  |
| F9D2: 1  | 9 AE  | 69   |         |  |  |  |
| F9D2: 1<br>F9D5: A   | 9 AE<br>8 19  | 69<br>23   |         | DFB<br>DFB   |  | \$1D,\$A1,\$00,\$29<br>\$69,\$A8,\$19,\$23   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2  | 9 AE<br>8 19<br>4 53  | 69<br>23<br>1B   |         | DFB  | \$19,\$AE,   | \$69,\$A8,\$19,\$23  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9D8: 2   | 9 AE<br>8 19<br>4 53<br>3 24  | 69<br>23<br>1B<br>53   |         | DFB<br>DFB   | \$19,\$AE,<br>\$24,\$53,   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DB: 2  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1  | 69<br>23<br>1B<br>53   |         | DFB  | \$19,\$AE,<br>\$24,\$53,   | \$69,\$A8,\$19,\$23  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9DE: 1   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A  | 69<br>23<br>1B<br>53<br>5B   |         | DFB<br>DFB   | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DB: 2  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A  | 69<br>23<br>1B<br>53<br>5B   |         | DFB<br>DFB   | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24  | 69<br>23<br>1B<br>53<br>5B<br>69   |         | DFB<br>DFB<br>DFB<br>DFB   | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24  | 69<br>23<br>1B<br>53<br>5B<br>69   |         | DFB<br>DFB<br>DFB<br>DFB   | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB                                    | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB                                    | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24<br>\$AE,\$AE,   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2<br>F9E8: A<br>F9E8: A  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB                                    | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24<br>\$AE,\$AE,   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2<br>F9E8: A<br>F9EB: A<br>F9EE: 7   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00<br>5 9C  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB                      | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24<br>\$AE,\$AE,<br>\$7C,\$00  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2<br>F9E8: A<br>F9EB: A<br>F9EB: A<br>F9EB: 7<br>F9E0: 1   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00<br>5 9C<br>C A5  | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> </ul>   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB               | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24<br>\$AE,\$AE,<br>\$7C,\$00<br>\$15,\$9C,  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9E9: 1<br>F9F0: 1<br>F9F3: 9  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00<br>5 9C<br>C A5<br>9 53  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB               | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24<br>\$AE,\$AE,<br>\$7C,\$00<br>\$15,\$9C,  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F0: 1<br>F9F3: 9<br>F9F6: 2   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>C 00<br>5 9C<br>C 00<br>5 9C<br>C A5<br>9 53<br>4 13  | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> </ul>   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB        | \$19,\$AE,<br>\$24,\$53,<br>\$19,\$A1<br>\$00,\$1A,<br>\$24,\$24<br>\$AE,\$AE,<br>\$7C,\$00<br>\$15,\$9C,<br>\$29,\$53   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9EB: A<br>F9EB: 7<br>F9E5: 7<br>F9F0: 1<br>F9F70: 1<br>F9F70: 2<br>F9F6: 2<br>F9F8: 8  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00<br>5 9C<br>C A5<br>9 53<br>4 13<br>1 A5  | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> </ul>   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9EB: A<br>F9EB: A<br>F9EE: 7<br>F9F0: 1<br>F9F0: 1<br>F9F8: 8<br>F9FB: 1   | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00<br>5 9C<br>C A5<br>9 53<br>4 13<br>1 A5<br>3 A0  | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> </ul>   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F7: 9<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D  | 9 AE<br>8 19<br>4 53<br>3 24<br>9 A1<br>0 1A<br>B A5<br>4 24<br>E AE<br>D 29<br>C 00<br>5 9C<br>C A5<br>9 53<br>4 13<br>1 A5<br>3 A0<br>8 62  | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> <li>5A</li> </ul>   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F0: 1<br>F9F0: 2<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4  | 9 AE 4 53<br>3 24<br>9 A1 53<br>9 A1 6<br>1 A5<br>9 A1 6<br>1 A5<br>9 A1 6<br>2 9<br>9 C 7<br>9 C 7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7 | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> <li>5A</li> <li>62</li> </ul>   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DB: 1<br>F9E0: 0<br>F9E3: 55<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F3: 9<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 1<br>F9F8: 1<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9  | 9 AE 4 533<br>3 244 533<br>9 A1 4 533<br>9 A1 4 533<br>9 A1 4 53<br>9 A1 53<br>9 A   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>60<br>69<br>34<br>69<br>5A<br>62<br>54   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E9: 1<br>F9F6: 2<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA09: 4  | 9 AE 4 5333 244 5333 244 5333 244 5333 244 533 244 5 AE 5 4 24 5 AE 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7   | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> <li>5A</li> <li>62</li> <li>54</li> <li>54</li> </ul>   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT   |
| F9D2: 1<br>F9D3: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 1<br>F9F6: 2<br>F9F6: 2<br>F3F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA00: 4<br>FA0C: 6   | 9 AE 4 53<br>3 24<br>9 A1<br>9 A1<br>0 1A<br>B A55<br>9 A1<br>1 A5<br>0 1A<br>4 24<br>4 24<br>4 24<br>4 24<br>5 3<br>0 0<br>0 0<br>0 0<br>0 0<br>0 0<br>0 0<br>0 0<br>0   | 69<br>23<br>1B<br>53<br>5B<br>69<br>80<br>60<br>60<br>60<br>69<br>34<br>69<br>54<br>54<br>54<br>54<br>54   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54   |
| F9D2: 1<br>F9D2: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2<br>F9E8: A<br>F9EB: A<br>F9EB: A<br>F9EB: 1<br>F9F6: 2<br>F9F6: 2<br>F9F6: 2<br>F9F6: 2<br>F9F6: 2<br>F9F8: 8<br>F9FB: 1<br>F9FE: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA0C: 6<br>FA0F: 9  | 9 AE 4 53<br>3 24<br>9 A1<br>9 A1<br>0 1A<br>4 24<br>4 24<br>4 24<br>4 24<br>5 3<br>0 0<br>1A<br>5 29<br>5 33<br>4 13<br>1 A5<br>5 3<br>4 13<br>1 A5<br>5 3<br>4 13<br>3 A0<br>2 4<br>4 24<br>4 24<br>4 24<br>5 3<br>5 3<br>5 3<br>5 3<br>4 13<br>1 A5<br>5 3<br>4 13<br>4 24<br>4 24<br>4 24<br>5 3<br>5 3<br>5 3<br>5 3<br>5 3<br>6 26<br>5 3<br>5 3<br>6 26<br>6 29<br>5 3<br>3 4<br>6 26<br>6 29<br>5 3<br>3 4<br>6 26<br>6 29<br>5 3<br>3 4<br>6 26<br>6 29<br>5 3<br>7 4<br>1 A5<br>5 3<br>6 26<br>6 29<br>5 3<br>7 4<br>1 A5<br>6 26<br>6 29<br>5 3<br>7 4<br>1 A5<br>6 26<br>6 29<br>5 3<br>7 4<br>1 A5<br>7 4<br>8 8<br>8 8<br>8 8<br>8 8<br>4 4<br>8 8<br>8 4<br>4 4<br>4   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>88<br>84   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F0: 1<br>F9F6: 2<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA06: 6<br>FA0F: 9<br>FA12: 0  | 9 AE 4 53<br>3 244 53<br>9 A1 4   | 69<br>23<br>1B<br>53<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>E8<br>B4<br>74   | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$E4  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 55<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F0: 1<br>F9F0: 2<br>F9F8: 8<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA05: 9<br>FA12: 0<br>FA15: B   | 9 AE 4 53<br>4 53<br>9 A1 53<br>9 A1 4 53<br>9 C 5 9 C 53<br>9 C   | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> <li>34</li> <li>69</li> <li>5A</li> <li>62</li> <li>54</li> &lt;</ul> | MNEMR   | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DB: 1<br>F9E0: 0<br>F9E3: 55<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F3: 99<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>F3F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA12: 0<br>FA12: 0<br>FA12: 0<br>FA13: F   | 9 AE 4 53<br>3 24<br>9 0 D A 53<br>9 0 D A 54<br>4 24<br>4 2 29<br>0 0 0 C 5 0 2 53<br>1 3 3 62<br>2 6 2 8<br>8 4 4 4 4<br>8 4 0 8<br>4 4 8 4<br>8 4 4<br>9 0 0 4<br>1 3 0 0 2 5<br>1 3 1 0 0 0<br>0 0 0 0 0 0 0<br>0 0 0 0 0 0 0<br>0 0 0 0  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>60<br>60<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>88<br>4<br>74<br>6E<br>CC  |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$E4<br>\$74,\$E4,\$28,\$6E   |
| F9D2: 1<br>F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DE: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 1<br>F9F7: 9<br>F9F8: 8<br>F9F8: 1<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA12: 0<br>FA15: B<br>FA18: 7<br>FA18: 7  | 9 AE 4 533<br>9 AE 4 533<br>9 AE 4 534<br>9 AE 4 54<br>9 AE 4 5  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>69<br>5A<br>62<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$74,\$F4,</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2  |
| F9D2: 1<br>F9D2: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 2<br>F9E8: 1<br>F9E9: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E9: 1<br>F9F6: 2<br>F9F6: 2<br>F9F6: 2<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA12: 0<br>FA15: B<br>FA18: 7<br>FA18: 7<br>FA18: 4<br>FA18: A  | 9 AE 4 53<br>9 AE 4 53  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>60<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>E8<br>B4<br>74<br>6E<br>CC<br>F2   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$74,\$F4,</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$E4<br>\$74,\$E4,\$28,\$6E   |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 55<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F7: 2<br>F9F7: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA12: 0<br>FA15: B<br>FA18: 7<br>FA18: 4<br>FA18: 4<br>FA18: 4<br>FA20: 0  | 9 AE 4 533<br>9 AE 4  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>54<br>88<br>84<br>74<br>6E<br>CC<br>F2<br>A2   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT  |
| F9D2: 1<br>F9D5: A<br>F9D8: 2<br>F9DB: 2<br>F9DE: 1<br>F9E0: 0<br>F9E3: 55<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E8: 7<br>F9F0: 1<br>F9F3: 99<br>F9F6: 2<br>F9F6: 2<br>F9F8: 8<br>F9F8: 1<br>F9F8: 1<br>F9F8: 2<br>FA00: D<br>FA03: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA12: 0<br>FA15: B<br>FA18: 7<br>FA18: 7<br>FA18: 4<br>FA22: 0<br>FA23: A   | 9 AE 4 533<br>9 AE 4 533<br>9 0 AA 544<br>9 0 AA 4 4 4 4 4<br>9 0 AA 4 4 0 AA 4<br>9 0 AA 54<br>9 0 AA 544<br>9 0 0 000<br>9 0 0000<br>9 0 000<br>9 0 0000<br>9 0 000<br>9 0000<br>9 0 000<br>9 0 0000<br>9 0 000<br>9 0 0000<br>9 0 000<br>9  | <ul> <li>69</li> <li>23</li> <li>1B</li> <li>53</li> <li>5B</li> <li>69</li> <li>A8</li> <li>00</li> <li>6D</li> <li>69</li> <li>34</li> <li>69</li> <li>34</li> <li>69</li> <li>54</li> &lt;</ul> |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74   |
| F9D2:       1         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9E8:       A         F9E8:       A         F9E8:       A         F9E8:       A         F9E7:       9         F9F6:       2         F9F8:       8         F9F8:       1         F9F8:       2         FA00:       D         FA03:       4         FA06:       9         FA15:       B         FA18:       7         FA18:       7         FA18:       4         FA20:       0         FA23:       A         FA26:       7  | 9 AE 4 533<br>9 AE 4 533<br>9 0 A 544<br>4 2 4 5 2 4 4 5 2 4 4 5 2 4 4 5 2 4 4 5 2 4 4 5 2 4 5 2 6 2 9 5 3 1 3 5 2 6 5 3 1 3 5 2 6 5 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>60<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>274  |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT  |
| F9D2: 1<br>F9D2: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 2<br>F9D8: 2<br>F9E9: 1<br>F9E0: 0<br>F9E3: 5<br>F9E6: 2<br>F9E8: A<br>F9E8: A<br>F9E8: A<br>F9E9: 1<br>F9F6: 2<br>FA00: D<br>FA07: 9<br>FA00: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA09: 4<br>FA06: 9<br>FA12: 0<br>FA12: 0<br>FA15: B<br>FA18: 7<br>FA18: 4<br>FA18: A<br>FA20: 0<br>FA23: A<br>FA22: 7<br>FA23: A<br>FA22: 7<br>FA23: A   | 9 AE 4 533<br>9 AE 4 533<br>9 AE 4 524<br>1 A54<br>9 0 B 4 24<br>4 E 2 90<br>0 0 C 5 0 45<br>1 A 54<br>4 2 4 E 0 0 0 C 5<br>0 0 C 5 0 4<br>1 A 50<br>2 6 4<br>4 8 4 8 4<br>4 8 4 8<br>4 4 7<br>2 4 4<br>4 8 4<br>4 4 4 4<br>4 4 4 4<br>4 4 4 4<br>4 4 4 4<br>4 5 4 4 4 4<br>4 5 4 5 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>74<br>88<br>84<br>74<br>82   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72</pre>  | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$E4<br>\$74,\$E4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT   |
| F9D2:       1         F9D2:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9E8:       A         F9E8:       A         F9E8:       A         F9E8:       A         F9E70:       1         F9F8:       8         F9F8:       1         F9F8:       1         F9F8:       2         FA00:       D         FA03:       4         FA06:       9         FA12:       0         FA12:       0         FA18:       7         FA18:       7         FA18:       7         FA18:       7         FA18:       4         FA20:       0         FA23:       A         FA26:       7         FA28:       4         FA28:       3   | 9 AE 4 53<br>9 AE 4 53<br>9 0 B 4 24<br>4 E 2 00 C 5 0 4 3<br>1 A 5 4 4 E 2 00 C 5 0 4 1 3 3 8 2 6 8 8 8 4 4 8 1 8 2 8 4 4 4 7 2 8 A 4 4 7 2 8 A 4 4 7 2 8 A 4 4 7 2 6 8 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>E8<br>B4<br>74<br>6E<br>CC<br>F2<br>A2<br>74<br>B2<br>00   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$B2,\$32,\$B2,\$00  |
| F9D2:       1         F9D2:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       1         F9E0:       0         F9E3:       53         F9E6:       2         F9E8:       A         F9E8:       A         F9E7:       1         F9F8:       8         F9F6:       2         FA06:       9         FA00:       0         FA06:       9         FA12:       0         FA15:       B         FA15:       7         FA15:       7         FA20:       0         FA23:       A         FA20:       0         FA23:       A         FA26:       7         FA28:       4         FA28:       4         FA28:       4   | 9 AE   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>60<br>69<br>34<br>69<br>34<br>69<br>54<br>54<br>54<br>54<br>54<br>54<br>254<br>54<br>254<br>254<br>274<br>82<br>74<br>82<br>00   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$E4<br>\$74,\$E4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT   |
| F9D2: 1         F9D2: A         F9D8: 2         F9D8: 2         F9D8: 1         F9E0: 0         F9E2: 1         F9E3: 53         F9E6: 2         F9E8: A         F9E7: 1         F9E7: 2         F9F6: 2         F9F8: 8         F9F8: 1         F9F8: 2         FA00: 0         FA03: 4         FA06: 9         FA12: 0         FA18: 7         FA18: 7         FA18: 7         FA18: 4         FA20: 0         FA23: A         FA26: 7         FA28: 4         FA28: 3         FA28: 3         FA28: 3         FA28: 3         FA28: 1   | 9 AE   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>254<br>74<br>6E<br>CC2<br>72<br>74<br>B2<br>00<br>26   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00</pre>   | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$B2,\$32,\$B2,\$00<br>(C) FORMAT                                      |
| F9D2: 1         F9D2: 1         F9D8: 2         F9D8: 2         F9D8: 1         F9E0: 0         F9E2: 2         F9E8: A         F9E8: A         F9E7: 7         F9F6: 2         F9F8: 8         F9F8: 8         F9F8: 1         F9F8: 1         F9F8: 1         F9F8: 2         FA00: 0         FA03: 4         FA06: 9         FA12: 0         FA15: B         FA18: 7         FA18: 7         FA18: 4         FA20: 0         FA23: A         FA26: 7         FA28: 4         FA28: 4         FA28: 2         FA33: 2  | 9 AE 4 533<br>9 0 B 4 24 E 290 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>254<br>74<br>6E<br>CC<br>F2<br>A2<br>74<br>B2<br>00<br>26<br>72  |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00<br/>\$1A,\$1A,</pre>                              | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$E4<br>\$74,\$E4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$B2,\$32,\$E2,\$00<br>(C) FORMAT                                      |
| F9D2:       1         F9D2:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9D8:       2         F9E8:       A         F9E8:       A         F9E8:       A         F9E8:       A         F9E8:       A         F9F6:       2         F9F8:       B         F9F8:       B         F9F8:       B         F9F8:       1         F000:       D         FA06:       9         FA12:       0         FA18:       7         FA18:       7         FA18:       7         FA18:       4         FA20:       0         FA23:       A         FA26:       7         FA28:       4         FA28:       4         FA28: <td< td=""><td>9 AE 93 4 533 4 1933 4 1933 4 2414 5</td><td>69<br/>23<br/>1B<br/>53<br/>5B<br/>69<br/>A8<br/>00<br/>6D<br/>69<br/>34<br/>69<br/>34<br/>69<br/>5A<br/>69<br/>5A<br/>69<br/>5A<br/>69<br/>5A<br/>24<br/>54<br/>54<br/>54<br/>54<br/>54<br/>54<br/>24<br/>74<br/>82<br/>00<br/>26<br/>72</td><td></td><td>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB</td><td><pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00<br/>\$1A,\$1A,</pre></td><td>\$69,\$A8,\$19,\$23<br/>\$1B,\$23,\$24,\$53<br/>(A) FORMAT ABOVE<br/>\$5B,\$5E,\$A5,\$69<br/>(B) FORMAT<br/>\$A8,\$AD,\$29,\$00<br/>(C) FORMAT<br/>\$6D,\$9C,\$A5,\$69<br/>(D) FORMAT<br/>\$34,\$11,\$A5,\$69<br/>(E) FORMAT<br/>\$5A,\$48,\$26,\$62<br/>\$54,\$44,\$C8,\$54<br/>\$E8,\$94,\$00,\$B4<br/>\$74,\$B4,\$28,\$6E<br/>\$CC,\$4A,\$72,\$F2<br/>(A) FORMAT<br/>\$A2,\$A2,\$74,\$74<br/>(B) FORMAT<br/>\$B2,\$32,\$B2,\$00<br/>(C) FORMAT</td></td<> | 9 AE 93 4 533 4 1933 4 1933 4 2414 5   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>69<br>5A<br>69<br>5A<br>69<br>5A<br>24<br>54<br>54<br>54<br>54<br>54<br>54<br>24<br>74<br>82<br>00<br>26<br>72   |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00<br/>\$1A,\$1A,</pre>                              | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5E,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$B2,\$32,\$B2,\$00<br>(C) FORMAT                                      |
| F9D2: 1         F9D2: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9E8: A         F9E70: 1         F9F8: 8         F9F8: 8         F9F8: 1         F9F8: 2         FA00: D         FA03: 4         FA00: 0         FA12: 0         FA15: B         FA15: B         FA18: 7         FA20: 0         FA23: A         FA20: 0         FA23: A         FA28: 4         FA28: 4         FA38: 2         FA38: 2   | 9 AE 4 533<br>9 AE 4 533<br>9 AE 4 534<br>9 AE 4 535<br>9 AE 4 535<br>1 A50<br>1 A50<br>2 AE 4 535<br>1 A50<br>2 AE 4 535<br>2 AE 4 5355<br>2 AE 4 53555<br>2 AE 4 535555<br>2 AE 4 535555<br>2 AE 4 5355555<br>2 AE 4 53555555<br>2 AE 4 535555555555555555555555555555555555  | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>5A<br>62<br>54<br>54<br>54<br>54<br>54<br>54<br>254<br>74<br>82<br>74<br>82<br>00<br>26<br>72<br>26  |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00<br/>\$1A,\$1A,<br/>\$88,\$C8</pre>                | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$26,\$26,\$72,\$72<br>(D) FORMAT                                      |
| F9D2: 1         F9D2: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 1         F9E0: 0         F9E3: 51         F9E6: 2         F9E8: A         F9E8: A         F9E8: A         F9E7: 1         F9F6: 2         F9F8: 8         F9F8: 1         F9F8: 2         FA00: D         FA03: 4         FA06: 9         FA15: B         FA15: B         FA15: R         FA20: 0         FA23: A         FA20: 0         FA23: A         FA20: 0         FA23: A         FA20: 0         FA23: A         FA26: 7         FA28: 4         FA28: 3         FA28: 4         FA30: 1         FA33: 2         FA36: 8         FA38: 7   | 9 AE   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>254<br>24<br>74<br>62<br>74<br>80<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>83<br>74<br>83<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74  |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00<br/>\$1A,\$1A,<br/>\$88,\$C8<br/>\$C4,\$CA,</pre> | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$22,\$32,\$B2,\$00<br>(C) FORMAT<br>\$26,\$26,\$72,\$72<br>(D) FORMAT |
| F9D2: 1         F9D2: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9D8: 2         F9E8: A         F9E70: 1         F9F8: 8         F9F8: 8         F9F8: 1         F9F8: 2         FA00: D         FA03: 4         FA00: 0         FA12: 0         FA15: B         FA15: B         FA18: 7         FA20: 0         FA23: A         FA20: 0         FA23: A         FA28: 4         FA28: 4         FA38: 2         FA38: 2   | 9 AE   | 69<br>23<br>1B<br>53<br>5B<br>69<br>A8<br>00<br>6D<br>69<br>34<br>69<br>34<br>69<br>54<br>54<br>54<br>54<br>54<br>54<br>54<br>254<br>24<br>74<br>62<br>74<br>80<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>82<br>74<br>83<br>74<br>83<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74<br>74  |         | DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>\$19,\$AE,<br/>\$24,\$53,<br/>\$19,\$A1<br/>\$00,\$1A,<br/>\$24,\$24<br/>\$AE,\$AE,<br/>\$7C,\$00<br/>\$15,\$9C,<br/>\$29,\$53<br/>\$84,\$13,<br/>\$23,\$A0<br/>\$D8,\$62,<br/>\$94,\$88,<br/>\$68,\$44,<br/>\$08,\$84,<br/>\$08,\$84,<br/>\$74,\$F4,<br/>\$A4,\$8A<br/>\$00,\$AA,<br/>\$74,\$72<br/>\$44,\$68,<br/>\$22,\$00<br/>\$1A,\$1A,<br/>\$88,\$C8<br/>\$C4,\$CA,</pre> | \$69,\$A8,\$19,\$23<br>\$1B,\$23,\$24,\$53<br>(A) FORMAT ABOVE<br>\$5B,\$5B,\$A5,\$69<br>(B) FORMAT<br>\$A8,\$AD,\$29,\$00<br>(C) FORMAT<br>\$6D,\$9C,\$A5,\$69<br>(D) FORMAT<br>\$34,\$11,\$A5,\$69<br>(E) FORMAT<br>\$5A,\$48,\$26,\$62<br>\$54,\$44,\$C8,\$54<br>\$E8,\$94,\$00,\$B4<br>\$74,\$B4,\$28,\$6E<br>\$CC,\$4A,\$72,\$F2<br>(A) FORMAT<br>\$A2,\$A2,\$74,\$74<br>(B) FORMAT<br>\$26,\$26,\$72,\$72<br>(D) FORMAT                                      |

| FA40:   |   |  |  |  |  | \$FF,\$FF,\$FI   |   |
|---|---|--|--|--|--|--|---|
| FA43:   | 20  | D0   | F8                                     | STEP   | JSR  | INSTDSP  | DISASSEMBLE ONE INST  |
| FA46:   |   |  |  |  | PLA  |  | AT (PCL,H)  |
| FA47:   |   | 2C   |  |  |  |  | ADJUST TO USER  |
| FA49:   |   | Ъ  |  |  | PLA  |  | STACK. SAVE   |
| FA4A:<br>FA4C:  |   |  |  |  | STA  |  | RTN ADR.  |
|   |   |  | FB                                     |  | LDX<br>LDA   |  | INIT XEQ AREA   |
| FA51:   |   |  |  | AQINII   | STA  |  | INTI ABQ ANBA   |
| FA53:   |   |  |  |  | DEX  | ngi ,n   |   |
| FA54:   |   |  |  |  |  | XQINIT   |   |
| FA56:   |   |  |  |  |  |  | USER OPCODE BYTE  |
| FA58:   | FO  | 42   |  |  |  |  | SPECIAL IF BREAK  |
| FA5A:   | A4  | 2F   |  |  | LDY  | LENGTH   | LEN FROM DISASSEMBLY  |
| FA5C:   | C9  | 20   |  |  | CMP  | #\$20  |   |
| FA5E:   | FO  | 59   |  |  | BEQ  | XJSR   | HANDLE JSR, RTS, JMP,   |
| FA60:   | C9  | 60   |  |  |  |  | JMP (), RTI SPECIAL   |
| FA62:   |   |  |  |  | BEQ  |  |   |
| FA64:   |   |  |  |  | CMP  |  |   |
| FA66:   |   |  |  |  | BEQ  |  |   |
| FA68:<br>FA6A:  |   |  |  |  | CMP  |  |   |
| FA6A:<br>FA6C:  |   |  |  |  | CMP  | XJMPAT<br>#\$40  |   |
| FA6E:   |   |  |  |  | BEQ  |  |   |
| FA70:   |   |  |  |  | AND  |  |   |
| FA72:   |   |  |  |  | EOR  |  |   |
| FA74:   | C9  | 04   |  |  |  |  | COPY USER INST TO XEQ AREA  |
| FA76:   | FO  | 02   |  |  |  |  |   |
| FA78:   | B1  | ЗA   |  | XQ1  | LDA  | (PCL),Y  | CHANGE REL BRANCH<br>DISP TO 4 FOR  |
| FA7A:   | 99  | 3C   | 00                                     | XQ2  | STA  | XQT,Y  | DISP TO 4 FOR   |
| FA7D:   |   |  |  |  | DEY  |  | JMP TO BRANCH OR  |
| FA7E:   |   |  |  |  | BPL  | XQ1  | NBRANCH FROM XEQ.<br>RESTORE USER REG CONTENTS.   |
| FA80:   |   |  |  |  |  |  |   |
| FA83:   |   |  |  | TDO  | JMP  | XQ.I.  | XEQ USER OP FROM RAM  |
| FA86:<br>FA88:  |   |  |  |  | STA<br>PLA   | ACC  | (RETURN TO NBRANCH)   |
| FA89:   |   |  |  |  | PHA  |  | **IRQ HANDLER   |
| FA8A:   |   |  |  |  | ASL  |  |   |
| FA8B:   |   |  |  |  | ASL  |  |   |
| FA8C:   | 0A  |  |  |  | ASL  | A  |   |
| FA8D:   | 30  | 03   |  |  |  |  | TEST FOR BREAK  |
| FA8F:   | 6C  | FE   | 03                                     |  | JMP  | (TROLOC)   | USER ROUTINE VECTOR IN RAM  |
|   |   |  |  |  |  | (  |   |
| FA92:   | 28  |  |  | BREAK  | PLP  | (  |   |
|   |   |  |  |  | PLP<br>JSR   |  | SAVE REG'S ON BREAK   |
| FA92:<br>FA93:<br>FA96:   | 20<br>68  | 4C   | FF                                     |  | PLP<br>JSR<br>PLA  | SAV1   |   |
| FA92:<br>FA93:<br>FA96:<br>FA97:  | 20<br>68<br>85  | 4C   | FF                                     |  | PLP<br>JSR<br>PLA<br>STA   | SAV1   | SAVE REG'S ON BREAK   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:   | 20<br>68<br>85<br>68  | 4C<br>3A   | FF                                     |  | PLP<br>JSR<br>PLA<br>STA<br>PLA  | SAV1<br>PCL  | SAVE REG'S ON BREAK   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA9A:  | 20<br>68<br>85<br>68<br>85  | 4C<br>3A<br>3B   | FF                                     |  | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA   | SAV1<br>PCL<br>PCH   | SAVE REG'S ON BREAK<br>INCLUDING PC   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA9A:<br>FA9C:   | 20<br>68<br>85<br>68<br>85<br>20  | 4C<br>3A<br>3B<br>82   | FF<br>F8                               | XBRK   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR  | SAV1<br>PCL<br>PCH<br>INSDS1   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA9A:<br>FA9C:<br>FA9F:  | 20<br>68<br>85<br>68<br>85<br>20<br>20  | 4C<br>3A<br>3B<br>82<br>DA   | FF<br>F8<br>FA                         | XBRK   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA9A:<br>FA9C:<br>FA9F:<br>FA92:   | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C  | 4C<br>3A<br>3B<br>82<br>DA<br>65   | FF<br>F8<br>FA                         | XBRK   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA9A:<br>FA9C:<br>FA9F:  | 20<br>68<br>85<br>68<br>20<br>20<br>4C<br>18  | 4C<br>3A<br>3B<br>82<br>DA<br>65   | FF<br>F8<br>FA                         | XBRK   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA9A:<br>FA9C:<br>FA9F:<br>FAA2:<br>FAA5:  | 20<br>68<br>85<br>20<br>20<br>4C<br>18<br>68  | 4C<br>3A<br>3B<br>82<br>DA<br>65   | FF<br>F8<br>FA                         | XBRK   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA94:<br>FA97:<br>FA97:<br>FA42:<br>FAA5:<br>FAA6:   | 20<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48   | FF<br>F8<br>FA<br>FF                   | XBRK   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON  | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING  |
| FA92:<br>FA96:<br>FA96:<br>FA97:<br>FA99:<br>FA94:<br>FA97:<br>FA97:<br>FAA2:<br>FAA5:<br>FAA6:<br>FAA7:  | 20<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48   | FF<br>F8<br>FA<br>FF                   | XBRK<br>XRTI   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA<br>STA   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA94:<br>FA97:<br>FA95:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA7:<br>FAA9:<br>FAA3:<br>FAA3:<br>FAA2:<br>FAA3:   | 20<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A   | FF<br>FA<br>FF                         | XBRK<br>XRTI<br>XRTS   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>CLC<br>PLA<br>STA<br>PLA   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION   |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA94:<br>FA94:<br>FA42:<br>FAA5:<br>FAA6:<br>FAA7:<br>FAA7:<br>FAA9:<br>FAA3:<br>FAA3:<br>FAA3:  | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68  | 4C<br>3A<br>82<br>DA<br>65<br>48<br>3A<br>3B   | FF<br>FA<br>FF                         | XBRK<br>XRTI<br>XRTS<br>PCINC2   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH  | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA94:<br>FA94:<br>FA94:<br>FA94:<br>FA45:<br>FAA5:<br>FAA6:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA2:<br>FAA2:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5:<br>FAA5: | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68<br>85<br>A5  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F   | FF<br>FA<br>FF                         | XBRK<br>XRTI<br>XRTS   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>LDA   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH  | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FAA2:<br>FAA5:<br>FAA5:<br>FAA7:<br>FAA7:<br>FAAA2:<br>FAAA2:<br>FAAA2:<br>FAAA1:<br>FAA1:<br>FAA1:<br>FAA1:<br>FAA1:   | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68<br>85<br>20  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56   | FF<br>F8<br>FA<br>FF                   | XBRK<br>XRTI<br>XRTS<br>PCINC2   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>CLC<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>STA<br>LDA<br>JSR  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3  | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)  |
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| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA97:<br>FA97:<br>FA97:<br>FAA2:<br>FAA5:<br>FAA6:<br>FAA7:<br>FAA7:<br>FAAC:<br>FAAC:<br>FAAD:<br>FAAD:<br>FAAD:<br>FAAD:<br>FAAD:<br>FAAD:   | 20<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>90  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3A<br>3B<br>2F<br>56<br>3B<br>14   | FF<br>F8<br>FA<br>FF<br>F9             | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>LDA<br>JSR<br>STY<br>CLC  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3  | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA92:<br>FA45:<br>FA45:<br>FA45:<br>FA45:<br>FA47:<br>FA47:<br>FA47:<br>FA47:<br>FA47:<br>FA481:<br>FA81:<br>FA86:<br>FA87:   | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>90<br>18  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56<br>3B<br>14   | FF<br>F8<br>FA<br>FF                   | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>STA<br>JSR<br>STA<br>DLA<br>STA<br>CLC<br>CLC   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)  |
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| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FAA2:<br>FAA2:<br>FAA5:<br>FAA5:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA8:<br>FAB1:<br>FAB6:<br>FAB7:<br>FAB4:<br>FAB6:<br>FAB4:<br>FAB4:   | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>90<br>18<br>20<br>AA  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56<br>3B<br>14<br>54   | FF<br>F8<br>FA<br>FF                   | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3   | PLP<br>JSR<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>LDA<br>JSR<br>STY<br>CLC<br>BCC<br>CLC<br>JSR   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH  |
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| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA92:<br>FA97:<br>FAA2:<br>FAA2:<br>FAA2:<br>FAA2:<br>FAA2:<br>FAA3:<br>FAA3:<br>FAA3:<br>FAA4:<br>FAA4:<br>FAB4:<br>FAB4:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAC0:<br>FAC1:<br>FAC2:  | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>90<br>18<br>20<br>84<br>18<br>90<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>84<br>84<br>82<br>84<br>83<br>84<br>83<br>84<br>83<br>84<br>84<br>83<br>84<br>84<br>84<br>84<br>85<br>84<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56<br>3B<br>14<br>54   | FF<br>FA<br>FF<br>F9                   | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR   | PLP<br>JSR<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>LDA<br>JSR<br>STY<br>CLC<br>BCC<br>CLC<br>CLC<br>JSR<br>TAX<br>TYA<br>PHA<br>TXA<br>PHA<br>LDY  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FAA2:<br>FAA2:<br>FAA2:<br>FAA2:<br>FAA3:<br>FAA2:<br>FAA4:<br>FAA7:<br>FAA3:<br>FAA2:<br>FAA4:<br>FAA5:<br>FAA5:<br>FAB1:<br>FAB4:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAC1:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3:<br>FAC3: | 20<br>68<br>85<br>200<br>20<br>4C<br>85<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>85<br>68<br>85<br>20<br>84<br>18<br>90<br>18<br>20<br>84<br>84<br>85<br>20<br>20<br>4C<br>84<br>18<br>90<br>18<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56<br>3B<br>14<br>54   | FF<br>F8<br>FA<br>FF<br>F9             | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>LDA<br>JSR<br>STY<br>CLC<br>CLC<br>CLC<br>JSR<br>TAX<br>TYA<br>PHA<br>LDY<br>CLC   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA99:<br>FA94:<br>FA96:<br>FAA2:<br>FAA2:<br>FAA5:<br>FAA6:<br>FAA7:<br>FAA6:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA8:<br>FAA8:<br>FAB1:<br>FAB1:<br>FAB9:<br>FAB9:<br>FAB9:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2:<br>FAB2: | 20<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>20<br>84<br>18<br>90<br>84<br>18<br>90<br>84<br>20<br>AA<br>98<br>84<br>85<br>20<br>84<br>18<br>90<br>84<br>18<br>90<br>84<br>85<br>20<br>84<br>85<br>20<br>84<br>85<br>85<br>20<br>20<br>84<br>85<br>85<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>53B<br>14<br>54<br>02<br>3A  | FF<br>F8<br>FA<br>FF<br>F9             | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>LDA<br>JSR<br>STY<br>CLC<br>CLC<br>JSR<br>TAX<br>TYA<br>PHA<br>TXA<br>PHA<br>LDY<br>CLC<br>LDA  | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE                    |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA45:<br>FA45:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FA47:<br>FA47:<br>FA47:<br>FA47:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA481:<br>FA4   | 20<br>68<br>85<br>20<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>90<br>84<br>18<br>90<br>84<br>85<br>20<br>84<br>85<br>20<br>84<br>18<br>90<br>84<br>85<br>20<br>84<br>18<br>90<br>84<br>85<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>53B<br>14<br>54<br>02<br>3A  | FF<br>F8<br>FA<br>FF<br>F9             | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR   | PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>DLA<br>STA<br>STA<br>CLC<br>CLC<br>JSR<br>CLC<br>CLC<br>JSR<br>TXA<br>PHA<br>TXA<br>PHA<br>LDY<br>CLC<br>CLC<br>JSR<br>TYA   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE  |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA92:<br>FA97:<br>FAA2:<br>FAA2:<br>FAA5:<br>FAA5:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAA7:<br>FAB4:<br>FAB4:<br>FAB4:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAB5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5:<br>FAC5: | 20<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>18<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>20<br>20<br>4C<br>18<br>85<br>84<br>85<br>84<br>84<br>82<br>0<br>84<br>84<br>83<br>84<br>84<br>85<br>84<br>85<br>84<br>85<br>84<br>85<br>84<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85   | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56<br>3B<br>14<br>54<br>02<br>3A   | FF<br>F8<br>FA<br>FF<br>F9             | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR   | PLP<br>JSR<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>STY<br>CLC<br>STA<br>JSR<br>STY<br>CLC<br>BCC<br>CLC<br>JSR<br>TAX<br>PLA<br>LDA<br>JSR<br>CLC<br>LDA<br>TXA<br>PHA<br>LDY<br>CLC<br>ZDA<br>TAX<br>PHA   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2<br>#\$02<br>(PCL),Y   | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE                    |
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| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA25:<br>FAA5:<br>FAA6:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA7:<br>FAB1:<br>FAB4:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAC1:<br>FAC2:<br>FAC2:<br>FAC2:<br>FAC3:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9: | 20<br>68<br>85<br>68<br>20<br>20<br>4C<br>18<br>85<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>20<br>84<br>18<br>20<br>84<br>18<br>20<br>84<br>85<br>85<br>85<br>85<br>88<br>5<br>88<br>5<br>88<br>5<br>88<br>5<br>88  | 4C<br>3A<br>3B<br>2DA<br>65<br>48<br>3A<br>3B<br>2F6<br>3B<br>14<br>54<br>02<br>3A<br>3B<br>3A<br>3B<br>54<br>54                             | FF<br>F8<br>FA<br>FF<br>F9<br>F9       | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR<br>XJSR                                       | PLP<br>JSR<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>DLA<br>STA<br>STA<br>DLA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2<br>#\$02<br>(PCL),Y<br>(PCL),Y<br>PCH<br>LCD,Y<br>PCH                                 | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE  |
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PLP<br>JSR<br>PLA<br>STA<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>DEX<br>CLC<br>CLC<br>CLC<br>CLC<br>CLC<br>CLC<br>JSR<br>TXA<br>PHA<br>TXA<br>PHA<br>TXA<br>PHA<br>CLC<br>STX<br>STA<br>PLA<br>STY<br>CLC<br>CLC<br>STA<br>STY<br>CLC<br>STA<br>STY<br>DA<br>STY<br>CLC<br>STA<br>STY<br>DA<br>STY<br>DA<br>STY<br>DA<br>STY<br>DA<br>STA<br>STA<br>PLA<br>STA<br>STA<br>STA<br>PLA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>PLA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2<br>#\$02<br>(PCL),Y<br>(PCL),Y<br>PCH<br>PCL<br>XJMP<br>RTNH<br>RTNL                  | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE<br>LOAD PC FOR JMP,<br>(JMP) SIMULATE. |
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REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE<br>LOAD PC FOR JMP,<br>(JMP) SIMULATE. |
| FA92:<br>FA93:<br>FA96:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA97:<br>FA45:<br>FAA5:<br>FAA6:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAA7:<br>FAA9:<br>FAB1:<br>FAB4:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAB7:<br>FAC1:<br>FAC2:<br>FAC2:<br>FAC7:<br>FAC3:<br>FAC7:<br>FAC8:<br>FAC7:<br>FAC8:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9:<br>FAC9: | 20<br>68<br>85<br>68<br>20<br>20<br>4C<br>18<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>20<br>84<br>18<br>90<br>84<br>18<br>90<br>84<br>820<br>AA<br>98<br>84<br>8A<br>84<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>68<br>85<br>84<br>18<br>90<br>84<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>84<br>85<br>85<br>85<br>85<br>84<br>85<br>85<br>85<br>84<br>85<br>85<br>85<br>85<br>84<br>85<br>85<br>85<br>85<br>85<br>84<br>85<br>85<br>88<br>85<br>85<br>88<br>85<br>88<br>80<br>88<br>85<br>80<br>88<br>80<br>88<br>80<br>88<br>80<br>80<br>88<br>80<br>80<br>80<br>80 | 4C<br>3A<br>3B<br>82<br>DA<br>65<br>48<br>3A<br>3B<br>2F<br>56<br>3B<br>14<br>54<br>02<br>3A<br>3B<br>3A<br>3B<br>3A<br>3B<br>2C<br>8E<br>45 | FF<br>F8<br>FA<br>FF<br>F9<br>F9<br>F9 | XBRK<br>XRTI<br>XRTS<br>PCINC2<br>PCINC3<br>XJSR<br>XJSR<br>XJMPAT<br>NEWPCL<br>RTNJMP         | PLP<br>JSR<br>PLA<br>STA<br>JSR<br>JSR<br>JSR<br>JSR<br>JMP<br>CLC<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>PLA<br>STA<br>DLA<br>JSR<br>CLC<br>CLC<br>JSR<br>TAX<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>PLA<br>STA<br>DLA<br>DLA<br>PLA<br>STA<br>DLA<br>DLA<br>DLA<br>DLA<br>DLA<br>DLA<br>DLA<br>DLA<br>DLA<br>DL   | SAV1<br>PCL<br>PCH<br>INSDS1<br>RGDSP1<br>MON<br>STATUS<br>PCL<br>PCH<br>LENGTH<br>PCADJ3<br>PCH<br>NEWPCL<br>PCADJ2<br>#\$02<br>(PCL),Y<br>(PCL),Y<br>PCH<br>XJMP<br>RTNH<br>RTNL<br>CROUT<br>#ACC<br>A3L | SAVE REG'S ON BREAK<br>INCLUDING PC<br>PRINT USER PC.<br>AND REG'S<br>GO TO MONITOR<br>SIMULATE RTI BY EXPECTING<br>STATUS FROM STACK, THEN RTS<br>RTS SIMULATION<br>EXTRACT PC FROM STACK<br>AND UPDATE PC BY 1 (LEN=0)<br>UPDATE PC BY LEN<br>UPDATE PC AND PUSH<br>ONTO STACH FOR<br>JSR SIMULATE<br>LOAD PC FOR JMP,<br>(JMP) SIMULATE. |

| FADE:  | Α9  | 00   |                                  |  |  | #ACC/256   |  |
|--|---|--|----------------------------------|--|--|--|--|
| FAE0:  | 85  | 41   |                                  |  | STA<br>LDX   | A3H  |  |
| FAE2:  | A2  | FB   |                                  |  | LDX  | #\$FB  |  |
| FAE4:  | A9  | A0   |                                  | RDSP1  | LDA  | #\$A0  |  |
| FAE6:  | 20  | ED   | FD                               |  | JSR  | COUT   |  |
| FAE9:  |   |  |                                  |  |  | RTBL-\$FB,X  |  |
|  |   |  |                                  |  |  |  |  |
| FAEC:  |   |  |                                  |  | JSR  |  |  |
| FAEF:  |   |  |                                  |  | LDA  |  |  |
| FAF1:  |   |  |                                  |  | JSR  |  |  |
| FAF4:  | B5  | 4A   |                                  |  | LDA  | ACC+5,X  |  |
| FAF6:  | 20  | DA   | FD                               |  | JSR  | PRBYTE   |  |
| FAF9:  | E8  |  |                                  |  | INX  |  |  |
| FAFA:  |   |  |                                  |  | BMI  | RDSP1  |  |
| FAFC:  |   |  |                                  |  | RTS  | REDITI   |  |
| FAFC:  | 60  |  |                                  |  | RIS  |  |  |
| FAFD:  | 18  |  |                                  | BRANCH   | СГС  |  | BRANCH TAKEN,  |
| FAFE:  | A0  | 01   |                                  |  | LDY  | #\$01  | ADD LEN+2 TO PC  |
| FB00:  | Β1  | ЗA   |                                  |  | LDA  | (PCL),Y<br>PCADJ3  |  |
| FB02:  | 20  | 56   | F9                               |  | JSR  | PCADJ3   |  |
| FB05:  | 85  | 3A   |                                  |  | STA  | PCL  |  |
| FB07:  |   |  |                                  |  | TYA  |  |  |
| FB08:  |   |  |                                  |  | SEC  |  |  |
|  |   |  |                                  |  |  | DOTNOO   |  |
| FB09:  | <u>Б</u> О  | AZ   |                                  | NBRNCH   | BCS<br>TOD   | PCINCZ   |  |
| LROB:  | 20  | 4A   | F.F.                             | NBRNCH   | JSR  | SAVE   | NORMAL RETURN AFTER  |
| FB0E:  |   |  |                                  |  | SEC  |  | XEQ USER OF  |
| FB0F:  | В0  | 9E   |                                  |  | BCS  | PCINC3   | GO UPDATE PC   |
| FB11:  | ΕA  |  |                                  | INITBL   | NOP  |  |  |
| FB12:  | ΕA  |  |                                  |  | NOD  |  | DUMMY FILL FOR   |
| FB13:  |   |  | FB                               |  | TMP  | NBRNCH   | XEQ AREA   |
| FB15:  |   |  |                                  |  |  | BRANCH   |  |
| FB16:  | 4U  | rυ   | гА                               | DUDI   | UMP  |  |  |
| FB19:  | C1  |  |                                  | RTBL   | DFB  | ŞC1  |  |
| FB1A:  | D8  |  |                                  |  |  | \$D8   |  |
| FB1B:  | D9  |  |                                  |  | DFB  | \$D9   |  |
| FB1C:  | D0  |  |                                  |  | DFB<br>DFB   | \$D0   |  |
| FB1D:  | D3  |  |                                  |  |  |  |  |
| FB1E.  |   | 70   | CO                               | PREAD  |  | PTRIC  | TRIGGER PADDLES  |
| ED11.  | 7.0   | 00   | 00                               | I ICLI ID  | TDV  | #\$00  | TRIGGER PADDLES<br>INIT COUNT  |
| FDZI:  | AU  | 00   |                                  |  | LDI  | #\$00  | INII COUNI   |
| FD25:  | БА  |  |                                  |  | NOP  |  | COMPENSATE FOR 1ST COUNT   |
| FB24:  |   |  |                                  |  | NOP  |  |  |
| FB25:  | BD  | 64   | C0                               | PREAD2   | LDA  | PADDL0,X   | COUNT Y-REG EVERY<br>12 USEC   |
| FB28:  | 10  | 04   |                                  |  | BPL  | RTS2D  | 12 USEC  |
| FB2A:  |   |  |                                  |  | INY  |  |  |
| FB2B:  |   |  |                                  |  |  | PREAD2   | EXIT AT 255 MAX  |
| FB2D:  |   |  |                                  |  | DEY  | 1 KD/ID2   | DATI III 200 IIIM  |
| FBZD:  |   |  |                                  |  | DEI  |  |  |
|  |   |  |                                  |  | -  |  |  |
| FB2E:  | 60  |  |                                  |  | RTS  |  |  |
| FB2E:<br>FB2F:   | 60<br>A9  | 00   |                                  | INIT   | LDA  | #\$00  | CLR STATUS FOR DEBUG   |
| FB2E:<br>FB2F:<br>FB31:  | A9  | 00   |                                  | INIT   | LDA  | #\$00<br>STATUS  | CLR STATUS FOR DEBUG<br>SOFTWARE   |
| FB2F:  | A9<br>85  | 00<br>48   |                                  | INIT   | LDA<br>STA   | STATUS   | SOFTWARE   |
| FB2F:<br>FB31:<br>FB33:  | A9<br>85<br>AD  | 00<br>48<br>56   | CO                               | INIT   | LDA<br>STA   | STATUS   | SOFTWARE   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:   | A9<br>85<br>AD<br>AD  | 00<br>48<br>56<br>54   | C0<br>C0                         | INIT   | LDA<br>STA<br>LDA<br>LDA   | STATUS<br>LORES<br>LOWSCR  | SOFTWARE<br>INIT VIDEO MODE  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:   | A9<br>85<br>AD<br>AD  | 00<br>48<br>56<br>54   | C0<br>C0                         | INIT   | LDA<br>STA<br>LDA<br>LDA   | STATUS<br>LORES<br>LOWSCR  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:   | A9<br>85<br>AD<br>AD<br>AD<br>A9  | 00<br>48<br>56<br>54<br>51<br>00   | C0<br>C0<br>C0                   | INIT<br>SETTXT   | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00   | SOFTWARE<br>INIT VIDEO MODE  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3C:  | A9<br>85<br>AD<br>AD<br>AD<br>A9<br>F0  | 00<br>48<br>56<br>54<br>51<br>00<br>0B   | C0<br>C0<br>C0                   | INIT<br>SETTXT   | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>BEQ  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:   | A9<br>85<br>AD<br>AD<br>AD<br>F0<br>AD  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50   | C0<br>C0<br>C0<br>C0             | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:   | A9<br>85<br>AD<br>AD<br>AD<br>F0<br>AD  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50   | C0<br>C0<br>C0<br>C0             | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:   | A9<br>85<br>AD<br>AD<br>AD<br>A9<br>F0<br>AD<br>AD  | 00<br>48<br>56<br>51<br>00<br>0B<br>50<br>53   | C0<br>C0<br>C0<br>C0             | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:<br>FB43:  | A9<br>85<br>AD<br>AD<br>A9<br>F0<br>AD<br>AD<br>20  | 00<br>48<br>56<br>51<br>00<br>0B<br>50<br>53<br>36   | C0<br>C0<br>C0<br>C0             | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:<br>FB43:<br>FB46:<br>FB49:  | A9<br>85<br>AD<br>AD<br>AD<br>F0<br>AD<br>AD<br>20<br>A9  | 00<br>48<br>56<br>51<br>00<br>0B<br>50<br>53<br>36<br>14   | C0<br>C0<br>C0<br>C0<br>C0<br>F8 | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:<br>FB43:<br>FB46:<br>FB49:<br>FB4B:   | A9<br>85<br>AD<br>AD<br>A0<br>F0<br>AD<br>20<br>A9<br>85  | 00<br>48<br>56<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA<br>STA  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:<br>FB43:<br>FB44:<br>FB49:<br>FB4B:<br>FB4D:  | A9<br>85<br>AD<br>AD<br>A0<br>F0<br>AD<br>AD<br>20<br>A9<br>85<br>A9  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22<br>00   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$00   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB37:<br>FB32:<br>FB40:<br>FB40:<br>FB440:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB45:  | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22<br>00<br>20   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>STA<br>LDA<br>STA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$00<br>WNDLFT   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB3C:<br>FB3E:<br>FB40:<br>FB40:<br>FB46:<br>FB49:<br>FB49:<br>FB4B:<br>FB4D:<br>FB45:<br>FB45:   | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>28   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$00<br>WNDLFT<br>#\$28  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB37:<br>FB36:<br>FB37:<br>FB40:<br>FB47:<br>FB49:<br>FB47:<br>FB45:<br>FB45:<br>FB53:   | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>28<br>21   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$00<br>WNDLFT<br>#\$28<br>WNDWDTH  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB39:<br>FB40:<br>FB40:<br>FB46:<br>FB49:<br>FB449:<br>FB449:<br>FB447:<br>FB47:<br>FB51:<br>FB53:  | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>28<br>21<br>18   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$28<br>WNDLFT<br>#\$28<br>WNDWDTH<br>#\$18   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB37:<br>FB36:<br>FB37:<br>FB40:<br>FB47:<br>FB49:<br>FB47:<br>FB45:<br>FB45:<br>FB53:   | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>28<br>21<br>18   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$00<br>WNDLFT<br>#\$28<br>WNDWDTH  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB39:<br>FB40:<br>FB40:<br>FB46:<br>FB49:<br>FB449:<br>FB449:<br>FB447:<br>FB47:<br>FB51:<br>FB53:  | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>53<br>36<br>14<br>22<br>00<br>20<br>20<br>28<br>21<br>18<br>23   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>STA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$28<br>WNDLFT<br>#\$28<br>WNDWDTH<br>#\$18   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB37:<br>FB40:<br>FB47:<br>FB47:<br>FB47:<br>FB47:<br>FB47:<br>FB51:<br>FB55:<br>FB55:<br>FB57:<br>FB59:   | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>08<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>20<br>20<br>28<br>21<br>18<br>23<br>17   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$00<br>WNDLFT<br>#\$28<br>WNDWDTH<br>#\$18<br>WNDBTM<br>#\$17  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB30:<br>FB32:<br>FB40:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB48:<br>FB48:<br>FB51:<br>FB55:<br>FB55:<br>FB55:<br>FB59:  | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>08<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>20<br>20<br>28<br>21<br>18<br>23<br>17<br>25   | C0<br>C0<br>C0<br>C0<br>F8       | INIT<br>SETTXT<br>SETGR<br>SETWND                                  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>STA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDLFT<br>#\$28<br>WNDUFT<br>#\$18<br>WNDBTM<br>#\$17<br>CV  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB37:<br>FB36:<br>FB37:<br>FB40:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB47:<br>FB51:<br>FB55:<br>FB55:<br>FB55:<br>FB55:<br>FB55:<br>FB55:<br>FB55:<br>FB55:   | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>21<br>18<br>23<br>17<br>25<br>22   | C0<br>C0<br>C0<br>F8<br>F2       | INIT<br>SETTXT<br>SETGR<br>SETWND                                  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>JMP  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDDTOP<br>#\$00<br>WNDLFT<br>#\$28<br>WNDWDTH<br>#\$18<br>WNDBTM<br>#\$17<br>CV<br>VTAB   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG   |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB36:<br>FB39:<br>FB40:<br>FB40:<br>FB46:<br>FB49:<br>FB47:<br>FB47:<br>FB51:<br>FB57:<br>FB57:<br>FB59:<br>FB59:<br>FB50:<br>FB50:  | <ul> <li>A9</li> <li>85</li> <li>AD</li> <li>AD</li> <li>A0</li> &lt;</ul>  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>53<br>36<br>14<br>22<br>00<br>20<br>20<br>20<br>20<br>20<br>28<br>21<br>18<br>23<br>17<br>25<br>22<br>A4   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT<br>SETTXT<br>SETGR<br>SETWND<br>TABV<br>MULPM                 | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>JMP<br>JSR  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDLFT<br>#\$28<br>WNDUFT<br>#\$18<br>WNDUFT<br>#\$18<br>WNDDETM<br>#\$17<br>CV<br>VTAB<br>MD1  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX  |
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STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$18<br>WNDDFTM<br>#\$18<br>WNDDETM<br>#\$18<br>WNDDETM<br>#\$11<br>WNDTOP<br>#\$10<br>WNDLFT<br>#\$18<br>WNDDETM<br>#\$11<br>WNDTOP<br>#\$10<br>WNDLFT<br>#\$18<br>WNDDETM<br>#\$11<br>WNDTOP<br>#\$10<br>WNDLFT<br>#\$18<br>WNDDETM<br>#\$11<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$18<br>WNDETM<br>#\$18<br>WNDETM<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>WUL4 | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,  |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB36:<br>FB40:<br>FB47:<br>FB47:<br>FB47:<br>FB47:<br>FB51:<br>FB55:<br>FB57:<br>FB57:<br>FB58:<br>FB57:<br>FB58:<br>FB57:<br>FB58:<br>FB57:<br>FB58:<br>FB57:<br>FB58:<br>FB58:<br>FB58:<br>FB58:<br>FB58:<br>FB67:<br>FB67:<br>FB68:<br>FB68:<br>FB68:<br>FB68:<br>FB68:<br>FB66:<br>FB66:   | A9<br>85<br>AD<br>AD<br>A0<br>20<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A0<br>85<br>A0<br>85<br>A0<br>85<br>A0<br>85<br>A0<br>85<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0  | 00<br>48<br>56<br>54<br>51<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | C0<br>C0<br>C0<br>F8<br>F8<br>F8 | INIT<br>SETTXT<br>SETGR<br>SETWND<br>TABV<br>MULPM<br>MUL<br>MUL2  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>BEQ<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDDFT<br>#\$28<br>WNDUFT<br>#\$18<br>WNDBTM<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)                    |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB37:<br>FB40:<br>FB47:<br>FB47:<br>FB47:<br>FB47:<br>FB47:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:  | A9<br>85<br>AD<br>AD<br>AD<br>20<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>40<br>A0<br>A5<br>A9<br>85<br>40<br>A0<br>A5<br>A9<br>85<br>40<br>A0<br>A5<br>A9<br>85<br>75  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>36<br>14<br>22<br>00<br>20<br>28<br>21<br>18<br>23<br>17<br>25<br>222<br>A4<br>10<br>50<br>6<br>FE<br>54<br>56   | C0<br>C0<br>C0<br>F8<br>F8<br>F8 | INIT<br>SETTXT<br>SETGR<br>SETWND<br>TABV<br>MULPM<br>MUL<br>MUL2  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>EQ<br>LDA<br>LDA<br>JDR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LD  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$10<br>WNDUFT<br>#\$18<br>WNDWDTH<br>#\$18<br>WNDBTM<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X<br>AUXL+2,X  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB39:<br>FB39:<br>FB40:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB49:<br>FB55:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:  | A9<br>85<br>AD<br>AD<br>AD<br>20<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>40<br>A0<br>A0<br>A5<br>A9<br>85<br>40<br>A0<br>A5<br>40<br>A5<br>A9<br>85<br>5<br>75<br>5  | 00<br>48<br>56<br>54<br>51<br>00<br>0B<br>50<br>36<br>14<br>22<br>00<br>20<br>28<br>21<br>18<br>23<br>17<br>25<br>222<br>A4<br>10<br>50<br>6<br>FE<br>54<br>56   | C0<br>C0<br>C0<br>F8<br>F8<br>F8 | INIT<br>SETTXT<br>SETGR<br>SETWND<br>TABV<br>MULPM<br>MUL<br>MUL2  | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDDFT<br>#\$28<br>WNDUFT<br>#\$18<br>WNDBTM<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
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 | A9<br>85<br>AD<br>AD<br>AD<br>20<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>40<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0  | $\begin{array}{c} 00\\ 48\\ 56\\ 54\\ 51\\ 00\\ 50\\ 53\\ 36\\ 14\\ 22\\ 00\\ 20\\ 23\\ 17\\ 25\\ 224\\ 10\\ 50\\ 0\\ FE\\ 56\\ 54\\ F7\\ \end{array}$   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT<br>SETTXT<br>SETGR<br>SETWND<br>TABV<br>MULPM<br>MUL<br>MUL2  | 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  | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDLFT<br>#\$28<br>WNDWDTH<br>#\$18<br>WNDBTM<br>#\$18<br>WNDBTM<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X<br>XTNDL+2,X  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
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 | $\begin{array}{c} 00\\ 48\\ 56\\ 54\\ 51\\ 00\\ 50\\ 53\\ 36\\ 14\\ 22\\ 00\\ 20\\ 23\\ 17\\ 25\\ 224\\ 10\\ 50\\ 0\\ FE\\ 56\\ 54\\ F7\\ \end{array}$   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | 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                     | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDUFT<br>#\$18<br>WNDWDTH<br>#\$18<br>WNDWDTH<br>#\$18<br>WNDWDTH<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
| FB2F:<br>FB31:<br>FB33:<br>FB36:<br>FB36:<br>FB37:<br>FB40:<br>FB47:<br>FB47:<br>FB47:<br>FB47:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB57:<br>FB58:<br>FB57:<br>FB66:<br>FB67:<br>FB68:<br>FB67:<br>FB67:<br>FB67:<br>FB67:<br>FB67:<br>FB67:<br>FB67:<br>FB71:<br>FB73:<br>FB74:<br>FB74:<br>FB74:<br>FB74:<br>FB74:<br>FB75:<br>FB79:  | A9<br>85<br>ADD<br>AD2<br>9<br>85<br>A9<br>85<br>A9<br>85<br>40<br>AD2<br>9<br>85<br>A9<br>85<br>40<br>A5<br>40<br>A5<br>40<br>A5<br>40<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>A5<br>50<br>50<br>A5<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50<br>50 | $\begin{array}{c} 00\\ 48\\ 56\\ 54\\ 51\\ 00\\ 50\\ 53\\ 36\\ 14\\ 22\\ 00\\ 20\\ 23\\ 17\\ 25\\ 224\\ 10\\ 50\\ 0\\ FE\\ 56\\ 54\\ F7\\ \end{array}$   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>STA<br>STA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDDTP<br>#\$18<br>WNDWDTH<br>#\$18<br>WNDWDTH<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>MU14<br>#\$FE<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>MUL3<br>#\$03<br>\$76  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
| <pre>FB2F:<br/>FB31:<br/>FB33:<br/>FB36:<br/>FB36:<br/>FB40:<br/>FB40:<br/>FB40:<br/>FB44:<br/>FB41:<br/>FB47:<br/>FB57:<br/>FB57:<br/>FB57:<br/>FB57:<br/>FB57:<br/>FB57:<br/>FB57:<br/>FB58:<br/>FB66:<br/>FB66:<br/>FB67:<br/>FB67:<br/>FB67:<br/>FB67:<br/>FB71:<br/>FB74:<br/>FB74:<br/>FB74:<br/>FB74:<br/>FB74:</pre>   | A9<br>85<br>ADD<br>ADD<br>A0<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A0<br>ADD<br>ADD<br>ADD<br>ADD<br>ADD<br>ADD<br>ADD<br>ADD<br>ADD   | 00<br>48<br>56<br>54<br>50<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | LDA<br>STA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>DA<br>STA<br>STA<br>DA<br>STA<br>STA<br>STA<br>DA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST   | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDLFT<br>#\$28<br>WNDWDTH<br>#\$18<br>WNDWDTH<br>#\$18<br>WNDBTM<br>#\$17<br>CV<br>VTAB<br>MD1<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X<br>AUXL+2,X<br>XTNDL+2,X<br>MUL3<br>#\$03<br>\$76<br>\$50  | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
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     | A9<br>85<br>AD<br>AD<br>A0<br>F0<br>AD<br>20<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A9<br>85<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0  | 00<br>48<br>56<br>54<br>50<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | 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| A9<br>85<br>ADD<br>AD9<br>F0<br>AD0<br>209<br>85<br>985<br>A95<br>A95<br>A95<br>A02<br>A05<br>A02<br>A05<br>A05<br>A05<br>A05<br>A05<br>A05<br>A05<br>A05<br>A05<br>A05   | 00<br>48<br>56<br>51<br>00<br>00<br>53<br>61<br>22<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | 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A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
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| A9<br>85<br>ADD<br>AD<br>209<br>85<br>A9<br>85<br>40<br>209<br>85<br>85<br>85<br>40<br>209<br>85<br>85<br>85<br>20<br>85<br>85<br>20<br>85<br>85<br>85<br>20<br>85<br>85<br>85<br>20<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85  | 00<br>48<br>56<br>51<br>00<br>00<br>53<br>61<br>22<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | 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                            | STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDDETM<br>#\$18<br>WNDBETM<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>WUL3<br>#\$00<br>\$50<br>WNL5   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |
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| A9<br>85<br>ADD<br>AD<br>209<br>85<br>A9<br>85<br>40<br>209<br>85<br>85<br>85<br>40<br>209<br>85<br>85<br>85<br>20<br>85<br>85<br>20<br>85<br>85<br>85<br>20<br>85<br>85<br>85<br>20<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85<br>85  | 00<br>48<br>56<br>51<br>00<br>00<br>53<br>61<br>22<br>00<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | C0<br>C0<br>C0<br>F8<br>FC<br>FB | INIT SETTXT SETGR SETWND TABV MULPM MUL2 MUL3 MUL4                 | 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| STATUS<br>LORES<br>LOWSCR<br>TXTSET<br>#\$00<br>SETWND<br>TXTCLR<br>MIXSET<br>CLRTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDTOP<br>#\$14<br>WNDDETM<br>#\$18<br>WNDBETM<br>#\$10<br>ACL<br>A<br>MUL4<br>#\$FE<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>XTNDL+2,X<br>WUL3<br>#\$00<br>\$50<br>WNL5   | SOFTWARE<br>INIT VIDEO MODE<br>SET FOR TEXT MODE<br>FULL SCREEN WINDOW<br>SET FOR GRAPHICS MODE<br>LOWER 4 LINES AS<br>TEXT WINDOW<br>SET FOR 40 COL WINDOW<br>TOP IN A-REG,<br>BTTM AT LINE 24<br>VTAB TO ROW 23<br>VTABS TO ROW IN A-REG<br>ABS VAL OF AC AUX<br>INDEX FOR 16 BITS<br>ACX * AUX + XTND<br>TO AC, XTND<br>IF NO CARRY,<br>NO PARTIAL PROD.<br>ADD MPLCND (AUX)<br>TO PARTIAL PROD |

| FB81:   | 20   | A4   | FB             | DIVPM  | JSR   | MD1  | ABS VAL OF AC, AUX.<br>INDEX FOR 16 BITS   |
|---|--|--|----------------|--|---|--|--|
| FB84:<br>FB86:  |  |  |                |  | ASL   |  | INDEX FOR 16 BITS  |
| FB86:<br>FB88:  |  |  |                |  |   |  |  |
| FB88:<br>FB8A:  |  |  |                |  | ROL<br>ROL  |  | XTND/AUX   |
| FB8C:   |  |  |                |  |   | XTNDH  | TO AC.   |
| FB8E:   |  |  |                |  | SEC   | ATTADIT  | 10 110.  |
| FB8F:   |  |  |                |  |   | XTNDL  |  |
| FB91:   |  |  |                |  |   |  | MOD TO XTND.   |
| FB93:   |  |  |                |  | TAX   |  |  |
| FB94:   | A5   | 53   |                |  | LDA   | XTNDH  |  |
| FB96:   |  |  |                |  | SBC   |  |  |
| FB98:   |  |  |                |  |   | DIV3   |  |
| FB9A:   | 86   | 52   |                |  | STX   | XTNDL  |  |
| FB9C:   | 85   | 53   |                |  | STA   | XTNDH  |  |
| FB9E:   | E6   | 50   |                |  | INC   | ACL  |  |
| FBA0:   | 88   |  |                | DIV3   | DEY   |  |  |
| FBA1:   | D0   | E3   |                |  | BNE   | DIV2   |  |
| FBA3:   |  |  |                |  | RTS   |  |  |
| FBA4:   |  |  |                | MD1  | LDY   | #\$00  | ABS VAL OF AC, AUX   |
| FBA6:   |  |  |                |  |   | SIGN   | WITH RESULT SIGN   |
| FBA8:   |  |  |                |  |   | #AUXL  | IN LSB OF SIGN.  |
| FBAA:   |  |  |                |  |   | MD3  |  |
| FBAD:   |  |  |                | MDD  | LDX   | #ACL   | V OPECIFICA AC OD AVV  |
| FBAF:   |  |  |                |  |   |  | X SPECIFIES AC OR AUX  |
| FBB1:   |  |  |                |  |   | MDRTS  |  |
| FBB3:   |  |  |                |  | SEC   |  |  |
| FBB4:   |  | 0.0  |                |  | TYA   | TOCO Y   | COMDI ODECIEIED DEC  |
| FBB5:<br>FBB7:  |  |  |                |  |   |  | COMPL SPECIFIED REG<br>IF NEG.   |
| FBB9:   |  |  |                |  | TYA   | LOC0,X   | IF NEG.  |
| FBBA:   |  |  |                |  |   | LOC1,X   |  |
| FBBC:   |  |  |                |  |   | LOC1,X   |  |
| FBBE:   |  |  |                |  | INC   |  |  |
| FBC0:   |  |  |                | MDRTS  | RTS   | 5101   |  |
| FBC1:   |  |  |                | BASCALC  |   |  | CALC BASE ADR IN BASL,H  |
| FBC2:   |  |  |                |  | LSR   |  | FOR GIVEN LINE NO  |
| FBC3:   |  |  |                |  |   | #\$03  | 0<=LINE NO.<=\$17  |
| FBC5:   |  |  |                |  |   |  | ARG=000ABCDE, GENERATE   |
| FBC7:   |  |  |                |  |   | BASH   | BASH=000001CD  |
| FBC9:   | 68   |  |                |  | PLA   |  | AND  |
| FBCA:   |  |  |                |  |   | #\$18  | BASL=EABAB000  |
| FBCC:   | 90   | 02   |                |  | BCC   | BSCLC2   |  |
| FBCE:   | 69   | 7F   |                |  | ADC   | #\$7F  |  |
| FBD0:   | 85   | 28   |                | BSCLC2   | STA   | BASL   |  |
| FBD2:   | 0A   |  |                |  | ASL   |  |  |
| FBD3:   | 0A   |  |                |  | ASL   |  |  |
|   | 05   | 28   |                |  | ORA   | BASL   |  |
| FBD4:   | 0.0  | 20   |                |  |   |  |  |
| FBD4:<br>FBD6:  |  |  |                |  | STA   | BASL   |  |
| FBD6:<br>FBD8:  | 85<br>60   | 28   |                |  | RTS   |  |  |
| FBD6:<br>FBD8:  | 85<br>60   | 28   |                |  | RTS   |  | BELL CHAR? (CNTRL-G)   |
| FBD6:<br>FBD8:<br>FBD9:<br>FBDB:  | 85<br>60<br>C9<br>D0   | 28<br>87<br>12   |                | BELL1  | RTS<br>CMP<br>BNE   | #\$87<br>RTS2B   | NO, RETURN   |
| FBD6:<br>FBD8:<br>FBD9:<br>FBDB:<br>FBDD:   | 85<br>60<br>C9<br>D0<br>A9   | 28<br>87<br>12<br>40   |                | BELL1  | RTS<br>CMP<br>BNE<br>LDA  | #\$87<br>RTS2B<br>#\$40  | BELL CHAR? (CNTRL-G)<br>NO, RETURN<br>DELAY .01 SECONDS  |
| FBD6:<br>FBD8:<br>FBD9:<br>FBDB:<br>FBDD:<br>FBDF:  | 85<br>60<br>C9<br>D0<br>A9<br>20   | 28<br>87<br>12<br>40<br>A8   | FC             | BELL1  | RTS<br>CMP<br>BNE<br>LDA<br>JSR   | #\$87<br>RTS2B<br>#\$40<br>WAIT  |  |
| FBD6:<br>FBD8:<br>FBD9:<br>FBDB:<br>FBDD:<br>FBDF:<br>FBE2:   | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0   | FC             | BELL1  | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0   | DELAY .01 SECONDS  |
| FBD6:<br>FBD8:<br>FBD9:<br>FBDB:<br>FBDD:<br>FBDF:<br>FBE2:<br>FBE4:  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A9   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C   | FC             | BELL1  | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT   |
| FBD6:<br>FBD9:<br>FBD9:<br>FBDD:<br>FBDF:<br>FBE2:<br>FBE4:<br>FBE6:  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A9<br>20   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8   | FC<br>FC       | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT  | DELAY .01 SECONDS  |
| FBD6:<br>FBD8:<br>FBD9:<br>FBDB:<br>FBDD:<br>FBDF:<br>FBE2:<br>FBE4:<br>FBE6:<br>FBE9:  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A9<br>20<br>AD   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8   | FC<br>FC       | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBDB :<br>FBD7 :<br>FBD7 :<br>FBE2 :<br>FBE4 :<br>FBE6 :<br>FBE9 :<br>FBEC :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A9<br>20<br>AD<br>88   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30   | FC<br>FC<br>C0 | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$CO<br>#\$OC<br>WAIT<br>SPKR  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD7 :<br>FBD7 :<br>FBE2 :<br>FBE4 :<br>FBE6 :<br>FBE9 :<br>FBEC :<br>FBED :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A9<br>20<br>AD<br>88<br>D0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5   | FC<br>FC<br>C0 | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD7 :<br>FBD7 :<br>FBE2 :<br>FBE4 :<br>FBE9 :<br>FBE2 :<br>FBE2 :<br>FBE2 :<br>FBE5 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>AD<br>88<br>D0<br>60   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5   | FC<br>FC<br>C0 | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD7 :<br>FBD7 :<br>FBE2 :<br>FBE4 :<br>FBE6 :<br>FBE9 :<br>FBEC :<br>FBED :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>60<br>A4   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24   | FC<br>FC<br>C0 | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD7 :<br>FBD7 :<br>FBD7 :<br>FBE2 :<br>FBE2 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBE7 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>88<br>D0<br>60<br>A4<br>91   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28   | FC<br>FC<br>C0 | BELL1<br>BELL2<br>RTS2B<br>STOADV                                    | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD7 :<br>FBD7 :<br>FBD7 :<br>FBE2 :<br>FBE2 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBE7 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>88<br>D0<br>60<br>A4<br>91<br>E6   | 28<br>87<br>12<br>40<br>00<br>00<br>A8<br>30<br>F5<br>24<br>28<br>24   | FC<br>FC<br>C0 | BELL1<br>BELL2   | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE   |
| FBD6:<br>FBD8:<br>FBD9:<br>FBD5:<br>FBD5:<br>FBD7:<br>FBD7:<br>FBE2:<br>FBE4:<br>FBE6:<br>FBE7:<br>FBE7:<br>FBE7:<br>FBE7:<br>FBE7:<br>FBE7:  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>00<br>00<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24   | FC<br>FC<br>C0 | BELL1<br>BELL2<br>RTS2B<br>STOADV                                    | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDA  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)   |
| FBD6 :<br>FBD9 :<br>FBD9 :<br>FBD5 :<br>FBD7 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF7 :<br>FBF6 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>60<br>A1<br>60<br>A4<br>91<br>E6<br>A5<br>C5   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24<br>21   | FC<br>FC<br>C0 | BELL1<br>BELL2<br>RTS2B<br>STOADV                                    | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDA  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX   |
| FBD6 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF6 :<br>FBF8 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24<br>21<br>66   | FC<br>FC<br>C0 | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3                 | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDY<br>CMP<br>BCS<br>RTS   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?   |
| FBD6 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF6 :<br>FBF8 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24<br>21<br>66   | FC<br>FC<br>C0 | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3                 | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDY<br>CMP<br>BCS<br>RTS   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE  |
| FBD6 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF6 :<br>FBF8 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :<br>FBF6 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>88<br>D0<br>60<br>A4<br>91<br>E6<br>A5<br>C5<br>B0<br>60<br>C9   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>24<br>24<br>24<br>21<br>66<br>A0   | FC<br>CO       | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE                         | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBFF :<br>FBFF :<br>FBFF :<br>FBFF :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>OC<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>21<br>66<br>A0<br>EF   | FC<br>CO       | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3                 | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDA<br>INC<br>LDA<br>CMP<br>BCS<br>CMP<br>BCS<br>TAY   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD8 :<br>FBD7 :<br>FBD7 :<br>FBE4 :<br>FBE6 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC02 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24<br>21<br>66<br>A0<br>EF<br>EC   | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>TAY<br>BPL  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>STOADV   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD0 :<br>FBE2 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC02 :<br>FC04 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24<br>24<br>21<br>66<br>A0<br>EF<br>EC<br>8D   | FC<br>CO       | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>LDY<br>STA<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>(BASL),Y<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD7 :<br>FBD7 :<br>FBD7 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBF4 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC01 :<br>FC04 :<br>FC06 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>24<br>24<br>24<br>24<br>24<br>26<br>66<br>A0<br>EF<br>EC<br>8D<br>5A   | FC<br>CO       | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP<br>BEQ  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>STOADV<br>#\$8D<br>CR  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO,RETURN<br>CONTROL CHAR?<br>NO,OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?<br>YES.   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE4 :<br>FBE7 :<br>FBE7 :<br>FBF4 :<br>FBF4 :<br>FBF4 :<br>FBF4 :<br>FBF5 :<br>FBF5 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC04 :<br>FC08 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>24<br>21<br>66<br>A0<br>EF<br>EC<br>8D<br>5A<br>8A   | FC<br>CO       | BELL1<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>DEY<br>BNE<br>RTS<br>LDY<br>STA<br>INC<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP<br>BEQ<br>CMP  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>CH<br>STOADV<br>#\$80<br>CR<br>#\$80<br>CR<br>#\$88  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO,RETURN<br>CONTROL CHAR?<br>NO,OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?<br>YES.<br>LINE FEED?   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF4 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC04 :<br>FC08 :<br>FC08 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>24<br>24<br>24<br>26<br>66<br>A0<br>EF<br>EC<br>8D<br>5A<br>8A<br>5A   | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDA<br>INC<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>CMP<br>BCS<br>BPL<br>CMP<br>BCP<br>BEQ   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$8A<br>LF   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF4 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC02 :<br>FC04 :<br>FC08 :<br>FC08 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>88<br>D0<br>60<br>44<br>91<br>E65<br>C5<br>B0<br>60<br>C9<br>B0<br>A8<br>10<br>9<br>F0<br>C9<br>F0<br>C9   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>28<br>24<br>24<br>21<br>66<br>A0<br>EF<br>EC<br>8D<br>5A<br>88<br>88   | FC             | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>CMP<br>BCS<br>CMP<br>BCS<br>CMP<br>BEQ<br>CMP  | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$8A<br>LF<br>#\$88  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)   |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD8 :<br>FBD7 :<br>FBD7 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF6 :<br>FBF7 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC02 :<br>FC03 :<br>FC03 :<br>FC03 :<br>FC03 :<br>FC04 :  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>88<br>D0<br>60<br>44<br>91<br>E65<br>C5<br>B0<br>60<br>C9<br>B0<br>A8<br>10<br>C9<br>E0<br>C9<br>D0<br>C9<br>D0<br>C9<br>D0<br>C9<br>D0<br>A0<br>20<br>A0<br>C9<br>A0<br>A0<br>C9<br>C0<br>A0<br>C9<br>C0<br>A0<br>C9<br>C0<br>A0<br>C9<br>C0<br>A0<br>C0<br>C9<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0  | 28<br>87<br>12<br>40<br>A8<br>COC<br>A8<br>30<br>F5<br>24<br>24<br>24<br>24<br>24<br>21<br>66<br>A0<br>EF<br>EC<br>8D<br>5A<br>88<br>C9  | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>RTS<br>BPL<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP<br>BNE   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>(BASL),Y<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$8A<br>LF<br>#\$88<br>BELL1  | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)<br>NO, CHECK FOR BELL.  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD1 :<br>FBD2 :<br>FBE4 :<br>FBE4 :<br>FBE6 :<br>FBE7 :<br>FBE7 :<br>FBF4 :<br>FBF6 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC01 :<br>FC03 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC04 :<br>FC05 :<br>FC  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>C<br>A8<br>30<br>F5<br>24<br>24<br>24<br>21<br>66<br>A0<br>EF<br>EC<br>8D<br>5A<br>88<br>C9<br>24  | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BDE<br>RTS<br>LDY<br>STA<br>LDA<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP<br>BCS<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$8A<br>LF<br>#\$88<br>BELL1<br>CH   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO,RETURN<br>CONTROL CHAR?<br>NO,OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)<br>NO, CHECK FOR BELL.<br>DECREMENT CURSOR H INDEX  |
| FBD6 :<br>FBD8 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD9 :<br>FBD7 :<br>FBE4 :<br>FBE4 :<br>FBE7 :<br>FBE7 :<br>FBF4 :<br>FBF4 :<br>FBF4 :<br>FBF7 :<br>FBF7 :<br>FBF7 :<br>FC01 :<br>FC02 :<br>FC03 :<br>FC03 :<br>FC03 :<br>FC03 :<br>FC04 :<br>FC05 :<br>FC5                                       | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>87<br>60<br>00<br>83<br>00<br>83<br>00<br>83<br>24<br>24<br>24<br>24<br>24<br>24<br>24<br>24<br>24<br>24<br>24<br>24<br>80<br>5A<br>80<br>5A<br>80<br>5A<br>80<br>5A<br>80<br>5A<br>80<br>5A<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80                   | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT       | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BDE<br>RTS<br>LDY<br>STA<br>STA<br>CMP<br>BCS<br>TAY<br>BCS<br>CMP<br>BCS<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP<br>BEQ<br>CMP   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$8A<br>LF<br>#\$88<br>BELL1<br>CH<br>RTS3   | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)<br>NO, CHECK FOR BELL.<br>DECREMENT CURSOR H INDEX<br>IF POS, OK. ELSE MOVE UP  |
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| FBD6:<br>FBD8:<br>FBD9:<br>FBD9:<br>FBD7:<br>FBD7:<br>FBE4:<br>FBE4:<br>FBE6:<br>FBE7:<br>FBE7:<br>FBF6:<br>FBF7:<br>FBF7:<br>FBF7:<br>FBF7:<br>FC01:<br>FC02:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04: | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0   | 28<br>87<br>12<br>40<br>87<br>60<br>830<br>75<br>24<br>28<br>24<br>21<br>66<br>80<br>87<br>80<br>87<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80  | FC<br>C0       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT<br>BS | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDA<br>INC<br>LDA<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP<br>BCS<br>CMP<br>BCS<br>CMP<br>BCS<br>TAY<br>BPL<br>CMP<br>BCS<br>STA   | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>CH<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$80<br>STOADV<br>#\$8D<br>CR<br>#\$88<br>BELL1<br>CH<br>RTS3<br>WNDWDTH<br>CH                 | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)<br>NO, CHECK FOR BELL.<br>DECREMENT CURSOR H INDEX<br>IF POS, OK. ELSE MOVE UP<br>SET CH TO WNDWDTH-1   |
| FBD6:<br>FBD8:<br>FBD9:<br>FBD9:<br>FBD9:<br>FBD9:<br>FBD9:<br>FBD9:<br>FBD9:<br>FBE4:<br>FBE6:<br>FBE7:<br>FBE7:<br>FBF4:<br>FBF6:<br>FBF7:<br>FBF7:<br>FC01:<br>FC04:<br>FC06:<br>FC08:<br>FC08:<br>FC12:<br>FC14:<br>FC16:<br>FC18:  | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>60<br>A1<br>20<br>A0<br>A0<br>60<br>A1<br>60<br>C9<br>B0<br>A0<br>C9<br>B0<br>A0<br>C9<br>C9<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0   | 28<br>87<br>12<br>40<br>A8<br>C0<br>0C<br>A8<br>30<br>F5<br>24<br>24<br>22<br>4<br>21<br>66<br>A0<br>FF<br>EC<br>8D<br>5A<br>88<br>C9<br>24<br>E8<br>24<br>22<br>4<br>22<br>4<br>22<br>4<br>22<br>4<br>22<br>4<br>22<br>4  | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT<br>BS | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>LDA<br>INC<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>CMP<br>BCS<br>CMP<br>BPL<br>CMP<br>BPL<br>CMP<br>BEQ<br>CMP<br>BDE<br>CMP<br>BDE<br>CMP<br>BDE<br>CMP<br>BDE<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>(CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$A0<br>STOADV<br>#\$8D<br>CR<br>#\$8A<br>LF<br>#\$88<br>BELL1<br>CH<br>RTS3<br>WNDWDTH<br>CH<br>CH | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES, OUTPUT IT.<br>CR?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)<br>NO, CHECK FOR BELL.<br>DECREMENT CURSOR H INDEX<br>IF POS, OK. ELSE MOVE UP<br>SET CH TO WNDWDTH-1<br>(RIGHTMOST SCREEN POS) |
| FBD6:<br>FBD8:<br>FBD9:<br>FBD9:<br>FBD7:<br>FBD7:<br>FBE4:<br>FBE4:<br>FBE6:<br>FBE7:<br>FBE7:<br>FBF6:<br>FBF7:<br>FBF7:<br>FBF7:<br>FBF7:<br>FC01:<br>FC02:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04:<br>FC04: | 85<br>60<br>C9<br>D0<br>A9<br>20<br>A0<br>A0<br>20<br>A0<br>40<br>60<br>40<br>50<br>60<br>40<br>50<br>60<br>C9<br>B0<br>80<br>C9<br>B0<br>80<br>C9<br>B0<br>80<br>C9<br>B0<br>80<br>C9<br>C9<br>C9<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A0<br>A9<br>20<br>A0<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A9<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0<br>A0 | 28<br>87<br>12<br>40<br>87<br>20<br>67<br>87<br>24<br>28<br>24<br>21<br>66<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>57<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80<br>80 | FC<br>CO       | BELL2<br>BELL2<br>RTS2B<br>STOADV<br>ADVANCE<br>RTS3<br>VIDOUT<br>BS | RTS<br>CMP<br>BNE<br>LDA<br>JSR<br>LDY<br>LDA<br>JSR<br>LDY<br>BNE<br>RTS<br>LDY<br>STA<br>LDA<br>INC<br>LDA<br>CMP<br>BCS<br>RTS<br>CMP<br>BCS<br>CMP<br>BCS<br>CMP<br>BPL<br>CMP<br>BPL<br>CMP<br>BEQ<br>CMP<br>BDE<br>CMP<br>BDE<br>CMP<br>BDE<br>CMP<br>BDE<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP<br>CMP | #\$87<br>RTS2B<br>#\$40<br>WAIT<br>#\$C0<br>#\$0C<br>WAIT<br>SPKR<br>BELL2<br>CH<br>(BASL),Y<br>CH<br>(BASL),Y<br>CH<br>WNDWDTH<br>CR<br>#\$A0<br>STOADV<br>#\$80<br>CR<br>#\$80<br>CR<br>#\$88<br>ELL1<br>CH<br>RTS3<br>WNDWDTH<br>CH<br>CH<br>WNDTOP               | DELAY .01 SECONDS<br>TOGGLE SPEAKER AT<br>1 KHZ FOR .1 SEC.<br>CURSOR H INDEX TO Y-REG<br>STORE CHAR IN LINE<br>INCREMENT CURSOR H INDEX<br>(MOVE RIGHT)<br>BEYOND WINDOW WIDTH?<br>YES CR TO NEXT LINE<br>NO, RETURN<br>CONTROL CHAR?<br>NO, OUTPUT IT.<br>INVERSE VIDEO?<br>YES.<br>LINE FEED?<br>IF SO, DO IT.<br>BACK SPACE? (CNTRL-H)<br>NO, CHECK FOR BELL.<br>DECREMENT CURSOR H INDEX<br>IF POS, OK. ELSE MOVE UP<br>SET CH TO WNDWDTH-1   |

| FC1E:<br>FC20:<br>FC22:   |  |  |    |  |  |   |  |
|---|--|--|----|--|--|---|--|
|   |  |  |    |  |  | RTS4  | IF TOP LINE THEN RETURN  |
| FC22:   |  |  |    |  | DEC  |   | DEC CURSOR V-INDEX   |
|   |  |  |    | VTAB   |  |   | GET CURSOR V-INDEX   |
|   |  |  | FB | VTABZ  | JSR  | BASCALC   | GENERATE BASE ADR<br>ADD WINDOW LEFT INDEX   |
| FC27:<br>FC29:  |  |  |    |  |  | BASL  | TO BASL  |
| FC29:<br>FC2B:  |  |  |    | RTS4   | RTS  | DASL  | IO BASL  |
| FC2B:   |  |  |    |  |  | #\$C0   | ESC?   |
| FC2E:   |  |  |    |  |  | HOME  | IF SO, DO HOME AND CLEAR   |
| FC30:   |  |  |    |  | ADC  | #\$FD   | ESC-A OR B CHECK   |
| FC32:   |  |  |    |  | BCC  | ADVANCE   | A, ADVANCE   |
| FC34:   | FO   | DA   |    |  | BEQ  | BS  | B, BACKSPACE   |
| FC36:   | 69   | FD   |    |  | ADC  | #\$FD   | ESC-C OR D CHECK   |
| FC38:   | 90   | 2C   |    |  | BCC  | LF  | C, DOWN  |
| FC3A:   | FO   | DE   |    |  | BEQ  | UP  | D, GO UP   |
| FC3C:   |  |  |    |  |  |   | ESC-E OR F CHECK   |
| FC3E:   |  |  |    |  |  | CLREOL  | E, CLEAR TO END OF LINE  |
| FC40:   |  |  |    |  |  | RTS4  | NOT F, RETURN  |
| FC42:   |  |  |    | CLREOP   |  |   | CURSOR H TO Y INDEX  |
| FC44:   |  |  |    |  | LDA  | CV  | CURSOR V TO A-REGISTER   |
| FC46:   |  |  |    | CLEOP1   | TOD  | VTABZ   | SAVE CURRENT LINE ON STK   |
| FC47:<br>FC4A:  |  |  |    |  |  | CLEOLZ  | CALC BASE ADDRESS<br>CLEAR TO EOL, SET CARRY   |
| FC4A:<br>FC4D:  |  |  | гC |  |  | #\$00   | CLEAR FROM H INDEX=0 FOR REST  |
| FC4D:<br>FC4F:  |  |  |    |  | PLA  | #\$00   | INCREMENT CURRENT LINE   |
| FC50:   |  |  |    |  |  | #\$00   | (CARRY IS SET)   |
| FC52:   |  |  |    |  |  |   | DONE TO BOTTOM OF WINDOW?  |
| FC54:   |  |  |    |  |  | CLEOP1  | NO, KEEP CLEARING LINES  |
| FC56:   |  |  |    |  |  | VTAB  | YES, TAB TO CURRENT LINE   |
| FC58:   |  |  |    | HOME   |  |   | INIT CURSOR V  |
| FC5A:   | 85   | 25   |    |  | STA  | CV  | AND H-INDICES  |
| FC5C:   | A0   | 00   |    |  | LDY  | #\$00   |  |
| FC5E:   | 84   | 24   |    |  | STY  | CH  | THEN CLEAR TO END OF PAGE  |
| FC60:   | FO   | E4   |    |  | BEQ  | CLEOP1  |  |
| FC62:   |  |  |    | CR   |  |   | CURSOR TO LEFT OF INDEX  |
| FC64:   |  |  |    |  |  | CH  | (RET CURSOR H=0)   |
| FC66:   |  |  |    | LF   | INC  |   | INCR CURSOR V(DOWN 1 LINE)   |
| FC68:   |  |  |    |  |  | CV  |  |
| FC6A:   |  |  |    |  |  | WNDBTM  |  |
| FC6C:   |  |  |    |  |  | VTABZ   | NO, SET BASE ADDR  |
| FC6E:   |  |  |    | CCDOLI   | DEC  |   | DECR CURSOR V (BACK TO BOTTOM)<br>START AT TOP OF SCRL WNDW  |
| FC70:<br>FC72:  |  |  |    | SCRULL   | PHA  | WNDIOP  | START AT TOP OF SCRL WNDW  |
| FC72:   |  |  | FC |  |  | VTABZ   | GENERATE BASE ADR  |
| FC76:   |  |  |    | SCRL1  |  | BASL  | COPY BASL,H  |
| FC78:   |  |  |    | Donali   |  | BAS2L   | TO BAS2L,H   |
| FC7A:   |  |  |    |  |  |   |  |
| FC7C:   |  |  |    |  | LDA  | BASH  |  |
|   | 85   | 2B   |    |  | LDA<br>STA   | BASH<br>BAS2H   |  |
| FC7E:   |  |  |    |  | STA  |   | INIT Y TO RIGHTMOST INDEX  |
| FC7E:<br>FC80:  | A4   |  |    |  | STA  | BAS2H   | INIT Y TO RIGHTMOST INDEX<br>OF SCROLLING WINDOW   |
|   | A4<br>88   |  |    |  | STA<br>LDY<br>DEY<br>PLA   | BAS2H<br>WNDWDTH  |  |
| FC80:<br>FC81:<br>FC82:   | A4<br>88<br>68<br>69   | 21<br>01   |    |  | STA<br>LDY<br>DEY<br>PLA<br>ADC  | BAS2H<br>WNDWDTH<br>#\$01   | OF SCROLLING WINDOW  |
| FC80:<br>FC81:<br>FC82:<br>FC84:  | A4<br>88<br>68<br>69<br>C5   | 21<br>01<br>23   |    |  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:   | A4<br>88<br>68<br>69<br>C5<br>B0   | 21<br>01<br>23<br>0D   |    |  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS  | BAS2H<br>WNDWDTH<br>#\$01   | OF SCROLLING WINDOW  |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:  | A4<br>88<br>69<br>C5<br>B0<br>48   | 21<br>01<br>23<br>0D   |    |  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH  |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:   | A4<br>88<br>69<br>C5<br>B0<br>48<br>20   | 21<br>01<br>23<br>0D<br>24   | FC |  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:<br>FC82:  | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1   | 21<br>01<br>23<br>0D<br>24<br>28   | FC | SCRL2  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE  |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:<br>FC8C:<br>FC8E:   | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A   | FC | SCRL2  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE  |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:<br>FC8C:<br>FC8E:<br>FC90:  | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A   | FC | SCRL2  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE  |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:<br>FC8C:<br>FC8E:<br>FC90:<br>FC91:   | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88<br>10   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9   | FC | SCRL2  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:<br>FC8C:<br>FC8E:<br>FC90:<br>FC91:<br>FC93:  | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88<br>10<br>30   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1   | FC | SCRL2  | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>BMI   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT LINE (ALWAYS TAKEN)   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC89:<br>FC8C:<br>FC8E:<br>FC90:<br>FC91:<br>FC93:  | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88<br>10<br>30<br>A0   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00   | FC | SCRL2<br>SCRL3   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>BMI<br>LDY  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC82:<br>FC82:<br>FC90:<br>FC91:<br>FC91:<br>FC95:<br>FC97:<br>FC94:  | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88<br>10<br>30<br>A0<br>20<br>B0   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>86   | FC | SCRL2<br>SCRL3   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>BMI<br>LDY<br>JSR<br>BCS  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT LINE (ALWAYS TAKEN)<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC88:<br>FC82:<br>FC82:<br>FC90:<br>FC91:<br>FC91:<br>FC95:<br>FC97:<br>FC94:  | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88<br>10<br>30<br>A0<br>20<br>B0   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>86   | FC | SCRL2<br>SCRL3   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>BMI<br>LDY<br>JSR<br>BCS  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT LINE (ALWAYS TAKEN)<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC86:<br>FC85:<br>FC85:<br>FC90:<br>FC91:<br>FC91:<br>FC95:<br>FC97:<br>FC92:<br>FC92:   | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>91<br>88<br>10<br>30<br>20<br>B0<br>A0<br>A0<br>A0<br>A0   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>86<br>24<br>A0   | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOLZ   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>BMI<br>LDY<br>JSR<br>BCS<br>LDY<br>LDA  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB<br>CH<br>#\$A0  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT CHAR OF LINE<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET<br>CURSOR H INDEX  |
| FC80:<br>FC81:<br>FC82:<br>FC82:<br>FC86:<br>FC88:<br>FC89:<br>FC80:<br>FC90:<br>FC91:<br>FC91:<br>FC97:<br>FC97:<br>FC92:<br>FC92:<br>FC92:<br>FC94:   | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>30<br>88<br>10<br>30<br>A0<br>20<br>B0<br>A4<br>A9<br>91   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>24<br>A0<br>28   | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOLZ   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>BMI<br>LDY<br>JSR<br>BCS<br>LDY<br>LDA  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB<br>CH<br>#\$A0  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT LINE (ALWAYS TAKEN)<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET   |
| FC80:<br>FC81:<br>FC82:<br>FC84:<br>FC86:<br>FC86:<br>FC85:<br>FC85:<br>FC90:<br>FC91:<br>FC91:<br>FC95:<br>FC97:<br>FC92:<br>FC92:   | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>30<br>88<br>10<br>30<br>A0<br>20<br>B0<br>A4<br>A9<br>91   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>24<br>A0<br>28   | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOLZ<br>CLEOL2   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>LDY<br>LDY<br>LDY<br>LDY<br>STA<br>INY  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB<br>CH<br>#\$40<br>(BASL),Y   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT CHAR OF LINE<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET<br>CURSOR H INDEX  |
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| 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>86<br>24<br>20<br>28<br>21<br>F9<br>01<br>F0<br>F0<br>F0                   | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOLZ<br>CLEOL2<br>CLEOL2<br>WAIT<br>WAIT2<br>WAIT3                   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>LDA<br>STA<br>DEY<br>BPL<br>JSR<br>LDY<br>JSR<br>BMI<br>LDY<br>LDA<br>STA<br>LDY<br>LDA<br>STA<br>INY<br>CPY<br>BCC<br>RTS<br>SEC<br>PHA<br>SBC<br>BNE<br>BNE   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB<br>CH<br>#\$A0<br>(BASL),Y<br>WNDWDTH<br>CLEOL2<br>WNDWDTH<br>CLEOL2   | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT CHAR OF LINE<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET<br>CURSOR H INDEX<br>STORE BLANKS FROM 'HERE'<br>TO END OF LINES (WNDWDTH)   |
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| A4<br>88<br>69<br>C5<br>B0<br>81<br>91<br>88<br>10<br>30<br>20<br>A4<br>91<br>C8<br>91<br>C8<br>91<br>C8<br>91<br>C8<br>91<br>C8<br>91<br>C8<br>91<br>C8<br>20<br>C5<br>D0<br>60<br>50<br>C5<br>D0<br>C5<br>D0<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>D1<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>28<br>24<br>A0<br>28<br>21<br>F9<br>01<br>FC<br>01<br>FC<br>01<br>26<br>42<br>02 | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOL2<br>CLEOL2<br>CLEOL2<br>WAIT<br>WAIT2<br>WAIT3                   | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>STA<br>DEY<br>BPL<br>BMI<br>LDY<br>JSR<br>BCS<br>LDY<br>LDA<br>STA<br>DEY<br>BPL<br>BCS<br>LDY<br>LDA<br>STA<br>SCC<br>RTS<br>SEC<br>PHA<br>SEC<br>RTS<br>SEC<br>PHA<br>SEC<br>RTS<br>SEC<br>PHA<br>INY<br>CPY<br>BDL<br>BNE<br>RTS<br>SEC<br>PHA<br>INY<br>CPY<br>BCS<br>SEC<br>PHA<br>INY<br>CPY<br>BCS<br>SC<br>SEC<br>PHA<br>INY<br>CPY<br>BCS<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>S   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>VTAB<br>CLEOLZ<br>VTAB<br>CH<br>#\$00<br>(BASL),Y<br>WNDWDTH<br>CLEOL2<br>#\$01<br>WAIT3<br>#\$01<br>WAIT3<br>#\$01<br>WAIT3<br>A4L<br>NXTA1<br>A4H                                  | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT CHAR OF LINE<br>NEXT LINE (ALWAYS TAKEN)<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET<br>CURSOR H INDEX<br>STORE BLANKS FROM 'HERE'<br>TO END OF LINES (WNDWDTH)<br>1.0204 USEC<br>(13+27/2*A+5/2*A*A)<br>INCR 2-BYTE A4<br>AND A1 |
| FC80:<br>FC81:<br>FC82:<br>FC82:<br>FC82:<br>FC82:<br>FC82:<br>FC82:<br>FC91:<br>FC91:<br>FC91:<br>FC91:<br>FC92:<br>FC92:<br>FC92:<br>FC92:<br>FC92:<br>FC92:<br>FC42:<br>FC42:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43:<br>FC43: | A4<br>88<br>69<br>C5<br>B0<br>48<br>20<br>B1<br>30<br>A0<br>20<br>BA4<br>A9<br>S1<br>88<br>80<br>C8<br>20<br>BA4<br>A9<br>C8<br>C8<br>C9<br>0<br>60<br>38<br>88<br>C9<br>D<br>C8<br>C9<br>C8<br>C9<br>C8<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9<br>C9   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>624<br>A0<br>28<br>21<br>F9<br>01<br>FC<br>01<br>F6<br>42<br>23<br>3C      | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOL2<br>CLEOL2<br>CLEOL2<br>WAIT<br>WAIT2<br>WAIT3<br>NXTA4<br>NXTA1 | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>STA<br>DEY<br>BPL<br>STA<br>DEY<br>BMI<br>LDY<br>JSR<br>BMI<br>LDY<br>LDA<br>STA<br>INY<br>CPY<br>BCC<br>RTS<br>SEC<br>PHA<br>SEC<br>PHA<br>SEC<br>PHA<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>ENE<br>SEC<br>BNE<br>SEC<br>PHA<br>SEC<br>SEC<br>PHA<br>SEC<br>SEC<br>PHA<br>SEC<br>SEC<br>PHA<br>SEC<br>SEC<br>PHA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST  | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB<br>CH<br>#\$A0<br>(BASL),Y<br>WNDWDTH<br>CLEOL2<br>#\$01<br>WAIT3<br>#\$01<br>WAIT3<br>#\$01<br>WAIT2<br>A4L<br>NXTA1<br>A4H<br>A1L        | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT CHAR OF LINE<br>MEXT LINE (ALWAYS TAKEN)<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET<br>CURSOR H INDEX<br>STORE BLANKS FROM 'HERE'<br>TO END OF LINES (WNDWDTH)<br>1.0204 USEC<br>(13+27/2*A+5/2*A*A)                             |
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| A4<br>88<br>69<br>C5<br>80<br>48<br>20<br>B1<br>30<br>20<br>B4<br>20<br>B1<br>30<br>20<br>B4<br>20<br>C5<br>80<br>48<br>20<br>C5<br>80<br>48<br>20<br>C5<br>80<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>20<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5<br>C5   | 21<br>01<br>23<br>0D<br>24<br>28<br>2A<br>F9<br>E1<br>00<br>9E<br>864<br>20<br>28<br>21<br>F9<br>01<br>FC<br>01<br>F6<br>42<br>023<br>3C     | FC | SCRL2<br>SCRL3<br>CLREOL<br>CLEOL2<br>CLEOL2<br>CLEOL2<br>WAIT<br>WAIT2<br>WAIT3<br>NXTA4<br>NXTA1 | STA<br>LDY<br>DEY<br>PLA<br>ADC<br>CMP<br>BCS<br>PHA<br>JSR<br>STA<br>DEY<br>BPL<br>BMI<br>LDY<br>JSR<br>BCS<br>LDY<br>LDA<br>STA<br>DEY<br>BPL<br>BCS<br>LDY<br>LDA<br>STA<br>SCC<br>RTS<br>SEC<br>PHA<br>SEC<br>RTS<br>SEC<br>PHA<br>SEC<br>RTS<br>SEC<br>PHA<br>INY<br>CPY<br>BDL<br>BNE<br>RTS<br>SEC<br>PHA<br>INY<br>CPY<br>BCS<br>SEC<br>PHA<br>INY<br>CPY<br>BCS<br>SC<br>SEC<br>PHA<br>INY<br>CPY<br>BCS<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>SC<br>S   | BAS2H<br>WNDWDTH<br>#\$01<br>WNDBTM<br>SCRL3<br>VTABZ<br>(BASL),Y<br>(BAS2L),Y<br>(BAS2L),Y<br>SCRL2<br>SCRL1<br>#\$00<br>CLEOLZ<br>VTAB<br>CH<br>#\$00<br>(BASL),Y<br>WNDWDTH<br>CLEOL2<br>#\$01<br>WAIT3<br>#\$01<br>WAIT3<br>#\$01<br>WAIT2<br>A4L<br>NXTA1<br>A4H<br>A1L<br>A2L | OF SCROLLING WINDOW<br>INCR LINE NUMBER<br>DONE?<br>YES, FINISH<br>FORM BASL,H (BASE ADDR)<br>MOVE A CHR UP ON LINE<br>NEXT CHAR OF LINE<br>NEXT CHAR OF LINE<br>NEXT LINE (ALWAYS TAKEN)<br>CLEAR BOTTOM LINE<br>GET BASE ADDR FOR BOTTOM LINE<br>CARRY IS SET<br>CURSOR H INDEX<br>STORE BLANKS FROM 'HERE'<br>TO END OF LINES (WNDWDTH)<br>1.0204 USEC<br>(13+27/2*A+5/2*A*A)<br>INCR 2-BYTE A4<br>AND A1 |

| FCC0: E5 3F<br>FCC2: E6 3C   | SE   | BC A2H  | (CARRY SET IF >=)   |
|--|--|---|---|
| FCC2: E6 3C  | II   | NC A1L  | (CARRY SET IF >=)   |
| FCC4: D0 02  | BI   | NE RTS4B  |   |
| FCC6: E6 3D  | IN<br>RTS4B RT   | NC A1H  |   |
| FCC8: 60   | RTS4B RT   | TS  |   |
| FCC9: A0 4B  | HEADR LI   | DY #\$4B  | WRITE A*256 'LONG 1'<br>HALF CYCLES<br>(650 USEC EACH)<br>THEN A 'SHORT 0'<br>(400 USEC)<br>WRITE TWO HALF CYCLES<br>OF 250 USEC (101)  |
| FCCB: 20 DB FC   | JS   | SR ZERDLY   | HALF CYCLES   |
| FCCE: DO F9  | BN   | NE HEADR  | (650 USEC EACH)   |
| FCDO. 60 FF  | 21   | DC #¢FF   | (050 Oble Enery   |
| FCDU: 69 FE  | AL   | DC #ŞFE   |   |
| FCDZ: BU F5  | BC   | CS HEADR  | THEN A SHORT U  |
| FCD4: A0 21  | الل  | DY #\$21  | (400 USEC)  |
| FCD6: 20 DB FC   | WRBIT JS   | SR ZERDLY   | WRITE TWO HALF CYCLES   |
| FCD9: C8   | 11   | NY  | OF 250 USEC ('0')   |
| FCD9: C8<br>FCDA: C8<br>FCDB: 88<br>FCDC: D0 FD<br>FCDE: 90 05   | II   | NY  | OR 500 USEC ('0')   |
| FCDB: 88   | ZERDLY DE  | EY  |   |
| FCDC: D0 FD  | BI   | NE ZERDLY   |   |
| FCDE: 90 05  | BC   | CC WRTAPE   | Y IS COUNT FOR  |
| FCE0: A0 32  | T.T  | DY #\$32  | TIMING LOOP   |
| ECE2. 00   |  | EV #452   |   |
| FCE2: 88<br>FCE3: D0 FD  |  | NE ONEDIV   |   |
| FCES: DU FD  |  | NE UNEDLI   |   |
| FCE5: AC 20 C0<br>FCE8: A0 2C  | WRIAPE LI  | DY IAPEOUI  |   |
| FCE8: A0 2C  | LI   | DY #\$2C  |   |
|  |  |   |   |
| FCEA: CA   | DE   | EX  |   |
| FCEB: 60   | R  | TS  |   |
| FCEC: A2 08  | RDBYTE LI  | DX #\$08  | 8 BITS TO READ<br>READ TWO TRANSITIONS<br>(FIND EDGE)   |
| FCEE: 48   | RDBYT2 PH  | HA  | READ TWO TRANSITIONS  |
| FCEF: 20 FA FC   | JS   | SR RD2BIT   | (FIND EDGE)   |
| FCEF: 20 FA FC<br>FCF2: 68   | זס   | LA  | /   |
| FCF3: 2A   | F1   | LA<br>OL  | NEXT BIT  |
|  | RC   |   | NEAT BIT  |
| FCF4: A0 3A  | للنا<br>   | DY #\$3A<br>  | COUNT FOR SAMPLES   |
| FCF6: CA   |  | EX  |   |
| FCF7: D0 F5  | BI   | NE RDBYT2   |   |
| FCF9: 60<br>FCFA: 20 FD FC   | R  | TS  |   |
| FCFA: 20 FD FC   | RD2BIT JS  | SR RDBIT  |   |
| FCFD: 88   | RDBIT DE   | EY  | DECR Y UNTIL  |
| FCFD: 88<br>FCFE: AD 60 C0   | LI   | DA TAPEIN   | TAPE TRANSITION   |
| FD01: 45 2F  | F(   | OP LAGTIN   |   |
| FD03: 10 F8  | BI   | PI. RDRTT   |   |
| FD05: 45 2F  | F  | OP LASTIN   |   |
|  | EC   | TA LASIIN   |   |
| FD07: 85 2F  | 51<br>01   | IA LASIIN   | SET CARRY ON Y  |
| FD09: C0 80  | CI   | PY #\$80  | SET CARRY ON Y  |
| FDUB: 60   | R  | TS  |   |
| FD0C: A4 24  | RDKEY LI   | DY CH   |   |
| FD0E: B1 28  | LI   | DA (BASL),Y   | SET SCREEN TO FLASH   |
| FD10: 48   | PH   | HA  |   |
| FD11: 29 3F  | A  | ND #\$3F  |   |
| FD13: 09 40  | OF   | RA #\$40  |   |
| FD15: 91 28  |  | TA (BASL),Y   |   |
| 1910. 91 20  | 5.   |   |   |
| FD17, 68   |  |   |   |
| FD17: 68   | PI   | MD (KGWI.)  | CO TO LIGER KEY-IN  |
| FD17: 68<br>FD18: 6C 38 00   | JN<br>VEVIN IN   | MP (KSWL)   | GO TO USER KEY-IN   |
| FD17: 68<br>FD18: 6C 38 00<br>FD1B: E6 4E  | JI<br>KEYIN IN   | MP (KSWL)<br>NC RNDL  | GO TO USER KEY-IN   |
| FD1D: D0 02  | BI   | NE KEYIN2   | GO TO USER KEY-IN<br>INCR RND NUMBER  |
| FD1D: D0 02  | BI   | NE KEYIN2   | INCR RND NUMBER   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0   | BN<br>IN<br>KEYIN2 BI  | NE KEYIN2<br>NC RNDH<br>IT KBD  | INCR RND NUMBER   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5  | BN<br>IN<br>KEYIN2 BI  | NE KEYIN2<br>NC RNDH<br>IT KBD  | INCR RND NUMBER   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28   | BN<br>IN<br>KEYIN2 BI  | NE KEYIN2<br>NC RNDH<br>IT KBD  | INCR RND NUMBER   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5  | Bî<br>Iî<br>KEYIN2 BI<br>BI<br>SI<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE  |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28   | Bî<br>Iî<br>KEYIN2 BI<br>BI<br>SI<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE  |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60   | Bî<br>Iî<br>KEYIN2 BI<br>Sî<br>LI<br>BI<br>RÎ  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS   | INCR RND NUMBER   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60   | Bî<br>Iî<br>KEYIN2 BI<br>Sî<br>LI<br>BI<br>RÎ  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60   | Bî<br>Iî<br>KEYIN2 BI<br>Sî<br>LI<br>BI<br>RÎ  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60   | Bî<br>Iî<br>KEYIN2 BI<br>Sî<br>LI<br>BI<br>RÎ  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2B: 2C 10 C0<br>FD2F: 20 0C FD<br>FD2F: 20 0C FD<br>FD35: 20 0C FD   | EXC JS<br>RDCHAR JS  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD38: C9 9B  | EXC JS<br>RDCHAR JS  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 0C FD<br>FD32: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3   | ESC JS<br>RDCHAR JS  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3C: 60   | BN<br>IN<br>KEYIN2 BJ<br>BI<br>ST<br>LI<br>BJ<br>RT<br>ESC JS<br>JS<br>RDCHAR JS<br>CN<br>BH<br>RT   | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           RDKEY         SR           SR         RDKEY           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         TS  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32  | ESC JS<br>RDCHAR JS<br>NOTCR LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR RDKEY<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32<br>FD3F: 48  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CI<br>ESC JS<br>RDCHAR JS<br>CN<br>BI<br>RDCHAR LI<br>NOTCR LI<br>PH   | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD28: 2C 10 C0<br>FD28: 2C 10 C0<br>FD27: 20 0C FD<br>FD37: 20 0C FD<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32<br>FD3F: 48<br>FD40: A9 FF  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>CN<br>BE<br>RT<br>NOTCR LI<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN  |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32<br>FD3F: 48<br>FD40: A9 FF<br>FD42: 85 32  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>CN<br>BE<br>RT<br>NOTCR LI<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN  |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD28: 2C 10 C0<br>FD28: 2C 10 C0<br>FD27: 20 0C FD<br>FD37: 20 0C FD<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32<br>FD3F: 48<br>FD40: A9 FF  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>CN<br>BE<br>RT<br>NOTCR LI<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN  |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD2B: 2C 10 C0<br>FD2E: 60<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32<br>FD3F: 48<br>FD40: A9 FF<br>FD42: 85 32  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR JS<br>NOTCR LI<br>PH<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN  |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD28: 2C 10 C0<br>FD28: 20 0C FD<br>FD32: 20 0C FD<br>FD32: 20 0C FD<br>FD38: C9 9B<br>FD3A: F0 F3<br>FD3C: 60<br>FD3D: A5 32<br>FD3F: 48<br>FD40: A9 FF<br>FD42: 85 32<br>FD44: BD 00 02  | BR<br>IN<br>KEYIN2 BJ<br>ST<br>LI<br>BJ<br>CN<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR LI<br>RT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>PP   | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY   |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD2B:       2C       10       C0         FD2F:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD36:       C9       9B       FD33:       F0         FD37:       60       FD       FD32:       60         FD30:       A5       32       FD3F:       48         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD   | BR<br>IN<br>KEYIN2 BJ<br>ST<br>LI<br>BJ<br>CN<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR LI<br>RT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>PP   | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN  |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD27:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD36:       C9       9B       FD37:         FD37:       70       C0       FD         FD37:       70       C0       FD         FD37:       48       FD40:       A9         FD42:       85       32       FD42:       85         FD42:       85       32       FD44:       BD       00       02         FD47:       20       ED       FD       FD       FD         FD44:       85       32       FD44:       85       32  | BR<br>IN<br>KEYIN2 BJ<br>ST<br>LI<br>BJ<br>CN<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR LI<br>RT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>PP   | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>HA<br>DA #\$FF<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN  |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       0C       FD         FD35:       20       0C       FD         FD36:       69       9B       FD37:         FD37:       70       F3       FD37:         FD37:       70       F3       FD37:         FD37:       48       FD40:       A9         FD42:       85       32       FD47:         FD44:       BD       00       02         FD44:       B0       00       02         FD44:       68       FD       FD         FD48:       85       32       FD41:         FD49:       85       32       FD41:  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR JS<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>LI<br>ST<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>DA #\$FF<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE   |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       2C       FD         FD32:       20       2C       FD         FD35:       20       2C       FD         FD36:       60       9B       FD37:         FD37:       48       FD40:       A9         FD42:       85       32       FD44:         FD42:       85       32       FD44:         FD40:       85       32       FD41:         FD40:       85       32       FD41:         F  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR JS<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>LI<br>ST<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>DA #\$FF<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS  |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD2B:       2C       10       C0         FD2F:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD36:       C9       9B       FD37:       80         FD37:       A5       32       FD37:       48         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD         FD44:       BD       00       02       FD44:       68       FD44:       68         FD41:       85       32       FD44:       68       FD44:       68       FD44:       60       02         FD50:       C9       88       FD52:       F0       1D       70       70   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>RT<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR JS<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>LI<br>ST<br>LI  | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>DA #\$FF<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X  | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE   |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD36:       60       9B       FD37:       60         FD30:       A5       32       FD40:       A9       FF         FD42:       85       32       FD44:       B0       00       02         FD47:       20       ED       FD       FD44:       68       FD44:       68         FD40:       8D       00       02       FD42:       69       88       FD45:       69       88         FD52:       F0       1D       FD55:       59       88       50       50       50       50  | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CA<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR LI<br>ST<br>LI<br>ST<br>ST<br>ST<br>LI<br>ST<br>ST<br>CA<br>CA<br>BI<br>ST<br>ST<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           SR         ESC1           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           DA         INVFLG           DA         INVFLG           DA         IN,X           SR         COUT           LA         INVFLG           DA         IN,X           SR         COUT           LA         EQ           PA         IN,X           SR         COUT           LA         EQ           DA         IN,X           SR         EQ           ROW         #\$98 | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS  |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD27:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD36:       60       FT       FD37:         FD37:       48       FD40:       A9       FF         FD42:       85       32       FD41:       8D       00       02         FD47:       20       ED       FD       FD       FD       FD       FD         FD48:       85       32       FD41:       B0       00       02       FD54:       68         FD49:       B0       00       02       FD50:       C9       98       FD52:       F0       1D         FD54:       C9       98       FD55:       C9       98       FD54:   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CA<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>CA<br>NOTCR LI<br>ST<br>LI<br>ST<br>ST<br>LI<br>ST<br>ST<br>LI<br>CA<br>BI<br>CA<br>BI<br>ST<br>ST<br>LI<br>ST<br>ST<br>LI<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST   | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$9B<br>EQ ESC<br>TS<br>DA INVFLG<br>DA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>EQ BCKSPC<br>MP #\$98<br>EQ CANCEL   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X  |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD27:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD36:       60       -       FD         FD37:       48       -       FD40:       A9         FD42:       85       32       -       FD42:       85       32         FD42:       85       32       -       FD       FD       FD         FD44:       BD       00       02       -       FD       FD         FD44:       BD       00       02       -       FD       -       FD         FD44:       BD       00       02       -       -       FD       -       -         FD45:       E0       88       -  | KEYIN2 BI<br>IN<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CAN<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>CN<br>BI<br>ST<br>CN<br>CN<br>ST<br>CN<br>CN<br>ST<br>ST<br>CN<br>CN<br>ST<br>CN<br>CN<br>ST<br>ST<br>CN<br>ST<br>ST<br>CN<br>ST<br>ST<br>CN<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>SR RDKEY<br>SR RDKEY<br>SR RDKEY<br>SR ESC1<br>SR RDKEY<br>MP #\$98<br>EQ ESC<br>TS<br>DA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X<br>MP #\$88<br>EQ BCKSPC<br>MP #\$98<br>EQ CANCEL<br>PX #\$F8   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS  |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD35:       20       0C       FD         FD37:       48       FD40:       A9         FD42:       85       32       FD44:         FD42:       85       32       FD44:         FD42:       85       32       FD44:         FD40:       BD       00       02         FD41:       BD       00       02         FD50: </td <td>KEYIN2 BR<br/>IN<br/>KEYIN2 BI<br/>ST<br/>LL<br/>BT<br/>ST<br/>ST<br/>ST<br/>RDCHAR JS<br/>RDCHAR JS<br/>RDCHAR LS<br/>NOTCR LL<br/>ST<br/>LL<br/>ST<br/>ST<br/>ST<br/>CN<br/>BH<br/>CN<br/>BH<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST<br/>ST</td> <td>NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           HA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         INVFLG           DA         IN,X           SR         COUT           LA         INVFLG           DA         IN,X           FQ         BCKSPC           MP         #\$98           EQ         CANCEL           PX         #\$F8</td> <td>INCR RND NUMBER<br/>KEY DOWN?<br/>LOOP<br/>REPLACE FLASHING SCREEN<br/>GET KEYCODE<br/>CLR KEY STROBE<br/>GET KEYCODE<br/>HANDLE ESC FUNC.<br/>READ KEY<br/>ESC?<br/>YES, DON'T RETURN<br/>ECHO USER LINE<br/>NON INVERSE<br/>CHECK FOR EDIT KEYS<br/>BS, CTRL-X<br/>MARGIN?</td> | KEYIN2 BR<br>IN<br>KEYIN2 BI<br>ST<br>LL<br>BT<br>ST<br>ST<br>ST<br>RDCHAR JS<br>RDCHAR JS<br>RDCHAR LS<br>NOTCR LL<br>ST<br>LL<br>ST<br>ST<br>ST<br>CN<br>BH<br>CN<br>BH<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           HA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         INVFLG           DA         IN,X           SR         COUT           LA         INVFLG           DA         IN,X           FQ         BCKSPC           MP         #\$98           EQ         CANCEL           PX         #\$F8   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?   |
| FD1D: D0 02<br>FD1F: E6 4F<br>FD21: 2C 00 C0<br>FD24: 10 F5<br>FD26: 91 28<br>FD28: AD 00 C0<br>FD28: 2C 10 C0<br>FD29: 20 0C FD<br>FD2F: 20 0C FD<br>FD32: 20 2C FC<br>FD35: 20 0C FD<br>FD38: C9 9B<br>FD34: F0 F3<br>FD37: 48<br>FD40: A9 FF<br>FD42: 85 32<br>FD44: BD 00 02<br>FD44: BD 00 02<br>FD44: 68<br>FD45: C9 98<br>FD45: C9 98<br>FD55: C9 98<br>FD56: F0 0A<br>FD58: E0 F8<br>FD54: 90 03<br>FD54: 20 20 27 FE  | KEYIN2 BI<br>IN<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CA<br>ESC JS<br>RDCHAR JS<br>CA<br>RDCHAR JS<br>CA<br>NOTCR LI<br>LI<br>ST<br>ST<br>LI<br>ST<br>ST<br>LI<br>CA<br>BI<br>CA<br>BI<br>CA<br>BI<br>CA<br>BI<br>CA<br>BI<br>CA<br>CA<br>ST<br>ST<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA<br>CA   | NE KEYIN2<br>NC RNDH<br>IT KBD<br>PL KEYIN<br>TA (BASL),Y<br>DA KBD<br>IT KBDSTRB<br>TS<br>RDKEY<br>SR RDKEY<br>SR RDKEY<br>SR RDKEY<br>SR RDKEY<br>MP #\$98<br>EQ ESC<br>TS<br>DA INVFLG<br>DA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>TA INVFLG<br>DA IN,X<br>SR COUT<br>LA<br>P #\$98<br>EQ CANCEL<br>PX #\$F8<br>CC NOTCR1<br>SR PE I   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?<br>YES, SOUND BELL                        |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD33:       C9       9B       FD33:         FD34:       F0       F3       FD37:         FD35:       60       FD       FD40:       A9         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD         FD44:       BD       00       02       FD44:       68       FD44:       B0       00       02         FD45:       E0       F0       D       FD       FD       68       FD52:       F0       10         FD50:       C9   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CT<br>ESC JS<br>JS<br>RDCHAR JS<br>CT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>CT<br>BI<br>CT<br>BI<br>ST<br>LI<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           SR         ESC1           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           DA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         IN,X           PA         #\$88           EQ         ECKSPC           MP         #\$88           EQ         CANCEL           PX         #\$F8           CC         NOTCR1           SR         BELL   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?<br>YES, SOUND BELL<br>ADVANCE INPUT INDEX |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD33:       C9       9B       FD33:         FD34:       F0       F3       FD37:         FD35:       60       FD       FD40:       A9         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD         FD44:       BD       00       02       FD44:       68       FD44:       B0       00       02         FD45:       E0       F0       D       FD       FD       68       FD52:       F0       10         FD50:       C9   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CT<br>ESC JS<br>JS<br>RDCHAR JS<br>CT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>CT<br>BI<br>CT<br>BI<br>ST<br>LI<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           SR         ESC1           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           DA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         IN,X           PA         #\$88           EQ         ECKSPC           MP         #\$88           EQ         CANCEL           PX         #\$F8           CC         NOTCR1           SR         BELL   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?<br>YES, SOUND BELL<br>ADVANCE INPUT INDEX |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD33:       C9       9B       FD33:         FD34:       F0       F3       FD37:         FD35:       60       FD       FD40:       A9         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD         FD44:       BD       00       02       FD44:       68       FD44:       B0       00       02         FD45:       E0       F0       D       FD       FD       68       FD52:       F0       10         FD50:       C9   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CT<br>ESC JS<br>JS<br>RDCHAR JS<br>CT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>CT<br>BI<br>CT<br>BI<br>ST<br>LI<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           SR         ESC1           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           DA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         IN,X           PA         #\$88           EQ         ECKSPC           MP         #\$88           EQ         CANCEL           PX         #\$F8           CC         NOTCR1           SR         BELL   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?<br>YES, SOUND BELL<br>ADVANCE INPUT INDEX |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD33:       C9       9B       FD33:         FD34:       F0       F3       FD37:         FD35:       60       FD       FD40:       A9         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD         FD44:       BD       00       02       FD44:       68       FD44:       B0       00       02         FD45:       E0       F0       D       FD       FD       68       FD52:       F0       10         FD50:       C9   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>LI<br>BI<br>CT<br>ESC JS<br>JS<br>RDCHAR JS<br>CT<br>NOTCR LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>LI<br>ST<br>CT<br>BI<br>CT<br>BI<br>ST<br>LI<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           SR         ESC1           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           DA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         IN,X           PA         #\$88           EQ         ECKSPC           MP         #\$88           EQ         CANCEL           PX         #\$F8           CC         NOTCR1           SR         BELL   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?<br>YES, SOUND BELL<br>ADVANCE INPUT INDEX |
| FD1D:       D0       02         FD1F:       E6       4F         FD21:       2C       00       C0         FD24:       10       F5         FD26:       91       28         FD28:       AD       00       C0         FD28:       2C       10       C0         FD28:       20       0C       FD         FD28:       20       0C       FD         FD28:       20       0C       FD         FD32:       20       2C       FC         FD33:       C9       9B       FD33:         FD34:       F0       F3       FD37:         FD35:       60       FD       FD40:       A9         FD40:       A9       FF       FD42:       85       32         FD44:       BD       00       02       FD47:       20       ED       FD         FD44:       BD       00       02       FD44:       68       FD44:       B0       00       02         FD45:       E0       F0       D       FD       FD       68       FD52:       F0       10         FD50:       C9   | KEYIN2 BI<br>KEYIN2 BI<br>ST<br>ESC JS<br>RDCHAR JS<br>RDCHAR JS<br>NOTCR LI<br>ST<br>ST<br>LI<br>ST<br>ST<br>CANCEL LI<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST<br>ST  | NE         KEYIN2           NC         RNDH           IT         KBD           PL         KEYIN           TA         (BASL),Y           DA         KBD           IT         KBDSTRB           TS         SR           SR         RDKEY           SR         ESC1           SR         RDKEY           MP         #\$9B           EQ         ESC           TS         INVFLG           DA         #\$FF           TA         INVFLG           DA         IN,X           SR         COUT           LA         IN,X           PA         #\$88           EQ         ECKSPC           MP         #\$88           EQ         CANCEL           PX         #\$F8           CC         NOTCR1           SR         BELL   | INCR RND NUMBER<br>KEY DOWN?<br>LOOP<br>REPLACE FLASHING SCREEN<br>GET KEYCODE<br>CLR KEY STROBE<br>GET KEYCODE<br>HANDLE ESC FUNC.<br>READ KEY<br>ESC?<br>YES, DON'T RETURN<br>ECHO USER LINE<br>NON INVERSE<br>CHECK FOR EDIT KEYS<br>BS, CTRL-X<br>MARGIN?<br>YES, SOUND BELL                        |

| FD67:   | 20   | 8E   | FD                    | GETLNZ   | JSR   | CROUT<br>PROMPT<br>COUT  | OUTPUT CR   |
|---|--|--|-----------------------|--|---|--|---|
| FD6A:   | A5   | 33   |                       | GETLN  | LDA   | PROMPT   |   |
| FD6C:   | 20   | ED   | FD                    |  | JSR   | COUT   | OUTPUT PROMPT CHAR  |
| FD6F:   | A2   | 01   |                       |  | LDX   | #\$01  | INIT INPUT INDEX<br>WILL BACKSPACE TO 0   |
| FD71:   |  |  |                       | BCKSPC   | TXA   |  | WILL BACKSPACE TO 0   |
| FD72:   |  |  |                       | 201010   | BEO   | GETINZ   | MILL District To 0  |
| FD74:   |  |  |                       |  | DEX   | 001000   |   |
|   |  |  |                       |  |   | DDOULD   |   |
|   |  |  |                       | NXTCHAR  | JSR   | RDCHAR   |   |
| FD78:   |  |  |                       |  | CMP   | #PICK  | USE SCREEN CHAR   |
| FD7A:   | D0   | 02   |                       |  |   |  | FOR CTRL-U  |
| FD7C:   | В1   | 28   |                       |  | LDA   | (BASL),Y   |   |
|   |  |  |                       |  |   |  |   |
| FD7E:   | C9   | Ε0   |                       | CAPTST   | CMP   | #\$E0  |   |
| FD80:   | 90   | 02   |                       |  | BCC   | ADDINP   | CONVERT TO CAPS   |
| FD82:   | 29   | DF   |                       |  | AND   | #SDF   | CONVERT TO CAPS   |
| FD84.   | 9D   | 0.0  | 02                    | ADDINP   | STA   | TNX  | ADD TO INPUT BUF  |
| FD87.   | Ca   | 8D   | 02                    | 1.001.00   | CMD   | #\$80  |   |
| EDOO.   | 00   | 00   |                       |  | DNE   | #90D<br>NOTOD  |   |
| FD09.   | 20   | D2   | па                    |  | TOD   | GLDEOI   | ALD WO DOL ID AD  |
| FD8B:   | 20   | 90   | FC                    | an or m  | JSR   | CLREOL   | CLR IO EOL IF CR  |
| FD8E:   | A9   | 8D   |                       | CROUT  | LDA   | #\$8D  |   |
| FD90:   | DO   | 5B   |                       |  | BNE   | COUT   |   |
| FD92:   | Α4   | 3D   |                       | PRA1   | LDY   | A1H  | ADD TO INPUT BUF<br>CLR TO EOL IF CR<br>PRINT CR,A1 IN HEX  |
| FD94:   | A6   | 3C   |                       |  | LDX   | A1L  |   |
| FD96:   | 20   | 8E   | FD                    | PRYX2  | JSR   | CROUT  |   |
| FD99:   | 20   | 40   | F9                    |  | JSR   | PRNTYX   |   |
| FD9C:   | A0   | 00   |                       |  | LDY   | #\$00  |   |
| FD9E:   | A9   | AD   |                       |  | LDA   | #\$AD  | PRINT '-'   |
| FDA0:   | 4C   | ED   | FD                    |  | JMP   | COUT   |   |
| FDA3.   | <u>م</u>   | 30   | 2                     | XAM8   |   | A1T.   |   |
| FDA5:   |  |  |                       |  |   |  | SET TO FINISH AT  |
| FDA5:   |  |  |                       |  | CTTA  | #\$U7  | MOD 8=7   |
|   |  |  |                       |  | JIA   |  | MOD 8=7   |
| FDA9:   |  |  |                       |  | LDA   | AIH  |   |
| FDAB:   |  |  |                       |  | STA   |  |   |
|   |  |  |                       | MODSCHK  |   |  |   |
| FDAF:   |  |  |                       |  | AND   | #\$07  |   |
| FDB1:   | D0   | 03   |                       |  | BNE   | DATAOUT  |   |
| FDB3:   | 20   | 92   | FD                    | XAM  | JSR   | PRA1   |   |
| FDB6:   | A9   | A0   |                       |  | TDA   | 4000   |   |
| FDB8:   |  |  |                       |  | JSR   | COUT   | OUTPUT BLANK  |
| FDBB:   |  |  |                       |  | LDA   | (A1L).Y  | OUTPUT BLANK<br>OUTPUT BYTE IN HEX<br>CHECK IF TIME TO,<br>PRINT ADDR   |
| FDBD:   |  |  |                       |  | JSR   | PRBYTE   | OUTPUT BYTE IN HEX  |
| FDC0:   |  |  |                       |  | TCD   | NVTA1  |   |
|   |  |  |                       |  | DCC   | MODECUV  | CURCE IE TIME TO  |
| FDC3:   |  |  |                       |  | BCC   | MODSCHK  | CHECK IF TIME IO,   |
|   | ~ ~  |  |                       |  |   |  |   |
| FDC5:   | 60   |  |                       | 101010   | 1010  |  |   |
| FDC6:   | 4A   |  |                       | XAMPM  | LSR   | A  | DETERMINE IF MON  |
| FDC5:<br>FDC6:<br>FDC7:   | 4A   |  |                       | XAMPM  | LSR<br>BCC  | A<br>XAM   | DETERMINE IF MON  |
| FDC6:   | 4A<br>90   | EA   |                       | XAMPM  | LSR   | A<br>XAM   | DETERMINE IF MON  |
| FDC6:<br>FDC7:  | 4A<br>90<br>4A   | EA   |                       | XAMPM  | LSR<br>BCC  | A<br>XAM<br>A  | DETERMINE IF MON  |
| FDC6:<br>FDC7:<br>FDC9:   | 4A<br>90<br>4A<br>4A   | EA   |                       | XAMPM  | LSR<br>BCC<br>LSR<br>LSR  | A<br>XAM<br>A<br>A   | DETERMINE IF MON  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:  | 4A<br>90<br>4A<br>4A<br>A5<br>90   | EA<br>3E<br>02   |                       | XAMPM  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC  | A<br>XAM<br>A<br>A2L<br>ADD  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:  | 4A<br>90<br>4A<br>4A<br>A5<br>90   | EA<br>3E<br>02   |                       | XAMPM  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC  | A<br>XAM<br>A<br>A2L<br>ADD  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:  | 4A<br>90<br>4A<br>4A<br>A5<br>90   | EA<br>3E<br>02   |                       | XAMPM  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC  | A<br>XAM<br>A<br>A2L<br>ADD  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:<br>FDCF:<br>FDC1:  | 4A<br>90<br>4A<br>4A<br>A5<br>90<br>49<br>65   | EA<br>3E<br>02<br>FF<br>3C   |                       | ADD  | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC   | A<br>XAM<br>A<br>A2L<br>ADD  | DETERMINE IF MON  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCB:<br>FDCF:<br>FDCF:<br>FDD1:<br>FDD3:  | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48   | EA<br>3E<br>02<br>FF<br>3C   |                       | ADD  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:<br>FDCF:<br>FDD1:<br>FDD3:<br>FDD4:  | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48<br>A9   | EA<br>3E<br>02<br>FF<br>3C<br>BD   |                       | ADD  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA  | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>AlL<br>#\$BD  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:<br>FDCF:<br>FDC7:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:  | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>A9<br>20   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   |                       | ADD  | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR  | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>AlL<br>#\$BD  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB  |
| FDC6 :<br>FDC7 :<br>FDC9 :<br>FDCA :<br>FDCB :<br>FDCD :<br>FDC7 :<br>FDD1 :<br>FDD3 :<br>FDD4 :<br>FDD6 :<br>FDD9 :  | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48<br>A9<br>20<br>68   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:<br>FDCF:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:<br>FDD9:<br>FDDA:   | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48<br>20<br>68<br>48   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PHA  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:<br>FDCF:<br>FDC7:<br>FDD3:<br>FDD4:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD4:  | 4A<br>90<br>4A<br>4A<br>A5<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PHA<br>LSR  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDCA:<br>FDCB:<br>FDCD:<br>FDCD1:<br>FDD1:<br>FDD1:<br>FDD4:<br>FDD4:<br>FDD9:<br>FDDA:<br>FDD5:<br>FDDC:  | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PLA<br>LSR<br>LSR   | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC8:<br>FDC8:<br>FDC7:<br>FDC7:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:<br>FDD9:<br>FDD6:<br>FDD8:<br>FDD2:<br>FDD0:  | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A<br>4A   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PHA<br>LSR<br>LSR<br>LSR  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC8:<br>FDC8:<br>FDC7:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:<br>FDD9:<br>FDDA:<br>FDD2:<br>FDDD2:<br>FDDD2:   | 4A<br>90<br>4A<br>A5<br>90<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A<br>4A   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>A<br>A   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC8:<br>FDC5:<br>FDC1:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:<br>FDD8:<br>FDD8:<br>FDD5:<br>FDD5:<br>FDD5:  | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>EOR<br>ADC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC2:<br>FDC2:<br>FDC1:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD5:<br>FDD5:<br>FDD5:<br>FD25:   | 4A<br>90<br>4A<br>4A<br>A5<br>90<br>49<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>4A<br>20<br>68   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>JSR<br>PLA   | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC2:<br>FDC2:<br>FDC1:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD5:<br>FDD5:<br>FDD5:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25: | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED   | FD                    | ADD<br>PRBYTE  | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC2:<br>FDC2:<br>FDC1:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD5:<br>FDD5:<br>FDD5:<br>FD25:   | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED   | FD                    | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ   | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA   | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC2:<br>FDC2:<br>FDC1:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD5:<br>FDD5:<br>FDD5:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD25: | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>A9<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0   | FD                    | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ   | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA   | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC4:<br>FDC5:<br>FDC1:<br>FDD1:<br>FDD4:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD9:<br>FDD2:<br>FDD5:<br>FDD5:<br>FDD5:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2:<br>FDE2: | 4A<br>90<br>4A<br>A5<br>90<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>C9   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0<br>BA   | FD                    | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ   | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG   |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC4:<br>FDC5:<br>FDC7:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDE5:<br>FDE5:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:   | 4A<br>90<br>4A<br>4A<br>5<br>90<br>49<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>C9<br>90<br>69  | EA<br>3E<br>02<br>FF<br>3C<br>ED<br>ED<br>ED<br>E5<br>0F<br>B0<br>BA<br>02<br>06   | FD                    | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ   | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>CMP<br>BCC<br>ADC   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S  |
| FDC6:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC4:<br>FDC5:<br>FDC7:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDD2:<br>FDE5:<br>FDE5:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:   | 4A<br>90<br>4A<br>4A<br>5<br>90<br>49<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>C9<br>90<br>69  | EA<br>3E<br>02<br>FF<br>3C<br>ED<br>ED<br>ED<br>E5<br>0F<br>B0<br>BA<br>02<br>06   | FD                    | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ   | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>CMP<br>BCC<br>ADC   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S  |
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| FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC8:<br>FDC5:<br>FDC1:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:<br>FDD6:<br>FDD6:<br>FDD7:<br>FDD7:<br>FDD2:<br>FDE5:<br>FDE5:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9: | 4A<br>90<br>4A<br>4A<br>45<br>90<br>49<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>29<br>90<br>60<br>25   | EA<br>3E<br>02FF<br>3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0<br>B0<br>B0<br>206<br>36<br>A0<br>02<br>32                      | FD<br>FD              | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1                                  | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>CMP<br>BCC<br>ADC<br>JMP<br>BCC<br>AND   | A<br>XAM<br>A<br>A<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$06<br>(CSWL)<br>#\$06<br>(CSWL)  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG  |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC8:<br>FDC8:<br>FDC7:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD6:<br>FDD6:<br>FDD6:<br>FDD7:<br>FDD7:<br>FDD2:<br>FDE5:<br>FDE5:<br>FDE5:<br>FDE5:<br>FDE5:<br>FDE5:<br>FDE5:<br>FDE7:<br>FDE5:<br>FDE5:<br>FDE7:<br>FDE5:<br>FDE7:<br>FDE5:<br>FDE7:<br>FDE5:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7:<br>FDE7: | 4A<br>90<br>4A<br>4A<br>45<br>90<br>49<br>65<br>48<br>48<br>4A<br>4A<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>90<br>69<br>60<br>25<br>84   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0<br>BA<br>02<br>06<br>6<br>36<br>02<br>32<br>35              | FD<br>FD              | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUTZ                         | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>CMP<br>BCC<br>ADC<br>JMP<br>BCC<br>ADC<br>STY  | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSNL)<br>#\$06<br>(CSNL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG   |
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| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC1:<br>FDD1:<br>FDD4:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD5:<br>FDD5:<br>FDD5:<br>FDD5:<br>FDE7:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9: | 4A<br>90<br>4A<br>45<br>90<br>49<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>65<br>69<br>60<br>69<br>60<br>69<br>90<br>62<br>25<br>84<br>48<br>20   | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0<br>BA<br>02<br>06<br>36<br>A0<br>02<br>235<br>FD            | FD<br>FD              | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2                         | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>ECC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>CMP<br>BCC<br>CMP<br>BCC<br>ADC<br>JMP<br>CMP<br>BCC<br>AND<br>STY<br>PHA<br>JSR  | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUE: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC4:<br>FDC1:<br>FDD1:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD6:<br>FDD9:<br>FDD7:<br>FDD7:<br>FDD7:<br>FDD7:<br>FD25:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>90<br>4A<br>4D<br>49<br>90<br>49<br>65<br>48<br>49<br>20<br>68<br>48<br>4A<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>90<br>69<br>69<br>69<br>25<br>4<br>8<br>20<br>90<br>69<br>69<br>69<br>60<br>25<br>8<br>8<br>8<br>8<br>8<br>90<br>69<br>69<br>69<br>69<br>69<br>69<br>69<br>69<br>69<br>69<br>69<br>69<br>69  | EA<br>3E<br>3C<br>FF<br>3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0<br>8A<br>02<br>36<br>36<br>36<br>36<br>36<br>36<br>75<br>FD | FD<br>FD<br>00        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUTZ                         | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>CMP<br>BCC<br>ADC<br>JMP<br>BCC<br>ADC<br>STY<br>PHA   | A<br>XAM<br>A<br>A2L<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$B0<br>#\$B0<br>#\$B0<br>(CSWL)<br>#\$A0<br>COUT<br>Z<br>INVFLG<br>YSAV1<br>VIDOUT  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC4:<br>FDC5:<br>FDD1:<br>FDD3:<br>FDD4:<br>FDD4:<br>FDD6:<br>FDD6:<br>FDD5:<br>FDD5:<br>FDD5:<br>FDD5:<br>FDE7:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9:<br>FDE9: | 4A<br>90<br>4A<br>4A5<br>90<br>49<br>65<br>48<br>49<br>65<br>48<br>49<br>65<br>48<br>49<br>68<br>48<br>4A<br>4A<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>60<br>69<br>90<br>25<br>84<br>48<br>20<br>68<br>20<br>90<br>25<br>84<br>48<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | EA<br>3E<br>02<br>FF<br>3C<br>BD<br>ED<br>E5<br>0F<br>B0<br>BA<br>02<br>32<br>35<br>FD<br>35                               | FD<br>FD<br>00        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUTZ                         | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>CMP<br>BCC<br>ADC<br>DRA<br>JMP<br>BCC<br>ADC<br>STY<br>PLA<br>LDY<br>RCC<br>ADC<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LDA<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC4:<br>FDC9:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>90<br>4A<br>4A<br>590<br>49<br>65<br>48<br>48<br>4A<br>4A<br>4A<br>4A<br>4A<br>4A<br>4A<br>4A<br>4A<br>20<br>68<br>29<br>09<br>25<br>84<br>48<br>20<br>69<br>25<br>84<br>48<br>20<br>69<br>69<br>60<br>25<br>84<br>48<br>60<br>69<br>60<br>25<br>84<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60  | EA<br>3E<br>02<br>FF<br>3C<br>ED<br>ED<br>ED<br>ED<br>0F<br>BA<br>02<br>06<br>36<br>A00<br>232<br>35<br>FD<br>35           | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2                         | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>AND<br>ORA<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC4:<br>FDC9:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>20<br>68<br>48<br>4A<br>4A<br>20<br>68<br>29<br>09<br>90<br>67<br>C9<br>90<br>67<br>C9<br>90<br>25<br>84<br>48<br>20<br>68<br>20<br>69<br>C9<br>90<br>25<br>84<br>40<br>20<br>69<br>C9<br>20<br>5<br>84<br>20<br>69<br>60<br>5<br>20<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60                               | EA<br>3E 02<br>FFF 3C<br>BD<br>ED<br>ED<br>E5<br>0F 0BA<br>02<br>06<br>36<br>A00<br>232<br>35<br>FD<br>35<br>34            | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1                  | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>AND<br>ORA<br>SC<br>MP<br>BCC<br>ADC<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>YSAV1  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG   |
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FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC4:<br>FDC9:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>20<br>68<br>48<br>4A<br>4A<br>20<br>68<br>29<br>09<br>90<br>67<br>C9<br>90<br>67<br>C9<br>90<br>25<br>84<br>48<br>20<br>68<br>20<br>69<br>C9<br>90<br>25<br>84<br>40<br>20<br>69<br>C9<br>20<br>5<br>84<br>20<br>69<br>60<br>5<br>20<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60                               | EA<br>3E2<br>FFF3C<br>BD<br>ED<br>E5<br>0FF<br>B0<br>BA<br>02<br>32<br>35<br>FD<br>35<br>34<br>9F                          | FD<br>FD<br>00        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUTZ<br>BL1                           | LSR<br>BCC<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>PLA<br>LDA<br>PLA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>DFLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>CMP<br>BCC<br>ADC<br>ADC<br>LSR<br>LSR<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PLA<br>BCC<br>EOR<br>ADC<br>PLA<br>BCC<br>EOR<br>ADC<br>PLA<br>BCC<br>EOR<br>ADC<br>PLA<br>BCC<br>EOR<br>DC<br>PLA<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BCC<br>CMP<br>BC | A<br>XAM<br>A<br>A<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC4:<br>FDC9:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>48<br>20<br>68<br>48<br>4A<br>4A<br>20<br>68<br>48<br>20<br>68<br>4A<br>4A<br>20<br>69<br>90<br>69<br>60<br>C9<br>90<br>53<br>48<br>20<br>69<br>69<br>60<br>C9<br>90<br>53<br>48<br>20<br>69<br>65<br>54<br>60<br>69<br>60<br>69<br>60<br>69<br>60<br>69<br>60<br>69<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60     | EA<br>3E2<br>FFF3C<br>BD<br>ED<br>E5<br>0FF<br>B0<br>BA<br>02<br>32<br>35<br>FD<br>35<br>34<br>9F                          | FD<br>FD<br>00        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK         | LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>ADC<br>DEC<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>AlL<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$B0<br>#\$B0<br>#\$B0<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>YSAV1<br>YSAV  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC1:<br>FDD1:<br>FDD4:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD0:<br>FDD0:<br>FDD0:<br>FDD0:<br>FDD0:<br>FDD0:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00:<br>FD00: | 4A<br>90<br>4A<br>A5<br>90<br>49<br>65<br>8<br>48<br>4A<br>4A<br>20<br>68<br>8<br>48<br>4A<br>4A<br>20<br>68<br>8<br>48<br>4A<br>4A<br>20<br>68<br>90<br>90<br>67<br>90<br>25<br>84<br>8<br>20<br>8<br>25<br>84<br>8<br>20<br>67<br>90<br>25<br>84<br>8<br>20<br>67<br>90<br>25<br>84<br>8<br>20<br>67<br>20<br>67<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | EA<br>3E2<br>FFF3C<br>BD<br>ED<br>ED<br>E5<br>0F<br>B0<br>BA<br>02<br>06<br>36<br>32<br>35<br>FD<br>35<br>34<br>9F         | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK         | LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>ADC<br>DEC<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>YSAV1<br>YSAV  | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG<br>THEN RETURN   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC4:<br>FDC1:<br>FDD1:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD9:<br>FDD4:<br>FDD7:<br>FDD7:<br>FDD7:<br>FDD7:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>900<br>4AA<br>A5<br>900<br>499<br>658<br>489<br>200<br>688<br>484<br>4A<br>4A<br>200<br>688<br>4A<br>4A<br>200<br>689<br>090<br>690<br>690<br>690<br>255<br>844<br>480<br>689<br>209<br>900<br>690<br>690<br>255<br>844<br>600<br>C600<br>C600<br>C600<br>C600<br>C600<br>C600<br>C60  | EA<br>3E2<br>FFF3C<br>BD<br>ED<br>ED<br>E5<br>0FF<br>B0<br>BA<br>02<br>32<br>35<br>FD<br>35<br>34<br>9F<br>16              | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK         | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>CMP<br>BCC<br>ADC<br>JMP<br>BCC<br>ADC<br>DEC<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>(CSWL)<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$BA<br>COUTZ<br>INVFLG<br>YSAV1<br>YSAV1<br>YSAV<br>XAM8<br>SETMDZ<br>#\$BA   | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG<br>THEN RETURN<br>BLANK TO MON   |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC4:<br>FDC5:<br>FDC4:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD4:<br>FDD5:<br>FDD5:<br>FDD5:<br>FD25:<br>FD25:<br>FD25:<br>FD25:<br>FD27:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>900<br>4AA<br>A5<br>900<br>499<br>655<br>489<br>200<br>688<br>484<br>4A<br>4A<br>200<br>688<br>209<br>609<br>609<br>609<br>2584<br>488<br>209<br>900<br>609<br>609<br>2584<br>488<br>209<br>609<br>609<br>609<br>609<br>609<br>2584<br>800<br>200<br>609<br>609<br>609<br>609<br>609<br>609<br>609<br>609<br>609<br>6  | EA<br>3E2<br>FFF3C<br>BD<br>ED<br>E5<br>0F0<br>BA<br>02<br>32<br>35<br>FD<br>35<br>34<br>9F<br>16<br>BA                    | FD<br>FD<br>000<br>FB | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK         | LSR<br>BCC<br>LSR<br>LSR<br>LDA<br>BCC<br>EOR<br>ADC<br>PHA<br>LDA<br>JSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>AND<br>ORA<br>CMP<br>BCC<br>ADC<br>JMP<br>BCC<br>ADC<br>DEC<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT<br>YSAV1<br>YSAV1<br>YSAV<br>XAM8<br>SETMDZ<br>#\$BA                                      | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG<br>THEN RETURN<br>BLANK TO MON<br>AFTER BLANK<br>DATA STORE MODE?              |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC7:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>900<br>4AA<br>A5<br>900<br>499<br>658<br>488<br>420<br>688<br>48A<br>4AA<br>4AA<br>200<br>688<br>48A<br>4AA<br>209<br>099<br>60<br>209<br>900<br>255<br>48<br>200<br>60<br>209<br>900<br>255<br>48<br>200<br>60<br>209<br>200<br>200<br>200<br>200<br>200<br>200<br>200<br>200<br>20   | EA<br>3E202<br>FFF3C<br>BD<br>ED<br>E5<br>0F0<br>B00<br>BA206<br>360<br>2235<br>FD<br>35<br>34<br>9F<br>16<br>BAB          | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK         | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>LSR<br>BCC<br>EOR<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR  | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT<br>YSAV1<br>YSAV<br>XAM8<br>SETMDZ<br>#\$BA<br>XAMPM                        | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG<br>THEN RETURN<br>BLANK TO MON<br>AFTER BLANK<br>DATA STORE MODE?              |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC1:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>900<br>4AA<br>A5<br>900<br>499<br>658<br>480<br>400<br>688<br>480<br>400<br>688<br>480<br>400<br>600<br>600<br>600<br>255<br>848<br>200<br>600<br>600<br>255<br>848<br>200<br>600<br>600<br>255<br>848<br>600<br>600<br>600<br>600<br>600<br>600<br>600<br>600<br>600<br>60  | EA<br>3E2<br>FFF3C<br>ED<br>ED<br>E5<br>0FFB0<br>BA<br>022<br>325<br>FD<br>35<br>34<br>9F<br>16<br>BBB<br>31               | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK<br>STOR | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>BCC<br>EOR<br>ADC<br>PHA<br>LSR<br>PLA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR   | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>VIDOUT<br>YSAV1<br>YSAV<br>XAM8<br>SETMDZ<br>#\$BA<br>XAMPM<br>MODE                | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV Y-REG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG<br>THEN RETURN<br>BLANK TO MON<br>AFTER BLANK<br>DATA STORE MODE? |
| FDC6:<br>FDC7:<br>FDC7:<br>FDC7:<br>FDC9:<br>FDC9:<br>FDC7:<br>FDD1:<br>FDD4:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FDD9:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29:<br>FD29: | 4A<br>900<br>4AA<br>A5<br>900<br>499<br>658<br>480<br>400<br>688<br>480<br>400<br>688<br>480<br>400<br>600<br>600<br>600<br>255<br>848<br>200<br>600<br>600<br>255<br>848<br>200<br>600<br>600<br>255<br>848<br>600<br>600<br>600<br>600<br>600<br>600<br>600<br>600<br>600<br>60  | EA<br>3E2<br>FFF3C<br>ED<br>ED<br>E5<br>0FFB0<br>BA<br>022<br>325<br>FD<br>35<br>34<br>9F<br>16<br>BBB<br>31               | FD<br>FD<br>FB        | ADD<br>PRBYTE<br>PRHEX<br>PRHEXZ<br>COUT<br>COUT1<br>COUT2<br>BL1<br>BLANK<br>STOR | LSR<br>BCC<br>LSR<br>LSR<br>LSR<br>LSR<br>BCC<br>EOR<br>ADC<br>PHA<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR<br>LSR  | A<br>XAM<br>A<br>A<br>A2L<br>ADD<br>#\$FF<br>A1L<br>#\$BD<br>COUT<br>A<br>A<br>A<br>PRHEXZ<br>#\$0F<br>#\$B0<br>#\$BA<br>COUT<br>#\$06<br>(CSWL)<br>#\$06<br>(CSWL)<br>#\$A0<br>COUTZ<br>INVFLG<br>YSAV1<br>YSAV1<br>YSAV1<br>YSAV1<br>YSAV<br>XAM8<br>SETMDZ<br>#\$BA<br>XAMPM<br>MODE<br>A2L | DETERMINE IF MON<br>MODE IS XAM<br>ADD, OR SUB<br>SUB: FORM 2'S COMPLEMENT<br>PRINT '=', THEN RESULT<br>PRINT BYTE AS 2 HEX<br>DIGITS, DESTROYS A-REG<br>PRINT HEX DIG IN A-REG<br>LSB'S<br>VECTOR TO USER OUTPUT ROUTINE<br>DON'T OUTPUT CTRL'S INVERSE<br>MASK WITH INVERSE FLAG<br>SAV A-REG<br>OUTPUT A-REG AS ASCII<br>RESTORE A-REG<br>AND Y-REG<br>THEN RETURN<br>BLANK TO MON<br>AFTER BLANK<br>DATA STORE MODE?              |

| FEOF:          |          |          |    |           |            |                      | STORE AS LOW BYTE AS (A3)                     |
|----------------|----------|----------|----|-----------|------------|----------------------|---|
| FE11:<br>FE13: |          |          |    |           |            | A3L<br>RTS5          | INCR A3, RETURN                               |
| FE15:          |          |          |    |           | INC        |                      | ·   |
| FE17:          |          |          |    | RTS5      | RTS        |                      | SAVE CONVERTED ':', '+',                      |
| FE18:<br>FE1A: | A4<br>B9 | 34<br>FF | 01 | SETMODE   | LDY        | YSAV<br>TN-1.Y       | SAVE CONVERTED ':', '+',<br>'-', '.' AS MODE. |
| FE1D:          | 85       | 31       |    | SETMDZ    | STA        | MODE                 | ,   |
| FE1F:          | 60       |          |    |           | RTS        |                      |   |
| FE20:<br>FE22: |          |          |    | LT<br>LT2 | LDX<br>LDA | #\$01<br>A2L,X       | COPY A2 (2 BYTES) TO                          |
| FE24:          |          |          |    |           | STA        | A4L,X                | A4 AND A5                                     |
| FE26:          |          |          |    |           |            | A5L,X                |   |
| FE28:<br>FE29: |          |          |    |           | DEX<br>BPL | ፒ.ሞ2                 |   |
| FE2B:          |          |          |    |           | RTS        | 512                  |   |
|                |          |          |    | MOVE      | LDA        | (A1L),Y              | MOVE (A1 TO A2) TO (A4)                       |
| FE2E:<br>FE30: |          |          |    |           | STA        | (A4L),Y<br>NXTA4     | (A4)  |
| FE33:          |          |          |    |           | BCC        |                      |   |
| FE35:          |          |          |    |           | RTS        |                      |   |
| FE36:          | B1<br>D1 | 3C       |    | VFY       | LDA        | (A1L),Y              | VERIFY (A1 TO A2) WITH (A4)                   |
| FE3A:          |          |          |    |           | BEQ        | VFYOK                | (44)  |
|                |          |          |    |           |            | PRA1<br>(A1L),Y      |   |
| FE3F:          |          |          |    |           |            |                      |   |
| FE41:<br>FE44: |          |          |    |           | LDA        | PRBYTE<br>#\$A0      |   |
| FE46:          |          |          |    |           | JSR        | COUT                 |   |
| FE49:          |          |          |    |           | LDA<br>JSR | #\$A8                |   |
| FE4B:<br>FE4E: |          |          |    |           | JSR        | COUT                 |   |
| FE50:          |          |          |    |           | JSR        | (A4L),Y<br>PRBYTE    |   |
| FE53:          | A9       | Α9       |    |           | LDA        | #\$A9                |   |
| FE55:          | 20       | ED       | FD | VFYOK     | JSR        | COUT                 |   |
| FE5B:          |          |          | FC |           | BCC        |                      |   |
| FE5D:          |          |          |    |           | RTS        |                      |   |
|                |          |          |    |           |            |                      | MOVE A1 (2 BYTES) TO                          |
| FE61:<br>FE63: |          |          |    | LIST2     |            | #\$14                | PC IF SPEC'D AND<br>DISEMBLE 20 INSTRS        |
| FE64:          |          |          |    |           | JSR        | INSTDSP              |   |
| FE67:          |          |          |    |           |            |                      | ADJUST PC EACH INSTR                          |
| FE6A:<br>FE6C: |          |          |    |           |            | PCL                  |   |
| FE6E:          |          |          |    |           | STY<br>PLA | РСП                  |   |
| FE6F:          | 38       |          |    |           | SEC        |                      |   |
| FE70:          |          |          |    |           |            |                      | NEXT OF 20 INSTRS                             |
| FE72:<br>FE74: |          |          |    |           | RTS        | LIST2                |   |
| FE75:          | 8A       |          |    | A1PC      | TXA        |                      | IF USER SPEC'D ADR                            |
| FE76:          |          |          |    |           |            | A1PCRTS              | COPY FROM A1 TO PC                            |
| FE78:<br>FE7A: |          |          |    | A1PCLP    | LDA<br>STA | A1L,X<br>PCL,X       |   |
| FE7C:          |          |          |    |           | DEX        | 102/11               |   |
| FE7D:          |          |          |    |           |            | A1PCLP               |   |
| FE7F:<br>FE80: |          |          |    | A1PCRTS   |            | #\$3F                | SET FOR INVERSE VID                           |
| FE82:          |          |          |    |           | BNE        | SETIFLG              | VIA COUT1                                     |
| FE84:          |          |          |    | SETNORM   | LDY        | #\$FF<br>INVFLG      | SET FOR NORMAL VID                            |
| FE86:<br>FE88: |          | 32       |    |           | STY<br>RTS | INVFLG               |   |
| FE89:          |          | 00       |    |           |            | #\$00                | SIMULATE PORT #0 INPUT                        |
| FE8B:          | 85       | 3E       |    | INPORT    | STA        | A2L                  | SPECIFIED (KEYIN ROUTINE)                     |
| FE8D:          |          |          |    | INPRT     | LDX        | #KSWL<br>#KEYIN      |   |
| FE8F:<br>FE91: |          |          |    |           |            | IOPRT                |   |
| FE93:          |          |          |    | SETVID    |            |                      | SIMULATE PORT #0 OUTPUT                       |
| FE95:          |          |          |    | OUTPORT   |            |                      | SPECIFIED (COUT1 ROUTINE)                     |
| FE97:<br>FE99: |          |          |    |           | LDX        | #CSWL<br>#COUT1      |   |
| FE9B:          |          |          |    |           | LDA        |                      | SET RAM IN/OUT VECTORS                        |
| FE9D:          |          |          |    |           |            | #\$0F                |   |
| FE9F:<br>FEA1: |          |          |    |           |            | IOPRT1<br>#IOADR/256 |   |
| FEA3:          |          |          |    |           | LDY        |                      |   |
| FEA5:          |          |          |    |           | BEQ        | IOPRT2               |   |
| FEA7:<br>FEA9: |          |          |    |           |            | #COUT1/256<br>LOC0,X |   |
| FEAB:          |          |          |    | 1011112   |            | LOCU,X<br>LOC1,X     |   |
| FEAD:          |          |          |    |           | RTS        |                      |   |
| FEAE:<br>FEAF: |          |          |    |           | NOP<br>NOP |                      |   |
|                |          |          | ΕO | XBASIC    |            | BASIC                | TO BASIC WITH SCRATCH                         |
| FEB3:          | 4C       | 03       | ΕO | BASCONT   | JMP        | BASIC2               | CONTINUE BASIC                                |
|                |          |          |    |           |            |                      |   |

| FEB6:   |  |   |   |  |  |   |  |
|---|--|---|---|--|--|---|--|
|   | 20   | 75  | FE  | GO   | JSR  | A1PC  | ADR TO PC IF SPEC'D  |
| FEB9:   | 20   | 3F  | FF  |  | JSR  | RESTORE   | RESTORE META REGS<br>GO TO USER SUBR   |
| FEBC:   |  |   |   |  | TMD  | (DCI)   | CO TO LICER CURR   |
| FEBC:   | 00   | 5A  |   |  | UMP  | (FCL)   | GO IO USER SOBR  |
| FEBF:   | 4C   | D7  | FΑ  | REGZ   | JMP  | REGDSP  | TO REG DISPLAY   |
| FEC2:   | C6   | 34  |   | TRACE  | DEC  | YSAV  |  |
| FEC4:   | 20   | 75  | FE  | STEPZ  | JSR  | Alpc  | ADR TO PC IF SPEC'D  |
| FEC7:   |  |   |   |  | TMP  | STED  | TAKE ONE STEP  |
|   |  |   |   | USR  | TMD  |   | TO USR SUBR AT USRADR  |
| FECA:   | 4C   | го  | 03  | USR  | UMP  | USRADR  | IO USK SUBR AI USRADR  |
| FECD:   | A9   | 40  |   | WRITE  | LDA  | #\$40   | WRITE 10-SEC HEADER  |
| FECF:   | 20   | C9  | FC  |  | JSR  | HEADR   | WRITE 10-SEC HEADER  |
| FED2:   | A0   | 27  |   |  | LDY  | #\$27   |  |
|   |  |   |   | WR1  | TUDX   | #\$00   |  |
| FED6:   | 11   | 20  |   |  | FOR  | (A1L,X)   |  |
|   |  |   |   |  |  | (AIL,A)   |  |
| FED8:   |  |   |   |  | PHA  |   |  |
| FED9:   | A1   | 3C  |   |  | LDA  | (A1L,X)<br>WRBYTE   |  |
| FEDB:   | 20   | ED  | FE  |  | JSR  | WRBYTE  |  |
| FEDE:   | 20   | ΒA  | FC  |  | JSR  | NXTA1   |  |
| FEE1:   |  |   |   |  | T'DA   | NXTA1<br>#\$1D  |  |
| FEE3:   |  |   |   |  |  | 11422   |  |
|   |  |   |   |  | PLA  |   |  |
| FEE4:   |  |   |   |  | BCC  |   |  |
| FEE6:   | A0   | 22  |   |  | LDY  |   |  |
| FEE8:   | 20   | ED  | FE  |  | JSR  | WRBYTE  |  |
| FEEB:   | F0   | 4D  |   |  | BEQ  |   |  |
| FEED:   | ∆2   | 10  |   |  |  |   |  |
| FEEF:   |  |   |   | WRBYTE<br>WRBYT2   | ACT  | πφ±0<br>λ   |  |
|   |  |   |   |  |  | A   |  |
| FEF0:   |  |   |   |  |  | WRBIT   |  |
| FEF3:   | D0   | FA  |   |  | BNE  | WRBYT2  |  |
| FEF5:   | 60   |   |   |  | RTS  |   |  |
| FEF6.   | 20   | 0.0   | FE  | CRMON  | JISR   | BL1   | HANDLE A CR AS BLANK   |
| FEF9:   | 60   |   |   | 0101011  | PLA  | 221   | THEN POP STACK   |
|   |  |   |   |  |  |   |  |
| FEFA:   |  |   |   |  | PLA  |   | AND RTN TO MON   |
| FEFB:   |  |   |   |  | BNE  | MONZ  |  |
| FEFD:   | 20   | FA  | FC  | READ   | JSR  | RD2BIT  | FIND TAPEIN EDGE   |
| FF00:   | A9   | 16  |   |  | LDA  | #\$16   |  |
| FF02:   | 20   | C9  | FC  |  | JISR   | HEADR   | DELAY 3.5 SECONDS  |
| FF05:   |  |   |   |  | CTTA   | CURCIM  | INIT CHKSUM=\$FF   |
|   |  |   |   |  | SIA  | CHKSUM  | INII CHRSOM=SFF  |
| FF07:   |  |   |   |  | JSR  | RD2B11  | FIND TAPEIN EDGE   |
| FF0A:   | A0   | 24  |   | RD2  | LDY  | #\$24   | FIND TAPEIN EDGE<br>LOOK FOR SYNC BIT  |
| FF0C:   | 20   | FD  | FC  |  | JSR  | RDBIT<br>RD2  | (SHORT 0)  |
| FFOF:   | В0   | F9  |   |  | BCS  | RD2   | LOOP UNTIL FOUND   |
| FF11:   |  |   |   |  | TCP  | PDBTT   | SKIP SECOND SYNC H-CYCLE   |
|   |  |   |   |  | TDI  | KDD11<br>Udan   |  |
| FF14:   |  |   |   |  | цр х   |   | INDEX FOR 0/1 TEST   |
| FF16:   | 20   | EC  | FC  | RD3  | JSR  | RDBYTE  | READ A BYTE  |
| FF19:   | 81   | 3C  |   |  | STA  | (A1L,X)<br>CHKSUM   | STORE AT (A1)  |
| FF1B:   | 45   | 2E  |   |  | EOR  | CHKSUM  |  |
| FF1D:   | 85   | 2E  |   |  |  |   | UPDATE RUNNING CHKSUM  |
| FF1F:   |  |   |   |  |  |   | INC A1, COMPARE TO A2  |
|   |  |   |   |  | TDV  | NXTA1<br>#\$35  | COMPENSATE 0/1 INDEX   |
|   |  | 35  |   |  | гдт  | #\$35   |  |
| FF22:   |  |   |   |  |  |   |  |
| FF24:   | 90   |   |   |  | BCC  | RD3   | LOOP UNTIL DONE  |
|   | 90   |   | FC  |  | BCC<br>JSR   | RD3   | LOOP UNTIL DONE<br>READ CHKSUM BYTE  |
| FF24:   | 90<br>20   | EC  |   |  | JSR  | RD3<br>RDBYTE   | LOOP UNTIL DONE<br>READ CHKSUM BYTE  |
| FF24:<br>FF26:<br>FF29:   | 90<br>20<br>C5   | EC<br>2E  |   |  | JSR<br>CMP   | RD3<br>RDBYTE<br>CHKSUM   | READ CHKSUM BYTE   |
| FF24:<br>FF26:<br>FF29:<br>FF2B:  | 90<br>20<br>C5<br>F0   | EC<br>2E<br>0D  |   |  | JSR<br>CMP<br>BEQ  | RD3<br>RDBYTE<br>CHKSUM<br>BELL   | LOOP UNTIL DONE<br>READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN   |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:   | 90<br>20<br>C5<br>F0<br>A9   | EC<br>2E<br>0D<br>C5  |   | PRERR  | JSR<br>CMP<br>BEQ<br>LDA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN  |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:<br>FF2D:  | 90<br>20<br>C5<br>F0<br>A9<br>20   | EC<br>2E<br>0D<br>C5<br>ED  | FD  | PRERR  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT  | READ CHKSUM BYTE   |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:   | 90<br>20<br>C5<br>F0<br>A9<br>20   | EC<br>2E<br>0D<br>C5<br>ED  | FD  | PRERR  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN  |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:<br>FF2D:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9   | EC<br>2E<br>0D<br>C5<br>ED<br>D2  | FD  | PRERR  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN  |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:<br>FF2F:<br>FF32:<br>FF34:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20   | EC<br>2E<br>0D<br>C5<br>ED<br>D2<br>ED  | FD<br>FD  | PRERR  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN  |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:<br>FF2F:<br>FF32:<br>FF34:<br>FF37:   | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>20   | EC<br>2E<br>0D<br>C5<br>ED<br>D2<br>ED<br>ED  | FD<br>FD<br>FD  | PRERR  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL  |
| FF24:<br>FF29:<br>FF29:<br>FF2D:<br>FF2F:<br>FF32:<br>FF34:<br>FF37:<br>FF3A:   | 90<br>20<br>C5<br>F0<br>20<br>20<br>20<br>20<br>A9   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87  | FD<br>FD<br>FD  | PRERR<br>BELL  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>LDA  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN  |
| FF24:<br>FF29:<br>FF28:<br>FF2D:<br>FF27:<br>FF32:<br>FF34:<br>FF37:<br>FF3A:<br>FF32:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>20<br>A9<br>4C   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>ED<br>87<br>ED  | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL  | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>JMP   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN  |
| FF24:<br>FF29:<br>FF28:<br>FF2D:<br>FF27:<br>FF32:<br>FF34:<br>FF37:<br>FF3A:<br>FF37:<br>FF3F:   | 90<br>20<br>5<br>70<br>20<br>20<br>20<br>20<br>20<br>40<br>40  | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87<br>ED<br>48  | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE   | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>JSR<br>JSR<br>LDA<br>JMP<br>LDA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF28:<br>FF2D:<br>FF27:<br>FF32:<br>FF34:<br>FF37:<br>FF3A:<br>FF32:  | 90<br>20<br>5<br>70<br>20<br>20<br>20<br>20<br>20<br>40<br>40  | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87<br>ED<br>48  | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE   | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>JMP   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN  |
| FF24:<br>FF29:<br>FF28:<br>FF2D:<br>FF27:<br>FF32:<br>FF34:<br>FF37:<br>FF3A:<br>FF37:<br>FF37:<br>FF37:<br>FF37:   | 90<br>20<br>5<br>F0<br>20<br>20<br>20<br>20<br>20<br>40<br>45<br>48  | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87<br>ED<br>48  | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE   | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>PHA  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
| FF24:<br>FF20:<br>FF29:<br>FF20:<br>FF20:<br>FF32:<br>FF34:<br>FF34:<br>FF37:<br>FF37:<br>FF34:<br>FF34:<br>FF41:<br>FF42:  | 90<br>20<br>5<br>F0<br>20<br>20<br>20<br>20<br>20<br>40<br>45<br>48<br>45  | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87<br>ED<br>48<br>45  | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE   | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>PHA<br>LDA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF29:<br>FF2B:<br>FF2D:<br>FF2F:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF3F:<br>FF41:<br>FF42:<br>FF44:   | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>A6   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87<br>ED<br>48<br>45<br>46  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1                                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>PHA<br>LDA<br>LDA  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>COUT<br>\$TATUS<br>ACC<br>XREG   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
| FF24:<br>FF26:<br>FF29:<br>FF2B:<br>FF2D:<br>FF2D:<br>FF32:<br>FF34:<br>FF37:<br>FF34:<br>FF37:<br>FF3F:<br>FF42:<br>FF44:<br>FF46:   | 90<br>20<br>C5<br>F0<br>A9<br>20<br>20<br>20<br>20<br>20<br>40<br>A9<br>4C<br>A5<br>48<br>A5<br>A6<br>A4   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>87<br>ED<br>48<br>45<br>46<br>47  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1                                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>LDA<br>LDA<br>LDA<br>LDX<br>LDY  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>COUT<br>\$TATUS<br>ACC<br>XREG   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF29:<br>FF29:<br>FF20:<br>FF34:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF34:<br>FF34:<br>FF41:<br>FF44:<br>FF44:<br>FF48:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>A6<br>A4<br>28   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>22<br>ED<br>87<br>ED<br>48<br>45<br>46<br>47  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1                                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>LDA<br>LDA<br>LDX<br>LDY<br>PLP  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>COUT<br>\$TATUS<br>ACC<br>XREG   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF29:<br>FF20:<br>FF20:<br>FF37:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF46:<br>FF49:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>A6<br>A4<br>28<br>60   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>22<br>ED<br>87<br>ED<br>48<br>45<br>46<br>47  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1                                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDY<br>PLP<br>RTS  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE   |
| FF24:<br>FF29:<br>FF29:<br>FF29:<br>FF20:<br>FF34:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF34:<br>FF34:<br>FF41:<br>FF44:<br>FF44:<br>FF48:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>A6<br>A4<br>28<br>60   | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>22<br>ED<br>87<br>ED<br>48<br>45<br>46<br>47  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1                                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDY<br>PLP<br>RTS  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE   |
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| FF24:<br>FF20:<br>FF20:<br>FF20:<br>FF20:<br>FF32:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF44:<br>FF46:<br>FF46:<br>FF49:<br>FF44:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>A9<br>40<br>A5<br>48<br>A5<br>A6<br>A4<br>28<br>60<br>85<br>86   | EC<br>2E<br>0D<br>C5<br>ED<br>ED<br>2<br>ED<br>48<br>45<br>46<br>47<br>45<br>46   | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDY<br>PLP<br>RTS  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS   |
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| FF24:<br>FF29:<br>FF29:<br>FF20:<br>FF20:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF44:<br>FF44:<br>FF46:<br>FF46:<br>FF49:<br>FF44:<br>FF42:<br>FF42:<br>FF42:<br>FF51:<br>FF52:<br>FF54:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A6<br>A4<br>28<br>60<br>85<br>86<br>85<br>BA   | EC 2E 0D C5 ED 2ED 87 ED 48 45 46 47 45 46 47 48  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STX<br>STY<br>PLP<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE   |
| FF24:<br>FF29:<br>FF29:<br>FF20:<br>FF20:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF44:<br>FF46:<br>FF44:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF42:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF45:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55: | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A6<br>A4<br>28<br>60<br>85<br>86<br>85<br>BA   | EC 2E 0D C5 ED 2ED 87 ED 48 45 46 47 45 46 47 48  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STX<br>STA<br>STX<br>STA<br>STA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE   |
| FF24:<br>FF29:<br>FF29:<br>FF20:<br>FF20:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF44:<br>FF44:<br>FF46:<br>FF46:<br>FF49:<br>FF44:<br>FF42:<br>FF42:<br>FF42:<br>FF51:<br>FF52:<br>FF54:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>20<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A6<br>A4<br>85<br>86<br>84<br>08<br>85<br>BA<br>86<br>85<br>BA   | EC 2E 0D C5 ED 2ED 87 ED 48 45 46 47 45 46 47 48  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STX<br>STY<br>PLP<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE   |
| FF24:<br>FF22:<br>FF29:<br>FF29:<br>FF20:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF51:<br>FF52:<br>FF55:<br>FF55:<br>FF57:  | 90<br>20<br>C5<br>F0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED 2ED ED 87 ED 48 45 46 47 45 46 47 48 49  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAVE                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDY<br>PLP<br>RTS<br>STA<br>STY<br>PHP<br>PLA<br>STX<br>STY<br>CLD   | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE   |
| FF24:<br>FF20:<br>FF20:<br>FF20:<br>FF27:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF44:<br>FF46:<br>FF46:<br>FF46:<br>FF50:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF58:   | 90<br>20<br>C5<br>F0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED 2ED ED 87 ED 48 45 46 47 45 46 47 48 49  | FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAVE                 | JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>COUT<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>XREG<br>YREG<br>STATUS<br>SPNT   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF29:<br>FF29:<br>FF27:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:  | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>40<br>A5<br>48<br>A5<br>A6<br>A2<br>85<br>86<br>85<br>86<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>8<br>BA<br>8 | EC<br>2E<br>0D<br>C5<br>ED<br>22<br>ED<br>22<br>ED<br>48<br>45<br>46<br>47<br>45<br>46<br>47<br>48<br>49<br>84  | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAVE<br>SAV1         | JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$87<br>COUT<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS<br>SPNT<br>SETNORM  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF29:<br>FF20:<br>FF20:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF34:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:   | 90<br>20<br>C5<br>F0<br>A9<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>48<br>A5<br>A6<br>A2<br>86<br>85<br>86<br>85<br>BA<br>85<br>BA<br>85<br>BA<br>80<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED 2E 0D 2E 0D 2E 0E 2E | FD<br>FD<br>FD<br>FD  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS<br>SPNT<br>SETNORM<br>INIT  | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
| FF24:<br>FF22:<br>FF22:<br>FF22:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF45:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:   | 90<br>20<br>C5<br>F0<br>A9<br>20<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>A6<br>A4<br>28<br>60<br>85<br>86<br>84<br>08<br>85<br>BA<br>86<br>D8<br>60<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED D2 ED 87 ED 48 45 46 47 45 46 47 48 49 84 2F 33  | FD<br>FD<br>FD<br>FD<br>FD<br>FE  | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STX<br>STY<br>PHP<br>PLA<br>STA<br>STX<br>STY<br>PLDA<br>STA<br>STX<br>STY<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA                     | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS<br>SPNT<br>SETNORM<br>INIT<br>SETVID                              | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
| FF24:<br>FF29:<br>FF29:<br>FF20:<br>FF20:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF34:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:   | 90<br>20<br>C5<br>F0<br>A9<br>20<br>20<br>A9<br>4C<br>A5<br>48<br>A5<br>A6<br>A4<br>28<br>60<br>85<br>86<br>84<br>08<br>85<br>BA<br>86<br>D8<br>60<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED D2 ED 87 ED 48 45 46 47 45 46 47 48 49 84 2F 33  | FD<br>FD<br>FD<br>FD<br>FD<br>FE<br>FE<br>FE                                    | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAVE<br>SAVE         | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STY<br>PHP<br>PLA<br>STX<br>STY<br>PHP<br>PLA<br>STX<br>STX<br>CLD<br>RTS<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA                      | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS<br>STATUS<br>SPNT<br>SETNORM<br>INIT<br>SETVID<br>SETKBD | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
| FF24:<br>FF22:<br>FF22:<br>FF22:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF45:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:   | 90<br>20<br>F0<br>A9<br>20<br>20<br>A9<br>20<br>A9<br>20<br>A9<br>20<br>A9<br>20<br>A9<br>20<br>A9<br>20<br>A9<br>20<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D 25 ED 22 ED 87 ED 48 45 46 47 45 46 47 48 49 82F 93 89   | FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FE<br>FE                        | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAVE<br>SAVE         | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JMP<br>LDA<br>PHA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STX<br>STY<br>PHP<br>PLA<br>STA<br>STX<br>STY<br>PLDA<br>STA<br>STX<br>STY<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA                     | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>ACC<br>XREG<br>YREG<br>STATUS<br>STATUS<br>SPNT<br>SETNORM<br>INIT<br>SETVID<br>SETKBD | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
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| FF24:<br>FF22:<br>FF22:<br>FF22:<br>FF32:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF34:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF65:<br>FF65:<br>FF65:<br>FF66:<br>FF69:  | 90<br>20<br>C5<br>F0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED 2 ED ED 2 ED 48 45 46 47 45 46 47 48 49 84 2F 93 89 3A AA  | FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>FD<br>F | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1<br>RESET<br>MON | JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STA<br>STX<br>STA<br>STX<br>STA<br>STX<br>STA<br>STA<br>STA<br>STA<br>JSR<br>STA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>COUT<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>STATUS<br>SPNT<br>SETNORM<br>INIT<br>SETVID<br>SETKBD<br>BELL<br>#\$AA   | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS   |
| FF24:<br>FF22:<br>FF22:<br>FF22:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66: | 90<br>20<br>C5<br>F0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>80<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED 2ED ED 2ED ED 48 45 46 47 45 46 47 48 49 82F 93 89 3AA 33  | FD<br>FD<br>FD<br>FD<br>FD<br>FE<br>FE<br>FE<br>FE<br>FE                        | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>STATUS<br>SPNT<br>SETNORM<br>INIT<br>SETVID<br>SETKBD<br>BELL<br>#\$AA<br>PROMPT       | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS<br>SAVE 6502 REG CONTENTS<br>SET SCREEN MODE<br>AND INIT KBD/SCREEN<br>AS I/O DEV'S<br>MUST SET HEX MODE!<br>'*' PROMPT FOR MON |
| FF24:<br>FF22:<br>FF22:<br>FF22:<br>FF34:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF37:<br>FF41:<br>FF42:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF44:<br>FF45:<br>FF51:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF55:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF56:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66:<br>FF66: | 90<br>20<br>C5<br>F0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>86<br>85<br>80<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | EC 2E 0D C5 ED 2ED ED 2ED ED 48 45 46 47 45 46 47 48 49 82F 93 89 3AA 33  | FD<br>FD<br>FD<br>FD<br>FD<br>FE<br>FE<br>FE<br>FE<br>FE                        | PRERR<br>BELL<br>RESTORE<br>RESTR1<br>SAVE<br>SAV1                 | JSR<br>CMP<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA  | RD3<br>RDBYTE<br>CHKSUM<br>BELL<br>#\$C5<br>COUT<br>#\$D2<br>COUT<br>COUT<br>#\$87<br>COUT<br>STATUS<br>ACC<br>XREG<br>YREG<br>STATUS<br>SPNT<br>SETNORM<br>INIT<br>SETVID<br>SETKBD<br>BELL<br>#\$AA<br>PROMPT       | READ CHKSUM BYTE<br>GOOD, SOUND BELL AND RETURN<br>PRINT "ERR", THEN BELL<br>OUTPUT BELL AND RETURN<br>RESTORE 6502 REG CONTENTS<br>USED BY DEBUG SOFTWARE<br>SAVE 6502 REG CONTENTS<br>SAVE 6502 REG CONTENTS   |

|   | ~ ~   | ~ ~            |      |                 | TOD  | <b>ENODE</b>  | GLEND NON NODE GON TOY   |
|---|---|----------------|------|-----------------|--|---|--|
| FF70:   |   |                |      |                 | JSR  | ZMODE   | CLEAR MON MODE, SCAN IDX   |
| FF73:   | 20  | A'/            | F.F. | NX.I.T.I.W      | JSR  | GETNUM  | GET ITEM, NON-HEX  |
| FF76:   | 84  | 34             |      |                 | STY  | YSAV  | GET ITEM, NON-HEX<br>CHAR IN A-REG<br>X-REG=0 IF NO HEX INPUT  |
| FF78:   | A0  | 17             |      |                 | LDY  | #\$17   | X-REG=0 IF NO HEX INPUT  |
|   |   |                |      | CHRSRCH         | DEY  |   |  |
| FF7B:   |   |                |      |                 | BMI  | MON   | NOT FOUND, GO TO MON   |
| FF7D:   |   |                |      |                 | CMP  | CHRTBL,Y  | FIND CMND CHAR IN TEL<br>FOUND, CALL CORRESPONDING   |
| FF80:   |   |                |      |                 | BNE  | CHRSRCH   |  |
| FF82:   |   |                |      |                 | JSR  | TOSUB   | FOUND, CALL CORRESPONDING  |
| FF85:   | Α4  | 34             |      |                 | LDY  | YSAV<br>NXTITM  | SUBROUTINE   |
| FF87:   | 4C  | 73             | FF   |                 | JMP  | NXTITM  |  |
| FF8A:   | A2  | 03             |      | DIG             | LDX  | #\$03   |  |
| FF8C:   | 0A  |                |      |                 | ASL  | A   |  |
| FF8D:   | 0A  |                |      |                 | ASL<br>ASL   | A   | GOT HEX DIG,   |
| FF8E:   | 0A  |                |      |                 | ASL  | A   | SHIFT INTO A2  |
| FF8F:   | 0A  |                |      |                 | ASL  | A   |  |
| FF90:   | 0A  |                |      | NXTBIT          | ASL  | A   |  |
| FF91:   | 26  | 3E             |      |                 | ROL  | A2L   |  |
| FF93:   | 26  | 3F             |      |                 | ROL  | A2H   |  |
| FF95:   | CA  |                |      |                 | DEX  | NXTBIT  | LEAVE X=\$FF IF DIG  |
| FF96:   | 10  | F8             |      |                 | BPL  | NXTBIT  |  |
|   |   |                |      | NXTBAS          | LDA  | MODE  |  |
| FF9A:   |   |                |      |                 | BNE  | NXTBS2  | IF MODE IS ZERO<br>THEN COPY A2 TO<br>A1 AND A3  |
| FF9C:   |   |                |      |                 | LDA  | A2H.X   | THEN COPY A2 TO  |
| FF9E:   |   |                |      |                 | STA  | A1H.X   | A1 AND A3  |
| FFA0:   |   |                |      |                 | STA  | ДЗН X   |  |
| FFA2:   |   |                |      | NXTBS2          | TNY  | 11511,11  |  |
| FFA2:<br>FFA3:  |   |                |      | NA1D52          | DEO  | NYTDAC  |  |
| FFA5:<br>FFA5:  |   |                |      |                 | DNE  | NXTBAS  |  |
|   |   |                |      | annun.          | BNE  | NXTCHR  |  |
| FFA7:   | A2  | 00             |      | GETNUM          | LDX  | #\$00   | CLEAR A2   |
|   |   |                |      |                 | STX  | A2L   |  |
| FFAB:   | 86  | 3F             |      |                 | STX  | A2H   |  |
| FFAD:   | В9  | 00             | 02   | NXTCHR          | LDA  | IN,Y  | GET CHAR   |
| FFB0:   |   |                |      |                 | INY  |   |  |
| FFB1:   | 49  | В0             |      |                 | EOR  | #\$B0   |  |
| FFB3:   | C9  | 0A             |      |                 | CMP  |   |  |
| FFB5:   | 90  | D3             |      |                 | BCC  | DIG   | IF HEX DIG, THEN   |
| FFB7:   | 69  | 88             |      |                 | ADC  | #\$88   |  |
| FFB9:   | C9  | FA             |      |                 | CMP  | #\$FA   |  |
| FFBB:   | В0  | CD             |      |                 | BCS  | DIG   |  |
| FFBD:   | 60  |                |      |                 | RTS  |   |  |
| FFBE:   | A9  | FE             |      | TOSUB           | LDA  | #GO/256   | PUSH HIGH-ORDER  |
| FFC0:   |   |                |      |                 | PHA  |   | SUBR ADR ON STK  |
| FFC1:   | В9  | E3             | FF   |                 | LDA  | SUBTBL,Y  | PUSH LOW-ORDER   |
|   |   |                |      |                 |  |   |  |
| FFC4:   | 48  |                |      |                 | PHA  |   | SUBR ADR ON STK  |
| FFC4:<br>FFC5:  |   |                |      |                 | PHA<br>LDA   | MODE  | SUBR ADR ON STK  |
| FFC5:   | A5  | 31             |      |                 | LDA  | MODE<br>#\$00   |  |
| FFC5:   | A5  | 31             |      |                 | LDA  |   | CLR MODE, OLD MODE   |
| FFC5:<br>FFC7:  | A5<br>A0  | 31<br>00       |      | ZMODE           | LDA<br>LDY   | #\$00   | CLR MODE, OLD MODE   |
| FFC5:<br>FFC7:<br>FFC9:   | A5<br>A0<br>84  | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY  |   | CLR MODE, OLD MODE<br>TO A-REG   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFCB:  | A5<br>A0<br>84<br>60  | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS   | #\$00<br>MODE   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFCB:<br>FFCC:   | A5<br>A0<br>84<br>60<br>BC  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB  | #\$00<br>MODE<br>\$BC   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")  |
| FFC5:<br>FFC7:<br>FFC9:<br>FFCB:<br>FFCC:<br>FFCC:  | A5<br>A0<br>84<br>60<br>BC<br>B2  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB  | #\$00<br>MODE<br>\$BC   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFCB:<br>FFCC:<br>FFCC:<br>FFCC:   | A5<br>A0<br>84<br>60<br>BC<br>B2<br>BE  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB  | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")  |
| FFC5:<br>FFC7:<br>FFC9:<br>FFCB:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFCC:  | A5<br>A0<br>84<br>60<br>BC<br>B2<br>BE<br>ED  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB  | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("TT")   |
| FFC5:<br>FFC9:<br>FFCB:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFCF:<br>FFC0:  | A5<br>A0<br>84<br>60<br>BC<br>B2<br>BE<br>ED<br>EF  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB   | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("TT")<br>F("V")   |
| FFC5:<br>FFC7:<br>FFC8:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFC5:<br>FFC6:<br>FFC0:<br>FFD0:<br>FFD1:   | A5<br>A0<br>84<br>60<br>BC<br>B2<br>BE<br>ED<br>EF<br>C4  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB                                    | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF<br>\$C4   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("CTRL-K")   |
| FFC5:<br>FFC7:<br>FFC8:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFCC:<br>FFC5:<br>FFC0:<br>FFD1:<br>FFD2:   | A5<br>A0<br>84<br>60<br>B2<br>BE<br>ED<br>EF<br>C4<br>EC  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB                      | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$EB<br>\$EF<br>\$C4<br>\$EC   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("TT")<br>F("V")<br>F("CTRL-K")<br>F("S")  |
| FFC5:<br>FFC7:<br>FFC8:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFC4:<br>FFC5:<br>FFD0:<br>FFD1:<br>FFD2:<br>FFD3:  | A5<br>A0<br>84<br>60<br>BC<br>BE<br>ED<br>EF<br>C4<br>EC<br>A9  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB               | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF<br>\$C4<br>\$EC<br>\$A9   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")  |
| FFC5:<br>FFC7:<br>FFC8:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFD0:<br>FFD1:<br>FFD2:<br>FFD3:<br>FFD4:   | A5<br>A0<br>84<br>60<br>B2<br>B2<br>BE<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB        | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$C4<br>\$EC<br>\$A9<br>\$BB   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-B")   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFCC:<br>FFC2:<br>FFC2:<br>FFC5:<br>FFD1:<br>FFD1:<br>FFD2:<br>FFD3:<br>FFD4:<br>FFD5:  | A5<br>A0<br>84<br>60<br>B2<br>B2<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$BB<br>\$A6   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-B")<br>F("-")   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFCC:<br>FFC2:<br>FFC2:<br>FFD1:<br>FFD2:<br>FFD2:<br>FFD4:<br>FFD4:<br>FFD5:<br>FFD6:  | A5<br>A0<br>84<br>60<br>B2<br>BE<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$BB<br>\$A6<br>\$A4   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-F")<br>F("CTRL-B")<br>F("-")<br>F("+")   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFC0:<br>FFC0:<br>FFC7:<br>FFC7:<br>FFD1:<br>FFD2:<br>FFD4:<br>FFD4:<br>FFD5:<br>FFD6:<br>FFD7:   | A5<br>A0<br>84<br>60<br>B2<br>BE<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$B8<br>\$A6<br>\$A4<br>\$06   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("CTRL-K")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("-)<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFC2:<br>FFC7:<br>FFC7:<br>FFD1:<br>FFD2:<br>FFD2:<br>FFD4:<br>FFD5:<br>FFD5:<br>FFD7:<br>FFD8:   | A5<br>A0<br>84<br>60<br>BC<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$E5<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$A9<br>\$B8<br>\$A6<br>\$A6<br>\$A4<br>\$C4<br>\$A6<br>\$A6<br>\$A6<br>\$A6<br>\$A6<br>\$A6<br>\$A6<br>\$A6<br>\$A6<br>\$A6   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("T")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-B")<br>F("-)<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)<br>F("<")  |
| FFC5:<br>FFC7:<br>FFC8:<br>FFC8:<br>FFC6:<br>FFC6:<br>FFC6:<br>FFD0:<br>FFD1:<br>FFD2:<br>FFD2:<br>FFD3:<br>FFD4:<br>FFD5:<br>FFD6:<br>FFD7:<br>FFD8:<br>FFD9:  | A5<br>A0<br>84<br>60<br>B2<br>B2<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$ED<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$A9<br>\$BB<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("TV")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-B")<br>F("-")<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)<br>F("<")<br>F("N")  |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFC1:<br>FFD1:<br>FFD2:<br>FFD3:<br>FFD4:<br>FFD5:<br>FFD5:<br>FFD7:<br>FFD5:<br>FFD5:<br>FFD5:<br>FFD5:<br>FFD5:<br>FFD7:   | A5<br>A0<br>84<br>60<br>B2<br>B2<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A6<br>95<br>07<br>02  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$BB<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("T")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-B")<br>F("-")<br>F("-")<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)<br>F("<")<br>F("I")  |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFC2:<br>FFC2:<br>FFC2:<br>FFD1:<br>FFD2:<br>FFD3:<br>FFD4:<br>FFD5:<br>FFD6:<br>FFD7:<br>FFD8:<br>FFD4:<br>FFD5:<br>FFD4:<br>FFD5:<br>FFD5:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:   | A5<br>A0<br>84<br>60<br>B2<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>05  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$BB<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02<br>\$05   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-B")<br>F("-")<br>F("+")<br>F("+")<br>F("#1")<br>F("klt")<br>F("I")<br>F("I")<br>F("I")<br>F("I")   |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFC2:<br>FFC2:<br>FFC5:<br>FFD1:<br>FFD2:<br>FFD4:<br>FFD4:<br>FFD5:<br>FFD5:<br>FFD9:<br>FFD9:<br>FFD9:<br>FFD4:<br>FFD9:<br>FFD4:<br>FFD4:<br>FFD4:<br>FFD9:<br>FFD4:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:<br>FFD7:   | A5<br>A0<br>84<br>60<br>B2<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>05<br>F0  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$B8<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$02<br>\$02<br>\$05<br>\$F0   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-F")<br>F("CTRL-P")<br>F("-TRL-P")<br>F("+")<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)<br>F("<")<br>F("I")<br>F("I")<br>F("W")  |
| FFC5:<br>FFC7:<br>FFC9:<br>FFC5:<br>FFC2:<br>FFC7:<br>FFC7:<br>FFD1:<br>FFD2:<br>FFD4:<br>FFD4:<br>FFD5:<br>FFD5:<br>FFD5:<br>FFD5:<br>FFD7:<br>FFD8:<br>FFD9:<br>FFD4:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:<br>FFD2:   | A5<br>A0<br>84<br>60<br>BC<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>05<br>F0<br>00  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BB<br>\$ED<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$BB<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02<br>\$05<br>\$F0<br>\$00   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("CTRL-K")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("CTRL-B")<br>F("CTRL-B")<br>F("T)<br>F("T)<br>F("T)<br>F("T)<br>F("T)<br>F("T)<br>F("N")<br>F("N")<br>F("N")<br>F("N")<br>F("N")<br>F("W")<br>F("W")<br>F("G")  |
| FFC5:           FFC7:           FFC8:           FFC6:           FFC7:           FFC8:           FFC9:           FFC7:           FF01:           FFD2:           FFD4:           FFD5:           FFD6:           FFD6:           FFD7:           FFD8:           FFD8:           FFD01:           FFD2:           FFD8:           FFD8:           FFD01:           FFD2:           FFD2:           FFD3:           FFD4:           FFD5:           FFD4:           FFD5:           FFD5:           FFD4:           FFD5:           FFD5:           FFD4:           FFD5:   | A5<br>A0<br>84<br>60<br>BC<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>05<br>F0<br>00<br>EB  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$ED<br>\$ED<br>\$C4<br>\$A9<br>\$A9<br>\$A9<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02<br>\$05<br>\$F0<br>\$C0<br>\$C2<br>\$C2<br>\$C2<br>\$C2<br>\$C2<br>\$C2<br>\$C4<br>\$EC<br>\$EC<br>\$EC<br>\$EC<br>\$EC<br>\$EC<br>\$EC<br>\$EC<br>\$EC<br>\$EC   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-E")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-B")<br>F("CTRL-B")<br>F("-")<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)<br>F("<")<br>F("I")<br>F("I")<br>F("I")<br>F("I")<br>F("G")<br>F("G")<br>F("G")<br>F("R")   |
| FFC5:           FFC9:           FFC8:           FFC6:           FFC6:           FFC7:           FFD1:           FFD2:           FFD2:           FFD4:           FFD5:           FFD6:           FFD7:           FFD8:           FFD8:           FFD2:           FFD8:           FFD2:           FFD8:           FFD2:           FFD2: </td <td>A5<br/>A0<br/>84<br/>60<br/>B2<br/>BE<br/>ED<br/>EF<br/>C4<br/>EC<br/>A9<br/>BB<br/>A6<br/>06<br/>95<br/>07<br/>02<br/>05<br/>F0<br/>00<br/>EB<br/>93</td> <td>31<br/>00<br/>31</td> <td></td> <td>ZMODE<br/>CHRTBL</td> <td>LDA<br/>LDY<br/>STY<br/>RTS<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB</td> <td>#\$00<br/>MODE<br/>\$BC<br/>\$B2<br/>\$BE<br/>\$ED<br/>\$C4<br/>\$A9<br/>\$BB<br/>\$A6<br/>\$A4<br/>\$06<br/>\$95<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$07<br/>\$02<br/>\$07<br/>\$02<br/>\$07<br/>\$02<br/>\$95</td> <td>CLR MODE, OLD MODE<br/>TO A-REG<br/>GO TO SUBR VIA RTS<br/>F("CTRL-C")<br/>F("CTRL-E")<br/>F("T")<br/>F("T")<br/>F("V")<br/>F("CTRL-K")<br/>F("S")<br/>F("CTRL-B")<br/>F("CTRL-B")<br/>F("-")<br/>F("+")<br/>F("M") (F=EX-OR \$B0+\$89)<br/>F("&lt;")<br/>F("I")<br/>F("I")<br/>F("I")<br/>F("I")<br/>F("I")<br/>F("I")<br/>F("I")<br/>F("R")<br/>F("R")<br/>F(":")</td>  | A5<br>A0<br>84<br>60<br>B2<br>BE<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>06<br>95<br>07<br>02<br>05<br>F0<br>00<br>EB<br>93  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$C4<br>\$A9<br>\$BB<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02<br>\$05<br>\$07<br>\$02<br>\$07<br>\$02<br>\$07<br>\$02<br>\$07<br>\$02<br>\$95   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("T")<br>F("T")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-B")<br>F("CTRL-B")<br>F("-")<br>F("+")<br>F("M") (F=EX-OR \$B0+\$89)<br>F("<")<br>F("I")<br>F("I")<br>F("I")<br>F("I")<br>F("I")<br>F("I")<br>F("I")<br>F("R")<br>F("R")<br>F(":")  |
| FFC5:           FFC9:           FFC8:           FFC5:           FFC7:           FFC7:           FFC7:           FFD1:           FFD2:           FFD2:           FFD4:           FFD5:           FFD6:           FFD7:           FFD8:           FFD9:           FFD8:           FFD01:           FFD02:           FFD1:           FFD2:           FFD2:           FFD1:           FFD2:   | A5<br>A0<br>84<br>60<br>B2<br>BE<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>06<br>95<br>07<br>02<br>05<br>F0<br>00<br>EB<br>93<br>A7  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$BE<br>\$ED<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$A9<br>\$BB<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02<br>\$05<br>\$07<br>\$02<br>\$05<br>\$F0<br>\$00<br>\$EB<br>\$27   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("V")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-B")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("   |
| FFC5:           FFC7:           FFC9:           FFC5:           FFC6:           FFC1:           FFD2:           FFD1:           FFD2:           FFD3:           FFD4:           FFD5:           FFD5:           FFD6:           FFD9:           FFD8:           FFD8:           FFD9:           FFD7:           FFD8:           FFD9:           FFD0:           FFE0:           FFE1:   | A5<br>A0<br>84<br>60<br>B2<br>BE<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>05<br>00<br>EB<br>93<br>A7<br>C6  | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$EF<br>\$C4<br>\$EC<br>\$A9<br>\$B8<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$00<br>\$02<br>\$05<br>\$02<br>\$05<br>\$F0<br>\$00<br>\$20<br>\$27<br>\$27<br>\$27<br>\$27<br>\$27<br>\$27<br>\$27<br>\$27<br>\$27<br>\$27   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") |
| FFC5:           FFC9:           FFC9:           FFC0:           FFC0:           FFC0:           FFC1:           FFD2:           FFD1:           FFD2:           FFD3:           FFD4:           FFD5:           FFD5:           FFD6:           FFD2:           FFD5:           FFD2:           FFD5:           FFD5:           FFD5:           FFD5:           FFD5:           FFD5:           FFE05:           FFE1:           FFE2:  | A5<br>A0<br>84<br>60<br>B2<br>BE<br>EF<br>C4<br>EF<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>05<br>00<br>88<br>93<br>A7<br>C6<br>99  | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$BC<br>\$B2<br>\$B5<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4<br>\$C4   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-Y")<br>F("CTRL-E")<br>F("V")<br>F("V")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-B")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("-")<br>F("   |
| FFC5:           FFC9:           FFC8:           FFC6:           FFC6:           FFC7:           FFC8:           FFD1:           FFD2:           FFD3:           FFD4:           FFD5:           FFD4:           FFD5:           FFD7:           FFD8:           FFD0:           FFE0:           FFE0:           FFE0:           FFE2:           FFE3:   | A5<br>A0<br>B2<br>BED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A64<br>05<br>500<br>E3<br>A7<br>00<br>B3<br>A7<br>02<br>99<br>B2   | 31<br>00<br>31 |      | ZMODE<br>CHRTBL | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | #\$00<br>MODE<br>\$EC<br>\$B2<br>\$B5<br>\$ED<br>\$C4<br>\$A9<br>\$A6<br>\$A4<br>\$A6<br>\$A4<br>\$06<br>\$95<br>\$07<br>\$02<br>\$05<br>\$07<br>\$02<br>\$05<br>\$50<br>\$00<br>\$EB<br>\$93<br>\$A7<br>\$C6<br>\$99<br>BASCONT-1  | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") |
| FFC5:           FFC9:           FFC8:           FFC6:           FFC6:           FFC7:           FFD1:           FFD2:           FFD4:           FFD5:           FFD6:           FFD7:           FFD8:           FFD7:           FFD8:           FFD7:           FFD8:           FFD0:           FFD0:           FFD2:           FFE1:           FFE2:           FFE2: </td <td>A5<br/>A0<br/>B2<br/>BED<br/>EF<br/>C4<br/>EC<br/>A9<br/>BB<br/>A6<br/>A0<br/>6<br/>95<br/>60<br/>00<br/>EB<br/>93<br/>A7<br/>699<br/>B2<br/>C9</td> <td>31<br/>00<br/>31</td> <td></td> <td>ZMODE</td> <td>LDA<br/>LDY<br/>STY<br/>RTS<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB</td> <td><pre>#\$00<br/>MODE<br/>\$BC<br/>\$B2<br/>\$BE<br/>\$ED<br/>\$C4<br/>\$A9<br/>\$BB<br/>\$A6<br/>\$A4<br/>\$06<br/>\$95<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$05<br/>\$F0<br/>\$00<br/>\$EB<br/>\$93<br/>\$A7<br/>\$C2<br/>\$93<br/>\$A7<br/>\$C2<br/>\$93<br/>\$A7<br/>\$C2<br/>\$00<br/>\$BB<br/>\$A2<br/>\$00<br/>\$BB<br/>\$A2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C</pre></td> <td>CLR MODE, OLD MODE<br/>TO A-REG<br/>GO TO SUBR VIA RTS<br/>F("CTRL-C")<br/>F("CTRL-E")<br/>F("CTRL-E")<br/>F("T")<br/>F("CTRL-K")<br/>F("S")<br/>F("CTRL-P")<br/>F("CTRL-P")<br/>F("+")<br/>F("+")<br/>F("+")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")</td> | A5<br>A0<br>B2<br>BED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A0<br>6<br>95<br>60<br>00<br>EB<br>93<br>A7<br>699<br>B2<br>C9   | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00<br/>MODE<br/>\$BC<br/>\$B2<br/>\$BE<br/>\$ED<br/>\$C4<br/>\$A9<br/>\$BB<br/>\$A6<br/>\$A4<br/>\$06<br/>\$95<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$05<br/>\$F0<br/>\$00<br/>\$EB<br/>\$93<br/>\$A7<br/>\$C2<br/>\$93<br/>\$A7<br/>\$C2<br/>\$93<br/>\$A7<br/>\$C2<br/>\$00<br/>\$BB<br/>\$A2<br/>\$00<br/>\$BB<br/>\$A2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C2<br/>\$C</pre> | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") 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| FFC5:           FFC9:           FFC8:           FFC6:           FFC6:           FFC7:           FFD1:           FFD2:           FFD3:           FFD4:           FFD5:           FFD6:           FFD7:           FFD8:           FFD8:           FFD7:           FFD8:           FFD7:           FFD6:           FFD7:           FFD6:           FFE1:           FFE2:           FFE4:           FFE4:           FFE4:           FFE4:           FFE4:   | A5<br>A0<br>84<br>60<br>B2<br>ED<br>EF<br>C4<br>EC<br>A9<br>BB<br>A6<br>A4<br>06<br>95<br>07<br>02<br>500<br>EB<br>93<br>A7<br>C6<br>99<br>B2<br>C9<br>BE   | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00<br/>MODE<br/>\$BC<br/>\$B2<br/>\$BE<br/>\$ED<br/>\$C4<br/>\$C4<br/>\$C4<br/>\$C4<br/>\$A9<br/>\$BB<br/>\$A6<br/>\$A4<br/>\$06<br/>\$95<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$05<br/>\$F0<br/>\$00<br/>\$EB<br/>\$93<br/>\$A7<br/>\$C6<br/>\$99<br/>BASCONT-1<br/>USR-1<br/>REGZ-1</pre>  | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") |
| FFC5:           FFC7:           FFC9:           FFC0:           FFC0:           FFC1:           FFC2:           FFD1:           FFD2:           FFD3:           FFD4:           FFD5:           FFD6:           FFD7:           FFD8:           FFD9:           FFD8:           FFD2:           FFD5:           FFD2:           FFD2:           FFD2:           FFE1:           FFE2:           FFE3:           FFE4:           FFE5:           FFE6:   | A5<br>A0<br>84<br>60C<br>B2<br>BE<br>ED<br>EF<br>C4C<br>A9<br>BB<br>A6<br>05<br>F0<br>02<br>05<br>F0<br>00E<br>93<br>A7<br>C6<br>99<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00 MODE \$EC \$B2 \$B2 \$EF \$ED \$EF \$C4 \$EC \$A9 \$A4 \$06 \$95 \$A4 \$06 \$95 \$07 \$02 \$05 \$F0 \$00 \$EB \$93 \$A7 \$C6 \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 TRACE-1 TRACE-1</pre>   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") |
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A5<br>A0<br>84<br>60C<br>B2<br>BE<br>ED<br>EF<br>C4C<br>A9<br>BB<br>A6<br>05<br>F0<br>02<br>05<br>F0<br>00E<br>93<br>A7<br>C6<br>99<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>20<br>EC<br>20<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>20<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC<br>EC | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00<br/>MODE<br/>\$BC<br/>\$B2<br/>\$BE<br/>\$ED<br/>\$C4<br/>\$C4<br/>\$C4<br/>\$C4<br/>\$A9<br/>\$BB<br/>\$A6<br/>\$A4<br/>\$06<br/>\$95<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$05<br/>\$07<br/>\$02<br/>\$05<br/>\$F0<br/>\$00<br/>\$EB<br/>\$93<br/>\$A7<br/>\$C6<br/>\$99<br/>BASCONT-1<br/>USR-1<br/>REGZ-1</pre>  | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") 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  | A5<br>A0<br>84<br>60C<br>BE<br>BE<br>DE<br>CE<br>A9<br>BB<br>A64<br>95<br>702<br>050<br>00<br>EB<br>33<br>C9<br>BC<br>BE<br>C1<br>50<br>C9<br>BC<br>BE<br>C1<br>50<br>C<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C2<br>C  | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00 MODE SEC \$B2 \$BE \$ED \$EF \$C4 \$A9 \$A6 \$A4 \$06 \$95 \$07 \$02 \$05 \$07 \$02 \$05 \$570 \$00 \$EB \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 REGZ-1 TRACE-1 VFY-1 INPRT-1</pre>  | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA 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| FFC5:           FFC7:           FFC8:           FFC8:           FFC7:           FFC8:           FFC7:           FFC8:           FF01:           FF02:           FF03:           FF04:           FF04:           FF07:           FF08:           FF07:           FF08:           FF07:           FF08:           FF07:           FF08:           FF07:           FF02:           FF02:           FF02:           FF02:           FF02: </td <td>A5<br/>A0<br/>84<br/>60C<br/>BE<br/>BE<br/>BE<br/>CCC<br/>A9<br/>BB<br/>A6<br/>A0<br/>60<br/>507<br/>02<br/>050<br/>0702<br/>807<br/>807<br/>807<br/>807<br/>807<br/>807<br/>807<br/>807<br/>807<br/>807</td> <td>31<br/>00<br/>31</td> <td></td> <td>ZMODE</td> <td>LDA<br/>LDY<br/>STY<br/>RTS<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB</td> <td><pre>#\$00 MODE \$EC \$B2 \$ED \$ED \$C4 \$A9 \$A4 \$06 \$A4 \$06 \$A4 \$06 \$A4 \$06 \$95 \$07 \$02 \$05 \$F0 \$00 \$EB \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 RECZ-1 TRACE-1 VFY-1 STEPZ-1</pre></td> <td>CLR MODE, OLD MODE<br/>TO A-REG<br/>GO TO SUBR VIA RTS<br/>F("CTRL-C")<br/>F("CTRL-E")<br/>F("CTRL-E")<br/>F("T")<br/>F("CTRL-K")<br/>F("S")<br/>F("CTRL-P")<br/>F("CTRL-P")<br/>F("+")<br/>F("+")<br/>F("+")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")</td> 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\$EB \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 REGZ-1 TRACE-1 VFY-1 INPRT-1 STEPZ-1 OUTPRT-1 SETMODE-1</pre></td> <td>CLR MODE, OLD MODE<br/>TO A-REG<br/>GO TO SUBR VIA RTS<br/>F("CTRL-C")<br/>F("CTRL-E")<br/>F("CTRL-E")<br/>F("T")<br/>F("CTRL-K")<br/>F("S")<br/>F("CTRL-P")<br/>F("CTRL-P")<br/>F("+")<br/>F("+")<br/>F("+")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")</td>   | A5<br>A0<br>84<br>6B2<br>BEDF4<br>EC4<br>BB<br>A6<br>25<br>70<br>25<br>60<br>82<br>82<br>82<br>82<br>82<br>82<br>82<br>82<br>82<br>82<br>82<br>82<br>82   | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00 MODE \$EC \$B2 \$B2 \$EF \$EF \$C4 \$EC \$A9 \$A6 \$A4 \$06 \$95 \$07 \$02 \$05 \$F0 \$00 \$EB \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 REGZ-1 TRACE-1 VFY-1 INPRT-1 STEPZ-1 OUTPRT-1 SETMODE-1</pre>   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") 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| FFC5:           FFC9:           FFC9:           FFC0:           FFC0:           FFC0:           FFC1:           FFD2:           FFD1:           FFD2:           FFD4:           FFD5:           FFD4:           FFD5:           FFD4:           FFD5:           FFD5:           FFD4:           FFD5:           FFD5:           FFD6:           FFD6:           FFD7:           FFD6:           FFD7:           FFE4:           FFE2:           FFE4:           FFE4:           FFE5:           FFE4:           FFE5:           FFE4:           FFE5:           FFE4:           FFE4: </td <td>A5<br/>A0<br/>84<br/>6B2<br/>BEDF4<br/>EC49<br/>BBAA4<br/>95<br/>700<br/>500<br/>EB37<br/>C99<br/>BC9<br/>EC4<br/>C3<br/>8C3<br/>96<br/>A17<br/>2B</td> <td>31<br/>00<br/>31</td> <td></td> <td>ZMODE</td> <td>LDA<br/>LDY<br/>STY<br/>RTS<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB<br/>DFB</td> <td><pre>#\$00 MODE SEC \$B2 \$BE \$ED \$EF \$C4 \$A9 \$BB \$A6 \$A4 \$06 \$95 \$07 \$02 \$05 \$07 \$02 \$05 \$570 \$00 \$EB \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 REGZ-1 TRACE-1 VFY-1 INPRT-1 STEPZ-1 OUTPRT-1 SETMODE-1 SETMODE-1 SETMODE-1 </pre></td> <td>CLR MODE, OLD MODE<br/>TO A-REG<br/>GO TO SUBR VIA RTS<br/>F("CTRL-C")<br/>F("CTRL-E")<br/>F("CTRL-E")<br/>F("T")<br/>F("CTRL-K")<br/>F("S")<br/>F("CTRL-P")<br/>F("CTRL-P")<br/>F("+")<br/>F("+")<br/>F("+")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")<br/>F("klt")</td>  | A5<br>A0<br>84<br>6B2<br>BEDF4<br>EC49<br>BBAA4<br>95<br>700<br>500<br>EB37<br>C99<br>BC9<br>EC4<br>C3<br>8C3<br>96<br>A17<br>2B  | 31<br>00<br>31 |      | ZMODE           | LDA<br>LDY<br>STY<br>RTS<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB<br>DFB | <pre>#\$00 MODE SEC \$B2 \$BE \$ED \$EF \$C4 \$A9 \$BB \$A6 \$A4 \$06 \$95 \$07 \$02 \$05 \$07 \$02 \$05 \$570 \$00 \$EB \$93 \$A7 \$C6 \$99 BASCONT-1 USR-1 REGZ-1 TRACE-1 VFY-1 INPRT-1 STEPZ-1 OUTPRT-1 SETMODE-1 SETMODE-1 SETMODE-1 </pre>   | CLR MODE, OLD MODE<br>TO A-REG<br>GO TO SUBR VIA RTS<br>F("CTRL-C")<br>F("CTRL-E")<br>F("CTRL-E")<br>F("T")<br>F("CTRL-K")<br>F("S")<br>F("CTRL-P")<br>F("CTRL-P")<br>F("+")<br>F("+")<br>F("+")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt")<br>F("klt") 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| FFF0: | 83 |       | DFB | SETNORM-1 |              |
|-------|----|-------|-----|-----------|--------------|
| FFF1: | 7F |       | DFB | SETINV-1  |              |
| FFF2: | 5D |       | DFB | LIST-1    |              |
| FFF3: | CC |       | DFB | WRITE-1   |              |
| FFF4: | B5 |       | DFB | GO-1      |              |
| FFF5: | FC |       | DFB | READ-1    |              |
| FFF6: | 17 |       | DFB | SETMODE-1 |              |
| FFF7: | 17 |       | DFB | SETMODE-1 |              |
| FFF8: | F5 |       | DFB | CRMON-1   |              |
| FFF9: | 03 |       | DFB | BLANK-1   |              |
| FFFA: | FB |       | DFB | NMI       | NMI VECTOR   |
| FFFB: | 03 |       | DFB | NMI/256   |              |
| FFFC: | 59 |       | DFB | RESET     | RESET VECTOR |
| FFFD: | FF |       | DFB | RESET/256 |              |
| FFFE: | 86 |       | DFB | IRQ       | IRQ VECTOR   |
| FFFF: | FA |       | DFB | IRQ/256   |              |
|       |    | XQTNZ | EQU | \$3C      |              |

|                         | ******          | *****      | ******           | **   |                     |
|-------------------------|-----------------|------------|------------------|------|---------------------|
|                         | *               |            |                  | *    |                     |
|                         | * A             | PPLE-I     | I                | *    |                     |
|                         | * MINI          | -ASSEM     | BLER             | *    |                     |
|                         | *               |            |                  | *    |                     |
|                         | * COPYR         |            |                  |      |                     |
|                         | * APPLE         | COMPUT     | ER INC.          |      |                     |
|                         | *               | ~~~~~      |                  | *    |                     |
|                         | * ALL RI        | GHTS R     | ESERVED          | *    |                     |
|                         |                 | WOZNI.     | λV               | *    |                     |
|                         | υ.              | . BAUM     |                  | *    |                     |
|                         | *******         |            |                  | **   |                     |
|                         | TITLE ".        | APPLE-     | II MINI.         | -ASS | EMBLER"             |
|                         | FORMAT          | EQU        | \$2E             |      |                     |
|                         | LENGTH          | EQU        | \$2F             |      |                     |
|                         |                 | EQU        | \$31             |      |                     |
|                         | PROMPT          | EQU        | \$33             |      |                     |
|                         | YSAV            | EQU        | \$34             |      |                     |
|                         |                 | EQU        | \$35             |      |                     |
|                         |                 | EQU        | \$3A             |      |                     |
|                         |                 | EQU        | \$3B             |      |                     |
|                         |                 | EQU        | \$3D             |      |                     |
|                         |                 | EQU        | \$3E             |      |                     |
|                         |                 | EQU<br>EQU | \$3F<br>\$42     |      |                     |
|                         |                 | EQU        | \$43             |      |                     |
|                         |                 |            | \$44             |      |                     |
|                         |                 | EQU        | \$200            |      |                     |
|                         | INSDS2          | EQU        | \$F88E           |      |                     |
|                         | INSTDSP         | EQU        | \$F8D0           |      |                     |
|                         |                 | EQU        | \$F94A           |      |                     |
|                         |                 |            | \$F953           |      |                     |
|                         |                 | EQU        | \$F9B4           |      |                     |
|                         |                 | EQU        | \$F9BA           |      |                     |
|                         |                 | EQU        | \$F9C0           |      |                     |
|                         | MNEMR<br>CURSUP | EQU        | \$FA00<br>\$FC1A |      |                     |
|                         |                 | EQU        | \$FD67           |      |                     |
|                         |                 | EQU        | \$FDED           |      |                     |
|                         |                 | EQU        | ,<br>\$FE00      |      |                     |
|                         | A1PCLP          | EQU        | \$FE78           |      |                     |
|                         | BELL            | EQU        | \$FF3A           |      |                     |
|                         | GETNUM          | EQU        | \$FFA7           |      |                     |
|                         |                 | EQU        | \$FFBE           |      |                     |
|                         |                 | EQU        | \$FFC7           |      |                     |
|                         | CHRTBL          |            | \$FFCC           |      |                     |
| F500: E9 81             | REL             |            | \$F500<br>#\$81  |      | IS FMT COMPATIBLE   |
| F502: 4A                | KEL             | SBC<br>LSR | #\$01            |      | WITH RELATIVE MODE? |
| F502: 4A<br>F503: D0 14 |                 | BNE        | EBB3             |      | NO.                 |
| F505: A4 3F             |                 | LDY        | A2H              |      | 110.                |
| F507: A6 3E             |                 | LDX        | A2L              |      | DOUBLE DECREMENT    |
| F509: D0 01             |                 | BNE        | REL2             |      |                     |
| F50B: 88                |                 | DEY        |                  |      |                     |
| F50C: CA                | REL2            | DEX        |                  |      |                     |
| F50D: 8A                |                 | TXA        |                  |      |                     |
| F50E: 18                |                 | CLC        |                  |      |                     |
| F50F: E5 3A             |                 | SBC        | PCL              |      | FORM ADDR-PC-2      |
| F511: 85 3E             |                 | STA        | A2L              |      |                     |
| F513: 10 01<br>F515: C8 |                 | BPL<br>INY | REL3             |      |                     |
| F516: 98                | REL3            | TYA        |                  |      |                     |
| 1010. 00                | , LLLJ          | 110        |                  |      |                     |

|   | E5  | 20  |  |   | SBC   | חכת  |   |
|---|---|---|--|---|---|--|---|
| F519:   |   |   |  | ERR3  |   |  | ERROR IF >1-BYTE BRANCH   |
|   |   |   |  | FINDOP  |   |  | Biaton II /I BIID Biation   |
|   |   |   |  |   |   |  | MOVE INST TO (PC)   |
| F51D.   |   |   | 00                                     | FNDOP2  |   |  | NOVE INST TO (TC)   |
| F520:   |   |   |  |   | DEY   | (PCL),Y  |   |
| F523:   |   |   |  |   |   | FNDOP2   |   |
| F525:   |   |   | FC                                     |   |   | CURSUP   |   |
| F525:<br>F528:  |   |   |  |   |   |  | RESTORE CURSOR  |
| F528:   |   |   |  |   |   |  | TYPE FORMATTED LINE   |
|   |   |   |  |   | JSK   |  |   |
| F52E:<br>F531:  |   |   | F9                                     |   |   |  | UPDATE PC   |
|   |   |   |  |   |   | PCH  |   |
| F533:   |   |   | -                                      |   |   | PCL  |   |
| F535:   |   |   |  |   |   |  | GET NEXT LINE   |
|   |   |   |  | FAKEMON3  | JSR   | TOSUB  | GO TO DELIM HANDLER   |
| F53B:   |   |   |  |   | LDY   |  | RESTORE Y-INDEX   |
|   |   |   | FF                                     | FAKEMON   |   |  | READ PARAM  |
| F540:   |   |   |  |   |   |  | SAVE Y-INDEX  |
| F542:   |   |   |  |   |   |  | INIT DELIMITER INDEX  |
| F544:   |   |   |  | FAKEMON2  | DEY   |  | CHECK NEXT DELIM<br>ERR IF UNRECOGNIZED DELIM   |
| F545:   |   |   |  |   |   |  |   |
| F547:   |   |   | FF                                     |   |   |  | COMPARE WITH DELIM TABLE  |
| F54A:   |   |   |  |   |   | FAKEMON2   |   |
| F54C:   |   |   |  |   |   |  | MATCH, IS IT CR?  |
| F54E:   | D0  | E8  |  |   | BNE   | FAKEMON3   | NO, HANDLE IT IN MONITOR  |
| F550:   | Α5  | 31  |  |   | LDA   | MODE   |   |
| F552:   | A0  | 00  |  |   |   | #\$0   |   |
| F554:   | C6  | 34  |  |   | DEC   | YSAV   |   |
| F556:   | 20  | 00  | FE                                     |   | JSR   | BL1  | HANDLE CR OUTSIDE MONITOR   |
| F559:   | 4C  | 95  | F5                                     |   | JMP   | NXTLINE  |   |
| F55C:   | A5  | 3D  |  | TRYNEXT   | LDA   | A1H  | GET TRIAL OPCODE  |
| F55E:   | 20  | 8E  | F8                                     |   | JSR   | INSDS2   | GET FMT+LENGTH FOR OPCODE   |
| F561:   | AA  |   |  |   | TAX   |  |   |
| F562:   | BD  | 00  | FA                                     |   | LDA   | MNEMR,X  | GET LOWER MNEMONIC BYTE   |
| F565:   |   |   |  |   | CMP   |  | MATCH?  |
| F567:   |   |   |  |   |   |  | NO, TRY NEXT OPCODE.  |
| F569:   |   |   | F9                                     |   |   | MNEML,X  | GET UPPER MNEMONIC BYTE   |
| F56C:   |   |   |  |   | CMP   |  | MATCH?  |
| F56E:   |   |   |  |   |   | NEXTOP   | NO, TRY NEXT OPCODE   |
| F570:   |   |   |  |   |   | FMT  | NO, INI NEMI OFCODE   |
| F572:   |   |   |  |   | LDY   |  | GET TRIAL FORMAT  |
| F574:   |   |   |  |   |   | #\$9D  | TRIAL FORMAT RELATIVE?  |
| F574:   |   |   |  |   |   | REL  | YES.  |
| F578:   |   |   |  |   |   |  | SAME FORMAT?  |
|   |   |   |  |   |   |  |   |
| F57A:<br>F57C:  |   |   |  | NEXTOP  |   | FINDOP   | YES.  |
|   |   |   |  |   |   | A1H  | NO, TRY NEXT OPCODE   |
| F57E:   |   | DC.   |  |   | BNE   | TRYNEXT  |   |
|   |   |   |  |   |   |  |   |
| F580:   |   | 44  |  |   |   | FMT  | NO MORE, TRY WITH LEN=2   |
| F582:   | C6  | 44<br>35  |  |   | DEC   | L  | WAS L=2 ALREADY?  |
| F582:<br>F584:  | C6<br>F0  | 44<br>35<br>D6  |  |   | DEC<br>BEQ  | L<br>TRYNEXT   | WAS L=2 ALREADY?<br>NO.   |
| F582:<br>F584:<br>F586:   | C6<br>F0<br>A4  | 44<br>35<br>D6<br>34  |  | ERR   | DEC<br>BEQ<br>LDY   | L<br>TRYNEXT   | WAS L=2 ALREADY?  |
| F582:<br>F584:<br>F586:<br>F588:  | C6<br>F0<br>A4<br>98  | 44<br>35<br>D6<br>34  |  |   | DEC<br>BEQ<br>LDY<br>TYA  | L<br>TRYNEXT   | WAS L=2 ALREADY?<br>NO.   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:   | C6<br>F0<br>A4<br>98<br>AA  | 44<br>35<br>D6<br>34  |  | ERR   | DEC<br>BEQ<br>LDY<br>TYA<br>TAX   | L<br>TRYNEXT<br>YSAV   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.  |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:  | C6<br>F0<br>A4<br>98<br>AA<br>20  | 44<br>35<br>D6<br>34<br>4A  | F9                                     | ERR   | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR  | L<br>TRYNEXT<br>YSAV<br>PRBL2  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58A:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9  | 44<br>35<br>D6<br>34<br>4A<br>DE  | F9                                     | ERR<br>ERR2   | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58D:<br>F58F:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20  | 44<br>35<br>06<br>34<br>4A<br>DE<br>ED  | F9<br>FD                               | ERR<br>ERR2   | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58D:<br>F58F:<br>F592:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>20  | 44<br>35<br>34<br>4A<br>DE<br>ED<br>3A  | F9<br>FD<br>FF                         | ERR<br>ERR2<br>RESETZ                                       | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>JSR   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.  |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58D:<br>F58F:<br>F58F:<br>F592:<br>F595:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>20<br>A9  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1  | F9<br>FD<br>FF                         | ERR<br>ERR2   | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>JSR   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.  |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58D:<br>F58F:<br>F592:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>20<br>A9  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1  | F9<br>FD<br>FF                         | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT  |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58D:<br>F58F:<br>F592:<br>F595:<br>F597:<br>F599:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>20<br>A9<br>85<br>20  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67  | F9<br>FD<br>FF<br>FD                   | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F587:<br>F587:<br>F592:<br>F597:<br>F599:<br>F597:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>20<br>A9<br>85<br>20<br>20  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>JSR<br>JSR   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'.!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F58A:<br>F58D:<br>F58F:<br>F592:<br>F595:<br>F597:<br>F599:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>85<br>20<br>20  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F587:<br>F587:<br>F592:<br>F597:<br>F599:<br>F597:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>A9<br>85<br>20<br>20<br>AD  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'.!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF   |
| F582:<br>F584:<br>F588:<br>F589:<br>F587:<br>F587:<br>F587:<br>F595:<br>F597:<br>F599:<br>F599:<br>F597:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>20<br>20<br>85<br>20<br>20<br>20<br>AD<br>C9  | 44<br>35<br>D6<br>34<br>4A<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR  |
| F582:<br>F584:<br>F586:<br>F588:<br>F587:<br>F587:<br>F587:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>C9<br>F0  | 44<br>35<br>D6<br>34<br>4A<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?  |
| F582:<br>F584:<br>F588:<br>F588:<br>F589:<br>F587:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:  | C6<br>F0<br>A4<br>98<br>A0<br>20<br>20<br>20<br>A9<br>85<br>20<br>20<br>AD<br>C9<br>F0<br>C8  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP<br>BEQ<br>INY  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?  |
| F582:<br>F584:<br>F588:<br>F588:<br>F587:<br>F587:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F594:<br>F544:<br>F546:   | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>A9<br>85<br>20<br>20<br>20<br>C9<br>F0<br>C8<br>C9  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>ZSR<br>JSR<br>CMP<br>BEQ  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES   |
| F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F587:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>C9<br>F0<br>C8<br>C9<br>F0  | 44<br>35<br>26<br>34<br>4A<br>26<br>50<br>3A<br>41<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4<br>92  | F9<br>FD<br>FF<br>FD<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>ZSR<br>JSR<br>CMP<br>BEQ  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR  |
| F582:<br>F586:<br>F588:<br>F588:<br>F589:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F594:<br>F542:<br>F542:<br>F544:<br>F547:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>C9<br>F0<br>C8<br>C9<br>F0<br>88  | 44<br>35<br>06<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4<br>92  | F9<br>FD<br>FF<br>FD<br>FF<br>02       | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>JSR<br>LDA<br>CMP<br>BEQ<br>LDA<br>CMP<br>BEQ<br>DEY   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES<br>ASCII '\$' IN COL 1?   |
| F582:<br>F584:<br>F588:<br>F588:<br>F588:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>A9<br>85<br>20<br>20<br>AD<br>C9<br>F0<br>C8<br>C9<br>F0<br>88<br>20  | 44<br>35<br>06<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4<br>92<br>A7  | F9<br>FD<br>FF<br>FD<br>FF<br>02       | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>LDA<br>CMP<br>BEQ<br>INY<br>CMP<br>BEQ<br>DEY<br>JSR  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII '\$' IN COL 1?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER   |
| F582:<br>F584:<br>F588:<br>F588:<br>F587:<br>F587:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>A9<br>20<br>20<br>A9<br>85<br>20<br>20<br>AD<br>C9<br>F0<br>C8<br>E9<br>F0<br>88<br>20<br>C9  | 44<br>35<br>06<br>34<br>4A<br>ED<br>3A<br>41<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4<br>92<br>A7<br>93  | F9<br>FD<br>FF<br>02<br>FF             | ERR<br>ERR2<br>RESETZ<br>NXTLINE                            | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR   |
| F582:<br>F584:<br>F588:<br>F588:<br>F587:<br>F587:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>A9<br>20<br>20<br>A9<br>85<br>20<br>20<br>AD<br>C9<br>F0<br>C8<br>88<br>20<br>C9<br>D0  | 44<br>35<br>D6<br>34<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4<br>92<br>A7<br>93<br>D5  | F9<br>FD<br>FF<br>02<br>FF             | ERR2<br>RESETZ<br>NXTLINE<br>ERR4                           | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA<br>CMP<br>BEQ<br>INY<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BNE<br>TXA  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.  |
| F582:<br>F584:<br>F588:<br>F588:<br>F589:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>A9<br>20<br>20<br>A9<br>20<br>20<br>A0<br>20<br>A0<br>C9<br>F0<br>C8<br>88<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>F0<br>88  | 44<br>35<br>D6<br>34<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A4<br>92<br>A7<br>93<br>D5  | F9<br>FD<br>FF<br>02<br>FF             | ERR2<br>RESETZ<br>NXTLINE<br>ERR4                           | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>LDA<br>CMP<br>BEQ<br>INY<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BNE<br>TXA  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.  |
| F582:<br>F584:<br>F588:<br>F588:<br>F589:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>A9<br>20<br>20<br>A9<br>20<br>20<br>A0<br>20<br>A0<br>C9<br>F0<br>C8<br>88<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>F0<br>88<br>F0<br>F0<br>88<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0<br>F0  | 44<br>35<br>D6<br>34<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A1<br>33<br>67<br>C7<br>00<br>0<br>0<br>2<br>3<br>A2<br>4<br>92<br>D5<br>D2                                     | F9<br>FD<br>FF<br>02                   | ERR2<br>RESETZ<br>NXTLINE<br>ERR4                           | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP<br>BEQ<br>LDA<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII '\$' IN COL 1?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?  |
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F582:<br>F584:<br>F588:<br>F588:<br>F587:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>D0<br>88<br>A<br>F0<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20   | 44<br>35<br>D6<br>34<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A2<br>92<br>A7<br>93<br>D5<br>D2<br>78  | F9<br>FD<br>FF<br>02<br>FF             | ERR2<br>RESETZ<br>NXTLINE<br>ERR4                           | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>A1PCLP<br>#\$3  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII BLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.   |
| F582:<br>F584:<br>F588:<br>F588:<br>F587:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>D0<br>8A<br>F0<br>20<br>20<br>20<br>A9<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | 44<br>35<br>D6<br>34<br>ED<br>3A<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A2<br>92<br>A7<br>93<br>D5<br>D2<br>78<br>03                                | F9<br>FD<br>FF<br>02<br>FF             | ERR2<br>RESETZ<br>NXTLINE<br>ERR4                           | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>A1PCLP<br>#\$3  | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII '\$' IN COL 1?<br>YES<br>ASCII '\$' IN COL 1?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.   |
| F582:<br>F584:<br>F588:<br>F588:<br>F589:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F584:<br>F584:<br>F583:<br>F584:<br>F589:<br>F588:  | C6<br>F0<br>A4<br>98<br>A20<br>A9<br>20<br>20<br>A0<br>20<br>A0<br>C9<br>F0<br>C8<br>20<br>C9<br>F0<br>C8<br>20<br>C9<br>F0<br>C8<br>20<br>C9<br>F0<br>C8<br>20<br>C9<br>F0<br>C8<br>5<br>C9<br>S5<br>C9<br>C0<br>C9<br>S5<br>C0<br>C0<br>S5<br>C0<br>C0<br>S5<br>C0<br>C0<br>S5<br>C0<br>C0<br>C0<br>S5<br>C0<br>C0<br>C0<br>S5<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0  | 44<br>35<br>D6<br>34<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A2<br>92<br>A7<br>93<br>D5<br>D2<br>78<br>03<br>3D  | F9<br>FD<br>FF<br>02<br>FF             | ERR2<br>RESETZ<br>NXTLINE<br>ERR4<br>SPACE                  | DEC<br>BEQ<br>LDY<br>TYA<br>TXA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>MP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>JSR<br>CMP<br>BEQ<br>STA   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>AlPCLP<br>#\$3<br>AlH   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII '\$' IN COL 1?<br>YES<br>ASCII '\$' IN COL 1?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.   |
| F582:<br>F584:<br>F588:<br>F588:<br>F589:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F584:<br>F584:<br>F583:<br>F584:<br>F589:<br>F588:  | C6<br>F0<br>A4<br>98<br>AA<br>20<br>20<br>A9<br>20<br>20<br>A0<br>20<br>A0<br>C9<br>F0<br>88<br>20<br>C9<br>F0<br>88<br>20<br>C9<br>D0<br>85<br>20<br>20<br>85<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20  | 44<br>35<br>D6<br>34<br>4A<br>DE<br>B3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A1<br>92<br>A7<br>93<br>D5<br>D2<br>78<br>03<br>3D<br>34   | F9<br>FD<br>FF<br>02<br>FF<br>FE<br>FE | ERR2<br>RESETZ<br>NXTLINE<br>ERR4<br>SPACE<br>NXTMN         | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>JSR<br>CMP<br>BEQ<br>STA<br>JSR<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR<br>JSR  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>A1PCLP<br>#\$3<br>A1H<br>GETNSP   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII bLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.<br>COUNT OF CHARS IN MNEMONIC  |
| F582:<br>F584:<br>F588:<br>F588:<br>F589:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F584:<br>F581:<br>F584:<br>F586:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F580:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589:<br>F589: | C6<br>F0<br>A4<br>98<br>AA<br>20<br>A9<br>20<br>A9<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>C9<br>F0<br>88<br>20<br>C9<br>D0<br>88<br>C9<br>D0<br>88<br>F0<br>88<br>20<br>C9<br>D0<br>80<br>C9<br>C9<br>C9<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C0<br>C9<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0  | 44<br>35<br>D6<br>34<br>ADE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A2<br>92<br>A7<br>93<br>D5<br>D2<br>78<br>03<br>3D<br>34   | F9<br>FD<br>FF<br>02<br>FF<br>FE<br>F6 | ERR2<br>RESETZ<br>NXTLINE<br>ERR4<br>SPACE<br>NXTMN         | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>LDA<br>STA<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA  | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>ERR2<br>A1HPCLP<br>#\$3<br>A1H<br>GETNSP<br>A   | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII bLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.<br>COUNT OF CHARS IN MNEMONIC  |
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C6<br>F0<br>A4<br>98<br>A20<br>20<br>20<br>A9<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>C9<br>C9<br>B8<br>20<br>C9<br>B8<br>20<br>C9<br>B8<br>20<br>C9<br>B8<br>20<br>C9<br>B8<br>C9<br>C9<br>B8<br>C9<br>C9<br>B5<br>C0<br>C9<br>C9<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C9<br>C0<br>C9<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C9<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0 | 44<br>35<br>D6<br>34<br>4A<br>DE<br>ED<br>3A<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>13<br>A2<br>93<br>D5<br>D2<br>78<br>3D<br>278<br>3D<br>278<br>3D<br>234<br>BE<br>C2<br>C1                 | F9<br>FD<br>FF<br>02<br>FF<br>FE<br>F6 | ERR2<br>RESETZ<br>NXTLINE<br>ERR4<br>SPACE<br>NXTMN<br>NXTM | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>STA<br>JSR<br>CMP<br>BEQ<br>JSR<br>CMP<br>BEQ<br>SSC<br>CMP<br>BEQ<br>STA   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>AlPCLP<br>#\$3<br>AlPCLP<br>#\$3<br>AlH<br>GETNSP<br>A<br>#\$BE<br>#\$2<br>ERR2<br>ERR2<br>ERR2<br>AL           | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII bLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.<br>COUNT OF CHARS IN MNEMONIC<br>GET FIRST MNEM CHAR.<br>SUBTRACT OFFSET<br>LEGAL CHAR?<br>NO. |
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F582:<br>F584:<br>F586:<br>F588:<br>F589:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F584:<br>F584:<br>F581:<br>F584:<br>F584:<br>F584:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585: | C6<br>F0<br>A4<br>98<br>A0<br>20<br>20<br>A9<br>20<br>20<br>A9<br>20<br>A0<br>20<br>A0<br>50<br>C9<br>88<br>20<br>20<br>A0<br>50<br>C9<br>88<br>C9<br>88<br>C0<br>80<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>20<br>A0<br>A0<br>C0<br>A0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>C0<br>A0<br>C0<br>A0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0  | 44<br>35<br>D6<br>34<br>ADE<br>ED<br>3A<br>33<br>67<br>C7<br>00<br>A0<br>33<br>A1<br>33<br>67<br>C7<br>00<br>A0<br>33<br>A1<br>33<br>A2<br>93<br>D5<br>D2<br>78<br>30<br>32<br>BE<br>C2<br>C1 | F9<br>FD<br>FF<br>F02<br>FF<br>FE      | ERR2<br>RESETZ<br>NXTLINE<br>ERR4<br>SPACE<br>NXTMN<br>NXTM | DEC<br>BEQ<br>LDY<br>TYA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>JSR<br>JSR<br>LDA<br>STA<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEX<br>STA<br>SEC<br>CMP<br>BNE<br>TXA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST   | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>A1PCLP<br>#\$3<br>A1H<br>GETNSP<br>A<br>#\$BE<br>#\$BE<br>#\$C2<br>ERR2<br>A<br>A                               | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII bLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.<br>COUNT OF CHARS IN MNEMONIC<br>GET FIRST MNEM CHAR.<br>SUBTRACT OFFSET<br>LEGAL CHAR?<br>NO. |
| F582:<br>F584:<br>F586:<br>F588:<br>F587:<br>F592:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F597:<br>F584:<br>F584:<br>F584:<br>F584:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585:<br>F585: | C6<br>F0<br>A4<br>98<br>A0<br>20<br>A9<br>20<br>A9<br>20<br>A0<br>20<br>A0<br>C9<br>F0<br>820<br>C9<br>F0<br>820<br>C9<br>F0<br>820<br>C9<br>C9<br>820<br>A9<br>520<br>C9<br>C9<br>C0<br>A9<br>C9<br>C0<br>A9<br>C0<br>A0<br>A9<br>C0<br>A0<br>C9<br>C0<br>A0<br>C9<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0   | 44<br>35<br>06<br>34<br>4A<br>DE<br>ED<br>3A<br>33<br>67<br>C70<br>A0<br>13<br>A4<br>92<br>A7<br>93<br>D5<br>D2<br>78<br>03<br>3D<br>4<br>EC2<br>C1<br>04                                     | F9<br>FD<br>FF<br>O2<br>FF<br>FE<br>F6 | ERR2<br>RESETZ<br>NXTLINE<br>ERR4<br>SPACE<br>NXTMN<br>NXTM | DEC<br>BEQ<br>LDY<br>TYA<br>TAX<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>CMP<br>BEQ<br>INY<br>BEQ<br>INY<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>DEY<br>JSR<br>CMP<br>BEQ<br>JSR<br>CMP<br>BEQ<br>JSR<br>LDA<br>STA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>JSR<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST | L<br>TRYNEXT<br>YSAV<br>PRBL2<br>#\$DE<br>COUT<br>BELL<br>#\$A1<br>PROMPT<br>GETLNZ<br>ZMODE<br>IN<br>#\$A0<br>SPACE<br>#\$A4<br>FAKEMON<br>GETNUM<br>#\$93<br>ERR2<br>ERR2<br>A1PCLP<br>#\$3<br>A1H<br>GETNSP<br>A<br>#\$BE<br>#\$C2<br>ERR2<br>A<br>H\$SE<br>#\$C2<br>ERR2<br>A<br>A<br>#\$4 | WAS L=2 ALREADY?<br>NO.<br>YES, UNRECOGNIZED INST.<br>PRINT ^ UNDER LAST READ<br>CHAR TO INDICATE ERROR<br>POSITION.<br>'!'<br>INITIALIZE PROMPT<br>GET LINE.<br>INIT SCREEN STUFF<br>GET CHAR<br>ASCII bLANK?<br>YES<br>ASCII '\$' IN COL 1?<br>YES, SIMULATE MONITOR<br>NO, BACKUP A CHAR<br>GET A NUMBER<br>':' TERMINATOR?<br>NO, ERR.<br>NO ADR PRECEDING COLON.<br>MOVE ADR TO PCL, PCH.<br>COUNT OF CHARS IN MNEMONIC<br>GET FIRST MNEM CHAR.<br>SUBTRACT OFFSET<br>LEGAL CHAR?<br>NO. |

| F5CC:   |  |  |          |                 | ROL   | A4L   |   |
|---|--|--|----------|-----------------|---|---|---|
| F5CE:   |  |  |          |                 | ROL   | A4H   |   |
| F5D0:   | CA   |  |          |                 | DEX   |   |   |
| F5D1:   | 10   | F8   |          |                 | BPL   | NXTM2   |   |
| F5D3:   | C6   | 3D   |          |                 | DEC   | AlH   | DONE WITH 3 CHARS?  |
| F5D5:   | FO   | F4   |          |                 | BEQ   | NXTM2   | YES, BUT DO 1 MORE SHIFT                                    |
| F5D7:   | 10   | E4   |          |                 | BPL   | NXTMN   | NO  |
| F5D9:   | A2   | 05   |          | FORM1           | LDX   | #\$5  | 5 CHARS IN ADDR MODE  |
| F5DB:   | 20   | 34   | F6       | FORM2           | JSR   | GETNSP  | GET FIRST CHAR OF ADDR                                      |
| F5DE:   |  |  |          |                 |   | YSAV  |   |
| F5E0:   |  |  | F9       |                 | CMP   | CHAR1,X   | FIRST CHAR MATCH PATTERN?                                   |
| F5E3:   |  |  |          |                 |   | FORM3   | NO  |
| F5E5:   |  |  | F6       |                 |   | GETNSP  | YES, GET SECOND CHAR  |
| F5E8:   |  |  |          |                 |   | CHAR2,X   | MATCHES SECOND HALF?  |
| F5EB:   |  |  | гэ       |                 |   | FORM5   | YES.  |
| F5ED:   |  |  | PO       |                 |   | CHAR2,X   |   |
|   |  |  | гэ       |                 |   |   | NO, IS SECOND HALF ZERO?                                    |
| F5F0:   |  |  |          |                 | ~   | FORM4   | YES.  |
| F5F2:   |  |  |          |                 |   | #\$A4   | NO, SECOND HALF OPTIONAL?                                   |
| F5F4:   |  |  |          |                 | ~   | FORM4   | YES.  |
| F5F6:   |  |  |          |                 | LDY   | YSAV  |   |
| F5F8:   |  |  |          | FORM3           | CLC   |   | CLEAR BIT-NO MATCH  |
| F5F9:   | 88   |  |          | FORM4           | DEY   |   | BACK UP 1 CHAR  |
| F5FA:   |  |  |          | FORM5           | ROL   | FMT   | FORM FORMAT BYTE  |
| F5FC:   | Ε0   | 03   |          |                 | CPX   | #\$3  | TIME TO CHECK FOR ADDR.                                     |
| F5FE:   | D0   | 0D   |          |                 | BNE   | FORM7   | NO  |
| F600:   | 20   | A7   | FF       |                 | JSR   | GETNUM  | YES   |
| F603:   | A5   | 3F   |          |                 | LDA   | A2H   |   |
| F605:   | FO   | 01   |          |                 | BEO   | FORM6   | HIGH-ORDER BYTE ZERO  |
| F607:   | E8   |  |          |                 | INX   |   | NO, INCR FOR 2-BYTE   |
| F608:   |  |  |          | FORM6           |   | L   | STORE LENGTH  |
| F60A:   |  |  |          | 1 01010         |   |   | RELOAD FORMAT INDEX   |
| F60C:   |  |  |          |                 | DEY   | πçσ   | BACKUP A CHAR   |
| F60D:   |  |  |          | FORM7           | STX   | AlH   | SAVE INDEX  |
| F60F:   |  |  |          | FORM/           |   | AIN   | DONE WITH FORMAT CHECK?                                     |
|   |  |  |          |                 | DEX   | DODWO   |   |
| F610:   |  |  |          |                 |   | FORM2   | NO.   |
| F612:   |  |  |          |                 |   | FMT   | YES, PUT LENGTH   |
| F614:   |  |  |          |                 | ASL   | A   | IN LOW BITS   |
| F615:   |  |  |          |                 |   | A   |   |
| F616:   |  |  |          |                 | ORA   | L   |   |
| F618:   |  |  |          |                 | CMP   | #\$20   |   |
| F61A:   | В0   | 06   |          |                 | BCS   | FORM8   | ADD "\$" IF NONZERO LENGTH                                  |
| F61C:   | A6   | 35   |          |                 | LDX   | L   | AND DON'T ALREADY HAVE IT                                   |
| F61E:   | FO   | 02   |          |                 | BEQ   | FORM8   |   |
| F620:   | 09   | 80   |          |                 | ORA   | #\$80   |   |
| F622:   | 85   | 44   |          | FORM8           | STA   | FMT   |   |
| F624:   |  |  |          |                 |   | YSAV  |   |
| F626:   |  |  | ~ ~      |                 | LDA   | IN,Y  |   |
| F629:   | B9   | 00   | 02       |                 |   |   | GET NEXT NONBLANK   |
|   |  |  | 02       |                 |   |   | GET NEXT NONBLANK   |
|   | C9   | BB   | 02       |                 | CMP   | #\$BB   | '' START OF COMMENT?  |
| F62B:   | C9<br>F0   | BB<br>04                                     | 02       |                 | CMP<br>BEQ  | #\$BB<br>FORM9  | '' START OF COMMENT?<br>YES                                 |
| F62B:<br>F62D:  | C9<br>F0<br>C9                                     | BB<br>04<br>8D                               | 02       |                 | CMP<br>BEQ<br>CMP   | #\$BB<br>FORM9<br>#\$8D   | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?             |
| F62B:<br>F62D:<br>F62F:   | C9<br>F0<br>C9<br>D0                               | BB<br>04<br>8D<br>80                         |          | EODMO           | CMP<br>BEQ<br>CMP<br>BNE  | #\$BB<br>FORM9<br>#\$8D<br>ERR4   | '' START OF COMMENT?<br>YES                                 |
| F62B:<br>F62D:<br>F62F:<br>F631:  | C9<br>F0<br>C9<br>D0<br>4C                         | BB<br>04<br>8D<br>80<br>5C                   | F5       |                 | CMP<br>BEQ<br>CMP<br>BNE<br>JMP   | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT                                      | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?             |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:                                     | C9<br>F0<br>C9<br>D0<br>4C<br>B9                   | BB<br>04<br>8D<br>80<br>5C                   | F5       | FORM9<br>GETNSP | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA                                    | #\$BB<br>FORM9<br>#\$8D<br>ERR4   | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?             |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:<br>F637:                            | C9<br>F0<br>C9<br>D0<br>4C<br>B9<br>C8             | BB<br>04<br>8D<br>80<br>5C<br>00             | F5       |                 | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA<br>INY                             | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT<br>IN,Y                              | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?<br>NO, ERR. |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:<br>F637:<br>F638:                   | C9<br>F0<br>C9<br>D0<br>4C<br>B9<br>C8<br>C9       | BB<br>04<br>8D<br>80<br>5C<br>00<br>A0       | F5       |                 | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA<br>INY<br>CMP                      | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT<br>IN,Y<br>#\$A0                     | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?             |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:<br>F637:<br>F638:<br>F63A:          | C9<br>F0<br>C9<br>D0<br>4C<br>B9<br>C8<br>C9<br>F0 | BB<br>04<br>8D<br>80<br>5C<br>00<br>A0<br>F8 | F5       |                 | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA<br>INY<br>CMP<br>BEQ               | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT<br>IN,Y                              | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?<br>NO, ERR. |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:<br>F637:<br>F638:                   | C9<br>F0<br>C9<br>D0<br>4C<br>B9<br>C8<br>C9<br>F0 | BB<br>04<br>8D<br>80<br>5C<br>00<br>A0<br>F8 | F5       |                 | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA<br>INY<br>CMP<br>BEQ<br>RTS        | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT<br>IN,Y<br>#\$A0<br>GETNSP           | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?<br>NO, ERR. |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:<br>F637:<br>F638:<br>F63A:<br>F63C: | C9<br>F0<br>D0<br>4C<br>B9<br>C8<br>C9<br>F0<br>60 | BB<br>04<br>8D<br>5C<br>00<br>F8             | F5<br>02 | GETNSP          | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA<br>INY<br>CMP<br>BEQ<br>RTS<br>ORG | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT<br>IN,Y<br>#\$A0<br>GETNSP<br>\$F666 | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?<br>NO, ERR. |
| F62B:<br>F62D:<br>F62F:<br>F631:<br>F634:<br>F637:<br>F638:<br>F63A:<br>F63C: | C9<br>F0<br>D0<br>4C<br>B9<br>C8<br>C9<br>F0<br>60 | BB<br>04<br>8D<br>5C<br>00<br>F8             | F5<br>02 |                 | CMP<br>BEQ<br>CMP<br>BNE<br>JMP<br>LDA<br>INY<br>CMP<br>BEQ<br>RTS<br>ORG | #\$BB<br>FORM9<br>#\$8D<br>ERR4<br>TRYNEXT<br>IN,Y<br>#\$A0<br>GETNSP<br>\$F666 | '' START OF COMMENT?<br>YES<br>CARRIAGE RETURN?<br>NO, ERR. |

|                                  | *********   | *****          | * * * * * * * * |  |
|----------------------------------|-------------|----------------|-----------------|--|
|                                  | *           |                | *               |  |
|                                  | * APPLE-II  | I FLOA         | ATING *         |  |
|                                  | * POINT H   | ROUTI          | NES *           |  |
|                                  | *           |                | *               |  |
|                                  | * COPYRIGH  | HT 19'         | 77 BY *         |  |
|                                  | * APPLE CON | MPUTER         | R INC. *        |  |
|                                  | *           |                | *               |  |
|                                  | * ALL RIGHT | rs res         | SERVED *        |  |
|                                  | *           |                | *               |  |
|                                  | * S.WC      | DZNIAI         | K *             |  |
|                                  | *           |                | *               |  |
|                                  | *********   |                |                 |  |
|                                  | TITLE "FLO  |                |                 | ROUTINES"  |
|                                  |             | EPZ :<br>EPZ : |                 |  |
|                                  |             | EPZ S          |                 |  |
|                                  | OVLOC H     |                |                 |  |
|                                  |             | ORG S          |                 |  |
| F425: 18                         |             | CLC            |                 | CLEAR CARRY  |
| F426: A2 02                      |             |                | #\$2            | INDEX FOR 3-BYTE ADD.                                |
| F428: B5 F9                      | ADD1 I      | LDA N          | M1,X            |  |
| F42A: 75 F5                      | 1           | ADC N          | M2,X            | ADD A BYTE OF MANT2 TO MANT1                         |
| F42C: 95 F9                      | S           | STA I          | M1,X            |  |
| F42E: CA                         | I           | DEX            |                 | INDEX TO NEXT MORE SIGNIF. BYTE.                     |
| F42F: 10 F7                      | E           | BPL A          | ADD1            | LOOP UNTIL DONE.                                     |
| F431: 60                         |             | RTS            |                 | RETURN   |
|                                  | MD1 A       | ASL S          | SIGN            | CLEAR LSB OF SIGN.                                   |
| F434: 20 37 F4                   |             |                |                 | ABS VAL OF M1, THEN SWAP WITH M2                     |
| F437: 24 F9                      | ABSWAP H    | BIT N          | 41              | MANT1 NEGATIVE?                                      |
| F439: 10 05                      |             |                |                 | NO, SWAP WITH MANT2 AND RETURN.                      |
| F43B: 20 A4 F4                   |             | JSR I          | FCOMPL          | YES, COMPLEMENT IT.<br>INCR SIGN, COMPLEMENTING LSB. |
| F43E: E6 F3<br>F440: 38          | ABSWAP1 S   | INC S          |                 | SET CARRY FOR RETURN TO MUL/DIV.                     |
| F440: 38<br>F441: A2 04          | SWAP I      | ידר<br>אטיי    |                 | INDEX FOR 4 BYTE SWAP.                               |
|                                  | SWAP1 S     | STV I          | #\$4<br>E-1,X   | INDER FOR 4 DITE SWAF.                               |
| F445: B5 F7                      |             |                |                 | SWAP A BYTE OF EXP/MANT1 WITH                        |
| F447: B4 F3                      |             |                |                 | EXP/MANT2 AND LEAVE A COPY OF                        |
| F449: 94 F7                      |             |                |                 | MANT1 IN E (3 BYTES). E+3 USED                       |
| F44B: 95 F3                      |             |                | X2-1,X          |  |
| F44D: CA                         |             | DEX            |                 | ADVANCE INDEX TO NEXT BYTE                           |
| F44E: D0 F3                      | H           | BNE S          | SWAP1           | LOOP UNTIL DONE.                                     |
| F450: 60                         | F           | RTS            |                 | RETURN   |
| F451: A9 8E                      | FLOAT I     | LDA ‡          | #\$8E           | INIT EXP1 TO 14,                                     |
| F453: 85 F8                      | 5           | STA 2          | X1              | THEN NORMALIZE TO FLOAT.                             |
| F455: A5 F9                      |             |                |                 | HIGH-ORDER MANT1 BYTE.                               |
| F457: C9 C0                      |             |                |                 | UPPER TWO BITS UNEQUAL?                              |
| F459: 30 OC                      |             |                |                 | YES, RETURN WITH MANT1 NORMALIZED                    |
| F45B: C6 F8                      |             | DEC 2          |                 | DECREMENT EXP1.                                      |
| F45D: 06 FB                      |             | ASL N          |                 |  |
| F45F: 26 FA                      |             |                | M1+1            | SHIFT MANT1 (3 BYTES) LEFT.                          |
| F461: 26 F9                      |             | ROL I          |                 | EVD1 ZEDOD   |
| F463: A5 F8<br>F465: D0 EE       |             |                |                 | EXP1 ZERO?<br>NO, CONTINUE NORMALIZING.              |
| F465: DU EE<br>F467: 60          |             | RTS            |                 | RETURN.  |
| F467: 80<br>F468: 20 A4 F4       |             |                |                 | CMPL MANT1, CLEARS CARRY UNLESS 0                    |
| F468: 20 A4 F4<br>F46B: 20 7B F4 |             |                |                 | RIGHT SHIFT MANTI OR SWAP WITH                       |
| F46E: A5 F4                      |             |                | X2              |  |
| F470: C5 F8                      |             | CMP 2          |                 | COMPARE EXP1 WITH EXP2.                              |
| F472: D0 F7                      |             |                |                 | IF #,SWAP ADDENDS OR ALIGN MANTS.                    |
| F474: 20 25 F4                   |             | JSR /          |                 | ADD ALIGNED MANTISSAS.                               |
|                                  |             | BVC 1          |                 | NO OVERFLOW, NORMALIZE RESULT.                       |
| F479: 70 05                      | I           | BVS I          | RTLOG           | OV: SHIFT M1 RIGHT, CARRY INTO SIGN                  |
|                                  |             |                |                 |  |

|                               | NLONGUD DOG           |               |  |
|-------------------------------|-----------------------|---------------|--|
| F47B: 90 C4                   | ALGNSWP BCC<br>* ELSE |               | SWAP IF CARRY CLEAR,<br>T ARITH.   |
| F47D: A5 F9                   |                       |               | SIGN OF MANT1 INTO CARRY FOR   |
| F47F: 0A                      |                       |               | RIGHT ARITH SHIFT.   |
| F480: E6 F8                   |                       |               | INCR X1 TO ADJUST FOR RIGHT SHIFT  |
| F482: F0 75<br>F484: A2 FA    | RTLOG1 LDX            |               | EXP1 OUT OF RANGE.<br>INDEX FOR 6:BYTE RIGHT SHIFT.  |
| F486: 76 FF                   |                       |               | INDER FOR U.DITE RIGHT SHIFT.  |
| F488: E8                      | INX                   |               | NEXT BYTE OF SHIFT.  |
| F489: D0 FB                   |                       |               | LOOP UNTIL DONE.   |
| F48B: 60                      | RTS                   |               | RETURN.  |
| F48C: 20 32 F4                | FMUL JSR              | MD1           | ABS VAL OF MANT1, MANT2  |
| F48F: 65 F8<br>F491: 20 E2 F4 | ADC                   | X1            | ADD EXP1 TO EXP2 FOR PRODUCT EXP<br>CHECK PROD. EXP AND PREP. FOR MUL                        |
| F494: 18                      | CLC                   |               | CLEAR CARRY FOR FIRST BIT.   |
|                               |                       |               | M1 AND E RIGHT (PROD AND MPLIER)   |
| F498: 90 03                   | BCC                   | MUL2          | IF CARRY CLEAR, SKIP PARTIAL PROD  |
| F49A: 20 25 F4                | JSR                   | ADD           | ADD MULTIPLICAND TO PRODUCT.   |
| F49D: 88                      |                       |               | NEXT MUL ITERATION.  |
| F49E: 10 F5<br>F4A0: 46 F3    | MDEND I GE            | MUL1          | LOOP UNTIL DONE.   |
| F4A2: 90 BF                   | NORMX BCC             | NORM          | TEST SIGN LSB.<br>IF EVEN,NORMALIZE PROD,ELSE COMP   |
| F4A4: 38                      | FCOMPL SEC            |               | SET CARRY FOR SUBTRACT.  |
| F4A5: A2 03                   | LDX                   | #\$3          | INDEX FOR 3 BYTE SUBTRACT.   |
| F4A7: A9 00                   |                       | ⊾ #\$O        | CLEAR A.   |
| F4A9: F5 F8                   |                       | X1,X          | SUBTRACT BYTE OF EXP1.   |
| F4AB: 95 F8<br>F4AD: CA       | DEX                   |               | RESTORE IT.<br>NEXT MORE SIGNIFICANT BYTE.   |
| F4AE: D0 F7                   |                       |               | LOOP UNTIL DONE.   |
| F4B0: F0 C5                   | BEC                   | ADDEND        | NORMALIZE (OR SHIFT RT IF OVFL).   |
| F4B2: 20 32 F4                | FDIV JSF              | MD1           | TAKE ABS VAL OF MANT1, MANT2.<br>SUBTRACT EXP1 FROM EXP2.                                    |
| F4B5: E5 F8                   | SBC                   | X1            | SUBTRACT EXP1 FROM EXP2.   |
| F4B7: 20 E2 F4                | JSR                   | MD2           | SAVE AS QUOTIENT EXP.  |
| F4BA: 38<br>F4BB: A2 02       |                       |               | SET CARRY FOR SUBTRACT.<br>INDEX FOR 3-BYTE SUBTRACTION.                                     |
| F4BB: A2 02<br>F4BD: B5 F5    |                       |               | INDEX FOR 3-BILE SUBTRACTION.  |
| F4BF: F5 FC                   |                       |               | SUBTRACT A BYTE OF E FROM MANT2.   |
| F4C1: 48                      |                       |               | SAVE ON STACK.   |
| F4C2: CA                      | DEX                   |               | NEXT MORE SIGNIFICANT BYTE.  |
| F4C3: 10 F8                   |                       |               | LOOP UNTIL DONE.   |
| F4C5: A2 FD                   |                       |               | INDEX FOR 3-BYTE CONDITIONAL MOVE  |
| F4C7: 68<br>F4C8: 90 02       | DIV3 PLA              |               | PULL BYTE OF DIFFERENCE OFF STACK<br>IF M2 <e don't="" m2.<="" restore="" td="" then=""></e> |
| F4CA: 95 F8                   |                       | M2+3,X        | IF M2CE INEN DON I RESIONE M2.   |
| F4CC: E8                      | DIV4 INX              |               | NEXT LESS SIGNIFICANT BYTE.  |
| F4CD: D0 F8                   | BNE                   | DIV3          | LOOP UNTIL DONE.   |
| F4CF: 26 FB                   |                       | M1+2          |  |
| F4D1: 26 FA                   |                       |               | ROLL QUOTIENT LEFT, CARRY INTO LSB   |
| F4D3: 26 F9<br>F4D5: 06 F7    |                       | M1<br>M2+2    |  |
| F4D7: 26 F6                   |                       |               | SHIFT DIVIDEND LEFT  |
| F4D9: 26 F5                   |                       | M2            |  |
| F4DB: B0 1C                   | BCS                   | OVFL          | OVFL IS DUE TO UNNORMED DIVISOR  |
| F4DD: 88                      | DEY                   |               | NEXT DIVIDE ITERATION.   |
| F4DE: D0 DA                   |                       |               | LOOP UNTIL DONE 23 ITERATIONS.   |
| F4E0: F0 BE<br>F4E2: 86 FB    |                       | MDEND<br>M1+2 | NORM. QUOTIENT AND CORRECT SIGN.   |
| F4E4: 86 FA                   |                       |               | CLEAR MANT1 (3 BYTES) FOR MUL/DIV.   |
| F4E6: 86 F9                   |                       | M1            |  |
| F4E8: B0 0D                   |                       |               | IF CALC. SET CARRY, CHECK FOR OVFL   |
| F4EA: 30 04                   |                       |               | IF NEG THEN NO UNDERFLOW.  |
| F4EC: 68<br>F4ED: 68          | PLA<br>PLA            |               | POP ONE RETURN LEVEL.  |
| F4EE: 90 B2                   |                       |               | CLEAR X1 AND RETURN.   |
|                               |                       |               | COMPLEMENT SIGN BIT OF EXPONENT.   |
| F4F2: 85 F8                   |                       | X1            | STORE IT.  |
| F4F4: A0 17                   |                       |               | COUNT 24 MUL/23 DIV ITERATIONS.  |
| F4F6: 60                      | RTS                   |               | RETURN.  |
| F4F7: 10 F7<br>F4F9: 4C F5 03 |                       | MD3<br>OVLOC  | IF POSITIVE EXP THEN NO OVFL.  |
| r4r9; 40 P5 U3                |                       | \$F63D        |  |
| F63D: 20 7D F4                |                       | RTAR          |  |
|                               |                       | X1            |  |
| F642: 10 13                   |                       | UNDFL         |  |
| F644: C9 8E                   |                       | #\$8E         |  |
| F646: D0 F5<br>F648: 24 F9    |                       | FIX1<br>M1    |  |
| F648: 24 F9<br>F64A: 10 0A    |                       | FIXRTS        |  |
| F64C: A5 FB                   |                       | M1+2          |  |
| F64E: F0 06                   |                       | FIXRTS        |  |
| F650: E6 FA                   |                       | M1+1          |  |
| F652: D0 02                   |                       | FIXRTS        |  |
| F654: E6 F9<br>F656: 60       |                       | M1            |  |
|                               |                       | ⊈#\$0         |  |
| F659: 85 F9                   |                       | . M1          |  |
| F65B: 85 FA                   |                       | M1+1          |  |
| F65D: 60                      | RTS                   |               |  |
|                               |                       | 95            |  |
|                               |                       |               |  |

|                         | *******   | *****      | ****        |   |
|-------------------------|-----------|------------|-------------|---|
|                         | *         |            | *           |   |
|                         | * APPLE   | -II PS     | SEUDO *     |   |
|                         | * MACHINE | INTER      | RPRETER *   |   |
|                         | *         |            | *           |   |
|                         | * COPYR   |            |             |   |
|                         | * APPLE C | OMPUTE     | ER INC *    |   |
|                         | *         |            | *           |   |
|                         | * ALL RIG |            |             |   |
|                         | ° Б.<br>* | WOZNIA     | * .         |   |
|                         | *******   | *****      | *******     |   |
|                         | TITLE "SW | EET16      | INTERPRETER | R."   |
|                         |           | EQU        |             |   |
|                         | ROH       | EQU        | \$1         |   |
|                         | R14H      | EQU        | \$1D        |   |
|                         |           |            | \$1E        |   |
|                         | R15H      |            |             |   |
|                         | SW16PAG   |            |             |   |
|                         | SAVE      |            |             |   |
|                         | RESTORE   |            |             |   |
| F689: 20 4A FF          |           | ORG        | SAVE        | PRESERVE 6502 REG CONTENTS                            |
| F68C: 68                |           | PLA        | DAVE        | PRESERVE 0502 REG CONTENTS                            |
| F68D: 85 1E             |           |            | R15L        | INIT SWEET16 PC                                       |
| F68F: 68                |           | PLA        |             | FROM RETURN   |
| F690: 85 1F             |           | STA        | R15H        | ADDRESS   |
| F692: 20 98 F6          | SW16B     | JSR        | SW16C       | INTERPRET AND EXECUTE                                 |
| F695: 4C 92 F6          |           | JMP        | SW16B       | ONE SWEET16 INSTR.                                    |
| F698: E6 1E             | SW16C     |            |             |   |
| F69A: D0 02             |           |            | SW16D       | INCR SWEET16 PC FOR FETCH                             |
| F69C: E6 1F             |           | INC        |             |   |
| F69E: A9 F7<br>F6A0: 48 |           | dda<br>PHA | #SW16PAG    | PUSH ON STACK FOR RTS                                 |
| F6A1: A0 00             |           | ldy<br>Ldy | #\$0        | PUSH ON STACK FOR RIS                                 |
| F6A3: B1 1E             |           |            |             | FETCH INSTR   |
| F6A5: 29 OF             |           | AND        |             | MASK REG SPECIFICATION                                |
| F6A7: 0A                |           | ASL        |             | DOUBLE FOR TWO BYTE REGISTERS                         |
| F6A8: AA                |           | TAX        |             | TO X REG FOR INDEXING                                 |
| F6A9: 4A                |           |            | A           |   |
| F6AA: 51 1E             |           |            |             | NOW HAVE OPCODE                                       |
| F6AC: F0 OB             |           | ~          | TOBR        | IF ZERO THEN NON-REG OP                               |
| F6AE: 86 1D             |           |            | R14H        | INDICATE'PRIOR RESULT REG'                            |
| F6B0: 4A<br>F6B1: 4A    |           | LSR<br>LSR | A           | OPCODE*2 TO LSB'S                                     |
| F6B2: 4A                |           | LSR        |             | OFCODE"2 TO LISE 5                                    |
| F6B3: A8                |           | TAY        |             | TO Y REG FOR INDEXING                                 |
| F6B4: B9 E1 F6          |           |            | OPTBL-2,Y   | LOW ORDER ADR BYTE                                    |
| F6B7: 48                |           | PHA        |             | ONTO STACK  |
| F6B8: 60                | :         | RTS        |             | GOTO REG-OP ROUTINE                                   |
| F6B9: E6 1E             | TOBR      | INC        | R15L        |   |
| F6BB: D0 02             |           |            | TOBR2       | INCR PC   |
| F6BD: E6 1F             |           |            | R15H        |   |
| F6BF: BD E4 F6          |           |            | BRTBL,X     | LOW ORDER ADR BYTE                                    |
| F6C2: 48<br>F6C3: A5 1D |           | PHA<br>LDA | R14H        | ONTO STACK FOR NON-REG OP<br>'PRIOR RESULT REG' INDEX |
| F6C3: A5 1D<br>F6C5: 4A |           | LDA<br>LSR | A A         | PREPARE CARRY FOR BC, BNC.                            |
| F6C6: 60                |           | RTS        |             | GOTO NON-REG OP ROUTINE                               |
| F6C7: 68                |           | PLA        |             | POP RETURN ADDRESS                                    |
| F6C8: 68                |           | PLA        |             |   |
| F6C9: 20 3F FF          |           |            | RESTORE     | RESTORE 6502 REG CONTENTS                             |
| F6CC: 6C 1E 00          |           |            | (R15L)      | RETURN TO 6502 CODE VIA PC                            |
| F6CF: B1 1E             | SETZ      | LDA        | (R15L),Y    | HIGH-ORDER BYTE OF CONSTANT                           |
|                         |           |            |             |   |

| F6D1: 95 01   |   |  |  |  |
|---|---|--|--|--|
|   |   | STA  | ROH,X  |  |
| F6D3: 88<br>F6D4: B1 1E   |   | DEY  | (DIET) V   | LOW-ORDER BYTE OF CONSTANT   |
| F6D6: 95 00   |   |  | ROL,X  | LOW-ORDER BITE OF CONSTANT   |
| F6D8: 98  |   | TYA  |  | Y-REG CONTAINS 1   |
| F6D9: 38  |   | SEC  |  |  |
| F6DA: 65 1E   |   |  | R15L   | ADD 2 TO PC  |
| F6DC: 85 1E   |   |  | R15L   |  |
| F6DE: 90 02   |   | BCC  | SET2   |  |
| F6E0: E6 1F   |   | INC  | R15H   |  |
| F6E2: 60  |   | RTS  |  |  |
| F6E3: 02  | OPTBL   | DFB  | SET-1  | 1X   |
| F6E4: F9  | BRTBL   | DFB  | RTN-1  | 0  |
| F6E5: 04  |   |  |  | 2X   |
| F6E6: 9D  |   |  |  | 1  |
| F6E7: 0D  |   |  | ST-1   | 3X   |
| F6E8: 9E  |   |  | BNC-1  | 2  |
| F6E9: 25<br>F6EA: AF  |   |  |  | 4X   |
| F6EB: 16  |   | DFB  |  | 3<br>5X  |
| F6EC: B2  |   |  | BP-1   | 4  |
| F6ED: 47  |   |  | LDDAT-1  |  |
| F6EE: B9  |   |  | BM-1   | 5  |
| F6EF: 51  |   |  | STDAT-1  |  |
| F6F0: C0  |   |  | BZ-1   | 6  |
| F6F1: 2F  |   |  |  | 8X   |
| F6F2: C9  | :   | DFB  | BNZ-1  | 7  |
| F6F3: 5B  | :   | DFB  | STPAT-1  | 9X   |
| F6F4: D2  | :   | DFB  | BM1-1  | 8  |
| F6F5: 85  | 1   | DFB  | ADD-1  | AX   |
| F6F6: DD  |   |  | BNM1-1   | 9  |
| F6F7: 6E  | :   |  |  | BX   |
| F6F8: 05  |   |  |  | A  |
| F6F9: 33  |   |  |  | CX   |
| F6FA: E8  |   |  |  | B  |
| F6FB: 70  |   |  |  | DX   |
| F6FC: 93  |   |  |  | C  |
| F6FD: 1E<br>F6FE: E7  |   |  |  | EX<br>D  |
| F6FF: 65  |   |  |  | FX   |
| F700: E7  |   |  |  | E  |
| F701: E7  |   |  |  | UNUSED   |
| F702: E7  |   |  |  | F  |
|   |   |  |  | ALWAYS TAKEN   |
|   |   |  | ROL,X  |  |
|   | BK  | EQU  | *-1  |  |
| F707: 85 00   |   | STA  | ROL  |  |
| F709: B5 01   |   | LDA  | ROH,X  | MOVE RX TO RO  |
| F70B: 85 01   |   | STA  | ROH  |  |
| F70D: 60  |   | RTS  |  |  |
| F70E: A5 00   |   | LDA  |  |  |
|   |   |  |  |  |
| F710: 95 00   |   |  | ROL,X  | MOVE RO TO RX  |
| F712: A5 01   |   | LDA  | ROL,X<br>ROH   | MOVE R0 TO RX  |
| F712: A5 01<br>F714: 95 01  |   | LDA<br>STA   | ROL,X<br>ROH   | MOVE RO TO RX  |
| F712: A5 01<br>F714: 95 01<br>F716: 60  |   | LDA<br>STA<br>RTS  | ROL,X<br>ROH<br>ROH,X  | MOVE RO TO RX  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00   | STAT  | LDA<br>STA<br>RTS<br>LDA   | ROL,X<br>ROH<br>ROH,X<br>ROL   |  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00  | STAT<br>STAT2   | LDA<br>STA<br>RTS<br>LDA<br>STA  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)  | MOVE RO TO RX<br>STORE BYTE INDIRECT   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00  | STAT<br>STAT2   | LDA<br>STA<br>RTS<br>LDA<br>STA  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)  | STORE BYTE INDIRECT  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00  | STAT<br>STAT2   | LDA<br>STA<br>RTS<br>LDA<br>STA  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)  |  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00  | STAT<br>STAT2<br>STAT3<br>INR   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X   | STORE BYTE INDIRECT  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F71B: A0 00<br>F71B: A0 00<br>F71D: 84 1D<br>F71F: F6 00<br>F721: D0 02<br>F723: E6 01  | STAT<br>STAT2<br>STAT3<br>INR   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X   | STORE BYTE INDIRECT<br>INDICATE R0 IS RESULT NEG   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F719: 84 00<br>F7110: 84 1D<br>F71F: F6 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X  | STORE BYTE INDIRECT<br>INDICATE R0 IS RESULT NEG<br>INCR RX  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F719: 84 00<br>F7110: 84 1D<br>F71F: F6 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X  | STORE BYTE INDIRECT<br>INDICATE R0 IS RESULT NEG<br>INCR RX  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F718: A0 00<br>F71B: 84 1D<br>F71F: F6 00<br>F721: D0 02<br>F721: D0 02<br>F722: F6 01<br>F725: 60<br>F726: A1 00<br>F728: 85 00  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)   | STORE BYTE INDIRECT<br>INDICATE R0 IS RESULT NEG   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F71B: A0 00<br>F71B: 84 1D<br>F71F: F6 00<br>F721: D0 02<br>F722: F6 01<br>F725: 60<br>F726: A1 00<br>F728: 85 00<br>F72A: A0 00  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F718: A0 00<br>F71B: A4 1D<br>F71F: F6 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F726: A1 00<br>F724: A0 00<br>F724: A0 00   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>STY  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F718: A0 00<br>F718: A4 1D<br>F71F: F6 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F728: 85 00<br>F722: A0 00<br>F722: 84 01<br>F725: F0 ED  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>BEQ   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F711: A0 00<br>F711: A0 00<br>F711: A0 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F726: A1 00<br>F728: 85 00<br>F728: 85 00<br>F722: A0 00<br>F722: F0 ED<br>F725: F0 ED<br>F723: F0 ED   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>BEQ   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F71B: A0 00<br>F71B: A0 00<br>F71B: A0 00<br>F71B: A0 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F728: 85 00<br>F726: A1 00<br>F728: A0 00<br>F722: 84 01<br>F725: F0 ED<br>F730: A0 00<br>F732: F0 06  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT   | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>BEQ<br>LDY<br>BEQ   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F719: 84 1D<br>F719: 84 1D<br>F71F: F6 00<br>F721: D0 02<br>F722: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F726: A1 00<br>F726: A1 00<br>F726: A1 00<br>F727: 84 01<br>F726: F0 ED<br>F730: A0 00<br>F722: F0 06<br>F734: 20 66 F7  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD                          | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDY<br>STY<br>STY<br>BEQ<br>LDY<br>SEQ<br>LDY<br>SEQ<br>JSR   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F719: 84 1D<br>F719: 84 1D<br>F711: F6 00<br>F721: D0 02<br>F722: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F726: A1 00<br>F728: 85 00<br>F726: A1 00<br>F728: 85 00<br>F726: A1 00<br>F728: 85 00<br>F727: A0 00<br>F739: F0 06<br>F734: 20 66 F7<br>F737: A1 00  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD                          | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>STA<br>LDY<br>STY<br>STY<br>LDA<br>LDY<br>LDA  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX   |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F718: A0 00<br>F718: A0 00<br>F718: A0 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F726: A1 00<br>F726: 85 00<br>F726: 85 00<br>F726: 84 01<br>F726: F0 ED<br>F730: A0 00<br>F732: F0 66<br>F734: 20 66 F7<br>F737: A1 00<br>F739: A8  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD                          | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>RTS<br>LDA<br>STA<br>LDA<br>STA<br>LDY<br>BEQ<br>LDY<br>BEQ<br>LDY<br>JSR<br>LDA<br>TAY  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROL,X<br>ROH,X<br>(ROL,X)<br>ROL<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG  |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F718:       A0       00         F711:       A4       10         F711:       B4       10         F711:       B6       00         F721:       D0       02         F722:       F0       01         F725:       60       1         F726:       A1       00         F728:       85       00         F728:       A0       00         F728:       R0       ED         F728:       F0       ED         F728:       F0       ED         F728:       F0       ED         F728:       F0       ED         F730:       A0       00         F732:       F0       ED         F732:       F0       ED         F733:       A1       00         F739:       A8       F73A:         F73A:       20       66       F7   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2                  | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>BEQ<br>LDY<br>BEQ<br>JSR   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROL,X<br>ROH,X<br>(ROL,X)<br>ROL<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG  |
| F712: A5 01<br>F714: 95 01<br>F716: 60<br>F717: A5 00<br>F719: 81 00<br>F718: A0 00<br>F718: A0 00<br>F718: A0 00<br>F721: D0 02<br>F723: F6 01<br>F725: 60<br>F726: A1 00<br>F726: A1 00<br>F726: 85 00<br>F726: 85 00<br>F726: 84 01<br>F726: F0 ED<br>F730: A0 00<br>F732: F0 66<br>F734: 20 66 F7<br>F737: A1 00<br>F739: A8  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2                  | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>SEQ<br>LDY<br>BEQ<br>LDY<br>BEQ<br>LDY<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)<br>DCR<br>(ROL,X)  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE   |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F718:       A0       00         F719:       81       00         F711:       A0       00         F711:       F6       00         F721:       D0       02         F723:       F6       01         F725:       60         F726:       A1       00         F728:       85       00         F728:       R5       00         F728:       R5       00         F728:       R5       00         F728:       R0       00         F728:       F0       ED         F730:       A0       00         F732:       F0       66         F734:       20       66         F739:       A8       F739:         F730:       A1       00         F733:       20       66         F735:       A2       66  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2                  | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDA<br>STA<br>LDY<br>SEQ<br>LDY<br>BEQ<br>LDY<br>BEQ<br>LDY<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>STAT3<br>#\$0<br>FOP2<br>DCR<br>(ROL,X)<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROH   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE<br>TO RO  |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F719:       81       00         F711:       A0       00         F711:       F6       00         F721:       D0       02         F723:       F6       01         F725:       60       60         F726:       A1       00         F728:       85       00         F728:       A0       00         F722:       F0       ED         F732:       F0       60         F734:       20       66       F7         F737:       A1       00         F739:       A8       F7         F734:       20       66       F7         F735:       A1       00         F735:       A1       00         F735:  | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2                  | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNE<br>INC<br>RTS<br>LDY<br>STA<br>LDY<br>STY<br>BEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>STA<br>STA   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>STAT3<br>#\$0<br>FOP2<br>DCR<br>(ROL,X)<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROH   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE<br>TO RO  |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F719:       81       00         F711:       A0       00         F711:       B4       1D         F711:       F6       01         F721:       D0       02         F723:       F6       01         F725:       60       F726:         F726:       A1       00         F728:       85       00         F722:       F0       ED         F730:       A0       00         F732:       F0       66         F734:       20       66         F737:       A1       00         F739:       A8       ************************************   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2<br>POP3          | LDA<br>STA<br>STA<br>RTS<br>LDA<br>STY<br>STY<br>STY<br>STY<br>STY<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>STAT3<br>#\$0<br>FOP2<br>DCR<br>(ROL,X)<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROH   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE   |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F711:       A0       00         F711:       R0       00         F711:       F0       00         F712:       D0       02         F723:       F0       01         F725:       60       1         F726:       A1       00         F728:       85       00         F728:       R0       00         F728:       R0       00         F728:       R0       00         F728:       R0       00         F730:       A0       00         F731:       A0       00         F732:       F0       66         F734:       20       66       F7         F730:       A1       00         F737:       A1       00         F737:       A1       00         F737:       A1       00         F741:       84       01         F743:       A0       0   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2<br>POP3          | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNC<br>RTS<br>LDA<br>STA<br>LDY<br>SEQ<br>LDA<br>JSR<br>LDA<br>JSR<br>LDA<br>STA<br>STA<br>STY<br>STA<br>STY<br>RTS  | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROL,X)<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE<br>TO RO<br>INDICATE RO AS LAST RESULT REG  |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F711:       A0       00         F711:       R0       00         F711:       F6       00         F721:       D0       02         F723:       F6       01         F725:       60       1         F726:       A1       00         F722:       R0       00         F722:       R0       00         F722:       F0       ED         F732:       F0       60         F734:       20       66         F737:       A1       00         F739:       A8       1         F735:       20       66       F7         F735:       A1       00       1         F734:       20       66       F7         F735:       A1       00       1         F743:       A0       00       1         F741:       84       01       1         F743:       A0   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2<br>POP3<br>LDDAT | LDA<br>STA<br>STA<br>RTS<br>LDA<br>STY<br>STY<br>INC<br>BNE<br>INC<br>STA<br>LDY<br>STY<br>BEQ<br>JSR<br>LDA<br>JSR<br>LDA<br>JSR<br>STY<br>JSR<br>STY<br>STY<br>STS<br>STY<br>STS<br>STS<br>STS<br>STS<br>STS   | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROL<br>(ROL,X)<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL<br>ROL   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE<br>TO RO<br>INDICATE RO AS LAST RESULT REG<br>LOW-ORDER BYTE TO RO, INCR RX                       |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F719:       81       00         F711:       A0       00         F711:       F6       00         F721:       D0       02         F723:       F6       01         F725:       60       F726:         F726:       A1       00         F722:       A0       00         F722:       R0       00         F722:       F0       ED         F732:       F0       06         F732:       F0       06         F733:       A0       00         F732:       F0       06         F733:       A1       00         F733:       A1       00         F737:       A1       00         F737:       A1       00         F737:       A1       00         F741:       84       01         F743:       A0       00         F741:       84       01 <td>STAT<br/>STAT2<br/>STAT3<br/>INR<br/>INR2<br/>LDAT<br/>POP<br/>POPD<br/>POP2<br/>POP3<br/>LDDAT</td> <td>LDA<br/>STA<br/>STA<br/>RTS<br/>LDA<br/>STY<br/>INC<br/>BNE<br/>INTS<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>ST</td> <td>ROL,X<br/>ROH<br/>ROH,X<br/>ROL<br/>(ROL,X)<br/>#\$0<br/>R14H<br/>ROL,X<br/>INR2<br/>ROH,X<br/>(ROL,X)<br/>ROL<br/>#\$0<br/>ROH<br/>STAT3<br/>#\$0<br/>POP2<br/>DCR<br/>(ROL,X)<br/>ROL<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>POP2<br/>DCR<br/>(ROL,X)<br/>ROL<br/>ROL,X)<br/>ROL<br/>ROH<br/>#\$0<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH</td> <td>STORE BYTE INDIRECT<br/>INDICATE RO IS RESULT NEG<br/>INCR RX<br/>LOAD INDIRECT (RX)<br/>TO RO<br/>ZERO HIGH-ORDER RO BYTE<br/>ALWAYS TAKEN<br/>HIGH ORDER BYTE = 0<br/>ALWAYS TAKEN<br/>DECR RX<br/>POP HIGH ORDER BYTE @RX<br/>SAVE IN Y-REG<br/>DECR RX<br/>LOW-ORDER BYTE<br/>TO RO<br/>INDICATE RO AS LAST RESULT REG</td>   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2<br>POP3<br>LDDAT | LDA<br>STA<br>STA<br>RTS<br>LDA<br>STY<br>INC<br>BNE<br>INTS<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>ST | ROL,X<br>ROH<br>ROH,X<br>ROL<br>(ROL,X)<br>#\$0<br>R14H<br>ROL,X<br>INR2<br>ROH,X<br>(ROL,X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROH<br>#\$0<br>ROH<br>#\$0<br>POP2<br>DCR<br>(ROL,X)<br>ROL<br>ROL,X)<br>ROL<br>ROH<br>#\$0<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH  | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE<br>TO RO<br>INDICATE RO AS LAST RESULT REG  |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F719:       81       00         F711:       A0       00         F711:       R4       1D         F711:       F6       01         F721:       D0       02         F723:       F6       01         F725:       60       F726:         F726:       A1       00         F728:       85       00         F728:       R5       00         F728:       R5       00         F728:       R5       00         F728:       R5       00         F728:       R0       00         F739:       A0       00         F737:       A1       00         F737:       A1       00         F739:       A8       01         F747:       A1       00         F748:       A0       00         F745:       84       01         F745:       A0       00 <td>STAT<br/>STAT2<br/>STAT3<br/>INR<br/>INR2<br/>LDAT<br/>POP<br/>POPD<br/>POP2<br/>POP3<br/>LDDAT</td> <td>LDA<br/>STA<br/>RTS<br/>LDA<br/>STA<br/>LDY<br/>STY<br/>INC<br/>BNC<br/>RTS<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STAY<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>STY<br/>STY<br/>STY<br/>STY<br/>STY<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA</td> <td>ROL, X<br/>ROH<br/>ROH, X<br/>ROL<br/>(ROL, X)<br/>#\$0<br/>R14H<br/>ROL, X<br/>INR2<br/>ROH, X<br/>(ROL, X)<br/>ROH<br/>STAT3<br/>#\$0<br/>POP2<br/>DCR<br/>(ROL, X)<br/>ROL<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>ROH<br/>#\$0<br/>ROH<br/>ROH<br/>#\$0<br/>ROH<br/>#\$0<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH</td> <td>STORE BYTE INDIRECT<br/>INDICATE RO IS RESULT NEG<br/>INCR RX<br/>LOAD INDIRECT (RX)<br/>TO RO<br/>ZERO HIGH-ORDER RO BYTE<br/>ALWAYS TAKEN<br/>HIGH ORDER BYTE = 0<br/>ALWAYS TAKEN<br/>DECR RX<br/>POP HIGH ORDER BYTE @RX<br/>SAVE IN Y-REG<br/>DECR RX<br/>LOW-ORDER BYTE TO RO<br/>INDICATE RO AS LAST RESULT REG<br/>LOW-ORDER BYTE TO RO, INCR RX<br/>HIGH-ORDER BYTE TO RO</td> | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2<br>POP3<br>LDDAT | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNC<br>RTS<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STAY<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA  | ROL, X<br>ROH<br>ROH, X<br>ROL<br>(ROL, X)<br>#\$0<br>R14H<br>ROL, X<br>INR2<br>ROH, X<br>(ROL, X)<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL, X)<br>ROL<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>ROH<br>#\$0<br>ROH<br>ROH<br>#\$0<br>ROH<br>#\$0<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE TO RO<br>INDICATE RO AS LAST RESULT REG<br>LOW-ORDER BYTE TO RO, INCR RX<br>HIGH-ORDER BYTE TO RO |
| F712:       A5       01         F714:       95       01         F716:       60         F717:       A5       00         F719:       81       00         F719:       81       00         F711:       A0       00         F711:       F6       00         F721:       D0       02         F723:       F6       01         F725:       60       F726:         F726:       A1       00         F722:       A0       00         F722:       R0       00         F722:       F0       ED         F732:       F0       06         F732:       F0       06         F733:       A0       00         F732:       F0       06         F733:       A1       00         F733:       A1       00         F737:       A1       00         F737:       A1       00         F737:       A1       00         F741:       84       01         F743:       A0       00         F741:       84       01 <td>STAT<br/>STAT2<br/>STAT3<br/>INR<br/>INR2<br/>LDAT<br/>POP<br/>POPD<br/>POP2<br/>POP3<br/>LDDAT</td> <td>LDA<br/>STA<br/>RTS<br/>LDA<br/>STA<br/>LDY<br/>STY<br/>INC<br/>BNC<br/>RTS<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STA<br/>LDA<br/>STAY<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>LDA<br/>STY<br/>STY<br/>STY<br/>STY<br/>STY<br/>STY<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA<br/>STA</td> <td>ROL, X<br/>ROH<br/>ROH, X<br/>ROL<br/>(ROL, X)<br/>#\$0<br/>R14H<br/>ROL, X<br/>INR2<br/>ROH, X<br/>(ROL, X)<br/>ROL<br/>#\$0<br/>ROH<br/>STAT3<br/>#\$0<br/>POP2<br/>DCR<br/>(ROL, X)<br/>ROL<br/>ROH<br/>STAT3<br/>#\$0<br/>POP2<br/>DCR<br/>(ROL, X)<br/>ROL<br/>ROH<br/>H\$0<br/>ROH<br/>STAT3<br/>#\$0<br/>POP2<br/>DCR<br/>(ROL, X)<br/>ROL<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH<br/>ROH</td> <td>STORE BYTE INDIRECT<br/>INDICATE RO IS RESULT NEG<br/>INCR RX<br/>LOAD INDIRECT (RX)<br/>TO RO<br/>ZERO HIGH-ORDER RO BYTE<br/>ALWAYS TAKEN<br/>HIGH ORDER BYTE = 0<br/>ALWAYS TAKEN<br/>DECR RX<br/>POP HIGH ORDER BYTE @RX<br/>SAVE IN Y-REG<br/>DECR RX<br/>LOW-ORDER BYTE<br/>TO RO<br/>INDICATE RO AS LAST RESULT REG<br/>LOW-ORDER BYTE TO RO, INCR RX</td>   | STAT<br>STAT2<br>STAT3<br>INR<br>INR2<br>LDAT<br>POP<br>POPD<br>POP2<br>POP3<br>LDDAT | LDA<br>STA<br>RTS<br>LDA<br>STA<br>LDY<br>STY<br>INC<br>BNC<br>RTS<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STA<br>LDA<br>STAY<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>LDA<br>STY<br>STY<br>STY<br>STY<br>STY<br>STY<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA<br>STA  | ROL, X<br>ROH<br>ROH, X<br>ROL<br>(ROL, X)<br>#\$0<br>R14H<br>ROL, X<br>INR2<br>ROH, X<br>(ROL, X)<br>ROL<br>#\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL, X)<br>ROL<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL, X)<br>ROL<br>ROH<br>H\$0<br>ROH<br>STAT3<br>#\$0<br>POP2<br>DCR<br>(ROL, X)<br>ROL<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH<br>ROH   | STORE BYTE INDIRECT<br>INDICATE RO IS RESULT NEG<br>INCR RX<br>LOAD INDIRECT (RX)<br>TO RO<br>ZERO HIGH-ORDER RO BYTE<br>ALWAYS TAKEN<br>HIGH ORDER BYTE = 0<br>ALWAYS TAKEN<br>DECR RX<br>POP HIGH ORDER BYTE @RX<br>SAVE IN Y-REG<br>DECR RX<br>LOW-ORDER BYTE<br>TO RO<br>INDICATE RO AS LAST RESULT REG<br>LOW-ORDER BYTE TO RO, INCR RX                       |

|   | A5  | 01   |                                      | LDA   | ROH   | BYTE AND INCR RX. THEN   |
|---|---|--|--------------------------------------|---|---|--|
| F757:   |   |  |                                      |   |   | STORE HIGH-ORDER BYTE.   |
|   |   | 1F F7<br>66 F7   | STPAT                                | JMP<br>JSR  |   | INCR RX AND RETURN<br>DECR RX  |
| F75F:   |   |  |                                      | LDA   |   |  |
| F761:   |   |  |                                      |   |   | STORE RO LOW BYTE @RX  |
|   |   | 43 F7<br>00  |                                      |   | POP3<br>ROL,X   | INDICATE RO AS LAST RSLT REG   |
| F768:   |   |  | DCK                                  |   |   | DECR RX  |
| F76A:   |   |  |                                      |   | ROH,X   |  |
| F76C:<br>F76E:  |   | 00   | DCR2                                 |   | ROL,X   |  |
| F76E:   |   |  | SUB                                  | RTS<br>LDY  | #\$0  | RESULT TO RO   |
| F771:   | 38  |  | CPR                                  | SEC   |   | NOTE Y-REG = 13*2 FOR CPR  |
| F772:   |   |  |                                      | LDA   |   |  |
| F774:<br>F776:  |   | 00 00  |                                      |   | ROL,X<br>ROL,Y  | RO-RX TO RY  |
| F779:   |   |  |                                      | LDA   |   |  |
| F77B:   |   |  |                                      |   | ROH,X   |  |
| F780:   |   | 01 00  | SUB2                                 | TYA   | ROH,Y   | LAST RESULT REG*2  |
| F781:   |   |  |                                      | ADC   |   | CARRY TO LSB   |
| F783:   |   |  |                                      | STA   | R14H  |  |
| F785:<br>F786:  |   |  |                                      | RTS<br>LDA  | ROL   |  |
| F788:   |   |  |                                      | ADC   |   |  |
| F78A:   |   |  |                                      | STA   |   | R0+RX TO R0  |
| F78C:<br>F78E:  |   |  |                                      | LDA<br>ADC  | ROH<br>ROH,X  |  |
| F790:   |   |  |                                      | LDY   |   | R0 FOR RESULT  |
| F792:   |   |  |                                      |   |   | FINISH ADD   |
| F794:   |   | 1E<br>19 F7  |                                      |   |   | NOTE X-REG IS 12*2!<br>PUSH LOW PC BYTE VIA R12  |
| F799:   |   |  |                                      |   | R15H  | FOR HOW FE DITE VIA KIZ  |
|   |   | 19 F7  |                                      | JSR   | STAT2   | PUSH HIGH-ORDER PC BYTE  |
| F79E:   |   |  |                                      | CLC   | DNCO  | NO CARRY TEST  |
| F79F:<br>F7A1:  |   | 1E   |                                      |   |   | DISPLACEMENT BYTE  |
| F7A3:   |   |  |                                      | BPL   | BR2   |  |
| F7A5:   |   |  |                                      | DEY   | D1 - T  |  |
| F7A6:<br>F7A8:  |   | 1E<br>1E   | BR2                                  | ADC<br>STA  |   | ADD TO PC  |
| F7AA:   |   |  |                                      | TYA   |   |  |
| F7AB:   |   |  |                                      | ADC   | R15H  |  |
| F7AD:<br>F7AF:  |   |  |                                      | STA<br>RTS  | R15H  |  |
| F7B0:   |   |  |                                      | BCS   | BR  |  |
| F7B2:   | 60  |  |                                      | RTS   |   |  |
|   |   |  |                                      |   | -   |  |
| F7B3:   | 0A  |  |                                      | ASL   | A   | DOUBLE RESULT-REG INDEX<br>TO X REG FOR INDEXING   |
|   | 0A<br>AA  |  | BP                                   | ASL<br>TAX  |   | DOUBLE RESULT-REG INDEX<br>TO X REG FOR INDEXING<br>TEST FOR PLUS  |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:  | 0A<br>AA<br>B5<br>10  | 01   | BP                                   | ASL<br>TAX<br>LDA<br>BPL  | ROH,X   | TO X REG FOR INDEXING  |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B9:   | 0A<br>AA<br>B5<br>10<br>60  | 01<br>E8   | BP                                   | ASL<br>TAX<br>LDA<br>BPL<br>RTS   | ROH,X<br>BR1  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:  | 0A<br>AA<br>B5<br>10<br>60<br>0A  | 01<br>E8   | BP                                   | ASL<br>TAX<br>LDA<br>BPL  | ROH,X   | TO X REG FOR INDEXING<br>TEST FOR PLUS   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B9:<br>F7BA:<br>F7BB:<br>F7BC:  | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>B5  | 01<br>E8<br>01   | BP<br>BM                             | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA  | ROH,X<br>BR1<br>A<br>ROH,X  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B9:<br>F7BA:<br>F7BB:<br>F7BC:<br>F7BE:   | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>B5<br>30  | 01<br>E8<br>01<br>E1   | BP<br>BM                             | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI   | ROH,X<br>BR1<br>A   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX  |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B9:<br>F7BA:<br>F7BB:<br>F7BC:  | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>B5<br>30<br>60  | 01<br>E8<br>01<br>E1   | BP<br>BM                             | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX  |
| F7B3:<br>F7B5:<br>F7B5:<br>F7B9:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7BC:<br>F7BE:<br>F7C0:<br>F7C1:<br>F7C2:  | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>85<br>30<br>60<br>0A<br>AA  | 01<br>E8<br>01<br>E1   | BP<br>BM<br>BZ                       | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B9:<br>F7B8:<br>F7B8:<br>F7BC:<br>F7BE:<br>F7C0:<br>F7C1:<br>F7C2:<br>F7C3:   | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>85<br>30<br>60<br>0A<br>AA<br>B5  | 01<br>E8<br>01<br>E1   | BP<br>BM<br>BZ                       | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO  |
| F7B3:<br>F7B5:<br>F7B5:<br>F7B9:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7BC:<br>F7BE:<br>F7C0:<br>F7C1:<br>F7C2:  | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>60<br>0A<br>AA<br>B5<br>15  | 01<br>E8<br>01<br>E1<br>00<br>01   | BP<br>BM<br>BZ                       | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO  |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7C0:<br>F7C1:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C7:<br>F7C7:  | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>B5<br>30<br>60<br>0A<br>AA<br>B5<br>55<br>50<br>60  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8   | BP<br>BM<br>BZ                       | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO  |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7C1:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:   | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>B5<br>30<br>60<br>0A<br>B5<br>5<br>60<br>60<br>0A   | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8   | BP<br>BM<br>BZ                       | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO  |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7C0:<br>F7C1:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C7:<br>F7C7:  | 0A<br>AA<br>B5<br>10<br>60<br>0A<br>AA<br>B5<br>0A<br>AA<br>B5<br>15<br>60<br>0A<br>AA  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX   |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B6:<br>F7B6:<br>F7C0:<br>F7C0:<br>F7C2:<br>F7C3:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C9:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:  | 0A<br>B5<br>10<br>60<br>0A<br>B5<br>30<br>60<br>0A<br>B5<br>15<br>60<br>0A<br>AA<br>B5<br>15  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)  |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C7:<br>F7C7:<br>F7C9:<br>F7C8:<br>F7C8:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3: | 0A<br>B5<br>10<br>0A<br>B5<br>30<br>0A<br>B5<br>15<br>60<br>0A<br>AA<br>B5<br>15<br>50<br>0A<br>B5<br>15<br>D0  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO  |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B6:<br>F7B6:<br>F7C0:<br>F7C0:<br>F7C2:<br>F7C3:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C9:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:  | 0A<br>B5<br>10<br>60<br>0A<br>B5<br>30<br>0A<br>B5<br>5<br>60<br>0A<br>B5<br>5<br>00<br>AA<br>B5<br>15<br>5<br>00<br>60<br>00<br>60   | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)  |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C5:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3: | 0A<br>B5<br>10<br>0A<br>B5<br>30<br>0A<br>B5<br>50<br>0A<br>B5<br>50<br>0A<br>B5<br>15<br>00<br>AA<br>B5<br>15<br>00<br>AA<br>B5<br>50<br>0A<br>AA<br>B5<br>50<br>0A<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA<br>AA  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BRTS<br>ASL<br>TAX<br>LDA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX   |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7B2:<br>F7C0:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2: | 0A<br>B5<br>10<br>0A<br>B5<br>30<br>0A<br>B5<br>50<br>0A<br>B5<br>15<br>00<br>AA<br>B5<br>15<br>00<br>AA<br>B5<br>50<br>0A<br>AA<br>B5  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BIN<br>RTS<br>ASL<br>TAX<br>LDA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES   |
| F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C5:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C3: | 0A<br>B5<br>10<br>60<br>0A<br>B5<br>30<br>60<br>0A<br>B5<br>50<br>0A<br>B5<br>15<br>00<br>AB5<br>15<br>00<br>AA<br>B5<br>35   | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF   | BP<br>BM<br>BZ<br>BNZ                | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BIN<br>RTS<br>ASL<br>TAX<br>LDA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B2:<br>F7B8:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8:<br>F7D8: | 0A<br>B5<br>10<br>60<br>AA<br>B5<br>30<br>0A<br>B5<br>15<br>60<br>0A<br>B5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>5<br>5<br>9<br>70<br>85<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4                         | BP<br>BM<br>BZ<br>BNZ<br>BM1         | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>CORA<br>BNE<br>RTS<br>ASL<br>CORA<br>BASL<br>CORA<br>BASL<br>CORA<br>CORA<br>CORA<br>CORA<br>CORA<br>CORA<br>CORA<br>CORA   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>ROH,X<br>ROH,X<br>***                                 | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES   |
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F7B3:<br>F7B4:<br>F7B5:<br>F7B5:<br>F7B5:<br>F7B2:<br>F7B2:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7C5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5: | 0A<br>AA<br>B5<br>10<br>60<br>AA<br>B5<br>50<br>60<br>AA<br>B5<br>50<br>60<br>AA<br>B5<br>15<br>D0<br>60<br>AA<br>B5<br>52<br>D0<br>60<br>AA<br>B5<br>55<br>C0<br>AA<br>B5<br>50<br>C0<br>AA<br>B5<br>C0<br>AA<br>AB5<br>50<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AA<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>AB5<br>C0<br>C0<br>AB5<br>C0<br>C0<br>AB5<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0<br>C0  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4                         | BP<br>BM<br>BZ<br>BNZ<br>BM1         | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BML<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA<br>SA  | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>H\$FF<br>BR1  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)<br>BRANCH IF SO   |
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F7B3:<br>F7B5:<br>F7B7:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C5:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2: | 0A<br>AA<br>B5<br>10<br>60<br>AA<br>B5<br>30<br>0A<br>AB5<br>15<br>60<br>AB5<br>15<br>D0<br>60<br>AB5<br>15<br>D0<br>60<br>AB5<br>53<br>9<br>60<br>AA<br>B5<br>50<br>0A<br>AB5<br>50<br>0A<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>A<br>AB5<br>60<br>A<br>AA<br>AB5<br>60<br>A<br>AA<br>AB5<br>60<br>A<br>AA<br>AB5<br>60<br>AA<br>AB5<br>60<br>A<br>A<br>AB5<br>60<br>A<br>A<br>AB5<br>60<br>A<br>A<br>A<br>AB5<br>60<br>A<br>A<br>A<br>AB5<br>60<br>A<br>A<br>A<br>A<br>AB5<br>60<br>A<br>A<br>A<br>AB5<br>60<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A<br>A   | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4                         | BP<br>BM<br>BZ<br>BNZ<br>BM1         | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNC<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNC<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNC<br>RTS<br>ASL<br>TAX<br>LDA<br>BCR<br>BEQ<br>RTS<br>ASL   | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>H\$FF<br>BR1  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B2:<br>F7B2:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C4:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7D2:<br>F7D2:<br>F7D3:<br>F7D4:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5: 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  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4                         | BP<br>BM<br>BZ<br>BNZ<br>BM1         | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>AND<br>EOR<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA  | ROH, X<br>BR1<br>A<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>#\$FF<br>BR1<br>A<br>ROL, X                   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX  |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7B2:<br>F7C0:<br>F7C0:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C5:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7D3:<br>F7D4:<br>F7D5:<br>F7D5:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7:<br>F7D7: | 0A<br>AB5<br>10<br>60<br>AB5<br>30<br>60<br>AB5<br>15<br>60<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>35<br>35<br>35<br>35  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4                         | BP<br>BM<br>BZ<br>BNZ<br>BM1         | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>BASL<br>TAX<br>LDA<br>BASL<br>TAX<br>LDA<br>BASL<br>TAX<br>LDA<br>BASL<br>TAX<br>LDA<br>BASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>TAX<br>LDA<br>CRTS<br>ASL<br>LDA<br>CRTS<br>ASL<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>LTAX<br>LDA<br>ASL<br>LDA<br>ASL<br>TAX<br>LDA<br>ASL<br>LTAX<br>LDA<br>ASL<br>LTAX<br>LDA<br>ASL<br>ASL<br>LTAX<br>LDA<br>ASL<br>LTAX<br>LDA<br>ASL<br>LTAX<br>LDA<br>ASL<br>LDA<br>ASL<br>LDA<br>ASL<br>LDA<br>ASL<br>LDA<br>ASL<br>ASL<br>LDA<br>ASL<br>ASL<br>LDA<br>ASL<br>ASL<br>ASL<br>ASL<br>ASL<br>ASL<br>ASL<br>ASL<br>ASL<br>AS  | ROH, X<br>BR1<br>A<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>SR1<br>A<br>ROL, X<br>ROH, X<br>SFF<br>BR1<br>A<br>ROL, X<br>ROH, X<br>ROH, X | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)<br>BRANCH IF SO   |
| F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B2:<br>F7B2:<br>F7B2:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C3:<br>F7C3:<br>F7C4:<br>F7C7:<br>F7C5:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7D2:<br>F7D2:<br>F7D3:<br>F7D4:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5: | 0A<br>AB5<br>10<br>60<br>AB5<br>30<br>60<br>AB5<br>50<br>0A<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>15<br>00<br>AB5<br>549<br>F0<br>0A<br>AB5<br>55<br>949  | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4                         | BP<br>BM<br>BZ<br>BNZ<br>BM1<br>BNM1 | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BML<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>ORA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>CRA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>CRA<br>CRA<br>CRA<br>CRA<br>CRA<br>CRA<br>CRA<br>CRA<br>CRA<br>CR  | ROH, X<br>BR1<br>A<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>BR1<br>A<br>ROL, X<br>ROH, X<br>#SFF<br>BR1<br>A<br>ROL, X<br>ROH, X<br>#SFF                                  | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX  |
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F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C2:<br>F7C3:<br>F7C4:<br>F7C5:<br>F7C7:<br>F7C6:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7D2:<br>F7D2:<br>F7D2:<br>F7D2:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F726:<br>F726:<br>F726:<br>F727:<br>F727:<br>F727:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728: | 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| 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4<br>00<br>01<br>FF<br>E9 | BP<br>BM<br>BZ<br>BNZ<br>BM1<br>BNM1 | 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| ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>#\$FF<br>BR1<br>A<br>ROL,X<br>ROH,X<br>#\$FF<br>BR1   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES FOR NO \$FF<br>BRANCH IF NOT MINUS 1 |
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F7B3:<br>F7B4:<br>F7B5:<br>F7B7:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B8:<br>F7B2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C2:<br>F7C3:<br>F7C2:<br>F7C3:<br>F7C4:<br>F7C5:<br>F7C7:<br>F7C6:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7C7:<br>F7D2:<br>F7D2:<br>F7D2:<br>F7D2:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F7D5:<br>F726:<br>F726:<br>F726:<br>F727:<br>F727:<br>F727:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728:<br>F728: 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0A<br>B5<br>100<br>AB5<br>300<br>AB5<br>150<br>0A<br>B55<br>100<br>AB5<br>300<br>AB5<br>150<br>0A<br>B55<br>49<br>60A<br>AB5<br>349<br>60A<br>AB5<br>35<br>900<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>500<br>AB5<br>70<br>AB5<br>70<br>AB5<br>70<br>AB5<br>70<br>70<br>AB5<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70 | 01<br>E8<br>01<br>E1<br>00<br>01<br>D8<br>00<br>01<br>CF<br>00<br>01<br>FF<br>C4<br>00<br>01<br>FF<br>B9 | BP<br>BM<br>BZ<br>BNZ<br>BM1<br>BNM1 | ASL<br>TAX<br>LDA<br>BPL<br>RTS<br>ASL<br>TAX<br>LDA<br>BMI<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>LDA<br>BNE<br>RTS<br>ASL<br>TAX<br>CORA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>ASL<br>TAX<br>LDA<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>LDA<br>BEQ<br>RTS<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>TAX<br>ASL<br>RTS<br>ASL<br>TAX<br>ASL<br>ASL<br>ASL<br>TAX<br>ASL<br>RTS<br>ASL<br>TAX<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>TAX<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>TAX<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>TAX<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>RTS<br>ASL<br>R | ROH,X<br>BR1<br>A<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>BR1<br>A<br>ROL,X<br>ROH,X<br>#\$FF<br>BR1<br>A<br>ROL,X<br>ROH,X<br>#\$FF<br>BR1   | TO X REG FOR INDEXING<br>TEST FOR PLUS<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR MINUS<br>DOUBLE RESULT-REG INDEX<br>TEST FOR ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>TEST FOR NON-ZERO<br>(BOTH BYTES)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES<br>FOR \$FF (MINUS 1)<br>BRANCH IF SO<br>DOUBLE RESULT-REG INDEX<br>CHECK BOTH BYTES FOR NO \$FF                          |

| F7EB: 20 66 F7   | JSR     | DCR     | DECR STACK POINTER            |
|------------------|---------|---------|-------------------------------|
| F7EE: A1 00      | LDA     | (ROL,X) | POP HIGH RETURN ADDRESS TO PC |
| F7F0: 85 1F      | STA     | R15H    |                               |
| F7F2: 20 66 F7   | JSR     | DCR     | SAME FOR LOW-ORDER BYTE       |
| F7F5: A1 00      | LDA     | (ROL,X) |                               |
| F7F7: 85 1E      | STA     | R15L    |                               |
| F7F9: 60         | RTS     |         |                               |
| F7FA: 4C C7 F6 F | RTN JMP | RTNZ    |                               |

# 6502 MICROPROCESSOR INSTRUCTIONS

- AOC Add Memory to Accumulator with Carry
- AND "AND" Memory with Accumulator
- ASL Shift Left One Bit (Memory or Accumulator)
- BCC Branch on Carry Clear
- BCS Branch on Carry Set
- BED Branch on Result Zero
- BIT Test Bits in Memory with Accumulator
- BMI Branch on Result Minus
- ONE Branch on Result not Zero
- BPL Branch on Result Plus
- BRK Force Break
- BVC Branch on Overflow Clear
- BVS Branch on Overflow Set
- CLC Clear Carry Flag
- CLD Clear Decimal Mode
- CLI Clear Interrupt Disable Bit
- CLV Clear Overflow Flag
- CMP Compare Memory and Accumulator
- CPX Compare Memory and Index X
- CPY Compare Memory and Index `I
- DEC Decrement Memory by One
- DEX Decrement index X by One
- DEY Decrement Index Y by One FOR "Exclusive-Or" Memory with
- Accumulator
- INC Increment Memory by One
- INX Increment Index X by One
- INY Increment Index I by One
- JMP Jump to New Location
- JSA Jump to New Location Saving Return Address

- LDA Load Accumulator with Memory
- LDX Load Index X with Memory
- LDY Load Index Y with Memory
- LSR Shutt Right one Bit (Memory or Accumulator)
- NOP No Operation
- ORA OR Memory with Accumulator
- PHA Push Accumulator on Stack
- PHP Push Processor Status on Stack
- PLA Pull Accumulator from Stack
- PLP Pull Processor Status from Slack
- ROL Rotate One Bit Left (Memory or Accumulator)
- ROR Rotate One Bit Right (Memory or Accumulator)
- **RTI** Return from Interrupt
- **RTS** Return from Subroutine
- SBC Subtract Memory from Accumulator with Borrow
- SEC Set Carry Flag
- SED Set Decimal Mode
- SEI Set Interrupt Disable Status
- STA Store Accumulator in Memory
- STX Store Index X in Memory
- STY Store Index Y in Memory
- TAX Transfer Accumulator to Index X
- TAY Transfer Accumulator to Index Y
- TSX Transfer Stack Pointer to Index X
- TXA Transfer Index X to Accumulator
- TXS Transfer Index X to Stack Pointer
- TYA Transfer Index Y to Accumulator

# THE FOLLOWING NOTATION APPLIES TO THIS SUMMARY:

| Α                                | Accumulator               |
|----------------------------------|---------------------------|
| X,Y                              | Index Registers           |
| М                                | Memory                    |
| С                                | Borrow                    |
| Р                                | Processor Status Register |
| S                                | Stack Pointer             |
| 1                                | Change                    |
| _                                | No Change                 |
| +                                | Add                       |
| ٨                                | Logical AND               |
| -                                | Subtract                  |
| ¥                                | Logical Exclusive OR      |
| <b>≜</b>                         | Transfer From Slack       |
| ¥                                | Transfer To Stack         |
| <b>↓</b><br><b>↓</b><br><b>↓</b> | Transfer To               |
| ←                                | Transfer To               |
| V                                | Logical OR                |
| PC                               | Program Counter           |
| PCH                              | Program Counter High      |
| PCL                              | Program Counter low       |
| OPER                             | Operand                   |
| #                                | Immediate Addressing Mode |

FIGURE 1. ASL-SHIFT LEFT ONE BIT OPERATION

| С | • | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | - | 0 |  |
|---|---|---|---|---|---|---|---|---|---|---|---|--|
|---|---|---|---|---|---|---|---|---|---|---|---|--|

FIGURE 2 ROTATE ONE BIT LEFT (MEMORY OR ACCUMULATOR)

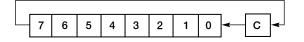


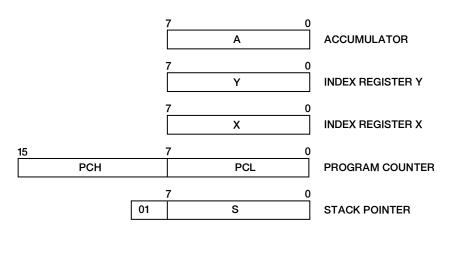
FIGURE 3.

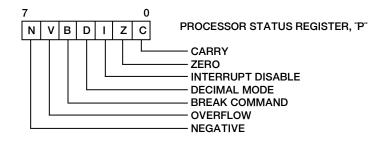
| └ <b>→</b> C  → | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |  |
|-----------------|---|---|---|---|---|---|---|---|--|

NOTE 1: BIT — TEST BITS

Bit 6 and 7 are Iranaterred to the status register. If the result of A  $\wedge$  M is zero than Z=1, otherwise Z=0.

# **PROGRAMMING MODEL**





# INSTRUCTION CODES

| BVS         BVS <th>to<br/>with carry A-M-C A.C<br/>with carry A-M-C A.C<br/>is with A M A<br/>but but (See Figure 1)<br/>Accumulator) (See Figure 1)<br/>arry clear Branch on C=0<br/>arry set Branch on C=0</th> <th>ļ į</th> <th>A<br/>A<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X<br/>Oper X</th> <th></th> <th></th> <th>BVS<br/>Branch on overllow<br/>CLC</th> <th>┟╌╍╍╎╌</th> <th>-<u></u></th> <th> <br/> <br/> </th> <th>,<br/>,</th> <th></th> <th></th>                                 | to<br>with carry A-M-C A.C<br>with carry A-M-C A.C<br>is with A M A<br>but but (See Figure 1)<br>Accumulator) (See Figure 1)<br>arry clear Branch on C=0<br>arry set Branch on C=0  | ļ į | A<br>A<br>Oper X<br>Oper X<br>Oper X<br>Oper X<br>Oper X<br>Oper X<br>Oper X<br>Oper X<br>Oper X<br>Oper X |             |                       | BVS<br>Branch on overllow<br>CLC | ┟╌╍╍╎╌           | - <u></u>              | <br> <br>            | ,<br>, |        |             |
|--|---|-----|--|-------------|-----------------------|----------------------------------|------------------|------------------------|----------------------|--------|--------|-------------|
| MC         Operation         Eig         Z         VVVV         Parach on overflow set         Eigendo not val         Peration         Vval         Peration  | to<br>with carry A-M-CA.C<br>with carry AA MA.C<br>but but AA MA<br>but (See Figure 1)<br>Accumulator) (See Figure 1)<br>Accumulator) and (See Figure 1)  |     |  |             | <u>^∕^</u>            | Branch on overllow               |                  |                        | _                    | 20     | -      |             |
| Risk<br>(R)<br>(R)<br>(R)<br>(R)<br>(R)<br>(R)<br>(R)<br>(R)<br>(R)<br>(R)   | with Carry<br>in with AAMA<br>but (See Figure 1)<br>Accumulator)<br>arry clear Branch on C=D<br>arry set Branch on C=D  |     |  |             |                       | CLC                              | -                |                        | BVS Oper             | 5      | 2      |             |
| Ric         ADC         Oper         Display         Display <thdisplay< th=""> <thdisplay< td="" th<=""><td>ry with AAM A<br/>but A<br/>Accumulator) (See Figure 1)<br/>Accumulator) arry clear Branch on C=0<br/>arry clear Branch on C=0</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td></thdisplay<></thdisplay<>   | ry with AAM A<br>but A<br>Accumulator) (See Figure 1)<br>Accumulator) arry clear Branch on C=0<br>arry clear Branch on C=0  |     |  |             |                       | -                                |                  |                        |                      |        |        |             |
| R.K.         ADD         Open         AD         ADD         Open         AD         ADD         Open         CL  | ry with AAMA<br>but<br>Accumulator) (See Figure 1)<br>Accumulator) and AAMA<br>Accumulator) (See Figure 1)<br>Accumulator) (See Figure 1)<br>Accumulator) and AAMA  |     |  |             |                       | Clear carry flag                 | 0 <del>1</del> 0 | Implied                | CLC                  | 18     | -      | 0           |
| CLI         D - 1         MD - 1   | ry with AAMA<br>bit bit (See Figure 1)<br>Accumulator) (See Figure 1)<br>arry clear Branch on C=0<br>arry set Branch on C=1   |     |  |             |                       | CLD<br>Clear decimal mode        |                  | heilen                 | 2                    | e.     |        |             |
| Bits<br>alst<br>AND<br>ADD         AND<br>OFF(<br>2012)         Compare<br>ADD         Deriv<br>ADD         Call<br>ADD         Deri        <   | ry with AAM A<br>bit<br>Accumulator)<br>fsee Figure 1)<br>Accumulator<br>fry clear Branch on C=0<br>sry set Branch on C=1   |     |  |             |                       |                                  |                  |                        |                      | 3      | -      |             |
| Bits         AND offer         23         2         VVVVV         CU         Molection         23         2         VVVVV         Constraine         CU         Molection         Current and constraints         Current and const         Curent and c   | ry with AAMA<br>but<br>Accumulator) (See Figure 1)<br>Accumulator) arry clear Branch on C=0<br>arry set Branch on C=1   |     |  |             |                       | 5                                |                  | implied                | CLI                  | 53     | -      | - 0         |
| age         Allo         Oper         35         2         CHP         Molect         35         2         CHP         Molect         35         2         CHP         Molect         35         2         CHP         Molect         35         3   | t bit<br>Accumulator) (See Figure 1)<br>Accumulator) (See Figure 1)<br>arry clear Branch on C=0   |     |  |             | ~~~//                 | 2 1                              |                  |                        |                      |        | ſ      |             |
| R.K.         Amo Oper         20         2 <t< td=""><td>left one bit<br/>lory or Accumulator)<br/>ch on carry clear Branch on C=0<br/>ch on carry set Branch on C=1</td><td></td><td></td><td></td><td></td><td>Clear criedlow flag</td><td></td><td>Pollon</td><td>2</td><td>gg</td><td>-</td><td></td></t<>   | left one bit<br>lory or Accumulator)<br>ch on carry clear Branch on C=0<br>ch on carry set Branch on C=1  |     |  |             |                       | Clear criedlow flag              |                  | Pollon                 | 2                    | gg     | -      |             |
| Riv         Aim         District         Signation         A         Memory and construction         Memory and constor constoreconstruction         Memory and constructio  | left one bit<br>lory or Accumulator)<br>sh on carry clear Branch on C=0<br>ch on carry set Branch on C=1  |     |  |             |                       |                                  |                  |                        |                      | 3      | -      |             |
| CM         AMD         Derivity         38         3         Compare memory and<br>entry         A - M         Immediate<br>consister         Compare memory and<br>accumulator         A - M         Immediate<br>constraints         CMP           eity         AMD         Derivy         31         2         2         Page x         CMP           eity         AND         Derivy         31         2         2         Page x         CMP           age         ASI Oper         Deri         1         V/V         2         Page x         CMP           age         ASI Oper         Deri         1         V/V         2         Page x         CMP           age         ASI Oper         E         2          1         Indirect/i Y         CMP           e         BCC Oper         SC         2          CPV         2         Page CPV           e         BSI Oper         FO         2          CPV         2         Page Page CPV           e         BSI Oper         FO         2          CPV         2         Page Page CPV           e         BSI Oper         FO         2  | left one bit<br>ory or Accumulator) (See Figure 1)<br>cry or Carry cry or Carry (See Figure 1)<br>cry or Carry cry or Carry (See Figure 1)<br>cry or Carry cry or Carry (See Figure 1)<br>cry or Carry (See Figure 1) |     |  |             |                       | CMP                              |                  |                        |                      |        |        |             |
| Circle         Allo         Opper         2         Allo         Compare         Compare <thcompare< th="">         Compare         Compare</thcompare<>   | left one bit<br>ory or Accumulator) (See Figure 1)<br>the Accumulator) (See Figure 1)<br>(See Figure 1)<br>(See Figure 1)<br>(See Figure 1)<br>(See Figure 1)<br>(See Figure 1)   |     | 1 4004   |             |                       | Compare memory ar                | <br><            | Immediate              | _                    | 82     | ~~~    | ~~^//       |
| Inder         ASI Oper         0A         1         V/V/         ASSOURCE         ASSOURCE <td>left one bit<br/>ory or Accumulator) (See Figure 1)<br/>the Accumulator) (See Figure 1)<br/>the Accumulator) (See Figure 1)<br/>the Accumulator) (See Figure 1)<br/>the Accumulator) (See Figure 1)</td> <td></td> <td>ASL A<br/>ASL Oper<br/>ASL Oper X</td> <td></td> <td></td> <td></td> <td></td> <td>Zero Page, X</td> <td></td> <td>88</td> <td>1 01</td> <td></td> | left one bit<br>ory or Accumulator) (See Figure 1)<br>the Accumulator) (See Figure 1)<br>the Accumulator) (See Figure 1)<br>the Accumulator) (See Figure 1)<br>the Accumulator) (See Figure 1)  |     | ASL A<br>ASL Oper<br>ASL Oper X  |             |                       |                                  |                  | Zero Page, X           |                      | 88     | 1 01   |             |
| ASI Ober     ASI O  | left one bit<br>ory or Accumulator) (See Figure 1)<br>the carry clear Branch on C=0<br>ch on carry set Branch on C=1  |     | ASL A<br>ASL Oper<br>ASL Oper X  |             | -                     |                                  |                  | Absolute<br>Absolute Y |                      | 88     |        |             |
| age         ASL Oper         66         2         0 <th< td=""><td>ory or Accumulator)<br/>ch on carry clear Branch on C=0<br/>ch on carry set Branch on C=1</td><td></td><td>ASL Oper<br/>ASL Oper X</td><td></td><td></td><td></td><td></td><td>Absolute.Y</td><td></td><td>38</td><td><br/>ით</td><td></td></th<>   | ory or Accumulator)<br>ch on carry clear Branch on C=0<br>ch on carry set Branch on C=1   |     | ASL Oper<br>ASL Oper X   |             |                       |                                  |                  | Absolute.Y             |                      | 38     | <br>ით |             |
| Bit     ASL Ober     Bit     Z       iii.x     Bit     Z     Z       iii.x     Der  | ch on carry clear Branch on C=0<br>ch on carry set Branch on C=1  |     | ASL Oper X   |             |                       |                                  |                  | (Indirect,X)           |                      | 5      | ~      |             |
| Risk       ASL Oper       Re       BCC Oper       Set       Zeto       CPX         Re       BCC Oper       BO       2        Compare memory and index X       A. Memory and index X       M - 1M       Memory and index X       M - 1M       Memory and index X       M - 1M       Memory and index M       Memory and index M       Memory and index M       Memory and index X       Memory and index<  | ch on carry clear Branch on C°O<br>ch on carry set Branch on C°I  |     | 1C Door  |             |                       |                                  |                  | (Indirect).Y           |                      | 5      | ~      |             |
| re     BCC Oper     So     2      Compare memory and index X     M     Immediate     CPX       re     BCC Oper     BO     2      CPY     Compare memory and index Y     X     M     Immediate     CPY       re     BEO Oper     BO     2      CPY     Compare memory and index Y     X     M     Immediate     CPY       re     BEO Oper     EO     2      DEC     DEC     M     Zero Page     CPY       re     BMI Oper     2d     30     2      DEC     DEC     Absolute     CPY       re     BMI Oper     30     2      DEC     DEC     Absolute     CPY       re     BMI Oper     30     2      DEC     DEC     Absolute     CPY       re     BMI Oper     30     2      DEC     DEC     Absolute     CPY       re     BMI Oper     30     2      DEC     DEC     Absolute     CPY       re     BMI Oper     30     2      DEC     DEC     Absolute     DEC       re     BMI Oper     30     2   | ch on carry clear Branch on C°O<br>ch on carry set Branch on C=1  | ł   | ASL Oper.X   |             |                       | CPX                              |                  |                        |                      |        |        |             |
| Re         BCC Oper         90         2          CPY         Absolute         CPY           Re         BSS Oper         B0         2          CPY         Zero Page         CPY           Re         BSG Oper         B0         2          CPY         Zero Page         CPY           Re         BSG Oper         B0         2          CPY         Zero Page         CPY           Re         BSG Oper         F0         2          Decrement memory and         Y – M         Zero Page         CPY           Re         BNI Oper         2d         2         My/M6         Decrement memory         M – 1M         Zero Page         DEC           Re         BNI Oper         30         2          DEC         Absolute         CPY           Re         BNE Oper         30         2          DEC         Absolute         DEC         Absolute         DEC           Re         BNE Oper         30         2          DEC         Absolute         DEC         Absolute         DEC         Absolute         DEC         Absolute         DEC  | ch on carry clear Branch on C=0<br>ch on carry set Branch on C=1  |     |  | -           |                       | Compare memory at                | ×                | : Immediate            | CPX #Oper            | 83     | ~ ~    | ///         |
| e       BCS Ober       B0       2        Compare memory and index Y       Y – M       Immediate CPY index Y $e$ BEO Oper       F0       2        Compare memory and index Y       Y – M       Immediate CPY index P $e$ BEO Oper       F0       2        Decrement memory       M – 1 – M       Zero Page Decrement memory       Decrement approx       D  | ch on carry set Branch on C=1   |     | SCC Oper   |             | ł                     |                                  |                  | Absolute               | CPX Oper             | 18     | • ~    |             |
| ice       BCS Oper       B0       2        Compare memory and index Y       Y – M       Immediate CPY index CPY index CPY index Page CPY index Y       Compare memory index Y       N – M       Zero Page CPY isolute       DE  | ch on carry set Branch on C=1   |     |  |             |                       | CPY                              |                  |                        |                      |        |        |             |
| Index Y         Zero Page         CPV           age         BiT* Oper         Za         2        M6         DEC           age         BiT* Oper         Za         2         M1M         Zero Page         DEC           age         BiT* Oper         Za         3         My/M6         Decrement memory         M - 1M         Zero Page         DEC           re         BMI Oper         30         Z          DEC         Decrement memory         M - 1M         Zero Page         DEC           re         BMI Oper         30         Z          DEC         Decrement index X         X - 1X         Implied         DEC           re         BPL Oper         D0         Z          DEC         Decrement index X         X - 1X         Implied         DE           d         BRK*         D0         Z          DE         Decrement index Y         Y - 1Y         Implied         DE           e         BVC Oper         S0         Z          Decrement index Y         Y - 1Y         Implied         DE   | 9E0   |     | 3CS Oper   |             |                       | Compare memory ar                | 7                | Immediate              | CPY #Oper            | 3      | ~      |             |
| ie     BE0 Oper     F0     2   |   |     |  |             |                       | index Y                          |                  | Zero Page<br>Absolute  | CPY Oper<br>CPY Oper | 38     | 2      |             |
| age     Bit' Oper     24     2     My/Me     Decrement memory     M - 1 -+ M     Zero Page. DEC       re     Bit' Oper     26     3     My/Me     DEC     DEC     DEC       re     Bit Oper     30     2      DEC     Absolute. X     DEC       re     Bit Oper     30     2      DEC     DEC       re     Bit Oper     30     2      DEC       re     Bit Oper     DO     2      DEC       re     Bit Oper     DO     2      DEC       d     Bit Oper     DO     2      DEC       d     Bit Oper     10     2      DEC       e     Bit Oper     10     2      DEC       d     Bit Oper     10     2      DEC       d     Bit Coper     S0     3      Decrement index Y     Y - 1Y     Implied       e     Bit Coper     S0     2      Decrement index Y     Y - 1Y     Implied     DEY  | on result zero Branch on Z+1  |     | 3EQ Oper   |             | !                     | PCL                              |                  |                        |                      | ;<br>  | ·      |             |
| age     Bit* Oper     24     2 $M_y \veeM_6$ by one     Zero Fage.X     Dic Assolute     Dic Assolute     Dic Assolute     Dic Assolute       re     BMI Oper     30     2      DE X     X - 1 -+ X     Implied     Dic Assolute       re     BNE Oper     Do     2      DE X     X - 1 -+ X     Implied     Dic Assolute       d     BRL Oper     DO     2      Dic Y     X - 1 -+ X     Implied     Dic X       d     BRL Oper     DO     2      Dic Y     Y - 1 -+ Y     Implied     Dic Y       d     BRC Oper     SO     2      Dic Y     Y - 1 -+ Y     Implied     Dic Y       d     BRC Oper     SO     2      Dic Y     Y - 1 -+ Y     Implied     Dic Y       e     BVC Oper     SO     2      Dic Y     Y - 1 -+ Y     Implied     Dic Y  |   |     |  |             |                       | Decrement memory                 | ī                | Zero Page              | 0FC Oner             | ප      | ć      | //          |
| Image: Non-out-out-out-out-out-out-out-out-out-out   | A M, M7 + N,  | •   | 311* Oper  |             | 1                     |                                  |                  | Zero Page,X            | DEC Oper.X           | 85     | 1010   |             |
| ee         BMI Oper         30         2          DEX           re         BNE Oper         D0         2          Decrement index X         X - 1 - + X         Implied           re         BNE Oper         D0         2          DEX         X - 1 - + X         Implied           re         BPL oper         10         2          DEX         X - 1 - + Y         Implied           d         BPL oper         10         2          Decrement index Y         Y - 1 - + Y         Implied           d         BPL oper         00         1          Decrement index Y         Y - 1 - + Y         Implied           e         BVC Oper         S0         2          Decrement index Y         Y - 1 - + Y         Implied   |   | +   |  | +           |                       |                                  |                  | Absolute,X             | DEC Oper,X           | ä      | ~      |             |
| Ref         BNE Oper         D0         2          Decrement index X         X = 1 -+-X         Implied           re         BNE Oper         D0         2          DF one         DY one         DY one         DC crement index Y         Y = 1 -+-Y         Implied           d         BPL oper         10         2          DC crement index Y         Y = 1 -+-Y         Implied           d         BPL oper         00         1          DY one         DC crement index Y         Y = 1 -+-Y         Implied           e         BVC Oper         S0         2          L   | ch on résult minus Branch on N=1  |     | 3MI Oper   |             |                       | DEX                              |                  |                        |                      |        |        |             |
| Re         BNE Oper         D0         2          DF           re         BPL oper         10         2          Decrement index Y         Y - 1 -+ Y         Implied           d         BPK         00         1        1         Dy one         Dy one         Implied           e         BVC Oper         S0         2          Decrement index Y         Y - 1 -+ Y         Implied  |   |     |  |             | <br> <br> <br>        | Decrement index X                | ī                | Implied                | DEX                  | 3      | -      | ~ · · - ^ / |
| re         BPL oper         10         2          Decrement index Y         Y - 1 -+Y         Implied           d         BRK*         00         3        1         Decrement index Y         Y - 1 -+Y         Implied           i         BVC Oper         S0         3        1         Decrement index Y         Y - 1 -+Y         Implied           i         BVC Oper         S0         2          Decrement index Y         Y - 1 -+Y         Implied   | Branch on Z=0   |     | BNE Oper   | _           |                       | nev                              |                  |                        |                      |        | T      |             |
| re         BPL oper         10         2            d         BRK*         00         3        1           e         BVC Oper         50         2            wei         BVC Oper         50         2  | BPL   |     |  |             |                       | Decrement index Y                | ī                | Imnlied                | DEY                  | 8      | -      | //          |
| d BRK*<br>BVC Oper<br>re BVC Oper  | Branch on N=0   |     | 3PL oper   | -           |                       | by one                           |                  |                        |                      |        |        | •           |
| d BRK*<br>ke BVC Oper  | BAK   |     |  |             |                       |                                  |                  |                        |                      |        |        |             |
| re BVC Oper  | Forced<br>Interrupt<br>PC-2 + P +   | •   | 3BK•   |             |                       |                                  |                  |                        |                      |        |        |             |
| re BVC Oper  |   |     |  |             |                       |                                  |                  |                        |                      |        |        |             |
|  |   |     | BVC Oper   |             |                       |                                  |                  |                        |                      |        |        |             |
|  | Nole 1 440 % and 2 are used integration to the statue register # the result of A V M is<br>near 3 - 5 coherence 2 - 0   | t   | Hale 2 A BRI   | K COMMING C | note be mushed by set |                                  |                  |                        |                      |        |        |             |

INSTRUCTION CODES

| Name<br>Description                           | Operation                             | Addressing<br>Mode   | Assembly<br>Language<br>Form  | HEI<br>Code                      | No.<br>Bytes | P" Status Reg.<br>N 2 C I D V | Name<br>Description                                    | Operation      | Addressing<br>Made   | Assembly<br>Language<br>Form                                | Щ. 6<br>2<br>2<br>2<br>2<br>3<br>2<br>3<br>2<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3 | By les  | .P. Status Reg.<br>N Z C I D V |
|---|---------------------------------------|--|---|----------------------------------|--------------|-------------------------------|--|----------------|--|---|---|---------|--------------------------------|
| EOR   |                                       |  |   | <br> <br>                        |              |                               | LSR  |                |  |   |   |         |                                |
| "Exclusive-Or" memory<br>with accumulator     | A V M A                               | Immediate<br>Zero Page<br>Zero Page, X<br>Absolute<br>Absolute, X    | EOR #Oper<br>EOR Oper<br>EOR Oper X<br>EOR Oper X<br>EOR Oper X     | & & X & & & &                    | ~~~~         | ·                             | Shift right one bit<br>(memory or accumulator)         | (See Figure 1) | Accumulator<br>Zero Page<br>Zero Page, X<br>Absolute, X<br>Absolute, X | LSR A<br>LSR Oper<br>LSR Oper X<br>LSR Oper X<br>LSR Oper X | 29845<br>29875  |         | ^0                             |
|   |                                       | Absolute,Y<br>(Indirect,X)   |   | 841                              |              |                               | NOP<br>No American                                     |                |  |   |   | ·  ·    |                                |
| INC   |                                       |  |   | 5                                | ,            |                               | ORA  |                | hand   |   | 5   | -       |                                |
| Increment memory<br>by one                    | M • 1 • M                             | Zero Page<br>Zero Page,X<br>Absolute<br>Absolute.X                   | INC Oper<br>INC Oper.X<br>INC Oper<br>INC Oper.X                    | 88 H H H                         | ~~~~         | · ^>                          | "OR" memory with accumulator                           | A V M A        | Immediate<br>Zero Page<br>Zero Page,X<br>Absolute                      | *   | 8858  | ~~~~    |                                |
| INX<br>Increment index X by one               | × ×                                   | Implied  | XNI   | 5                                | -            | >                             |  |                | Absolute,X<br>Absolute,Y<br>(indirect,X)                               | ORA Oper.X<br>ORA Oper.Y<br>ORA (Oper.X)                    | 9¢5   | ~~~     |                                |
| INY   |                                       |  |   |                                  |              |                               |  |                | (Indirect).Y   | ORA (Oper).Y  | ; =   | 101     |                                |
| Increment index Y by one                      | Y - 1 - Y                             | Implied  | ΝΥ  | ŝ                                | ~            |                               | PHA  |                |  |   |   |         |                                |
| JMP   |                                       |  |   |                                  |              |                               | on stack   | A <b>†</b>     | Implied  | РНА   | \$  | -       |                                |
| Jump to new location                          | (PC+1) + PCH                          | Absolute<br>Indirect   | JMP Oper<br>JMP (Oper)  | <del>2</del> 8                   | <b>ო</b> ო   | !                             | РНР  |                |  |   |   |         |                                |
| JSR   |                                       |  |   |                                  |              |                               | Push processor status<br>on stack                      | -              | Implied  | dHd   | 8   | -       |                                |
| Jump to new location<br>saving return address | PC+2+<br>(PC+1) + PCL<br>(PC+2) + PCH | Absolute   | JSR Oper  | ន                                | ę            |                               | PLA<br>Pull accumulator                                | A +            | Implied  | PLA   | 8   | -       | ^                              |
| LDA   |                                       |  |   |                                  |              |                               | from stack   |                |  |   |   |         |                                |
| toad accumulator<br>with memory               | M M                                   | Immediale<br>Zero Page<br>Zero Page,X                                |   | 85 A§                            | ~~~~         | ^^                            | Pull processor status<br>from stack                    | +.<br>4        | Implied  | ٥٦d   | 58  |         | From Stack                     |
|   |                                       | Absolute<br>Absolute.X<br>Absolute.Y<br>(Indirect.X)<br>(Indirect).Y | LDA Oper<br>LDA Oper,X<br>LDA Oper,Y<br>LDA (Oper,X)<br>LDA (Oper,Y | 99875                            | ~~~~~        | . <u></u>                     | ROL<br>Rotate one bit left<br>(memory or accumulator)  | (See Figure 2) | Accumulator<br>Zero Page<br>Zero Page X                                | ROL A<br>ROL A<br>ROL Oper<br>ROL Oper X                    | 288   | - ~~    | ^^^                            |
| LDX   | ;                                     |  |   |                                  |              |                               |  |                | Absolute<br>Absolute X   | ROL Oper<br>ROL Oper X                                      | 38  | <b></b> |                                |
| Load Index X<br>with memory                   | X + W                                 | Immediale<br>Zero Page<br>Zero Page.<br>Absolute<br>Absolute         | LDX #Cper<br>LDX Oper<br>LDX Oper.Y<br>LDX Oper.Y                   | AS<br>A6<br>A6<br>A6<br>B6<br>B6 |              |                               | ROR<br>Rotate one bit right<br>(memory or accumulator) | (See Figure 3) | Accumulator<br>Zero Page<br>Zero Page                                  | ROR A<br>ROR Oper<br>ROR Oper X                             | 388   | -~~     | ///                            |
| LOY   | ;                                     |  |   |                                  |              |                               |  |                | Absolute<br>Absolute.X   | ROR Oper<br>ROR Oper.X                                      | ۶<br>۲  |         |                                |
| Load Index Y<br>with memory                   | }<br>†<br>≥                           | immediale<br>Zero Page<br>Zero Page.X<br>Absolute                    | LDY Oper.X  | 844S                             | 2000         |                               |  |                |  | :   |   |         |                                |

| DES   |
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| <u></u> |
| z   |
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| <u>C</u>  |
| RC  |
| ST  |
| <u>Z</u>  |

,

| Name<br>Description                                    | Operation        | Addressing<br>Mode  | Assembly<br>Language<br>Form  | H A BOO       | No.<br>Bytes | P Status Reg.<br>N Z C I D V |
|--|------------------|---|---|---------------|--------------|------------------------------|
| RTI<br>Return from interrupt                           | P+PC+            | Implied   | RT  | 9             | -            | From Stack                   |
| RTS  |                  |   |   |               | ,            |                              |
| Return from subroutine                                 | PC1. PC+1 - PC   | PC implied  | HIS   |               | -            |                              |
| SBC<br>Subtract memory from<br>accumulator with borrow | A . M . Č A      | Immediate<br>Zero Page<br>Zero Page.X<br>Absolute<br>Absolute.X<br>Absolute.Y<br>(Indirect.X)         | SBC #Oper<br>SBC 0per<br>SBC 0per<br>SBC 0per<br>SBC 0per<br>SBC 0per<br>SBC 0per<br>SBC 10per<br>SBC 10per<br>SBC 10per<br>SBC 10per<br>SBC 10per<br>SBC 10per | 88585522<br>2 | ~~~~~~~~~    | ~~~^^^                       |
| SEC  |                  |   |   | ÷             |              |                              |
| Set carry 11ag   | ۔<br>            | Implied   | DEC   | 8             | -            |                              |
| SED<br>Set decimal mode                                | 1 -+-0           | Implied   | SED   | F8            | •            |                              |
| SEI  |                  |   |   |               |              |                              |
| Set interrupt disable<br>status                        | 1+1              | Implied   | SEI   | 82            | -            | 1                            |
| STA  |                  |   |   |               |              |                              |
| Store accumulator<br>In memory                         | A M              | Zero Page<br>Zero Page, X<br>Absolute<br>Absolute, Y<br>Absolute, Y<br>(Indirect, X)<br>(indirect), Y | STA Oper<br>STA Oper,X<br>STA Oper,X<br>STA Oper,Y<br>STA Oper,Y<br>STA (Oper,Y)<br>STA (Oper,Y)  | ****          | ~~~~~        |                              |
| STX<br>Store index X in memory                         | ₩ <del>+</del> X | Zero Page<br>Zero Page, Y<br>Absolute   | STX Oper<br>STX Oper,Y<br>STX Oper,Y  | 888           | 30.5         |                              |
| STY<br>Store index Y in memory                         | ₩+               | Zero Page<br>Zero Page,X<br>Absolute  | STY Oper<br>STY Oper<br>STY Oper  | 2.2.2         | 355          |                              |
| TAX  |                  |   |   |               |              |                              |
| Transfer accumulator<br>to index X                     | X X              | Implied   | TAX   | AA            | 1            | ^^                           |
| TAY<br>Transfer accumulator<br>to index Y              | A + Y            | Implied   | TAY   | AB            | -            | ^/                           |
| TSX  |                  |   | 104   |               | •            | 1                            |
| Iransier slack pointer<br>to index X                   | x to             | Implied   | Ye I  | 40            | -            | /                            |

| Name<br>Description                  | Operation    | Addressing<br>Mode | Åssembly<br>Language<br>Form | Code 분 | Bytes | No. "P" Status Rep.<br>Byles N 2 C I D V |
|--------------------------------------|--------------|--------------------|------------------------------|--------|-------|--|
| TXA                                  |              |                    |                              |        |       |  |
| Transfer index X<br>to accumulator   | X X          | Implied            | TXA                          | 84     | -     | · ·//                                    |
| TXS                                  |              |                    |                              |        |       |  |
| Transfer index X to<br>stack pointer | × + ×        | Implied            | TXS                          | 8      | ÷-    |  |
| TYA                                  |              |                    |                              |        |       |  |
| Transfer index Y<br>to accumulator   | <b>∀ +</b> ↓ | Implied            | TYA                          | 8      | -     | //                                       |

# HEX OPERATION CODES

| 00 — BRK                 | 2F — NOP                | 5E —LSR — Absolute. X      | 8D — STA — Absolute      | 84 — LDY — Zero Page. X  | D8 - NOR                 |
|--------------------------|-------------------------|----------------------------|--------------------------|--------------------------|--------------------------|
| 01 — ORA — (Indirect. XI | 30 — BM!                | SF - NOP                   | BE — STX — Absolute      | 85 — LDA — Zero Page. X  | DCMOP                    |
| - NOP                    | I                       |                            | NOP                      | –<br>LOX<br>–            | DO                       |
| 03 — NOR                 | - NOP                   | I                          | 1                        | 87 — NOP                 | DE — DEC — Absolute, X   |
| 04 — NOR                 | 33 — NOP                |                            | 91 — STA — (Indirect), Y | B8 — CLV                 | OF - NOP                 |
| 05 — ORA — Zero Page     | 34 — NOP                | 63 — NOP                   | 92 — NOP                 | 89 — LDA — Absolute. Y   | E0 — CPX — Immediate     |
| 06 — ASL — Zero Page     | 35 — AND — Zero Page, X | 64 — NOR                   | 93 — NOR                 | BA — TSX                 | El — SBC — (Indirect, X) |
| 07 — NOP                 | 36 — ROL — Zero Page. X | 65 — ADC — Zero Page       | 94 — STY — Zero Page. X  | BB — NOP                 | E2 — NOP                 |
| 08 — РНР                 | 37 — NOP                | 66 — ROR — Zero Page       | 95 — STA — Zero Page, X  | BC — LDY — Absolute.X    | E3 — NOP                 |
| 09 — ORA — Immediate     | 38 — SEC                | 67 — NOP                   | 96 — STX — Zero Page, Y  | BD — LDA — Absolute, X   | E4 — CPX — Zero Page     |
| OA — ASL — Accumulator   | 39 — AND — Absolute, Y  | 68 — PLA                   | 97 — NOP                 | BE — LOX — Absolute, Y   | E5 — SBC —Zero Page      |
| OB — NOP                 | 3A — NOP                | 69 — ADC — Immediate       | 98 — TVA                 | BF — NOP                 | E6 — INC—Zero Page       |
| OC - NOP                 | 3B — NOP                | 6A — ROR — Accumulator     | 99 — STA — Absolute, Y   | CO — CPY — Immediate     | E7 — NOP                 |
| OD — ORA — Absolute      | 3C — NOP                | 6B — NOP                   | 9A — TXS                 | C1 — CMP — (Indirect, X  | eb — Inx                 |
| OEASLAbsolute            | 3D — AND — Absolute, X  | 6C — JMP — Indirect        | 9B — MOP                 | C2 — NOP                 | E9 — SBC — Immediate     |
| OF - NOP                 | 3E — ROL — Absolute, X  | 6D — ADC — Absolute        | 9C — NOP                 | C3 — NOP                 | EA — NOP                 |
| 10 — BPL                 | 3F — NOP                | 6E — ROR — Absolute        | 9D — STA — Absolute, X   | C4 — CPY — Zero Page     | EB — NOP                 |
| 11 — ORA — (Indirect), Y | 40 — RTI                | 6F — NOP                   | 9E — NOP                 | C5 — CMP — Zero Page     | EC — CPX — Absolute      |
| 12 — NOP                 | 41 — EOR — Indirect. X  | 70 — BVS                   | 9F — NOP                 | C6 — DEC — Zero Page     | ED — SBC — Absolute      |
| 13 — NOP                 | 42 — NOP                | 71 — ADC — (Indirect), Y   | AO — LDY — Immediate     | C7 — NOP                 | EE — INC — Absolute      |
| 14 — NOR                 | 43 — NOP                | 72 — NOP                   | AI — LDA —(Indirect, XI  | C8 — INY                 | EE — NOP                 |
| 15 — ORA — Zero Page, X  | 44 — NOR                | 73 — MOP                   | A2 —LOX — Immediate      | C9 — CMP — Immediate     | FO — BM                  |
| 16 — ASL — Zero Page. X  | 45 — EOR — Zero Page    | 74 — NOP                   | A3 — NOR                 | ca — dex                 | F1 — SBC — (Indirect), Y |
| 17 — NOR                 | 46 — LSR — Zero Page    | 75 — ADC — Zero Page, X    | A4 — LDY — Zero Page     | CBMOP                    | F2 — NOP                 |
| 18 — CLC                 | 47 — NOP                | 76 — ROR — Zero Page. X    | AS — LDA — Zero Page     | CC —CPY — Absolute       | F3 — NOR                 |
| 19 — ORA — Absolute, Y   | 48 — PHA                | 77 — NOP                   | A6 — LDX — Zero Page     | CD —CMP — Absolute       | F4 — NOP                 |
| IA — NOR                 | 49 — EOR — Immediate    | 78 — SEI                   | AI — NOP                 | CE — DEC DEC — Absolute  | F5 — SBC — Zero Page, X  |
| 1B — NOP                 | 4A — LSR — Accumulator  | 79 — ADC — Absolute, Y     | А8 — ТАҮ                 | CF — NOP                 | F6 — INC — Zero Page. X  |
| 1C NOR                   | 4B                      | 7A — NOP                   | A9 — LDA — Immediate     | DO - BNE                 | F7 — NOP                 |
| 10 — ORA — Absolute, X   | 4C — JMP — Absolute     | 7B — NOP                   | АА — ТАХ                 | D1 — CMP — (Indirect), V | F8 — SED                 |
| 1E — ASL — Absolute.X    | 4D — EOR — Absolute     | 7C — NOP                   | AB — NOP                 | D2 — NOP                 | F9 — SBC — Absolute. Y   |
| 1F — NOP                 | 4E — LSR — Absolute     | 7D — ADC — Absolute, X NOP | AC —LDY — Absolute       | D3 — NOR                 | FA — NOP                 |
| 20 — JSR                 | 4FMOP                   | 7E — 808 — Absolute, X NOP | AD —Absolute             | D4 — NOP                 | FB — NOP                 |
| 21 — AND —(Indirect, X)  | 50 — BVC                | 7F — NOP                   | AE — LDX — Absolute      |                          | FC - NOP                 |
| 22 — NOR                 | 51 — EOR Indirect, Y    | 80 — NOR                   | AFNOR                    | D6 — DEC — Zero Page, X  | FD — SBC — Absolute.X    |
| Τ                        | 52 — NOP                | 81 — STA — (Indirect, Xi   | B0 BCS                   | 07                       | FE — INC — Absolute, X   |
| 24 — BIT — Zero Page     | 53 — NOP                | 82 — NOP                   | 81 — LDA — (Indirect), Y | 08 — CLD                 | FF — NOP                 |
| — and —                  | 54 — NOP                | 83 — NOP                   | B2 — NOP                 | D9 —CMP — Absolute. Y    |                          |
| 26 — ROL — Zero Page     | 55 — EOR — Zero Page, X | 84 —STY — Zero Page        | B3 — NOP                 | DA — NOP                 |                          |
| 27 — NOP                 | 56 — LSR — Zero Page, X | 85 — STA — Zero Page       |                          |                          |                          |
| 28 — PLP                 | 57 — NOP                | 86 — STX — Zero Page       |                          |                          |                          |
| 29 — AND — Immediate     | 58 — CLI                | 87 — NOP                   |                          |                          |                          |
| 2A — ROL — Accumulator   | 59 — FOR Absolute, Y    | 88 — DEY                   |                          |                          |                          |
| 2B — NOP                 | 5A — NOP                | 89 — NOP                   |                          |                          |                          |
| 2C — BIT — Absolute      | 5B — NOP                | 8A — TXA                   |                          |                          |                          |
| 2D — AND — Absolute      | 5C — NOP                | 88 — NOP                   |                          |                          |                          |
| 2E — ROL — Absolute      | 50 — EOR — Absolute, X  | 8C — STY — Absolute        |                          |                          |                          |

# **APPLE II HARDWARE**

- 1. Getting Started with Your APPLE II Board
- 2. APPLE II Switching Power Supply
- 3. Interfacing with the Home TV
- 4. Simple Serial Output
- 5. Interfacing the APPLE Signals, Loading, Pin Connections
- 6. Memory Options, Expansion, Map, Address
- 7. System Timing
- 8. Schematics

### INTRODUCTION

### ITEMS YOU WILL NEED:

Your APPLE II board comes completely assembled and thoroughly tested. You should have received the following:

- a. 1 ea. APPLE II P.C. Board complete with specified RAM memory.
- b. l ea. d.c. power connector with cable.
- c. l ea. 2" speaker with cable.
- d. l ea. Preliminary Manual
- e. l ea. Demonstration cassette tapes. (For 4K: 1 cassette (2 programs); 16K or greater: 3 cassettes.
- f. 2 ea. 16 pin headers plugged into locations A7 and J14

In addition you will need:

- g. A color TV set (or B & W) equipped with a direct video input connector for best performance or a commercially available RF modulator such as a "Pixi-verter"<sup>tm</sup> Higher channel (7-13) modulators generally provide better system performance than lower channel modulators (2-6).
- h. The following power supplies (NOTE: current ratings do not include any capacity for peripheral boards.):
  - 1. +12 Volts with the following current capacity!

a. For 4K or 16K systems - 350mA.

- b. For 8K, 20K or 32K 550mA.
- c. For 12K, 24K, 36K or 48K 850mA.
- 2. +5 Volts at 1.6 amps
- 3. -5 Volts at WmA.
- 4. OPTIONAL: If -12 Volts is reouired by your keyboard. (If using an APPLE II supplied keyboard, you will need -12V at 50mA.)

i. An audio cassette recorder such as a Panasonic model RQ-309 DS which is used to load and save programs.

An ASCII encoded keyboard equipped with a "reset" switch.

k.Cable for the following:

- 1. Keyboard to APPLE II P.C.B.
- 2. Video out 75 ohm cable to TV or modulator
- 3. Cassette to APPLE II P.C.B. (1 or 2)

Optionally you may desire:

- Game paddles or pots with cables to APPLE II Game I/O connector. (Several demo programs use PDL(O) and "Pong" also uses PDL(1).
- m. Case to hold all the above

Final Assembly Steps

- Using detailed information on pin functions in hardware section of manual, connect power supplies to d.c. cable assembly. Use both ground wires to miminize resistance. With cable assembly disconnected from APPLE II mother board, turn on power supplies and verify voltages on connector pins. Improper supply connections such as reverse polarity can severely damage your APPLE II.
- 2. Connect keyboard to APPLE II by unplugging leader in location A7 and wiring keyboard cable to it, then plug back into APPLE II P.C.B.
- 3. Plug in speaker cable.
- 4. Optionally connect one or two game paddles using leader supplied in socket located at J14.
- 5. Connect video cable.
- 6. Connect cable from cassette monitor output to APPLE II cassette input.
- 7. Check to see that APPLE II board is not contacting any conducting surface.
- 8. With power supplies turned off, plug in power connector to mother board then recheck all cableing.

### POWER UP

- Turn power on. If power supplies overload, immediately turn off and recheck power cable wiring. Verify operating supply voltages are within +3% of nominal value.
- You should now have random video display. If not check video level pot on mother board, full clockwise is maximum video output. Also check video cables for opens and shorts. Check modulator if you are using one.
- Press reset button. Speaker should beep and a "\*" prompt character with a blinking cursor should appear in lower left on screen.
- 4. Press "esc" button, release and type a "(0" (shift-P) to clear screen.. You may now try "Monitor" commands if you wish. See details in "Ionitor" software section.

### RUNNING BASIC

- Turn power on; press reset button; type "control B" and press return button. A ">" prompt character should appear on screen indicating that you are now in BASIC.
- 2. Load one of the supplied demonstration cassettes into recorder. Set recorder level to approximately 5 and start recorder. Type "LOAD" and return. First beep indicates that APPLE II has found beginning of program; second indicates end of program followed by ">" character on screen. If error occurs on loading, try a different demo tape or try changing cassette volume level.
- 3. Type RUN and carriage return to execute demonstration program. Listings of these are included in the last section of this manual.

Switching power supplies generally have both advantages and peculiarities not generally found in conventional power supplies. The Apple II user is urged to review this section.

Your Apple II is equipped with an AC line voltage filter and a three wire AC line cord. It is important to make sure that the third wine is returned to earth ground. Use a continuity checker or ohmmeter to ensure that the third wire is actually returned to earth. Continuity should be checked for between the power supply case and an available water pipe for example. The line filter, which is of a type approved by domestic (U.L. CSA) and international (VDE) agencies must be returned to earth to function properly and to avoid potential shock hazards.

The APPLE II power supply is of the "flyback" switching type. In this system, the AC line is rectified directly, "chopped up" by a high frequency oscillator and coupled through a small transformer to the diodes, filters, etc., and results in four low voltage DC supplies to run APPLE II. The transformer isolates the DC supplies from the line and is provided with several shields to prevent "hash" from being coupled into the logic or peripherals. In the "flyback" system, the energy transferred through from the AC line side to DC supply side is stored in the transformer's inductance on one-half of the operating cycle, then transferred to the output filter capacitors on the second half of the operating cycle. Similar systems are used in TV sets to provide horizontal deflection and the high voltages to run the CRT.

Regulation of the DC voltages is accomplished by controlling the frequency at which the converter operates; the greater the output power needed, the lower the frequency of the converter. If the converter is overloaded, the operating frequency will drop into the audible range with squeels and squawks warning the user that something is wrong.

All DC outputs are regulated at the same time and one of the four outputs (the +5 volt supply) is compared to a reference voltage with the difference error fed to a feedback loop to assist the oscillator in running at the needed frequency. Since all DC outputs are regulated together, their voltages will reflect to some extent unequal loadings. For example; if the +5 supply is loaded very heavily, then all other supply voltages will increase in voltage slightly; conversely, very light loading on the +5 supply and heavy loading on the +12 supply will cause both it and the others to sag lightly. If precision reference voltages are needed for peripheral applications, they should be provided for in the peripheral design.

In general, the APPLE II design is conservative with respect to component ratings and operating termperatures. An over-voltage crowbar shutdown system and an auxilliary control feedback loop are provided to ensure that even very unlikely failure modes will not cause damage to theAPPLE II computer system. The over-voltage protection references to the DC output voltages only. The AC line voltage input must be within the specified limits, i.e., 107V to 132V.

> Under no circumstances, should more than 140 VAC be applied to the input of the power supply. Permanent damage will result.

Since the output voltages are controlled by changing the operating frequency of the converter, and since that frequency has an upper limit determined by the switching speed of power transistors, there then must be a minimum load on the supply; the Apple II board with minimum memory (4K) is well above that minimum load. However, with the board disconnected, there is no load on the supply, and the internal over-voltage protection circuitry causes the supply to turn off. A 9 watt load distributed roughly 50-50 between the +5 and +12 supply is the nominal minimum load.

Nominal load current ratios are: The +12V supply load is ½ that of the +5V. The - 5V supply load is 1/10 that of the +5V. The -12V supply load is 1/10, that of the +5V.

The supply voltages are  $+5.0 \pm 0.15$  volts,  $+11.8 \pm 0.5$  volts,  $-12.0 \pm 1V$ ,  $-5.2 \pm 0.5$  volts. The tolerances are greatly reduced when the loads are close to nominal.

The Apple II power supply will power the Apple II board and all present and forthcoming plug-in cards, we recommend the use of low power TTL, CMOS, etc. so that the total power drawn is within the thermal limits of the entire system. In particular, the user should keep the total power drawn by any one card to less than 1.5 watts, and the total current drawn by all the cards together within the following limits:

> + 12V - use no more than 250 mA + 5V - use no more than 500 mA - 5V - use no more than 200 mA - 12V - use no more than 200 mA

The power supply is allowed to run indefinetly under short circuit or open circuit conditions.

CAUTION: There are dangerous high voltages inside the power supply case. Much of the internal circuitry is NOT isolated from the power line, and special equipment is needed for service. NO REPAIR BY THE USER IS ALLOWED.

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### NOTES ON INTERFACING WITH THE HOME TV

Accessories are available to aid the user in connecting the Apple II system to a home color TV with a minimum of trouble. These units are called "RF Modulators" and they generate a radio frequency signal corresponding to the carrier of one or two of the lower VHF television bands; 61.25 MHz (channel 3) or 67.25 MHz (channel 4). This RF signal is then modulated with the composite video signal generated by the Apple II.

Users report success with the following RF modulators:

the "PixieVerter" (a kit) ATV Research 13th and Broadway Dakota City, Nebraska 68731

the "TV-1" (a kit) UHF Associates 6037 Haviland Ave. Whittier, CA 90601

the "Sup-r-Mod" by (assembled & tested) M&R Enterprises P.O. Box 1011 Sunnyvale, CA94088

the RF Modulator (a P.C. board) Electronics Systems P.O. Box 212 Burlingame, CA 94010

Most of the above are available through local computer stores.

The Apple II owner who wishes to use one of these RF Modulators should read the following notes carefully.

All these modulators have a free running transistor oscillator. The M&R Enterprises unit is pre-tuned to Channel 4. The PixieVerter and the TV-1 have tuning by means of a jumper on the P.C. board and a small trimmer capacitor. All these units have a residual FM which may cause trouble if the TV set in use has a IF pass band with excessive ripple. The unit from M&R has the least residual FM.

All the units except the M&R unit are kits to be built and tuned by the customer. All the kits are incomplete to some extent. The unit from Electronics Systems is just a printed circuit board with assembly instructions. The kits from UHF Associates and ATV do not have an RF cable or a shielded box or a balun transformer, or an antenna switch. The M&R unit is complete.

Some cautions are in order. The Apple II, by virtue of its color graphics capability, operates the TV set in a linear mode rather than the 100% contrast mode satisfactory for displaying text. For this reason, radio frequency interference (RFI) generated by a computer (or peripherals) will beat with the

carrier of the RF modulator to produce faint spurious background patterns (called "worms") This RFI "trash" must be of quite a low level if worms are to be prevented. In fact, these spurious beats must be 40 to 50db below the signal level to reduce worms to an acceptable level. When it is remembered that only 2 to 6 mV (across 300Q, is presented to the VHF input of the TV set, then stray RFI getting into the TV must be less than  $500\mu$ V to obtain a clean picture. Therefore we recommend that a good, co-ax cable be used to carry the signal from any modulator to the TV set, such as RG/59u (with copper shield). Belden #8241 or an equivalent miniature type such as Belden #8218. We also recommend that the RF modulator been closed in a tight metal box (an unpainted die cast aluminum box such as Pomona #2428). Even with these precautions, some trouble may be encountered with worms, and can be greatly helped by threading the coax cable connecting the modulator to the TV set repeatedly through a Ferrite toroid core Apple Computer supplies these cores in a kit:along with a 4 circuit connector/cable assembly to match the auxilliary video connector found on the Apple II board. This kit has order number A2MØ1ØX. The M&R "Sup-r-Mod is supplied with a coax cable and toroids.

Any computer containing fast switching logic and high frequency clocks will radiate some 'radio frequency energy. Apple II is equipped with a good line filter and many other precautions have been taken to minimize radiated energy. The user is urged not to connect "antennas" to this computer; wires strung about carrying clocks and/data will act as antennas, and subsequent radiated energy may prove to be a nuisance.

Another caution concerns possible long term effects on the TV picture tube. Most home TV sets have "Brightness" and "Contrast" controls with a very wide range of adjustment. When an un-changing picture is displayed with high brightness for a long period ,a faint discoloration of the TV CRT may occur as an inverse pattern observable with the TV set turned off. This condition may be avoided by keeping the "Brightness "turned down slightly and "Contrast" moderate. The Apple II is equipped with a 16 pin DIP socket most frequently used to connect potentiometers, switches, etc. to the computer for paddle control and other game applications. This socket, located at J-14, has outputs available as well. With an appropriate machine language program, these output lines may be used to serialize data in a format suitable for a teletype. A suitable interface circuit must be built since the outputs are merely LSTTL and won't run a teletype without help. Several interface circuits are discussed below and the user may pick the one best suited to his needs.

The ASR - 33 Teletype

The ASR - 33 Teletype of recent vintage has a transistor circuit to drive its solenoids. This circuit is quite easy to interface to, since it is provided with its own power supply. (Figure 1a) It can be set up for a 20mA current loop and interfaced as follows (whether or not the teletype is strapped for full duplex or half duplex operation):

- a) The yellow wire and purple wire should both go to terminal 9 of Terminal Strip X. If the purple wire is going to terminal 8, then remove it and relocate it at terminal 9. This is necessary to change from the 60mA current loop to the 20mA current loop.
- b) Above Terminal Strip X is a connector socket identified as "2". Pin 8 is the input line + or high; Pin 7 is the input line or low. This connector mates with a Molex receptacle model 1375 #Ø3-Ø9-2151 or #03-09-2153. Recommended terminals are Molex #Ø2-Ø9-2136. An alternate connection method is via spade lugs to Terminal Strip X, terminal 7 (the + input line) and 6 (the input line).
- c) The following circuit can be built on a 16 pin DIP component carrier and then plugged into the Apple's 16 pin socket found at J-14: (The junction of the 3.3k resistor and the transistor base lead is floating). Pins 16 and 9 are used as tie points as they are unconnected on the Apple board. (Figure 1a).

The "RS - 232 Interface"

For this interface to be legitimate, it is necessary to twice invert the signal appearing at J-14 pin 15 and have it swing more than 5 volts both above and below ground. The following circuit does that but requires that both +12 and -12 supplies be used. (Figure 2) Snipping off pins on the DIP-component carrier will allow the spare terminals to be used for tie points. The output ground connects to pin 7 of the DB-25 connector. The signal output connects to pin 3 of the DB-25 connector. The "protective" ground wire normally found on pin 1 of the DB-25 connector may be connected to the Apple's base plate if desired. Placing a #4 lug under one of the four power supply mounting screws is perhaps the simplest method. The +12 volt supply is easily found on the auxiliary Video connector (see Figure S-11 or Figure 7 of the manual). The -12 volt supply may be found at pin 33 of the peripheral connectors (see Figure 4) or at the power supply connector (see Figure 5 of the manual).

### A Serial Out Machine Center Language Program

Once the appropriate circuit has been selected and constructed a machine language program is needed to drive the circuit. Figure 3 lists such a teletype output machine language routine. It can be used in conjunction with an Integer BASIC program that doesn't require page \$300 hex of memory. This program resides in memory from \$370 to \$3E9. Columns three and four of the listing show the op-code used. To enter this program into the Apple II the following procedure is followed:

Entering Machine Language Program

- 1. Power up Apple II
- 2. Depress and release the "RESET" key. An asterick and flashing cursor should appear on the left hand side of the screen below the random text matrix.
- 3. Now type in the data from columns one, two and three for each line from \$370 to 03E9. For example, type in "370: A9 82" and then depress and release the "RETURN" key. Then repeat this procedure for the data at \$372 and on until you complete entering the program.

Executing this Program

1. From BASIC a CALL 880 (\$370) will start the execution of this program. It will use the teletype or suitable 80 column printer as the primary output device.

- 2. PR#Ø will inactivate the printer transfering control back to the Video monitor as the primary output device.
- 3. In Monitor mode \$3700 activates the printer and hitting the "RESET" key exits the program.

Saving the Machine Language Program

After the machine language program has been entered and checked for accuracy it should, for convenience, be saved on tape - that is unless you prefer to enter it by keyboard every time you want to use it.

The way it is saved is as follows:

- 1. Insert a blank program cassette into the tape recorder and rewind it.
- Hit the "RESET" key. The system should move into Monitor mode. An asterick "\*" and flashing cursor should appear on the left-hand side of the screen.
- 3. Type in "370.03E9W 370.03E9W".
- Start the tape recorder in record mode and depress the "RETURN" key.
- 5. When the program has been written to tape, the asterick and flashing cursor will reappear.

The Program

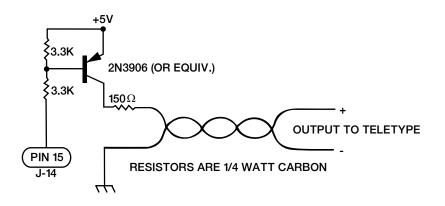
After entering, checking and saving the program perform the following procedure to get a feeling of how the program is used:

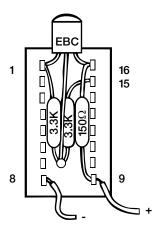
- 1. B<sup>C</sup> (control B) into BASIC
- 2. Turn the teletype (printer on)
- 3. Type in the following
  - 10 CALL 880
  - 15 PRINT "ABCD...XYZØ1123456789"
  - 2Ø PR#Ø
  - 25 END
- Type in RUN and hit the "RETURN" key. The text in line 15 should be printed on the teletype and control is returned to the keyboard and Video monitor

Line 10 activates the teletype machine routine and all "PRINT" statements following it will be printed to the teletype until a PR#0 statement is encountered. Then the text in line 15 will appear on the teletype's output. Line 20 deactivates the printer and the program ends on line 25.

### Conclusion

With the circuits and machine language program described in this paper the user may develop a relatively simple serial output interface to an ASR-3 or RS-232 compatible printers. This circuit can be activated through BASIC or monitor modes. And is a valuable addition to any users program library.







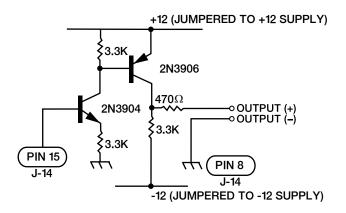


FIGURE 2 RS-232

|        |           |                   | TELET     | TYPE D | RIVER ROUTI  |                     | AOD.  |
|--------|-----------|-------------------|-----------|--------|--------------|---------------------|-------|
| 3:42   | 2 P.M., 2 | 11/18/19          |           |        |              |                     |       |
|        |           | 1                 | TITLE TE  | ELETYP | E DRIVER ROU | UTINES'             |       |
|        |           | 2                 | ******    | *****  | *****        | *                   |       |
|        |           | 3                 | *         |        |              | *                   |       |
|        |           | 4                 | *         | TTY    | DRIVER:      | *                   |       |
|        |           | 5                 | * ]       | FELETY | PE OUTPUT    | *                   |       |
|        |           | 6                 | * F       | ROUTIN | IE FOR 72    | *                   |       |
|        |           | 7                 | * (       | COLUMN | I PRINT WITH | *                   |       |
|        |           | 8                 | * E       | BASIC  | LIST         | *                   |       |
|        |           | 9                 | *         |        |              | *                   |       |
|        |           | 10                | * COI     | PYRIGH | IT 1977 BY:  | *                   |       |
|        |           | 11                | * API     | PLE CC | MPUTER INC.  | *                   |       |
|        |           | 12                | *         | 11     | /18/77       | *                   |       |
|        |           | 13                | *         |        |              | *                   |       |
|        |           | 14                | *         |        | IGGINTON     | *                   |       |
|        |           | 15                | *         | S.W    | 02IV1/IIC    | *                   |       |
|        |           | 16                | *         |        |              | *                   |       |
|        |           | <b>_</b> <i>i</i> | WNDWDTH   |        | \$21         | *<br>;FOR APPLE-II  |       |
|        |           | ±0                | CH        |        | 1            | ;CURSOR HORIZ.      |       |
|        |           | 12                | CSWL      |        | \$36         | ; CHAR. OUT SWITCH  |       |
|        |           | 20                | YSAVE     |        | \$778        |                     |       |
|        |           |                   | COLCNT    |        | \$7F8        | ;COLUMN COUNT LOC.  |       |
|        |           |                   | MARK      |        | \$C058       |                     |       |
|        |           |                   | SPACE     | EQU    | \$C059       |                     |       |
|        |           | 25                | WAIT      | EQU    | \$FCA8       |                     |       |
|        |           | 26                |           | ORG    | \$370        |                     |       |
| ***WAR | NING: OF  | ERAND OV          | /ERFLOW I | IN LIN | IE 27        |                     |       |
| 0370:  | A9 82     | 27                | TTINIT:   | LDA    | #TTOUT       |                     |       |
| 0372:  | 85 36     | 28                |           | STA    | CSWL         | ; POINT TO TTY ROUT | INES  |
| 0374:  | A9 03     | 29                |           |        | #TTOUT/256   | ;HIGH BYTE          |       |
| 0376:  | 85 37     | 30                |           | STA    | CSWL+1       |                     |       |
| 0378:  | A9 48     | 31                |           | LDA    |              | ;SET WINDOW WIDTH   | 0.1TT |
| 037A:  | 85 21     | 32                |           | STA    |              | ;TO NUMBER COLUMNS  | ONT   |
| 037C:  | A5 24     | 33                |           | LDA    | CH           | NULLER ME ADE NOW   |       |

STA

RTS

PHA

CMP

PLA

BCS

PHA

LDA

INC

PLA

PHA

BCC

36 TTOUT: PHA

38 TTOUT2: LDA

44 TESTCTRL:BIT

47 PRNTIT: JSR

COLCNT

COLCNT

TESTCTRL

CH

#\$A0

BEQ PRNTIT

RTS1

COLCNT

DOCHAR

TTOUT2

#\$OD

037E: 8D F8

0381: 60

0382: 48

0383: 48

0384: AD F8

0387: C5 24

038A: BO 03

038D: A9 AO

038F: 2C CO

0392: FO 03

0394: EE F8

0397: 20 C1

039C: 90 E6

039E: 49 OD

03A1: DO OD

039A: 68

0393: 48

03A0: OA

0389: 68

038C: 48

34

35

37

39

40

41

42

45

46

48

49

50

51

52

53

43

FOR А ;ELIM PARITY ASL FINISH BNE

FIGURE 3a

;WHERE WE ARE NOW.

; CHECK FOR A TAB.

;IF C SET, NO TAB

; PRINT A SPACE.

; IF CONTROL CHAR.

;RESTORE CHAR

; RESTORE OUTPUT CHAR.

;TRICK TO DETERMINE

; IF NOT, ADD ONE TO CM

; PRINT THE CHAR ON TTY

; AND PUT BACK ON STAC

; CHECK FOR CAR RET.

; IF NOT CR, DONE.

;DO MORE SPACES FOR TA

;SAVE TWICE

; ON STACK.

### TELETYPE DRIVER ROUTINES

2

| 3:42 P.M., | , 11/13/1977 |          |     |                | PAGE :                  |
|------------|--------------|----------|-----|----------------|-------------------------|
| 03A3:      | 8D F8 07 54  |          | STA | COLCNT         | CLEAR COLUMN COUNT      |
| 03A6:      | A9 8A 55     |          | LDA | #38A           | ;NOW DO LINE FEED       |
| 03A8:      | 20 C1 03 56  |          | JSR | DOCHAR         |                         |
| 03AB:      | A9 58 57     |          | LDA | #153           |                         |
| 03AD:      | 20 A8 FC 58  |          | JSR | 7AIT           | ;200MSEC DELAY FOR LIB  |
| 0330:      | AD F8 07 59  | ETNICII. | LDA | COLCNT         | ;CHECK IF IN MARGIN     |
| 0333:      | F0 08 60     | FINISH:  | 3E0 | SETCH          | ;FOR CR, RESET CH       |
| 0335:      | E5 21 61     |          | S3C | 7VD7DTH        | ;IF SO, CARRY SET.      |
| 0337:      | E9 F7 62     |          | SSC | #SF7           |                         |
| 0339:      | 90 04 63     |          | BCC | RETURN         |                         |
| 0393:      | 69 1F 64     |          | ADC | #11F           | ;ADJUST CH              |
| 033D:      | 85 24 65     | SETCH:   | STA | CH             |                         |
| 033F:      | 68 66        | RETURN:  | PLA |                |                         |
| 03C0:      | 60 67        | RTS1:    | RTS |                | ;RETURN TO CALLER       |
| 03C1:      | 68           | * HERE   | STY | TELETYPE PRINT | A CHARACTER ROUTINE:    |
| 03C4:      | 8C 78 07 69  | DOCHAR:  | PHP | YSAVE          |                         |
| 03C5:      | 08 70        | Docimit. | LDY |                | ;SAVE STATUS.           |
| 03C7:      | A0 08 71     |          | CLC | #SOS           | ;11 BITS (1 START, 1 2  |
| 03C3:      | 18 72        |          | PHA |                | ;BEGIN 7ITH SPACE (ST2  |
| 03C9:      | 48 73        | TTOUT3:  | 3CS |                | ;SAVE A REG AND SET FOI |
| 03C3:      | 80 05 74     | 110013.  | LDA | MARKOUT        |                         |
| 03CE:      | AD 59 CO 75  |          | 3CC | SPACE          | ;SEND A SPACE           |
| 0300:      | 90 03 76     |          | LDA | TTOUT4         |                         |
| 0303:      | AD 58 CO 77  | MARKOUT: | LDA | MARK           | ;SEND A MARK            |
| 0305:      | A9 D7 78     | TTOUT4:  | PHA | #%D7           | ;DELAY 9.091 MSEC FOR   |
| 0306:      | 48 79        | DLY1:    | LDA |                |                         |
| 03D8:      | A9 20 80     | DLY2:    | LSR | #\$20          |                         |
| 0309:      | 4A 81        |          | BCC | A              |                         |
| 03D3:      | 90 FD 82     |          | PLA | DLY2           |                         |
| 03DC:      | 68 83        |          | SBC |                |                         |
| 030E:      | 6A 84        |          | 3NE | #101           |                         |
| 03E0:      | 88 85        |          | PLA | DLY1           |                         |
| 03E1:      | D0 E3 86     |          | ROR |                | ;110 BAUD               |
| 03E2:      | AC 78 07 87  |          | DEY | A              | ;NEXT BIT (STOP BITS ?  |
| 03E3:      | 28 88        |          | BNE |                | LOOP 11 3ITS.           |
| 03E5:      | 60 89        |          | LDY | TTOUT3         |                         |
| 03E8:      | 90           |          | PLP | YSAVE          | ;RESTORE Y-REG.         |
| 03E9:      | 91           |          | RTS |                | ;RESTORE STATUS         |
|            |              |          |     |                | ;RETURN                 |

\*\*\*\*\*\*\*SUCCESSFUL ASSEMBLY: NO ERRORS

FIGURE 3b

| CROSS-REFER | NCE:TELETYP | E DRIVE | R ROUT | INES |      |      |
|-------------|-------------|---------|--------|------|------|------|
| CH          | 0024        | 0033    | 0039   | 0065 |      |      |
| COLCNT      | 0718        | 0034    | 0038   | 0046 | 0054 | 0059 |
| 05YL        | 0036        | 0028    | 0030   |      |      |      |
| DLYI        | 0305        | 0085    |        |      |      |      |
| DLY2        | 0308        | 0082    |        |      |      |      |
| DOCHAR      | 0301        | 0047    | 0056   |      |      |      |
| FINISH      | 0330        | 0053    |        |      |      |      |
| MARK        | CO58        | 0077    |        |      |      |      |
| MARKOUT     | 0300        | 0074    |        |      |      |      |
| PRNTIT      | 0397        | 0045    |        |      |      |      |
| RETURN      | 038F        | 0063    |        |      |      |      |
| RTS1        | 0300        | 0044    |        |      |      |      |
| SETCH       | 0330        | 0060    |        |      |      |      |
| SPACE       | CO59        | 0075    |        |      |      |      |
| TESTCTRL    | 033F        | 0041    |        |      |      |      |
| TTINIT      | 0370        |         |        |      |      |      |
| TTOUT       | 0332        | 0027    | 0029   |      |      |      |
| TTOUT2      | 0384        | 0050    |        |      |      |      |
| TTOUT3      | 03C8        | 0089    |        |      |      |      |
| TTOUT4      | 0303        | 0076    |        |      |      |      |
| WAIT        | FCAB        | 0058    |        |      |      |      |
| WNDWDTH     | 0021        | 0032    | 0061   |      |      |      |
| YSAVE       | 0778        | 0069    | 0090   |      |      |      |
| ILE:        |             |         |        |      |      |      |

FIGURE 3c

### INTERFACING THE APPLE

This section defines the connections by which external devices are attached to the APPLE II board. Included are pin diagrams, signal descriptions, loading constraints and other useful information.

### TABLE OF CONTENTS

- 1. CONNECTOR LOCATION DIAGRAM
- 2. CASSETTE DATA JACKS (2 EACH)
- 3. GAME I/O CONNECTOR
- 4. KEYBOARD CONNECTOR
- 5. PERIPHERAL CONNECTORS (8 EACH)
- 6. POWER CONNECTOR
- 7. SPEAKER CONNECTOR
- 8. VIDEO OUTPUT JACK
- 9. AUXILIARY VIDEO OUTPUT CONNECTOR

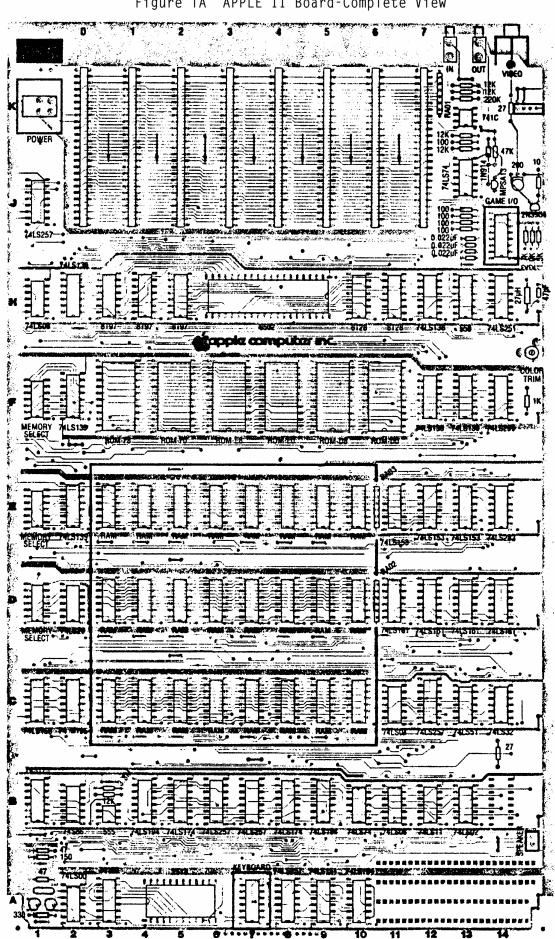
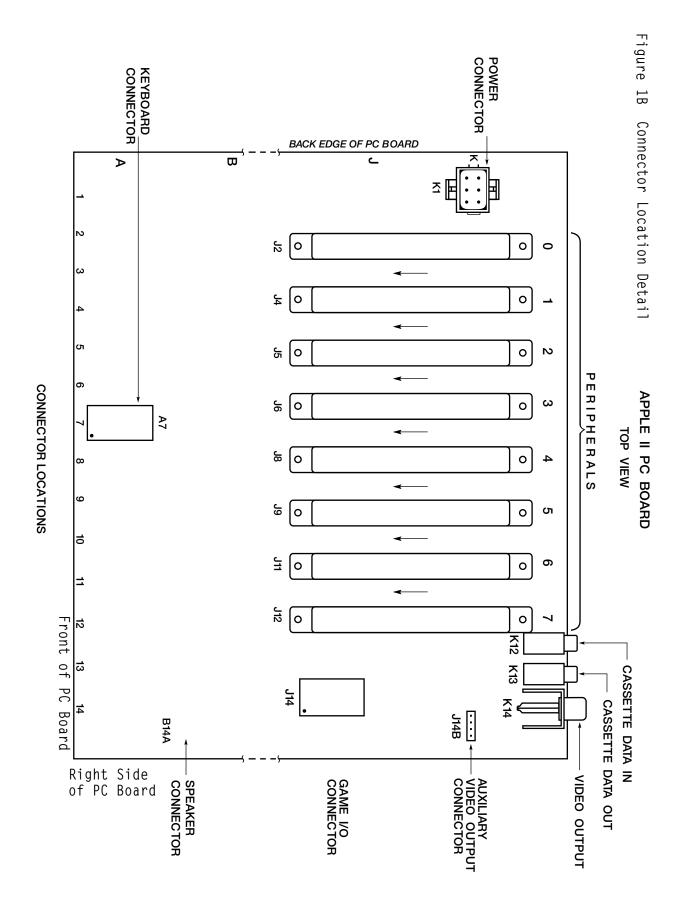


Figure 1A APPLE II Board-Complete View



### CASSETTE JACKS

A convenient means for interfacing an inexpensive audio cassette tape recorder to the APPLE II is provided by these two standard (3.5mm) miniature phone jacks located at the back of the APPLE II board.

<u>CASSETTE DATA IN JACK</u>: Designed for connection to the "EARPHONE" or "MONITOR" output found on most audio cassette tape recorders.  $V_{IN}$ =1Vpp (nominal),  $Z_{IN}$ =12K Ohms. Located at K12 as illustrated in Figure

<u>CASSETTE DATA OUT JACK</u>: Designed for connection to the "MIC" or "MICROPHONE" input found on most audio cassette tape recorders. V<sub>OUT</sub> =25 mV into 17 Ohms, Z<sub>OUT</sub> =100 Ohms. Located at K13 as illustrated in in Figure 1.

### GAME I/O CONNECTOR

The Game I/O Connector provides a means for connecting paddle controls, lights and switches to the APPLE II for use in controlling video games, etc. It is a 16 pin IC socket located at Jl4 and is illustrated in Figure 1 and 2.

Figure 2

GAME I/O CONNECTOR

( Front Edge of PC Board )

| +5V      | 1 | • | 16 | N.C. |
|----------|---|---|----|------|
| SWO      | 2 |   | 15 | ANO  |
| SW1      | 3 |   | 14 | AN1  |
| SW2      | 4 |   | 13 | AN2  |
| CO40 STB | 5 |   | 12 | AN3  |
| PDLO     | 6 |   | 11 | PDL3 |
| PDL2     | 7 |   | 10 | PDL1 |
| GND      | 8 |   | 9  | N.C. |

LOCATION J14

- ANO-AN3: 8 addresses (CØ58-CØ5F) are assigned to selectively "SET" or "CLEAR" these four "ANNUNCIATOR" outputs. Envisioned to control indicator lights, each is a 74LSxx series TTL output and must be buffered if used to drive lamps.
- GND: System circuit ground. O Volt line from power supply.

NC: No connection.

- PDLØ-PDL3: Paddle control inputs. Requires a Ø-150K ohm variable resistance and +5V for each paddle. Internal 100 ohm resistors are provided in series with external pot to prevent excess current if pot goes completely to zero ohms.
- <u>SWØ-SW2:</u> Switch inputs. Testable by reading from addresses CØ61-CØ63 (or CØ69-CØ6B). These are uncommitted 74LSxx series inputs.
- +5V: Positive 5-Volt supply. To avoid burning out the connector pin, current drain MUST be less than 100mA.

### KEYBOARD CONNECTOR

This connector provides the means for connecting as ASCII keyboard to the APPLE II board. It is a 16 pin IC socket located at A7 and is illustrated in Figures 1 and 3.

Figure 3

### **KEYBOARD CONNECTOR**

TOP VIEW

( Front Edge of PC Board )

| +5V 1<br>STROBE 2<br>RESET 3<br>N.C. 4<br>B6 5<br>B5 6<br>B7 7<br>GND 8 | • | 15<br>14<br>13<br>12<br>11<br>10 | N.C.<br>-12V<br>N.C.<br>B2<br>B1<br>B4<br>B3 |
|---|---|----------------------------------|--|
| GND 8   |   | 9                                | N.C.   |

### LOCATION A7

### SIGNAL DESCRIPTION FOR KEYBOARD INTERFACE

- <u>Bl-B7:</u> 7 bit ASCII data from keyboard, positive logic (high level= "1"), TTL logic levels expected.
- GND: System circuit ground. Ø Volt line from power supply.
- NC: No connection.
- RESET: System reset input. Requires switch closure to ground.
- STROBE: Strobe output from keyboard. The APPLE II recognizes the positive going edge of the incoming strobe.
- <u>+5V:</u> Positive 5-Volt supply. To avoid burning out the connector pin, current drain <u>MUST</u> be less than 100mA.
- <u>-12V:</u> Negative 12-Volt supply. Keyboard should draw less than 50mA.

### PERIPHERAL CONNECTORS

The eight Peripheral Connectors mounted near the back edge of the APPLE II board provide a convenient means of connecting expansion hardware and peripheral devices to the APPLE II I/O Bus. These are Winchester #2HW25CØ-111 (or equivalent) pin card edge connectors with pins on .10" centers. Location and pin outs are illustrated in Figures 1 and 4.

### SIGNAL DESCRIPTION FOR PERIPHERAL I/O

- AO-A15: 16 bit system address bus. Addresses are set up by the 6502 within 300nS after the beginning of  $\emptyset_1$ . These lines will drive up to a total of 16 standard TTL loads.
- <u>"DEVICE SELECT</u>: Sixteen addresses are set aside for each peripheral connector. A read or write to such an address will send pin 41 on the selected connector low during Ø<sub>2</sub> (5ØØnS). Each will drive 4 standard TTL loads.
- <u>DØ-D7</u>: 8 bit system data bus. During a write cycle data is set up by the 6502 less than 300nS after the beginning of  $\emptyset_2$ . During a read cycle the 6502 expects data to be ready no less than 100nS before the end of  $\emptyset_2$ . These lines will drive up to a total of 8 total low power schottky TTL loads.

- DMA: Direct Memory Access control output. This line has a 3K Ohm pullup to +5V and should be driven with an open collector output.
- DMA IN: Direct Memory Access daisy chain input from higher priority peripheral devices. Will present no more than 4 standard TTL loads to the driving device.
- DMA OUT: Direct Memory Access daisy chain output to lower priority peripheral devices. This line will drive 4 standard TTL loads.
- GND: System circuit ground. Ø Volt line from power supply.
- INH: Inhibit Line.When a device pulls this line low, all ROM's on board are disabled (Hex addressed DØØØ through FFFF). This line has a 3K Ohm pullup to +5V and should be driven with an open collector output.
- INT IN: Interrupt daisy chain input from higher priority peripheral devices. Will present no more than 4 standard TTL loads to the driving device.
- INT OUT: Interrupt daisy chain output to lower priority peripheral devices. This line will drive 4 standard TTL loads.
- **I/O SELECT:** 256 addresses are set aside for each peripheral connector (see address map in "MEMORY" section). A read or write of such an address will send pin 1 on the selected connector low during Ø2 (50ØnS). This line will drive 4 standard TTL loads.
- <u>I/O STROBE</u>: Pin 20 on all peripheral connectors will go low during 0, of a read or write to any address C800-OFFF. This line will drive a total of 4 standard TTL loads.
- IRQ: Interrupt request line to the 6502. This line has a 3K Ohm pullup to +5V and should be driven with an open collector output. It is active low.
- NC: No connection.
- <u>NMI</u>: Non Maskable Interrupt request line to the 6502. This line has a 3K Ohm pullup to +5V and should be driven with an open collector output.It is active low.
- <u>Q</u><sub>3</sub> A 1MHz (nonsymmetrical) general purpose timing signal. Will drive up to a total of 16 standard TTL loads.
- <u>RDY</u>: 'Ready" line to the 6502. This line should change only during 01, and when low will halt the microprocessor at the next READ cycle. This line has a 3K Ohm pullup to +5V and should be driven with an open collector output.
- <u>RES</u>: Reset line from "RESET" key on keyboard. Active low. Will drive 2 MOS loads per Peripheral Connector.

- <u>R/W:</u> READ/WRITE line from 6502. When high indicates that a read cycle is in progress, and when low that a write cycle is in progress. This line will drive up to a total of 16 standard TTL loads.
- USER 1: The function of this line will be described in a later document.
- <u>Ø</u><sub>0</sub>: Microprocessor phase V clock. Will drive up to a total of 16 standard TTL loads.
- 7M: Seven MHz high frequency clock. Will drive up to a total of 16 standard TTL loads.
- +12V: Positive 12-Volt supply.
- +5V: Positive 5-Volt supply
- -5V: Negative 5-Volt supply.
- -12V: Negative 12-Volt supply.

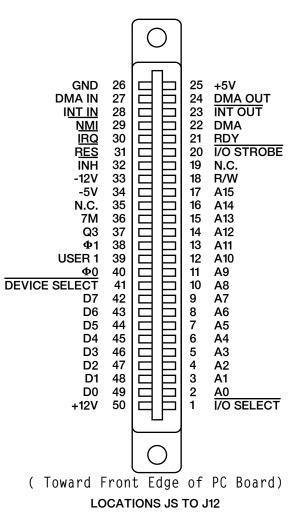
### POWER CONNECTOR

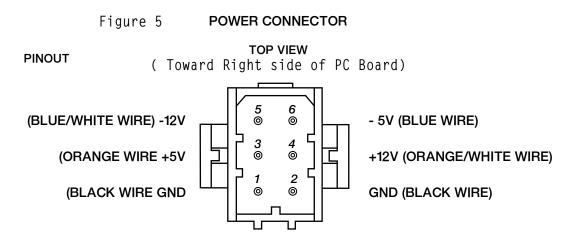
The four voltages required by the APPLE II are supplied via this AMP #9-35028-1,6 pin connector. See location and pin out in Figures 1 and 5.

### PIN DESCRIPTION

- GND:(2 pins) system circuit ground. Ø Volt line from power<br/>supply.+12V:Positive 12-Volt line from power supply.+5V:Positive 5-Volt line from power supply.-5V:Negative 5-Volt line from power supply.
- -12V: Negative 5-Volt line from power supply.







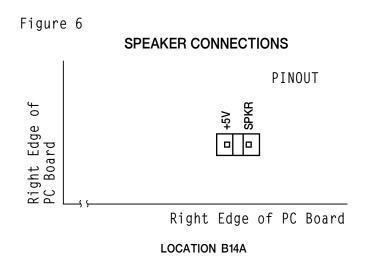
LOCATION K1

### SPEAKER CONNECTOR

This is a MOLEX KK 100 series connector with two .25" square pins on .10" centers. See location and pin out in Figures 1 and 6.

### SIGNAL DESCRIPTION FOR SPEAKER

- <u>+5V:</u> System +5 Volts
- <u>SPKR:</u> Output line to speaker. Will deliver about .5 watt into 8 Ohms.



### VIDEO OUTPUT JACK

This standard RCA phono jack located at the back edge of the APPLE II P.C. board will supply NTSC compatible, EIA standard, positive composite video to an external video monitor.

A video level control near the connector allows the output level to be adjusted from  $\emptyset$  to 1 Volt (peak) into an external 75 OHM load.

Additional tint (hue) range is provided by an adjustable trimmer capacitor.

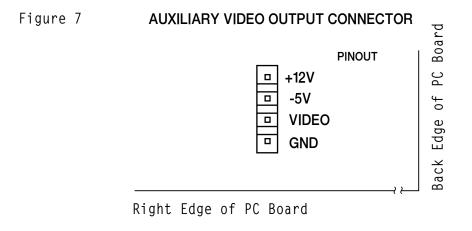
See locations illustrated in Figure 1.

### AUXILIARY VIDEO OUTPUT CONNECTOR

This is a MOLEX KK 100 series connector with four .25" square pins on .10" centers. It provides composite video and two power supply voltages. Video out on this connector is not adjustable by the on board 200 Ohm trim pot. See Figures 1 and 7.

### SIGNAL DESCRIPTION

- <u>GND:</u> System circuit ground. Ø Volt line from power supply.
- VIDEO NTSC compatible positive composite VIDEO. DC coupled emitter follower output (not short circuit protected). SYNC TIP is Ø Volts, black level is about .75 Volts, and white level is about 2.0 Volts into 470 Ohms. Output level is non-adjustable.
- +12V: +12 Volt line from power supply.
- +5V: -5 Volt line from power supply.



LOCATION J14B

### INSTALLING YOUR OWN RAM

### THE POSSIBILITIES

The APPLE II computer is designed to use dynamic RAM chips organized as 4096 x 1 bit, or 16384 x 1 bit called "4K° and "16K" RAMs respectively. These must be used in sets of 8 to match the system data bus (which is 8 bits wide) and are organized into rows of 8. Thus, each row may contain either 4096 (4K) or 16384 (16K) locations of Random Access Memory depending upon whether 4K or 16K chips are used. If all three rows on the APPLE II board are filled with 4K RAM chips, then 12288 (12K) memory locations will be available for storing programs or data, and if all three rows contain 16K RAM chips then 49152 (commonly called 48K) locations of RAM memory will exist on board!

### RESTRICTIONS

It is quite possible to have the three rows of RAM sockets filled with any combination of 4K RAMs, 16K RAMs or empty as long as certain rules are followed:

- 1. All sockets in a row must have the same type (4K or 16K) RAMs.
- 2. There MUST be RAM assigned to the zero block of addresses.

### ASSIGNING RAM

The APPLE II has 48K addresses available for assignment of RAM memory. Since RAM can be installed in increments as small as 4K, a means of selecting which address range each row of memory chips will respond to has been provided by the inclusion of three MEMORY SELECT sockets on board.

Figure 8

### MEMORY SELECT SOCKETS TOP VIEW

### PINOUT

| (0000-OFFF) 4K "0" BLOCK1  |   | 14 | RAM ROW C                 |
|----------------------------|---|----|---------------------------|
| (1000-1FFF) 4K "1" BLOCK 2 |   | 13 | RAM ROW D                 |
| (2000-2FFF) 4K "2" BLOCK 3 |   | 12 | RAM ROW E                 |
| (3000-3FFF) 4K "3" BLOCK 4 | 1 | 11 | N.C.                      |
| (4000-4FFF) 4K "4" BLOCK 5 |   | 10 | 16K "0" BLOCK (0000-3FFF) |
| (5000-5FFF) 4K "5" BLOCK 6 |   | 9  | 16K "4" BLOCK (4000-7FFF) |
| (6000-EFFF) 4K "6" BLOCK7  |   | 8  | 16K "8" BLOCK (8000-BFFF) |

LOCATIONS D1, E1, F1

### MEMORY

TABLE OF CONTENTS

- 1. INTRODUCTION
- 2. INSTALLING YOUR OWN RAM
- 3. MEMORY SELECT SOCKETS
- 4. MEMORY MAP BY 4K BLOCKS5.
- 5. DETAILED MAP OF ASSIGNED ADDRESSES

### INTRODUCTION

APPLE II is supplied completely tested with the specified amount of RAM memory and correct memory select jumpers. There are five different sets of standard memory jumper blocks:

- 1. 4K 4K 4K BASIC
- 2. 4K 4K 4K HIRES
- 3. 16K 4K 4K
- 4. 16K 16K 4K
- 5. 16K 16K 16K

A set of three each of one of the above is supplied with the board. Type 1 is supplied with 4K or 8K systems. Both type 1 and 2 are supplied with 12K systems. Type 1 is a contiguous memory range for maximum BASIC program size. Type 2 is non-contiguous and allows 8K dedicated to HIRES screen memory with approximately 2K of user BASIC space. Type 3 is supplied with 16K, 2CØK and 24K systems. Type 4 with 30K and 36K systems and type 5 with 48K systems.

Additional memory may easily be added just by plugging into sockets along with correct memory jumper blocks.

The 6502 microprocessor generates a 16 bit address, which allows 65536 (commonly called 65K) different memory locations to be specified. For convenience we represent each 16 bit (binary) address as a 4-digit hexadecimal number. Hexadecimal notation (hex) is explained in the Monitor section of this nlanual.

In the APPLE II, certain address ranges have been assigned to RAM memory, ROM memory, the I/O bus, and hardware functions. The memory and address maps give the details.

### MEMORY SELECT SOCKETS

The location and pin out for memory select sockets are illustrated in Figures 1 and 8.

### HOW TO USE

There are three MEMORY SELECT sockets, Theated at D1, E1 and F1 respectively. RAM memory is assigned to various address ranges by inserting jumper wires as described below. All three MEMORY SELECT sockets <u>MUST</u> be jumpered identically! The easiest way to do this is to use Apple supplied memory blocks.

Let us learn by example:

If you have plugged 16K RAMs into row "C" (the sockets located at C3-C1Ø on the board), and you want them to occupy the first 16K of addresses starting at ØØØØ, jumper pin 14 to pin 1Ø on all three MEMORY SELECT sockets (thereby assigning row "C" to the ØØØØ-3FFF range of memory).

If in addition you have inserted 4K RAMs into rows "D" and "E", and you want them each to occupy the first 4K addresses starting at 4000 and 5000 respectively, jumper pin 13 to pin 5 (thereby assigning row "D" to the 4000-4FFF range of memory), and jumper pin 12 to pin 6 (thereby assigning row "E" to the 5000-5FFF range of memory). Remember to jumper all three MEMORY SELECT sockets the same.

Now you have a large contiguous range of addresses filled with RAM memory. This is the 24K addresses from ØØØØ-5FFF.

By following the above examples you should be able to assign each row of RAM to any address range allowed on the MEMORY SELECT sockets. Remember that to do this properly you must know three things:

- 1. Which rows have RAM installed?
- Which address ranges do you want them to occupy?
- Jumper all three MEMORY SELECT sockets the same!

If you are not sure think carefully, essentially all the necessary information is given above.

# Memory Address Allocations in 4K Bytes

| 0000 | text and color graphics<br>display pages, 8502 stack, | 8000 |  |
|------|---|------|--|
| 1000 | pointers, etc.  | 9000 | 1  |
| 2000 | high res graphics display<br>primary page             | A000 | -  |
| 3000 |   | B000 | -  |
| 4000 | high res. graphics display<br>secondary page          | C000 | addresses dedicated to<br>hardware functions |
|      |   | D000 | ROM socket DO: spare                         |
| 5000 |   |      | ROM socket D8: spare                         |
|      | "   | E000 | ROM socket EO: BASIC                         |
| 6000 |   |      | ROM socket E8: BASIC                         |
| 7000 | -   | F000 | ROM socket FO: BASIC<br>utility              |
| 1000 |   |      | ROM socket F8: monitor                       |

## Memory Map Pages Ø to BFF

| HEX<br>ADDRESS(ES)    | USED<br>BY | USED FOR   | COMMENTS  |
|-----------------------|------------|--|---|
| PAGE ZERO             | UTILITY    | register area for "sweet 16"<br>16 bit firmware processor.             |   |
| 0020-004D             | MONITOR    |  |   |
| 004E-004F             | MONITOR    | holds a 16 bit number that<br>is randomized with each key<br>entry.    |   |
| 0050-0055             | UTILITY    | integer multiply and divide work space.                                |   |
| 0055-00FF             | BASIC      |  |   |
| 00F0- 00FF            | UTILITY    | floating point work space.   |   |
| PAGE ONE<br>0100-01FF | 6502       | subroutine return stack.   |   |
| PAGE TWO<br>0200-02FF |            | character input buffer.  |   |
| PAGE TEREE            | MONITOR    | Y (control Y) will cause<br>a JSR to this location.                    |   |
| 03 <b>FB</b>          |            | NMI's are vectored to this location.                                   |   |
| 03FE-03FF             |            | IRQ's are vectored to the<br>address pointed to by these<br>locations. |   |
| 0400-07FF             | DISPLAY    | text or color graphics<br>primary page.                                |   |
| 0800-0BFF             | DISPLAY    | text or color graphics<br>secondary page.                              | BASIC initializes<br>LONEM to location<br>0800. |

| HEX<br>ADDRESS | ASSIGNED FUNCTION           | COMMENTS  |  |  |
|----------------|-----------------------------|---|--|--|
| COOX           | Keyboard input.             | Keyboard strobe appears in bit<br>7. ASCII data from keyboard<br>appears in the 7 lower bits. |  |  |
| C01X           | Clear keyboard strobe.      |   |  |  |
| C02X           | Toggle cassette output.     |   |  |  |
| созх           | Toggle speaker output.      |   |  |  |
| C04X           | "C040 STB"                  | Output strobe to Game I/O connector.  |  |  |
| C050           | Set graphics mode           |   |  |  |
| C051           | " text "                    |   |  |  |
| C052           | Set bottom 4 lines graphics |   |  |  |
| C053           | " " " text                  |   |  |  |
| C054           | Display primary page        |   |  |  |
| C055           | " secondary page            |   |  |  |
| C056           | Set high res. graphics      |   |  |  |
| C057           | " color "                   |   |  |  |
| C058           | Clear "ANO"                 | Annunciator 0 output to   |  |  |
| C059           | Set "                       | Game I/O connector.   |  |  |
| C05A           | Clear "AN1"                 | Annunciator 1 output to   |  |  |
| C05B           | Set "                       | Game I/O connector.   |  |  |
| C05C           | Clear "AN2"                 | Annunciator 2 output to   |  |  |
| C05D           | Set "                       | Game I/O connector.   |  |  |
| C05E           | Clear "AN3"                 | Annunciator 3 output to   |  |  |
| C05F           | Set "                       | Game I/O connector.   |  |  |

| HEX<br>ADDRESS | ASSIGNED FUNC  | TION   | COMMENTS  |  |  |
|----------------|----------------|--------|---|--|--|
| C060/8         | Cassette input |        | State of "Cassette Data In"<br>appears in bit 7.                              |  |  |
| C061/9         | "SW1"          |        | input on<br>State of Switch 1 $\land$ Game<br>I/O connector appears in bit 7. |  |  |
| C062/A         | ''SW2''        |        | State of Switch 2 input on<br>Game I/O connector appears<br>in bit 7.         |  |  |
| C063/B         | ''SW3''        |        | State of Switch 3 input on<br>Game I/O connector appears<br>in bit 7.         |  |  |
| C064/C         | Paddle 0 timer | output | State of timer output for<br>Paddle 0 appears in bit 7.                       |  |  |
| C065/D         | " 1 "          |        | State of timer output for<br>Paddle 1 appears in bit 7.                       |  |  |
| C066/E         | " 2 "          |        | State of timer output for<br>Paddle 2 appears in bit 7.                       |  |  |
| C067/F         | " 3 "          | u.     | State of timer output for<br>Paddle 3 appears in bit 7.                       |  |  |
| C07X           | "PDL STB"      |        | Triggers paddle timers during $\phi_2$ .                                      |  |  |
| C08X           | DEVICE SELECT  | 0      | Pin 41 on the selected  |  |  |
| C09X           | "              | 1      | Peripheral Connector goes low during $\phi_2$ .                               |  |  |
| COAX           |                | 2      |   |  |  |
| COBX           |                | 3      |   |  |  |
| COCX           |                | 4      |   |  |  |
| CODX           |                | 5      |   |  |  |
| COEX           |                | 6      |   |  |  |
| COFX           |                | 7      |   |  |  |
| C10X           |                | 8      | Expansion connectors.   |  |  |
| C11X           |                | 9      |   |  |  |
| C12X           |                | A      |   |  |  |

| HEX<br>ADDRESS | ASSIGNED FUNCTION |      |    | ON         | COMMENTS   |  |
|----------------|-------------------|------|----|------------|--|--|
| C13X           | DEVICE SELECT B   |      |    |            |  |  |
| C14X           |                   |      | С  |            |  |  |
| C15X           |                   |      | D  |            | Π.   |  |
| C16X           | "                 |      | Е  |            | u.   |  |
| C17X           |                   |      | F  |            |  |  |
| CIXX           | I/O SELEC         | T    | 1  |            | Pin 1 on the selected<br>Peripheral Connector goes<br>low during $\varphi_2$ . |  |
| C2XX           |                   |      | 2  |            |  |  |
| СЗХХ           | "                 |      | 3  |            | NOTES:   |  |
| C4XX           | "                 |      | 4  |            | 1. Peripheral Connector<br>0 does not get this                                 |  |
| C5XX           |                   |      | 5  |            | signal.<br>2. $\overline{I/O \text{ SELECT}}$ 1 uses the                       |  |
| C6XX           |                   |      | 6  |            | same addresses as<br>DEVICE SELECT 8-F.  |  |
| C7XX           |                   |      | 7  |            |  |  |
| C8XX           |                   |      | 8, | I/O STROBE | Expansion connectors.  |  |
| сэхх           |                   |      | 9, | "          |  |  |
| CAXX           |                   |      | A, | ų          |  |  |
| CBXX           |                   |      | В, | п.         |  |  |
| CCXX           | · 11              |      | C, | n          |  |  |
| CDXX           | 11                |      | D, | "          |  |  |
| CEXX           | "                 |      | Е, | н          |  |  |
| CFXX           | "                 |      | F, |            |  |  |
| D000-D7FF      | ROM socket        | 5 DO |    |            | Spare.   |  |
| D800-DFFF      |                   | D8   |    | -4         | Spare.   |  |
| E000-E7FF      | н н               | EO   |    |            | BASIC.   |  |
| E800-EFFF      |                   | E8   |    |            | BASIC.   |  |
| F000-F7FF      |                   | FO   |    |            | 1K of BASIC, 1K of utility.  |  |
| F800-FFFF      |                   | F8   |    |            | Monitor.   |  |

## SYSTEM TIMING

## SIGNAL DESCRIPTIONS

- 14M: Master oscillator output, 14.318 MHz +/- 35 ppm. All other timing signals are derived from this one.
- 7M: Intermediate timing signal, 7.159 MHz.

COLOR REF: Color reference frequency used by video circuitry, 3.530 MHz.

- $Ø_0$ : Phase Ø clock to microprocessor, 1.023 MHz nominal.
- $\underbrace{ \emptyset_1 : }_{ nominal.}$  Microprocessor phase l clock, complement of  $\emptyset_0$ , l.023 Mhz
- $\underbrace{ \emptyset_2 } \\ \text{Same as } \emptyset_0. \text{ Included here because the 6502 hardware and} \\ \text{programming manuals use the designation } \emptyset_2 \text{ instead of } \emptyset_0.$
- <u>Q3:</u> A general purpose timing signal which occurs at the same rate as the microprocessor clocks but is nonsymmetrical.

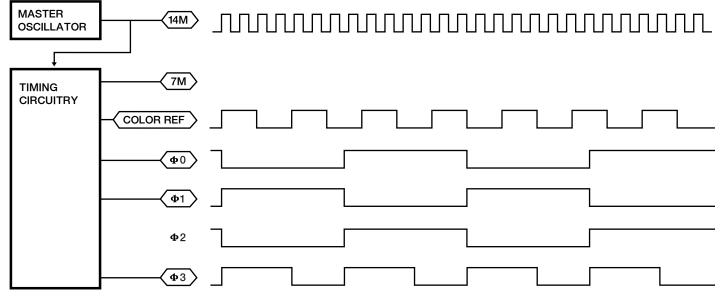
## MICROPROCESSOR OPERATIONS

- <u>ADDRESS</u>: The address from the microprocessor changes during  $\emptyset_1$ , and is stable about 300nS after the start of  $\emptyset_1$ .
- <u>DATA WRITE</u>: During a write cycle, data from the microprocessor appears on the data bus during  $\emptyset_2$ , and is stable about 300nS after the start of  $\emptyset_2$ .
- <u>DATA READ:</u> During a read cycle, the microprocessor will expect data to appear on the data bus no less than 100nS prior to the end of  $\emptyset_2$ .

## SYSTEM TIMING DIAGRAM

TIMING CIRCUITRY BLOCK DIAGRAM

TIMING RELATIONSHIPS



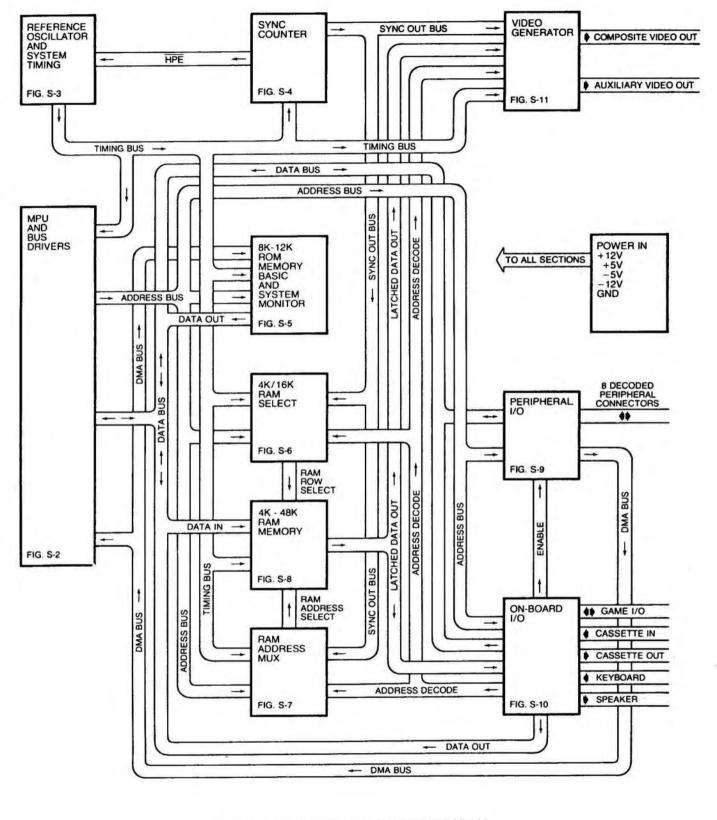
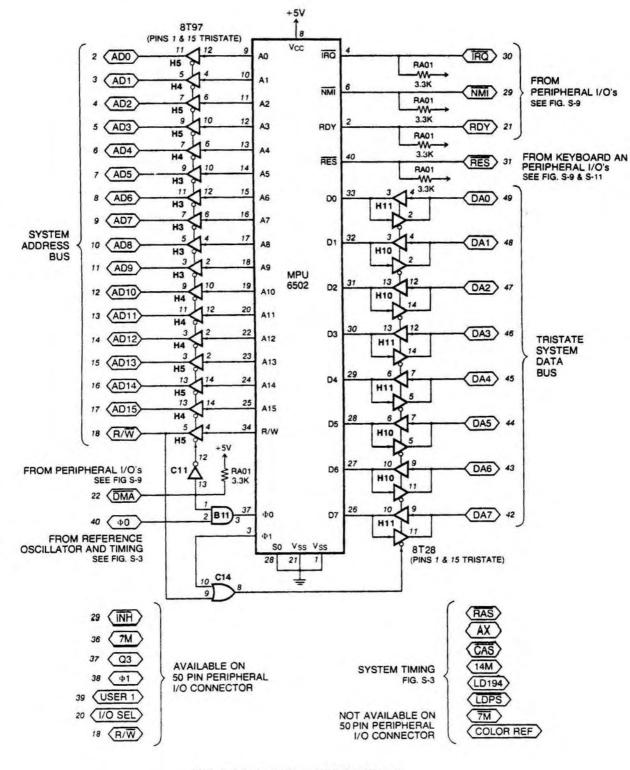


FIGURE S-1 APPLE II SYSTEM DIAGRAM





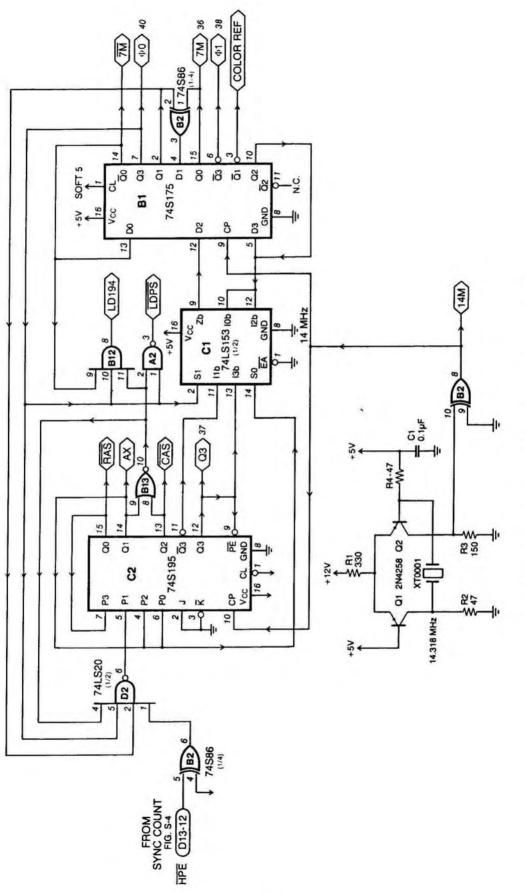
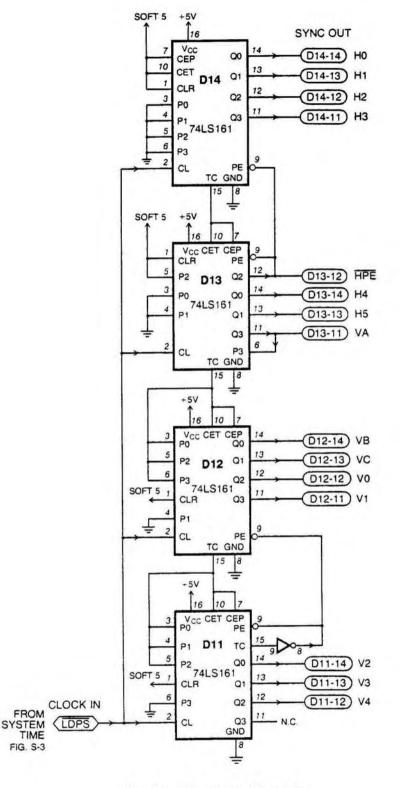


FIGURE S-3 REFERENCE OSCILLATOR AND SYSTEM TIMING

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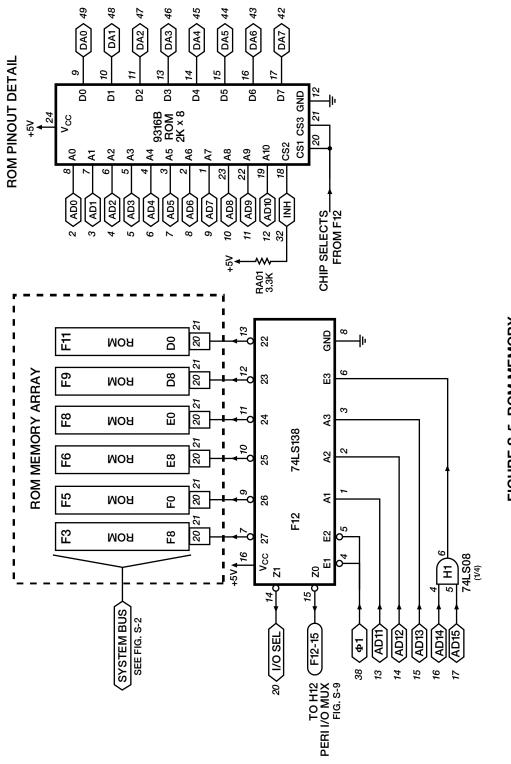


FIGURE S-5 ROM MEMORY

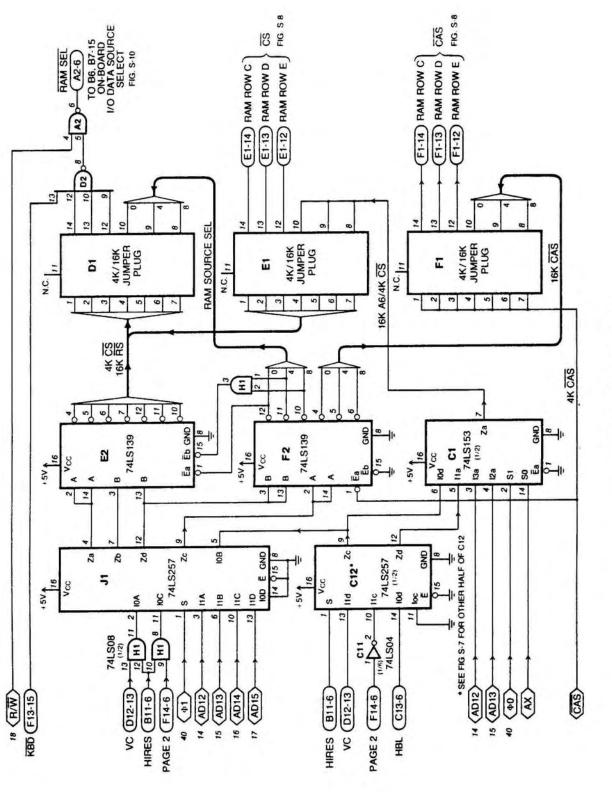
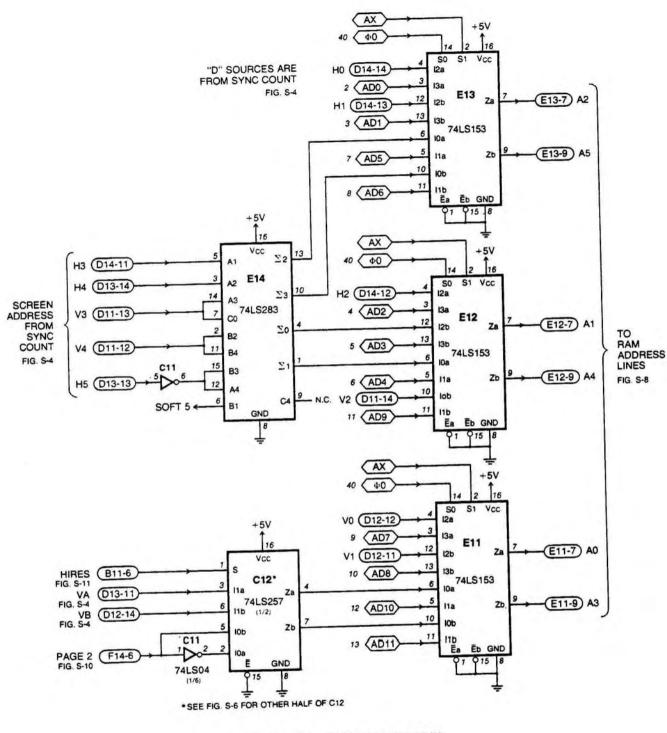


FIGURE S-6 4K/16K RAM SELECT





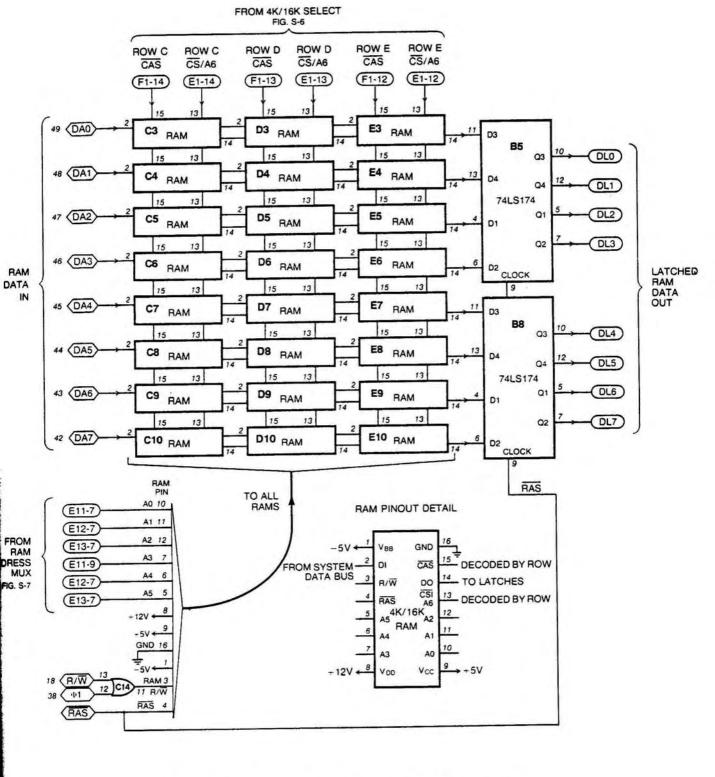
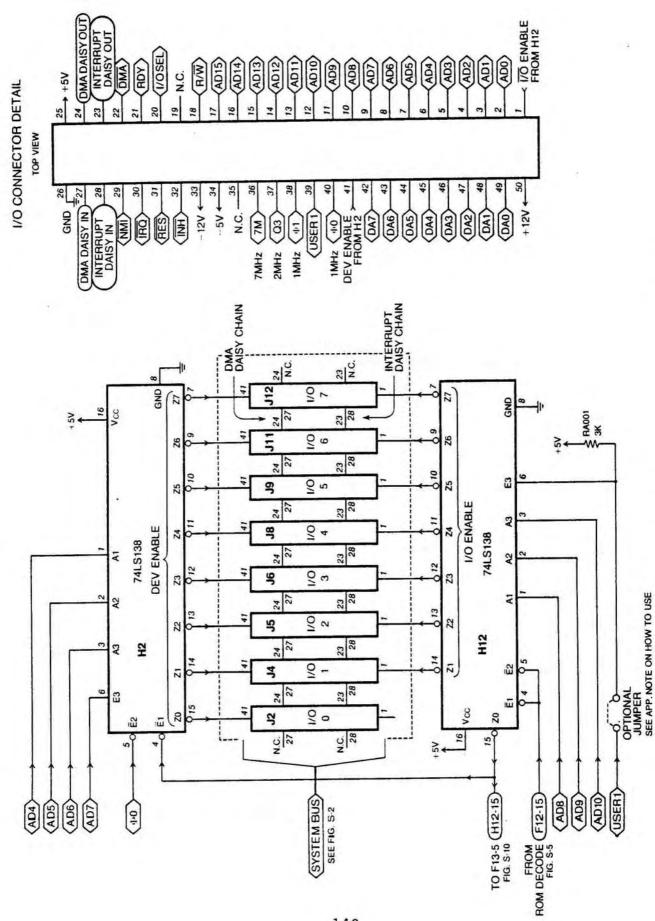


FIGURE S-8 4K TO 48K RAM MEMORY WITH DATA LATCH



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FIGURE S-9 PERIPHERIAL I/O CONNECTOR PINOUT AND CONTROL LOGIC

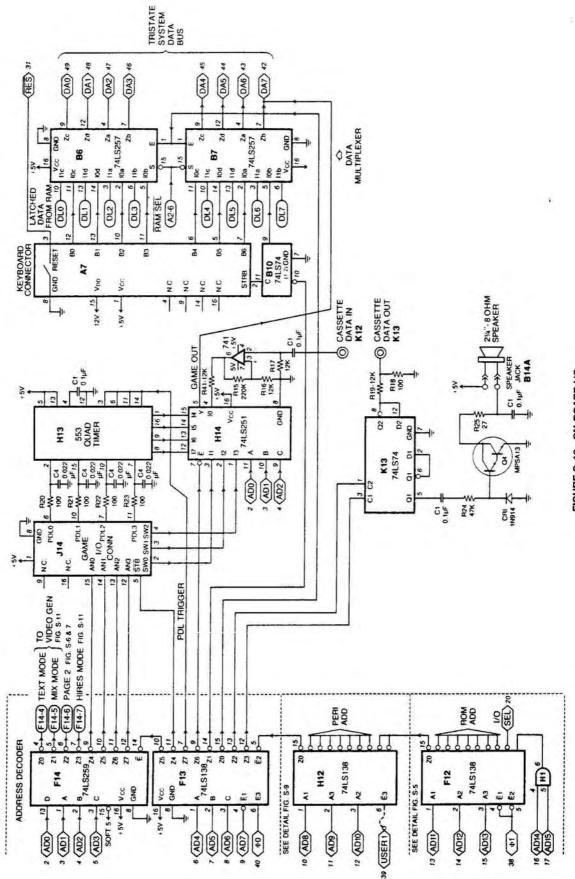


FIGURE S-10 ON-BOARD I/O

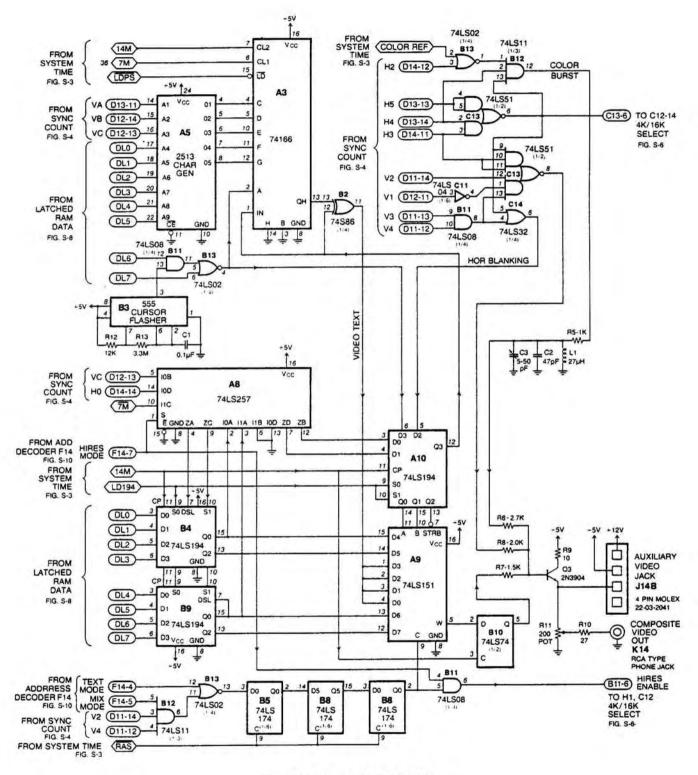


FIGURE S-11 VIDEO GENERATOR



10260 BRANDLEY DRIVE CUPERTINO, CALIFORNIA 95014 U.S.A. TELEPHONE (408) 996-1010



10260 BRANDLEY DRIVE CUPERTINO, CALIFORNIA 95014 U.S.A. TELEPHONE (408) 996-1010