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Washington Apple Pi



Volume 5

March 1983

Number 3

Highlights

LISA

SPEAKING OF FORTH: THE FORTH
DICTIONARY

VISICALC AND YOUR INCOME TAX

In This Issue

	Page
OFFICERS & STAFF, EDITORIAL, EVENT QUEUE, GENERAL INFORMATION	3
MINUTES, CLASSIFIEDS, JOB MART	4
SIGNEWS	5
PRESIDENT'S CORNER	DAVID MORGANSTEIN 6
Q & A	BRUCE F. FIELD 7
LISA	JAMES M. BURGER 10
SPEAKING OF FORTH: THE FORTH DICTIONARY	BILL WURZEL 14
WAP HOTLINE, APPLE TEAS	18
SOFTVIEWS: RECENT RELEASES	DAVID MORGANSTEIN 20
A REPORT CARD ON THE APPLE ///	WILLIAM C. JACOBSON 21
VISICALC AND YOUR INCOME TAXES	TOM WARRICK 24
THE BOTTOM LINE	LEON H. RAESLY 34
COLOR PLOTTING FROM EQUATIONS	A. R. RUMBLE 38
LOGOSIG NEWS	NANCY C. STRANGE & RON MURRAY 41
APPLESEEDS CORNER	44
HOME CONTROL: WHAT IT CAN DO	RUSS EBERHART 45
EDITING LONG APPLESOFT PROGRAMS	JIM ALLISON 46
ZCPR: AN OVERVIEW	WALT MILLS 48
WAP TUTORIALS	STEPHEN STERN 49
A PAGE FROM THE STACK	JILL & VANCE GIBONEY 50
EDSIG NEWS	PETER COMBES 52
SCREENWRITER HOT LINE FOLLOWUP	PETER COMBES 53
FIRST IMPRESSIONS OF APPLE DOT MATRIX PRINTER	BRUCE F. FIELD 54
ORDER FORMS, WAP TUTORIAL REGISTRATION	.55,56

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Rochowansky.
Addison Wesley, 1983. \$19.95

APPLE II ASSEMBLY LANGUAGE EXERCISES

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Wiley, 1982. \$9.95

APPLE II PROGRAMMER'S HANDBOOK

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Integer Basic, Applesoft Basic, Pascal, & 6502
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Robert Mottola.
Osborne/McGraw Hill, 1982. \$12.95

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Larry J. Goldstein & Martin Goldstein.
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Dr. Gordon Pash & Susan Curran.
Macmillan, 1982. \$14.95

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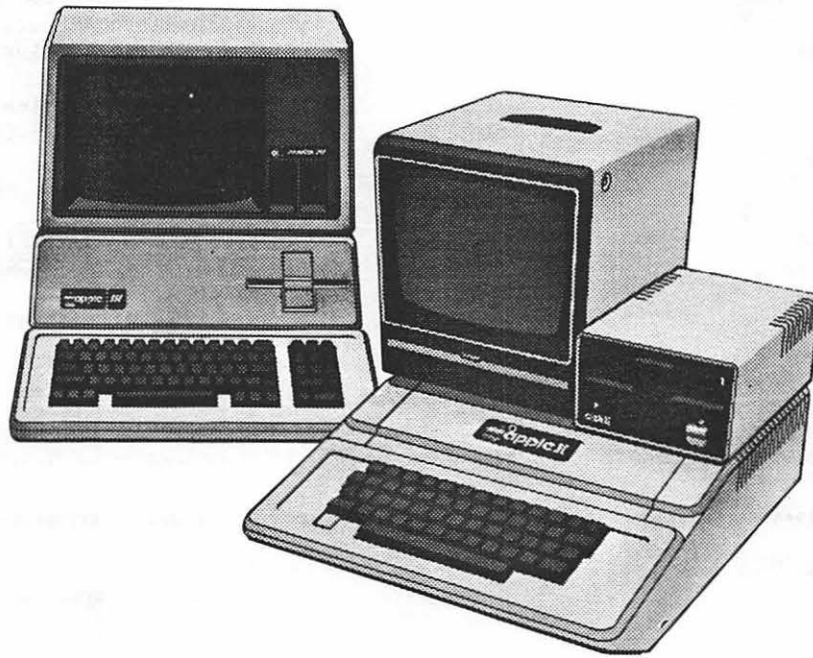
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Neither rain, nor sleet, nor snow, nor colds or flu shall stay the WAP Journal from its appointed deadline - But they almost did!

This month we would like to say "Hats Off" to Bruce Field, our Q & A columnist. Bruce has been a dedicated and loyal member of WAP and a regular contributor to the newsletter since the beginning. Now with his popular Q & A Column (some say it alone is worth the cost of the newsletter), his presence and ability is indeed an asset to the club. Please join us in celebrating Bruce Field month. Send in your cards and letters filled with accolades and questions. &

EVENT QUEUE

Washington Apple Pi meets on the 4th Saturday (usually) of each month at the Uniformed Services University of the Health Sciences (USUHS), Building B, 4301 Jones Bridge Road, Bethesda, MD, on the campus of the National Naval Medical Center. Sales, library transactions, newsletter pickup, etc. are from 8:45 - 10:00 AM. From 9:00 to 10:00 AM there will be an informal "Help" session in the auditorium. The main meeting starts promptly at 10:00, at which time all sales and services close so that volunteers can attend the meeting.

Following are the speakers and topics for the next few months:

March	26	-	Word Processors - Panel Discussion
April	30	-	LOGO - Nancy Strange (5th Sat.)
May	28	-	

APPLICATIONS DEMONSTRATION SCHEDULE

All Demos are from 9:00 to 10:00 AM unless designated otherwise.

March	-	Word Processors
April	-	Statistical Packages

GENERAL INFORMATION

Apple user groups may reprint without prior permission any portion of the contents herein, provided proper author, title and publication credits are given.

Membership dues for Washington Apple Pi are \$18.00 per year, beginning in the month joined. If you would like to join, please call the club office or write to the office address. A membership application will be mailed to you. Subscriptions to the Washington Apple Pi Newsletter are not available. The newsletter is distributed as a benefit of membership. &

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MINUTES

JANUARY GENERAL MEETING

The January meeting of Washington Apple Pi was held on January 22. The Office Open House was announced for January 23, 1-5. Volunteers are needed to help staff the office Tuesday evenings. Technical leaders are needed for the Apple Teas. Change in Group Purchase - no order, purchase, or pickup at the meetings. Order by phone, ship to home, or pickup at office. NEWSIG will have a new format- demonstration with overheads and APPLE. With the extension of our use of the USUHS facility, members are requested to follow the rules: come after 8:30, use underground walkways, respect parking labels for vans and small cars. Volunteers were solicited for tutorial and presentation coordinators. The membership was notified of the Board decision to procure two 8" disks instead of the hard disks mentioned in the budget. Call- A.P.P.L.E. is offering to WAP members a reduced joining fee of \$5. A copy of the Apple Tech notes will be available at the office. The Apple //e was on display at the meeting. Jim Burger reported on its features and that of the LISA. The presentation was by Alan Crieden on the PASCAL system.

SUMMARY OF FEBRUARY BOARD MEETING

The February Board meeting of Washington Apple Pi was held on February 10 at the Office. The agenda for the meeting included: SIG reports from Appleseeds and CP/M; Office - group purchase arrangements and reading library, new acquisitions; new member materials, manual and diskette; use of USUHS - set-up and 8:45 arrival; IAC - renewal of membership and support of Bernie Urban's reelection.

CLASSIFIEDS

FOR SALE: Basis 108 Apple compatible computer. 128K with Basic, Pascal and CP/M emulation software. Detachable keyboard, 280 parallel and serial outputs, RGB color outputs, all built in. \$1600. Lofty Becker, 338-5217 (eve.)

FOR SALE: Amdex RGB Color III monitor (IBM compatible), \$550; with DVM board for APPLE, \$625. Must sell. Call Jeff Altmire, (703) 998-7177.

FOR SALE: Complete APPLE System. Apple II+, 64K, two 140K Apple Disk II drives and controller, 128K RAM board + disk emulator software, MX-80 printer + Graftrax, Bell & Howell monitor, Integer and Applesoft Basics, Pascal Language System + Fortran. Plus all hardware interfaces, cables, manuals, cooling fan, surge clipper, and multiple outlet box w/ switch included. Asking \$3000. Equipment is approximately 18 months old and in mint condition. Expecting second child, wife does not share computer interest; rest is history. Call C. Vatikiotis, Day (202) 692-0331; Eve. (703) 698-9533.

FOR SALE: GRAFTRAX package and manual for Epson MX-80 printer, \$30. Can install. Call Skip Roberts, (W) 325-8417/8; (H) 971-3656.

FOR SALE: Cheap - all like new - Apple II+, \$650; Silentye printer, \$130; Sargon II chess, \$15; DJ Portfolio Evaluator (added options greatly improve operation), \$30. Call Newton Steers, 320-5820.

WILL SELL OR TRADE - 16K memory card from Language System; ABT Numeric Keypad (Rev. 6 or earlier); HP-67 programmable scientific calculator; Videx Keyboard Enhancer II; Integer Basic ROMs; Apple parallel Centronics interface card. I WOULD LIKE TO ACQUIRE THE FOLLOWING: AIO-II combined serial parallel interface board; Applesoft ROMs with or without language card; HP-12C Financial calculator. Call and make an offer if you are interested in any of the above. (202) 337-1253, ask for Bruce or leave message on the machine.

JOB MART

POSITION WANTED

WANTED - Full time position working with microcomputers on worthwhile creative applications. I have a Masters Degree in Computer Science and five years experience in programming and analysis on various size machines and projects. I am tired of large government agencies and beltway bandits. I believe the microcomputer can have a real, positive impact on society and I would like to contribute to such an effort. Interested persons, please contact Bernie Benson (202) 546-0076 (after 6:00 PM).

HELP WANTED

WANTED - Full time software evaluator, familiar with APPLE II hardware and software, and CP/M, with ability to evaluate business, home and game software. General knowledge of the software market and the microcomputer industry. Micro Distributors is a rapidly expanding company. Send resume to Micro Distributors, Attn. Gayle Conard, 11794 Parklawn Drive, Rockville, MD 20852. No phone calls.

ATTENTION, Washington, DC computer professionals. Dupont Circle area computer workshop wants to expand curriculum. Looking for experienced trainer in word processing, home finance, file management, adventure games, and graphics. Call Brian after 6:00 PM at (301) 568-6992.

SOS - HELP NEEDED

Prince George's County public libraries seek volunteers to present several programs (approximately 1 1/2 hours each) for young adults on programming games for home computers. Content can include general information, graphics, demonstrations. Ideas and help are needed! Call Julia Losinski, Prince George's County Memorial Library, 699-3500, ext. 294 (W) or 864-1598 (H).

SIGNEWS

SIGAMES is the special interest group of computer hobbyists interested in using their APPLES for entertainment. They meet immediately following the monthly meeting of Washington Apple Pi.

FIG, the Pascal Interest Group, meets on the third Thursday of each month at 7:30 PM at the Uniformed Services University of the Health Sciences, Bldg. A, Room 2054 (2nd floor), on the campus of the National Naval Medical Center at 4301 Jones Bridge Road, Bethesda, MD.

EDSIG - the education special interest group - will meet on Tuesday, February 1 at 7:30 PM in Lecture Room A, Building A, USUHS. For details of this and other meetings, see the EDSIG Page elsewhere in this issue.

LOGOSIG meets each month on the Saturday of the WAP meeting at 12:30 PM at the Bethesda Country Day School, 5616 Beech Avenue, Bethesda, MD. See the LOGOSIG column elsewhere in this issue.

ASMSIG meets immediately after the regular Washington Apple Pi meeting.

The APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. The meeting place alternates between the Walter Reed Medical Center and Universal Computers.

NEWSIG will meet just after the regular Washington Apple Pi meeting. We will answer questions and try to help new owners get their systems up and running. We will also explain how our club operates. The following members have agreed to answer questions over the phone when someone gets stuck and needs help between meetings:

Bob Chesley	560-0120
Paul Hoffman	831-7433
Sarah Lavilla	926-6355
Boris Levine	229-5730
Steve Sondag	281-5392

The Telecomm SIG meets after the regular WAP meeting.

The Business SIG meets after the regular WAP meeting. See The Bottom Line elsewhere in this issue for details.

The Home Control SIG will meet after the regular WAP meeting each month, starting Feb. 19. A "leader" will be selected. ☞

\$\$\$ DISCOUNT PRICES \$\$\$

AMDEK Color I Monitor	\$ 320
AMDEK RGB Color II Monitor	\$ 700
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NEC 1260 Green Monitor	\$ 120
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Synetix Disk Emulator 294 K	\$ 510
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Micro Buffer II (32 K)	\$ 240
Softcard Premium System (Z80, 16 K + Videx)	\$ 450
Videx Videoterm	\$ 250
D Base II	\$ 440
Real Estate Analysis	\$ 100
LJK Letter Perfect	\$ 105
Microsoft Multiplan	\$ 200
Locksmith	\$ 80
Screenwriter II	\$ 100
The Dictionary	\$ 80
General Manager	\$ 120
Visicalc 3.3	\$ 185
Visipak (includes Visicalc, Visifile & Visitrend/Plot)	\$ 490
Tax Preparer	\$ 165
Super Text 40/80	\$ 135
Executive Briefing System	\$ 150
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PRESIDENT'S CORNER

by David Morganstein

NEW VOLUNTEERS. The WAP extends a thank you and a wish for good luck to Vance & Jill Giboney. They and their little one will be moving to Canada. They have given much of their time to expand our public domain software library and their work has been appreciated. We are pleased to have Bob Platt (By-Law SIG Chairman) stepping in to carry on the work of assembling new offerings. Bob is close to completing a New Member Disk which will contain some of the best offerings written by or heavily modified by WAP members.

We wish to thank Robert Wood for volunteering to help out in the organizing of tutorials and David Moses who has offered to assist in the arrangement of future programs.

TUTORIALS. Steve Stern has organized several interesting tutorials over the next few months. Some are about specific software packages which seem to be used by many members. See his article in this issue.

USUHS. As we announced at the January meeting, we are requesting that members respect certain procedures required by the faculty at the USUHS. In particular, please enter and exit through the underground doorways and not through the courtyard doors. While these doors will be used for a few minutes during pre-meeting set-up, they should not be used for access for any other purpose. When travelling between buildings, go to the lower level and follow the underground tunnel. Although the courtyard is a shorter route, the emergency doors should not be opened. The guards are expecting members to begin entering at 8:45 A.M., not earlier!! We ask that you delay your arrival till that time. In addition, please observe the designated spaces in the parking lot. Certain areas are for automobiles, others for vans. We ask that you park accordingly. (We will not be able to get your vehicle back from the Navy if it is impounded for failure to comply...)

CONSULTANTS. In October, the WAP sought applicants to provide certain services associated with assembling and distributing the Journal and with maintaining the mailing list. Four applicants responded, one of which later withdrew. A committee consisting of Dana Schwartz, Vice President, Ed Myerson, Treasurer, and Rich Wasserstrom, Director at Large, reviewed the three remaining applications and made a recommendation to the Executive Board. The Board unanimously supported that recommendation. We are now completing the details of a contract with Bernie and Gena Urban to provide these services on a consulting basis. (Although Bernie is a Director at Large, he did not participate in the evaluation discussions or in the voting.) We hope that you are as pleased as the Board with the development of our office and the additional services it will be able to pro-

vide.

THE OFFICE. Please stop by and visit! By now, we have added a supply of our Library software to complement the magazines and books, copying machine (for articles, gang!!!) and back issues which you can obtain there. WAP wishes to thank Gregory King for donating a desk.

Call-A.P.P.L.E. Many of our members subscribe to the Call-A.P.P.L.E. magazine. This organization was one of the first Apple user's groups in the country and offers several unbeatable software and hardware items. WAP is pleased to announce a discount to its members for joining Call-A.P.P.L.E. The usual fee for membership is \$25.00 plus annual dues of \$20.00. WAP members may join for \$5.00 plus the annual fee. To join, send a check for \$25.00, made out to Washington Apple Pi, to our Office. (See accompanying application form.) We will assemble a list of new applicants and send it on to Call-A.P.P.L.E. In addition, C-A has agreed to allow us to bulk purchase their hardware and software items and make them available through our group purchase program. Our next issue will contain a list of such items. (See Softviews for a review of Global Program Line Editor, one of their many offerings.)

APPLE TEAS. A reminder about the many small group discussions being held around the D.C. area. If you are interested in hosting a tea please contact Paula Benson or me to indicate the dates and location. Check the list elsewhere in the Journal to find a tea being held near you.

THE APPLE //e and LOOK-ALIKES. I am often asked by people wanting to purchase a new computer, "What should I buy, a new //e or a look-alike?" Obviously, I'm not going to touch that one with a ten foot pole. However, let me give a few random observations and questions which may help someone in this situation. First, the Apple II+ will no longer be produced. Most new software and hardware will be developed to be as compatible with both the II+ and the //e as possible, but the //e is the "wave of the future". Fortunately for II+ owners, there are many businesses who will continue to make II+, as well as //e, products.

The look-alikes (and their numbers are increasing) seem to come in two forms: the "get something extra version" (such as a built-in 64K or Z80A to run CP/M) and the low cost "virtually the same as the II+" version. It has been reported that one way the low cost has been obtained is by not socketing the chips (i.e. soldering them in place). If you are handy with a soldering iron and can isolate a malfunction, this may represent no burden. If the machine needs to be repaired, you must ask yourself where will you get the repair and will it

contd. on pg 23

Q & A

by Bruce F. Field

Q. I would like to be able to easily upload a large Applesoft program to an IBM mainframe, without creating a text file of it, using the LIST command. The host editor is Wylbur, which has a "?" prompt for the next line. LIST is too fast, so the first few characters don't make it. LIST also apparently only works with actual line numbers, not variables. I would like to make it as simple as possible to type or EXEC in a program. Is there any way to slow LIST down and also do some checking of return prompt characters from the host?

A. Slowing down LIST is no problem. The Applesoft SPEED command can be used. Before listing your program execute the command SPEED=XXX, where XXX is a number from 0 to 255, (0 slowest to 255 fastest). You can experiment to find the fastest speed without losing characters. Unfortunately this will significantly increase the time required to transfer the file. It is also possible to write a small machine language program that connects into the output and input hooks and causes the Apple to wait for a "?" prompt after sending each carriage return. This is not difficult to write but does require that you know how your present modem (or communications card) driver software works.

Q. I am writing an Applesoft program for use by school children and I want to disable the RESET key so that pressing it has no effect. How can I do this?

A. On newer Apples it is possible to set a switch on the keyboard so that the CONTROL key must be pressed along with the RESET key to activate a reset. This will prevent accidental resets. On Apple II Pluses the Autostart ROM allows you to set up a pointer to jump to a machine language routine of your choosing whenever the RESET key is pressed. Unfortunately if you interrupt Applesoft by pressing the RESET key there is no way to automatically go back to where you were in the program. However you can mostly overcome this limitation by a little programming. It is possible to direct the Apple to restart an Applesoft program whenever RESET is pressed. Then at the beginning of the program use some sort of flag to tell the program whether it is being run for the first time or being restarted with a RESET. One way to do this is to POKE a value into a memory location when the program is running and check it at the beginning. If it has been set then the program is being restarted. It is then up to you to jump to a safe starting place in the program, say a menu of functions. The Applesoft program segment demonstrates how to do this.

```
100 REM CHECK FLAG BYTE
110 IF PEEK(0)<>0 THEN 200

120 REM IF WE'RE HERE WE ARE
130 REM RESTARTING PROGRAM
140 REM JUMP TO FUNCTION MENU
150 GOTO 500

200 REM CONTINUE WITH PROGRAM
210 REM EXECUTION FIRST TIME THROUGH

220 REM SET FLAG BYTE TO ZERO
230 POKE 0,0

240 REM SET RESET TO RESTART PROGRAM
250 POKE 1011,02:POKE 1011,213
260 POKE 1012,112

270 REM REST OF PROGRAM
```

Q. There has been some discussion at the WAP meetings about problems with RESET when using some Language cards. Can you clear this up for me?

A. As you know the RAM memory on the language (or RAM) card cannot be connected to the 6502 processor in the Apple at the same time as the Applesoft ROM memory is connected. Either one or the other may be connected, this process is called "bank switching". Which memory is connected is controlled by "soft switches" at memory addresses \$C080 to \$C08B. The problem comes about if you are using a RAM card to store data or DOS or anything that is not Applesoft or Integer Basic. When you press the RESET key the 6502 processor expects a machine language program in memory at \$FFFC. If the Applesoft ROMs are turned on the required program is there; if Applesoft or Integer Basic are loaded into the RAM card and the RAM card is connected ("turned on") the required program is also there. But, if you have been using the RAM card to store data and the RAM card is turned on, no program is there and the Apple will just "hang", that is do nothing. The problem is the way some RAM cards operate. When RESET is pressed they should turn themselves off and turn on the Applesoft ROMs. Some cards do this and some do not; it is not possible to tell without trying them. The AB Computers card presently being sold through the club Group Purchase does not reset to the Applesoft ROMs. One way around this is to copy the monitor ROM into the top of the RAM card memory whenever you are using it to store data and then RESET will always work.

Q. I am working on an Applesoft program but I keep getting an OUT OF MEMORY error. I check the amount of free memory with a FRE(0) command and it says I have over 30,000 bytes available. What's my problem?

A. OUT OF MEMORY can mean several things.
contd.

First, it can mean that you are truly out of memory. This can happen if the area occupied by your program plus the space needed by your program variables exceeds the memory available. It can also mean that you have set HIMEM or LOMEM improperly. LOMEM must be set higher than the end of the program, and HIMEM must be set higher than LOMEM. Also trying to change LOMEM from a higher to a lower value will give this error. In your case this is not the problem because FRE(0) shows that you have plenty of memory available.

Other conditions that produce OUT OF MEMORY are FOR-NEXT loops nested more than 10 levels deep and... this is it, are you ready for it... GOSUB's nested more than 24 levels deep. Almost every-time you get an OUT OF MEMORY error and FRE(0) says you have plenty of memory the problem is you have executed a GOSUB but neglected to use a RETURN. It is very easy to do this and sometimes hard to find. The following example shows one way it can happen.

```
100 PRINT"HEADING"
110 GOSUB 200
120 GOTO 100
200 FOR I=1 TO 200
210 PRINT A(I)
220 INPUT "DO YOU WANT ANOTHER?";A$
230 IF A$="N" THEN 120
240 NEXT I
250 RETURN
```

Do this 25 times and you'll get an OUT OF MEMORY error.

Q. I have written a data base management program (in Applesoft) that, among other things, prints summary reports. My hardware/firmware consists of a NEC 8023 printer, and the Grappler interface card. My problem is that I can't seem to print underlined column headings where I want them to be although I have no problem doing so if they are not underlined. I am using the following set of program instructions.

```
100 POKE 36,10:PRINT CHR$(27);"X";
"NAME";CHR$(27);"Y";
110 POKE 36,30:PRINT CHR$(27);"X";
"NUMBER";CHR$(27);"Y";
120 POKE 36,50:PRINT CHR$(27);"X";
"NAME";CHR$(27);"Y";
130 POKE 36,70:PRINT CHR$(27);"X";
"NUMBER";CHR$(27);"Y"
```

IF the underline characters (CHR\$(27); "X" and CHR\$(27);"Y") are not included the headings are printed in the specified locations on the page. As shown the headings are printed underlined, but shifted towards the left margin by an ever increasing number of spaces. By trial and error, I found that by changing the tab locations specified in the POKE commands to 10, 32, 54, and 76, respectively, the headings will start printing (with underlining) where I want them, but then the printer senses that the last heading goes beyond the 80th column so it issues a linefeed and carriage return, which splits the last heading onto two lines. Do you have any

suggestions for me?

A. Your problem comes about because the Grappler interface card doesn't know what your printer is doing. Let me digress a moment before I start the explanation. I hope everyone knows that you cannot use the TAB function of Applesoft to tab beyond 40 columns and generally HTAB can only be used to tab on the screen. If you want to tab on a printer beyond 40 columns the way to do it is to POKE the tab value into location 36 as shown above. This works with most, but not all, printer interface cards.

Now, back to your problem. Tab spacing is handled by the printer interface card. It keeps track of how many characters have been sent to the printer and issues enough spaces to move the print head to the desired tab location. What is happening here is that when the interface card sends the CHR\$(27);"X" or "Y" sequence to the printer it doesn't know that the printer doesn't print this. The interface card is smart enough to know that the control character doesn't print but it doesn't know that the X and Y are treated as printer commands. Thus after printing each heading the interface card thinks 2 more characters have been printed than actually have. The solution is to do exactly what you did, increase the tab location by 2 each time you print the two underline commands.

Now for the second part of your problem, if you are not actually trying to print beyond the 80th column on the printer then the printer is not issuing a carriage return and linefeed. The problem again is the interface card which thinks that 8 extra characters have been printed thus exceeding the 80 character maximum. The solution is to reset the maximum number of characters per line. On the Grappler this can be done by: PRINT CHR\$(9);"ON". By using a zero for the maximum line length, the Grappler will never issue a carriage return unless you expressly print one. With most printers and specifically your NEC the printer does not control the maximum line length, this function is performed by the interface card.

Q. I've been trying to use Super File Cabinet on WAP disk #37, but when it comes to printing a report I am requested to enter a header number, operator, and value. What are valid operators?

A. Super File Cabinet allows you to select records for printing based on selected conditions. The valid operators are:

EQ - equal NE - not equal
GT - greater than LT - less than.

For the header you enter, the program will search for all the records with a header entry greater than (for example) the value you enter.

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LISA

by James M. Burger

THE ANNUAL MEETING

Apple Computer, Inc.'s annual meeting was unlike most corporate annual meetings. The atmosphere was charged; Chairman of the Board Steven P. Jobs was greeted by the capacity crowd with cheers, whistles and bravos. Stockholders had reason to cheer -- Apple profits climbed from just under \$40 million in 1981 to over \$61 million in 1982.

The crowd was there not so much to cheer good financial news, but to greet LISA(tm) and the Apple //e. (The Apple //e is well described by Tom Warrick in last month's issue (February 1983, page 14)). Covered by a beige cloth, LISA held center stage.

I had the good fortune not only to attend the annual meeting in Cupertino; but, to receive a one-on-one demonstration of LISA. Afterwards, LISA was mine for over half an hour.

LISA, according to Apple, stands for "Local Integrated Software Architecture." There are at least two other explanations, but such speculation is left to Time magazine. LISA represents more than 200 person-years and \$50 million of development effort. At first glance, LISA is a user's machine. This is true because it was designed to make the computer as simple to use as possible.

LISA consists of four components: console, keyboard, mouse and Profile(tm) winchester drive. The console stands just under 14 inches high, by just under 19 inches wide and just over 15 inches deep. It weighs 48 pounds. Two high-density, double-sided disk drives and a high resolution black on white monitor are part of the console. Inside is a 32 bit MC 68000 CPU and one megabyte of RAM. Since the revolutionary key to LISA is not its hardware but the approach to the user, detailed technical data is left to the end of this article. The keyboard with numeric keypad stows below the monitor and drives. The five megabyte Profile comes with six integrated programs, a diagnostic test and a tutorial program. LISA lists for \$9995.

The first impression is the keyboard, clean and simple. No row upon row of special function keys. Not cluttered like some competitors' products. Other than a numeric keypad, it looks strikingly like an ordinary typewriter keyboard. (For those who cannot stand simplicity, all of the keys are programmable). Keys are sculptured, textured, nonslip and nonglare.

How is LISA easy to use without function keys, you ask? The secret is the mouse. Not a live creature, but a palm-sized box with a ball bearing on the bottom permitting it to slide across a flat surface. The mouse is connected to the computer by a

thin cable. Depressing a small bar at the top of the box sends an additional signal to the computer. After LISA is turned on a small arrow appears on the hi-resolution monitor. Sliding the mouse across the desk moves the arrow across the screen. With the exception of entering new text, the mouse commands the computer by pointing to objects on the screen.

The combination of the mouse and these objects on the screen makes, for perhaps the first time, using a computer an intuitive experience. These objects, at the left and bottom of the screen, are small pictorial representations (call icons) of functions and peripherals. These can be changed, added, deleted at will. On the machine I used, for example, there was a Wastebasket, Clipboard, Clock, Calculator, Stationary folder and Profile. To use a function the mouse is moved so that the arrow rests on one of the icons and the bar on top of the mouse depressed (clicked) twice. (After a few short minutes you are almost unaware of moving the mouse).

This combination of mouse and symbol relieves the user of worrying where a particular "program" is in storage or what menu to look at to get a particular task in memory. In fact, LISA is structured to operate like a desktop. The user merely selects an object or objects on the desktop and, as described below, spreads it out on the desk for use.

To use the calculator, for example, move the mouse over the calculator icon and click twice. A standard four function calculator with memory appears on the monitor; and, a menu bar appears across the top of the screen. You can use the keypad to operate the calculator. It seems more natural, however, to move the arrow over the calculator's keys on the screen, entering numbers by depressing the bar on the mouse.

The calculator can be moved, enlarged or shrunk by manipulating it with the mouse. Astonishingly, the calculator's function and displays can be changed with ease. You want reverse Polish logic? Simply move the arrow to the menu bar. By depressing the bar on the mouse you pull down a menu for calculator function and "click" in a new function. Want a display for the memory register? Want both the X and Y register displayed? These are easier done than explained!

LISA SOFTWARE

The calculator is one of many mere toys when compared to the six powerful integrated software packages that come on the Profile as part of the LISA package: LisaWriter(tm), LisaProject(tm), LisaCalc(tm), LisaGraph(tm), LisaDraw(tm) and LisaList(tm). The software offers two

contd.

significant advances. First, ease of learning and use; many features and commands for one program are applicable to the rest. Thus, learning time is shorter for each subsequent program used. Second, integration of the packages. Apple claims a basic learning time of under 30 minutes. In fact, once you complete LisaGuide(tm) (the machine operating tutorial) - which should take under 30 minutes, basic learning time for the first integrated package used should be closer to 22 minutes. This is due, in part, to extensive use of the mouse and, as noted, common features.

Based on my short exposure, I could learn to effectively use all six programs in less time than it took me to learn to use ScreenWriter][on my][+. Integration allows rapid switching from one package to another with little effort. Also, parts of work product can be cut or copied from one program and easily pasted in another.

Apple demonstrated for me LisaCalc, LisaWriter, and LisaGraph working together. The mouse was moved over the Profile icon and clicked twice. The icon turns gray with its label now white on black. On the screen a large folder with labeled smaller folders appears, representing the contents of the hard disk drive. Move the mouse over the LisaCalc folder two clicks; an electronic spreadsheet appears on the screen. Data for a regional sales budget was already entered. With ease, using the mouse, data was scrolled across the screen, the spreadsheet enlarged or shrunk, and data cut and pasted or copied to other areas of the spread sheet.

The next step was integrating LisaCalc data into a memorandum. Instead of having to store the spreadsheet, using the mouse, we were able to "tear" a piece of prepared blank memorandum "paper" off and lay it on top of (actually overlapping) the sales budget. (One million bytes helps). Thus, reinforcing the intuitive feel of working on a desk.

Text was entered through the keyboard; yes, the keyboard is occasionally used. But rather than reentering the budget material contained on LisaCalc, the mouse copied and pasted summary data sections into the memo.

I was asked, rhetorically, wouldn't it be nice to incorporate a graph into the memo. Click; LisaGraph was laid on top of the memo and the spreadsheet. Using the mouse, summary numbers were again copied and pasted into a table on LisaGraph (numbers could have been entered from the keypad). The mouse moves the arrow over the menu at the top of the screen; by depressing the bar over the label "GRAPH" a small window-shade like menu was pulled down. You are offered the choice of Bar, Line, Scatter or Pie graph. Move the arrow to the choice of graph, click; a bar graph appears on the screen. Size, shading, and typestyle of labels can be readily altered. Then the graph was cut and pasted onto the memo. Using the mouse and printer icon the memo was sent to the printer; voila, a finished product. Time involved: about 15 minutes, very impressive.

INTEGRATED SOFTWARE SPECIFICATIONS

LISACALC

Scrolling on the 255 row by 255 column spreadsheet is easily and naturally accomplished using the mouse. Individual columns can be adjusted from 1 to 80 characters. The mouse alters formats with ease. Dollars, cents and commas can be used at will. Dates and durations are acknowledged as well as added or subtracted by a built in calender (dates are automatically checked for consistency). Calculations are made to 15 digits.

LisaCalc has all the usual modeling features and more including: +, -, /, =, <, >, <>, AND, OR NOT, Integer division, remainder, sum, average, minimum, maximum, count, exponent, if-then-else, NPV, compound interest, and annuity factors, absolute value, integer portion, round off, log, natural log, square root, sum of squares, lookup, NA, error, sin, asin, cos, acos, tan and atan.

The program has many special features including: "Protection" to guard specified cells; "Circle Missing Values" to highlight cells for others to enter data; and the screen can be split up to six vertical or horizontal tiers. In addition, LisaCalc shares several special features with all the other programs. These are described only here but are included in all the others. The display on the screen can be easily altered by "grabbing" the lower left corner of the LisaCalc image on the screen, clicking, and moving the mouse in a natural fashion. Thus, the display can be moved around the screen, shrunk or enlarged. There is an UNDO feature to undo the last command. A REVERT TO PREVIOUS FUNCTION VERSION command which undoes all changes made to the document since last saved. Also, more than one spreadsheet can be placed on the screen. This makes transferring data from one spreadsheet (or word processing document, graph, etc.) a snap.

LISAWRITER

What sets this program apart from all other word processing programs is the facility with which you can move among functions. While I use ScreenWriter][on a regular basis, I still need considerable time to set up a document. If I need to do anything I have not done before (or in a while) it takes a careful reading of a section in the manual. In addition, the special feature usual require a series of command keystrokes. Also, my concentration is broken and some of the value of a word processor (speed) is lost. (ScreenWriter][, for its price, is still my standard for the][+). With LisaWriter, natural movements of the mouse and "click" gives you subscripts, superscripts, changed typestyle, autocentering, line spacing, tabs (a ruler appears and the mouse "drags" tabs into position), page breaks, and conditional pages. LisaWriter, like LisaCalc, offers split screens within a document. One outstanding feature of LisaWriter is that screen image is what you get on paper. The Apple Daisy Wheel Printer (a hardwired

contd.

version is slated for LISA) is supposed to come with a variable typefont wheel.

LISAPROJECT

This program brings to project management what Visacalc(tm) brought to financial modeling. It offers Task, Resource and Schedule charts for planning and following schedules. Schedule creates a flow chart with task boxes where you enter task, resources and task duration - task dates are automatically calculated. Milestones are represented by circles. Critical tasks are highlighted (those which failure to make a deadline will delay the entire project). After task boxes and milestones are created the mouse is used to draw lines to show interdependency. Changes in plans, proposed or actual are easily accomplished with the mouse. Resource charts (horizontal bars with resource names on the vertical margin, task names in the bars, and dates across the top) and Task charters (similar to resource charts, but tasks in vertical margins) can also be created. Astounding as it sounds (or perhaps not at this point) a chart 32 square feet can be created (approximately 60 pages). With intuitive use of the mouse, the entire chart can be viewed on the screen (although on a very large chart the text is not included since it would not be readable). It does afford the Flip Wilson, "what you see is what you get" printing feature.

LISALIST

This is LISA's data base program. Each list may have up to 100 columns. Each column can be assigned one of the following data types: 1. Text, 2. Number, 3. Date, 4. Money, 5. Time, 6. SSN, 7. Phone number, and 8. Zip Code. Rows may contain up to 990 characters. Thus, for example, a data base could contain up to 6,000 rows of 100 characters each, or 10,000 rows of 60 characters. Search criteria are easily selected by filing in a table; comparisons, of course, can be specified, e.g. before a certain date and/or more than \$X.

LISADRAW

This program was purportedly designed to enhance graphs, draw floor plans, maps, organization charts, business illustrations, etc. I suspect that Apple programmed it for frustrated artists, like me, who cannot draw a straight line. Freehand draw with the mouse and then use the program to smooth, straighten, enlarge, thicken, thin, shade and change in many ways the freehand drawing. The graphic editing is as amazingly powerful as it is easy to use. Text can be readily added and parts of the whole drawing cut and pasted onto other programs. The maximum size of a drawing is 32 square feet.

LISA TECHNICAL SPECIFICATIONS

Purposely, I have left these until last. This is because Apple has successfully made an integrated machine with transparent functions (i.e. you are hardly aware of hardware and software).

The heart of LISA is Motorola's MC68000 32

bit CPU with a 16 bit external data path. Unlike a certain computer company, Apple carefully does not claim LISA to be a 32 bit machine but a 16 bit machine (big blue, on the other hand, claims their machine to be a 16 bit machine despite its 8 bit external data path). Rumor has it that Apple is working on a 32 bit bus. Main memory is one megabyte RAM with 16K bytes of boot ROM. An internal clock is included, as well as a built-in speaker. For communications interface LISA has two serial ports and RS-232 with full-duplex channels (baud rates are software programmable). It has one parallel port (8-bit bidirectional and handshake control).

LISA supports Basic, Pascal and COBOL. For its development language Apple has available Lisa Editor, Assembler, Linker, and Debugger. (Yes, LISA is in the hands of independent software publishers and we can expect non-Apple generated software to be available).

Boards are easily removable with zero force insertion connectors. Three extension slots are included - portends of future Apple and outside hardware add-ons a la Apple II.

The two high density disk drives provide 1.4 Megabytes unformatted capacity and 860 bytes formatted storage per drive. They have automatic disk eject and are each interfaced with a 6504 processor.

The Monitor is extremely hi-resolution black on white with a 12 inch screen. It is full-screen bit-mapped displayed with 364 lines by 720 dots, up to 40 lines of 132 characters.

CONCLUSION

Many of LISA's concepts are from the Small-Talk system created at Xerox's Palo Alto Research Center (PARC). (See Info-World, January 24, 1983, p. 25). Nevertheless, Apple has put together a large variety of features in a way that had the individual in mind. Noncomputer users do not have to reformulate their thinking to use the machine. Much of a first time user's fear will rapidly evaporate. The "Oh-My-God-if-I-Touch-That-Key-I'll-Bomb-The-Program" syndrome is gone. In fact, you cannot destroy what you were working on even if you hit the power off switch -- LISA first puts away everything you were working on and then shuts down (its never truly off, but in a low power mode with a 20-hour back up battery). Turn it on the next time and you are back exactly where you left off. The extensive use of the mouse and the powerful but easy to use integrated software make LISA revolutionary.

Crystal ball gazers, it is said, must be prepared to eat glass. But, I believe that as the Apple II was the vanguard of the personal computer revolution, LISA will be the vanguard of individual computer power for the executive and professional. ☛

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SPEAKING OF FORTH: THE FORTH DICTIONARY

by Bill Wurzel

This month we're going to take a detailed look at the Forth dictionary and how Forth words are stored in it. In this and subsequent articles, I'm going to assume you have access to some sort of Forth glossary. The Forth Interest Group sells one for \$15 - it is reproduced on the WAP Forth diskette. Brodie's book (Starting Forth) also has a good glossary. Since we'll be looking into the dictionary frequently, we should have a word which will dump RAM to the screen:

```
0 P ( DUMP RAM UTILITY )
1 P ( DUMP TOS TO TOS+80 ON CRT ) 0
  VARIABLE HTEMP
2 P BASE @ HEX FORTH DEFINITIONS
3 P IF VARIABLE HTEMP 0 VARIABLE MASK
4 P : HEAD IF HTEMP C! CR 4 .R AD EMIT
5 P 2 SPACES 7 MASK ! ;
6 P : -DUMP DO I MASK @ AND 0= IF I HEAD
7 P THEN I C@ DUP AREG C! FDDA CALL
8 P 24 SPACE C@ HTEMP C@ 24 C! SWAP
9 P AREG C! FBFO CALL 24 C!
10 P 1 HTEMP +! LOOP CR ;
11 P : DUMP BASE @ SWAP HEX 0 MASK ! DUP
12 P 50 + SWAP -DUMP BASE ! ;
13 P
14 P BASE !
15 P ;S
```

This word outputs to the CRT the 128 bytes which start at the address which is on the top of the stack (TOS). The output is in both hex and ASCII. This routine works fine with an unadorned 40-column Apple. I usually use the Smarterm 80-column card - for which I offer the following screen:

```
0 P ( DUMP - DUMP $80 BYTES TO SMARTERM )
1 P BASE @ HEX 0 VARIABLE HTEMP
2 P : DHEAD CR . " - " 3A HTEMP ! ;
3 P
4 P : DUMP BASE @ HEX SWAP
5 P DUP F AND IF DUP DHEAD ENDIF
6 P DUP 80 + SWAP
7 P DO FORTH I DUP F AND 0= IF DUP DHEAD
  ENDIF
8 P C@ DUP AREG C! FDDA CALL SPACE I F
  AND 7 = IF SPACE THEN
9 P 57B C@ >R HTEMP @ 57B C!
10 P DUP 60 AND IF 80 OR ELSE DROP AE
  THEN AREG C! FDED CALL
11 P R> 57B C! 1 HTEMP +! LOOP CR BASE ! ;
12 P BASE !
13 P ;S
```

If you have some other 80-column card, you can probably use the above Forth word. Just substitute for each occurrence of 57B the address where your card stores the horizontal cursor coordinate. (The address 57B assumes that your 80-column card resides in slot #3. If this is not the case, check the Reference Manual for the correct slot address.)

Now, let's define a Forth word DUMPW which will dump the first 128 bytes of the dictionary definition of any word. Since most Forth words don't run longer than 128

bytes, this restriction isn't too severe.

```
: DUMPW ( DUMPW <NAME> ) (*COMPILE*) '
  NFA DUMP ;
```

Try the word out! Dump the dictionary word QUERY like this:

```
DUMPW QUERY
```

You should see a lot of hex and the word QUERY over in the ASCII column. Okay, on to the structure of the dictionary.

The Forth dictionary contains the definitions of all Forth words, as well as the values of constants and variables. Since we can manipulate dictionary management ourselves, it may also contain anything we want it to! Each word in the Forth dictionary is composed of three fields: the name field, the code field and the parameter field.

THE NAME FIELD

The name field is composed of one byte of information followed by the ASCII characters that make up the name of the word. The first byte of information contains the number of characters in the name in the low order 5 bits (that's B0 through B4 where B0 is the low order or rightmost bit and we count up to the left). This is why FIG-Forth words can have a maximum length of 31 characters -- that's as high as you can count with five bits!

The bit just to the left of the name length field (B5) is the smudge bit. The purpose of this bit is to prevent the Forth interpreter from finding a Forth word. It is only set during the time a word is being defined. When a word is successfully defined, the smudge bit is cleared. Just what the reason for this is, I'm not sure. Apparently, the designer of Forth wanted to prevent recursion (but what's wrong with recursion? Actually there are several ways to write recursive Forth code - more later). Anyhow, as far as I can see, the smudge bit is just a nuisance. Since the bit is only cleared after a word is successfully defined, if you make a mistake in defining a word, say in a colon definition, the compiler exits and you're back in execute mode with a half-finished word in the dictionary. If you try to FORGET this word (FORGET removes words from the dictionary), the interpreter tells you the word isn't there (the smudge bit is still set so Forth can't find the word). Even worse - if the word is already defined somewhere else then that word (and everything else to the end of the dictionary) is forgotten. Since it frequently happens that we want to delete the word just defined, let's write a Forth word to do this.

The most straightforward way to forget a smudged word is to turn the smudge bit back

contd.



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off and then forget the word. If the last defined word was named FARKLE, for example,

LATEST HEX DF AND FORGET FARKLE

would do the job. AND and's the TOS byte with the byte at NOS. A hex DF has only B5 clear, so we can AND out the smudge bit from the LATEST word. All in all, the smudge bit just seems to be a pain in the neck. There may be times when you would want to look and see if a word compiled successfully - but I can't think of what they are!

The next bit (B6) is the precedence bit. Any word whose precedence bit is set is defined as an immediate word and will be executed by the Forth interpreter, even if the interpreter is compiling at the time, unless the word is immediately preceded by the Forth word [COMPILE] (or its alias on the WAP disk, (*COMPILE*)). This business of compilation, execution and so forth is discussed in more detail in the last two month's columns.

The leftmost bit (B7) is always set. It identifies the leftmost byte of the name field. Immediately to the right of this information byte are the ASCII characters of the Forth word's name. B7 is only set in the rightmost character of the name, identifying the rightmost byte of the name field. Use DUMPW to look at the name field of QUERY. We see

```
85 51 55 45 52 D9
```

The leftmost byte (with B7 set) is the information byte which tells us that QUERY is not an immediate word (B6 clear), it has been successfully defined (B5 clear) and that it's name is 5 characters long. The next five bytes are the ASCII representation of QUERY with B7 clear in each character except the final 'Y'. For practice, try writing a Forth word ?IMMED which accepts the name of a Forth word and outputs whether or not the word is an immediate word (see the end of the article for a possible solution).

THE LINK FIELD

The two bytes following the name field make up the link field. The link field of any word (say WORD2) contains the Forth dictionary address (in standard 6502 low-order byte first format) of the word (say WORD1) which was defined immediately before WORD2. The link field of WORD1, in turn, contains the address of the word defined immediately before it - say WORD0 - and so on. The link field of the first word in the dictionary contains zero.

This is the way the Forth outer interpreter finds words to execute or compile: it starts at some high-RAM address and checks to see if this is the word it's looking for. If so, great. If not, it uses the link field of this word to get to the word previously defined and checks it. If this is the word it's looking for, great. If not, it keeps looking back through the link field of each word in turn until it finds the word it wants.

(By the way, if the outer interpreter cannot find a word in the dictionary, it assumes the word it was looking for is really a number and tries to convert it to internal numeric form using the current number BASE. If the number converts OK, it is placed on the stack. Otherwise, ERROR #0 is issued - can't find name in dictionary. Since names of Forth words can be made up of almost any characters, we could define the interesting but potentially treacherous word '2' whose action might be to place a 3 on the stack. Try this:

```
: 2 3 ;  
: 2 2 4 . ;
```

I can't imagine why anyone would want to do this - but as you see, it can be done!)

Actually, if you use multiple VOCABULARYs in Forth, the procedure the outer interpreter uses to find a Forth word is a little more complicated. We'll discuss vocabulary in a later column.

Using DUMPW, find the link field of the word DUP. We see that the link field of DUP is at address CA4 - the link field is 87 0C (to the 6502, or C87 to us!). Let's see what word this is:

HEX C87 DUMP DECIMAL

Looks like the link field of DUP points to SWAP. Use DUMPW again and find the link field of SWAP. It's C7E at address C8C. Find the word that was defined immediately before SWAP. Right! It's DROP. Write a practice program called DEFBEFORE which accepts the name of a Forth word and outputs the names of all the Forth words which were defined before it.

THE CODE FIELD

The two bytes following the link field are the code field. The bytes constitute the RAM address of the 6502 machine code to be run when the particular Forth word is executed. The code field of every word in Forth must contain the address of executable 6502 machine code, no matter what the word does or when it takes effect. The inner interpreter (that part of Forth which executes previously defined Forth words) executes each Forth word by branching to the code at the code field address. It does this via a 6502 indirect jump - and this can give rise to a subtle but disastrous bug: the jump indirect instruction will not cross page boundaries! This means that the low order byte of the code field address (stored in the low order byte of the pair, as usual) must not equal a hex FF. The Forth compiler takes care of preventing this for you - so you only have to worry about it if you're assembling Forth itself (using the Forth-based assembler to assemble 6502 machine language into the dictionary is okay too - the caveat only applies if you're assembling the entire Forth system with a non-Forth assembler).

THE PARAMETER FIELD

The final field in the Forth word is the parameter field. Exactly what it contains depends on what type of Forth word it's in.

contd.

There are two basic kinds of words in Forth: primary and secondary. In a primary word, the parameter field contains the actual machine code to do what the word is supposed to do. In the case of a primary word (and only in the case of a primary word), the code field contains the address of the parameter field - since that's where the executable code is. The word DUP for example is a primary. DUMPW DUP and take a look at it.

```
OCA0- 83 44 55 D0 87 0C A8 0C
OCA8- B5 00 48 B5 01 4C 41 08
```

We recognize the first four bytes as the name field and the next two (87 0C) as the link field to the previous word. The code field is next (A8 0C) and, as we can see, contains the address of the parameter field. The parameter field (which starts at OCA8) is composed of 6502 machine code which we can disassemble with the monitor as follows:

```
HEX FF69 CALL (gets us into the monitor
CA8L         (disassembles the word)
803C         (warm entry back into
              Forth)
```

Again for practice, try writing a Forth word ?PRIMARY which accepts the name of a Forth word and outputs the first page of its disassembly only if it is a primary, giving the message 'NOT A PRIMARY' if it is not. (You'll probably have to use the Apple Reference Manual for this one!)

FIG-FORTH ALLOCATION OF RAM

The 6502 Fig-Forth implementation allocates RAM as follows:

- \$60-\$FF - Forth uses nothing in the zero page below \$60. The data stack begins at \$DE and grows down to \$60. From \$DF to \$FF are various pointers and work areas for the inner interpreter.
- \$100-\$17F - This is the Forth terminal input buffer (TIB). The keyboard line input routine uses the monitor to input a line to \$200, then moves the line to \$100.
- \$800 - Cold entry point for FIG-Forth. This location contains a jump to \$17B2, the coldstart routine.
- \$803 - Warm entry point for FIG-Forth. This location contains a jump to \$17D5, the warmstart routine.
- \$805-\$827 - Various cold and warmstart initialization constants live here.
- \$828 - The Forth dictionary begins here with the word LIT. LIT is a primary word and its machine code falls through into the inner interpreter.
- \$828-\$21F7 - The basic Forth dictionary

(minus any utilities like the editor).

\$7B70-\$7F7F - This is the disk buffer area. It can hold one Forth screen of 64 characters per line times 16 lines.

\$7F80-\$7FFF - The "user area." The FIG-Forth model was written to support multiple users with one Forth dictionary. The user areas contain system variables which are unique to each user. Our FIG-Forth has only one user area, since multiprogrammed operating systems aren't real popular on the Apple!

So, as you can see, the dictionary can grow upward from \$21F8 to \$7B6F - each new word is added at the high-RAM end of the dictionary. The RAM immediately above the current top of the dictionary is used as a work area by Forth. The address of the first byte of RAM above the dictionary is stored in a system variable called DP (for Dictionary Pointer) and the Forth word HERE places this address on the stack.

New word headers are placed into the dictionary using the word CREATE. CREATE makes a dictionary entry for whatever word is next in the input stream, making a name field (with the smudge bit set), setting the link field to the most recently defined word, and storing the address of the parameter field into the code field address. DP is then updated to point to the first byte of the parameter field - the new dictionary top. Other Forth words which directly affect the dictionary are ALLOT, which adds the number on top of the stack (TOS) to DP (in effect, "making some room" in the dictionary), ',' (pronounced 'comma'), which enters TOS into the next dictionary location and 'C,' (sea-comma), which enters the low-order byte of TOS into the next dictionary location. The following, then, would create the word BUF1/2, containing two 100-byte buffers, the first preceded by the constant 1 and the second by the constant 2:

```
CREATE BUF1/2 1 , 100 ALLOT 2 ,
100 ALLOT SMUDGE
```

The SMUDGE is necessary to toggle the SMUDGE bit back off. We'll come back to these words next month when we look at extensibility and defining words.

SUGGESTED SOLUTIONS TO PRACTICE PROBLEMS

```
( ?IMMED <wordname> - tells whether
<wordname> is an) ( IMMEDIATE word )
: ?IMMED (* BASE @ HEX *)
(*COMPILE*) ' NFA C@ 20 AND IF ."
THIS WORD IS IMMEDIATE." ELSE ."
THIS WORD IS NOT IMMEDIATE."
ENDIF CR CR (* BASE ! *) ; ;S
```

```
( DEFBEFORE <wordname> - list all Forth
words )
( defined before <wordname> in
dictionary )
: DEFBEFORE
(*COMPILE*) ' LFA @
```

contd.

WAP HOTLINE

Have a problem? The following club members have agreed to help. PLEASE, respect all telephone restrictions, where listed, and no calls after 10:00 PM.

General	Robert Fretwell	971-2621	Languages, contd.	Bill Schultheis	538-4575
	Dave Harvey	527-2704	A,I,P,M	Richard Untied	241-8678
	Robert Martin	498-6074	A,I,M	Robert Fretwell	971-2621
APPLE SSC	Bernie Benson	546-0076	P	Dottie Acton	428-3605
Apple TechNotes	Ed Schenker	977-7349	Locksmith	Leon Raesly	460-0754
	Lance Bell	550-9064	LOGO		
Communications Packages and Modems-Telecom.			Apple	Ron Murray	328-3553
Anchor Sig. & BIZCOMP Modem	Jeremy Parker	229-2578	MIT Terr-Krell	Dagobert Soergel	823-2840
Apple CAT II	Ben Acton	428-3605	Operating Systems		
ASCII Express	Dave Harvey	527-2704	APPLE DOS	Richard Untied	241-8678
Data Capture	Howard Simkowitz	882-4645	CP/M	Robert Fretwell	971-2621
General	Ben Acton	428-3650	Paddles	Tom Riley (eve.)	340-9432
	Tom Nebiker (216)	867-7463	Pers. Fil. Sys.	Ben Ryan	469-6457
Hayes Smartmod.	Bernie Benson	546-0076	Printers		
VISITERM	Steve Wildstrom	933-7728	General	Walt Francis	966-5742
XTALK CP/M Com.	Bernie Benson	546-0076	Anderson Jac.	Bill Etue	620-2103
Expediter Cmplr.	Peter Rosden	229-2288		Leon Raesly	460-0754
Data Bases			IDS 460	Jeff Stetekluh	521-4882
DB Master	Dave Einhorn	593-8420	MX-80	Jeff Dillon	422-6458
	Leon Raesly	460-0754	Silentype	Bruce Field	340-7038
Data Perfect	Leon Raesly	460-0754	Stock Market	Robert Wood	893-9591
Data Factory	Bob Schmidt	736-4698	Time-Sharing	Dave Harvery	527-2704
Games	Jim Eatherly	232-6046	VisiCalc	Walt Francis	966-5742
	Donn Hoffmann	966-2616		Leon Raesly	460-0754
Graphics	Bill Schultheis	538-4575	Word Processors	Walt Francis	966-5742
Home Account	Leon Raesly	460-0754	Letter Perfect	Leon Raesly	460-0754
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine)			Screen Wrtr.II	Peter Combes	871-1455
A	Peter Combes	871-1455	Supertext II	Peter Rosden	229-2288
A,I	Jeff Dillon	422-6458	WordStar	Leon Raesly	460-0754
A	Mark Pankin	370-9219		David Inouye	422-8926

APPLE TEAS

The WAP is conducting small discussion groups around the D.C. area. Below you will find a list of volunteers who will be holding sessions in the next few weeks. These will be informal and last about 2 hours. If you would like to attend, call the host and register with them. Each host will limit the size according to their wishes and will let you know if there is room left for the tea of interest. Hopefully, there will be ample numbers of

sessions to meet the interest. If not, we will seek additional volunteers.

Session leaders may be needed if the host does not feel knowledgeable about the Apple. If you would like to help in organizing these sessions or would like to volunteer your home or help to be a session leader, contact David Morganstein or Paula Benson.

Apple Tea Schedule:

Host	Area	Phone	Date/Time	Date/Time	Leader Needed
Robert Boyle	Carlisle Pa.	717-245-0030		Mar 3	
Mansur Froozan	Bethesda	229-3224	Feb 9/7:30	Mar 9/7:30	Y
Dave Harvey	Arlington	527-2704	Feb 19/8:00	Mar 19/8:00	N
Ginny Spevak	Chevy Chase	362-3887		Mar 9/8:00	N
Robert Martin	Laurel	498-6074	Feb 19/2:00	Mar 19/2:00	
J&B Massey	Bowie	249-6178		Mar 14/7:00?	N
K. C. Gupta	Silver Spring	572-5130		Mar 10/7:00	Y
D. S. Oldfield	Annapolis	757-1723		Mar 3/7:00	
Scott Rullman	Bladensburg	779-5714	Feb 19/7:30	Mar 19/7:30	N
John Baker	Alexandria	354-9715	Mar 10/7:30	Mar 24/7:30	
R.L. Sanderson	Potomac	983-9419		Mar 3/3-5	
B&M Caruthers	Frederick	662-6550		Mar 12/2:00	Y
Roydell Rosfeld	Rockville	340-7962		Mar 9/7:30	N

Operant Systems

*** HARDWARE ***

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Elite Two (40 track, double side, 326K) ..	419
Elite Three (80 track, double side, 652K) ..	545
ALS CP/M Plus System (6 Mhz Z-80, 64K RAM, CP/M 3.0) ..	275
Microsoft Premium System-- Microsoft Z-80 card and 16K	
RAMcard, Videx 80-column, CP/M 2.2, MBASIC ..	439
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Davong 5-MEG Winchester (supports DOS, CP/M, Pascal) ..	1485

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300A (12" amber anti-glare screen, 18Mhz)	155
Color I (40-column text/color graphics)	299
NEC JB-1201 (12" green anti-glare screen, 20Mhz)	157
JB-1260 (12" green, 15Mhz, best value for money) ..	115
JB-1212 (12" color, composite video)	279
USI (12" amber anti-glare screen)	149

MODEMS--

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Smartmodem 300 (RS-232, direct-connect)	205
Smartmodem 300/1200 (as above)	489
Novation Apple-Cat II (w/ Comware; 1200 baud capable) ..	265
Smart-Cat 300 (RS-232, direct-connect)	175
Smart-Cat 300/1200 (as above)	425
J-Cat 300 (miniature RS-232, direct-connect) ..	109
55M ModemCard (300 baud, includes Transend-I & Source) ..	285
Anchor Automation (300 baud, RS-232, direct-connect) ..	85

PRINTERS--

Epson FX-80 (160 cps, tractor/single sheet, graphics) ..	549
MX-100 (tractor/single sheet & GRAFTRAX-plus)	639
Itoh Prowriter (120 cps, tractor/friction, graphics) ..	399
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Prism-80 (200 cps, buffer, excellent print quality) ..	999
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93 (132 column version of above)	849
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PF5: Report	75
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Home Accountant Plus	105
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Tax Manager	109

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SOFTVIEWS : RECENT RELEASES

by David Morganstein

Global Program Line Editor. (Neil Konzen, Call-A.P.P.L.E., 304 Main Ave. S., Suite 300, Renton, WA. 98055, \$38.50 members only) If you write Applesoft programs, you probably suffer from a common frustration. Editing a line can be painstakingly difficult, even with the ESC I,J,K,M cursor movement. After all, inserting one or more characters requires a tedious contortion of ESC sequences. Editing PRINT statements contains its own pitfalls unless you use the ubiquitous POKE 33,33. Neil Konzen solved this messy problem long ago by offering Program Line Editor. This new release extends PLE's useful editing to encompass the entire program.

Want to edit a line? Type Ctrl-E (GPLE echos EDIT) and the line number. The entire line appears and allows easy jumping about, and inserting or deleting of characters. You can readily jump to the beginning, end or next occurrence of a specific character. Global editing is just as simple. Specify the two strings, the one being changed and its replacement, a line number range and bingo, all changed. I recently needed to modify a series of DATA statements by removing a dozen commas in each of some 30 lines. With GPLE, one statement made the change!

However, the editing feature is but one aspect of GPLE. In addition, you have the ability to invoke Esc sequence Macros. "What's that?", you ask. Imagine being able to type only Esc 1, to CATALOG,D1 or Esc 2 to CATALOG,D2. Howabout Esc S to get the sectors free on a disk or Esc, to jump ahead 40 spaces. While GPLE comes with many other useful Esc functions, the real power is in the ability to create your own Esc functions (Macros).

Several other niceties include: a DOS mover to relocate GPLE and DOS onto the language card, a Page list option for viewing your BASIC program, a 64 character "type ahead" buffer (all software, no messy 80 col. card required!) All in all, it is a fine utility, well-documented and sold at a very low price.

STAN. (A Statistical Analysis System by David M. Allen. Statistical Consultants, Inc., Park Plaza Office Bldg., 462 E. High St., Lexington, Ky. 40508.) David Allen has written the first Pascal-based statistical package I have seen. As such, it is completely portable and will run on any UCSD equipped system. The software consists of four CODE files which perform the following functions: data management, linear model fitting, graphics and text formatting. Each module contains a help option to explain its purpose. Also included on the disk are several data sets for experimentation.

The data management module performs the tasks of converting text files to binary format, a space saving though required feature of STAN. That is, the user will

most likely enter data into a text file via the UCSD editor and then use this module to convert it to the binary format required by STAN. STAN will handle both qualitative and quantitative variables, the former being identified by a \$, ala the SAS. The module also computes transformations of the original data and includes random number generators for both normal and uniform distributions. The module can be used to view a text file or send it to a printer. It contains a multi-key sort routine, as well. The sorting operation requires that all data be in memory, however, and is limited to a maximum of about 5000 fields (that is, the number of records times the number of variables plus one must be less than 5000. e.g. 500 cases on 9 variables).

The linear models module will perform the following functions: compute an analysis of variance table, prepare estimated regression coefficients, test linear combinations of the coefficients, analyze residuals, and compute predicted values or confidence limits for the line. Qualitative variables are converted to 0/1 dummy variables for use in the linear model computations. Additional features include adding and deleting observations from the console, weighting observations, and listing variables in the data set.

A straightforward continuous line plot can be obtained with the graphics option. This permits examination of the predicted equation and its confidence limits. A plotting sample may be selected and many details of the graph, such as axis labelling, selected by the user. A graph may be saved or a previous graph recalled. A hard copy cannot be directly obtained from STAN; a hardware specific printer driver must be used independent of the package.

The text formatting module can be used to mix text and output from STAN to form a report. Many of the modelling module results can be saved as text files for merging with report contents.

Of the 93 pages in the accompanying manual, 29 are dedicated to instructions and 56 to various examples. The later includes a variety of liner models such ANOVA, multiple regression and joined straight lines.

While each module contains a help option ("H"), STAN could have been written to display the traditional UCSD command option format. That is, instead of:

```
DATA C, H, I, P, S, T, Q?
```

STAN could have shown:

```
DATA C(onvert, I(nspect, P(rint,
S(ort, T(ransform, Q(uit)?
```

This minor point would be more in keeping with the UCSD tradition. The user may want to establish a single menu file which chains to the individual modules, rather than selecting one to X(ecute, as is now the case. All in all, STAN seems to be a fairly complete package for Pascal users who need linear modelling capability.

A REPORT CARD ON THE APPLE /// DOES IT MERIT A PASSING GRADE?

by William C. Jacobson

It is time, in the annals of things Apple, to adjudge ///, nee the micro-creature serving the needs of small business persons seeking the magical land of Profits.

The "creature" /// is two years old. Has it grown and fulfilled the promise of its lineage -- the House of Apple? Or is it as yet the undistinguished relative of its brother, Prince Two, and its new born sister, Princess Lisa.

Like most computers of this generation of micros, the manufacturer promised much. It is now report card time with the Apple ///. Does it pass or fail? In my judgment, it gets a qualified passing grade.

On the plus side, it is a versatile, powerful system that can handle a wide variety of applications reliably and well. This has not always been the case. Those who purchased the original release of the /// experienced many hardware and software related disasters. Old Timers still regale their friends and compatriots with horror stories of loose screws shorting out components, and other equally disturbing problems.

Apple Computer, Inc. moved quickly and earnestly to correct these problems and apparently satisfied most, if not all of its disgruntled customers. In many cases, total replacement of malfunctioning machines was necessary. This is private enterprise at its best.

So chalk one up for Apple Computer, Inc.'s handling of a major crisis.

But the exception does not make the rule. Problems aside, does the Apple /// do what owners expect, indeed, have been promised?

Three Systems in One

The single most important promise to me, an owner of some 12-months duration, was the capacity to run programs in

DOS The Apple][disk operating system;

SOS The "sophisticated" operating system native to Apple ///, popularly referred to as Apple Sauce;

CP/M The standard for most business oriented microcomputers.

This feature potentially allows Apple /// owners to access several thousand programs. Incredible flexibility. Reality has not equaled expectations. The DOS (Apple][emulation) and CP/M components of this triad are the victims of a decision by Apple Computer, Inc. to place all of its (jonathans?) in the SOS basket. The Apple contention: Why would anyone need the outmoded DOS and CP/M systems when they

have access to SOS, the marvelously flexible, Pascal-based wunderkind?

Because of this decision, DOS emulation was tacked onto an Apple /// as a temporary expedient until sufficient numbers of SOS programs were available. The Apple /// emulation mode does not, however, totally replicate the features of an Apple][+. Apple /// owners can run many of the marvelous off-the-shelf Apple][programs, but only if they require no more than 48K of RAM. Also, the peripheral cards available to the][do not work on the ///. Even the joystick marketed by Apple for the /// does not work on most Apple][games that use this device. The Apple Computer, Inc. response to the latter problem: This is a business machine; people should not use it to play games.

In addition, DOS emulation does not take advantage of the 80-column and upper/lower case capabilities of the ///. As I understand it, these enhancements are technically feasible. Again, this reflects the Apple decision to downplay DOS.

The CP/M(ess)

In my opinion, Apple comes closest to a failing grade in the CP/M area. As stated earlier, Apple technical staff apparently were against a CP/M capability because of their preference for SOS. Apple's marketing staff supposedly wanted CP/M capability as a sales ploy ("DOS, SOS and CP/M").

CP/M for the Apple /// is available at a cost of \$450. DOS emulation was included with the /// package at no additional cost.

The Softcard /// was introduced in August, 1982, some 6 months after it was promised. It is marketed by Apple under a licensing agreement with MicroSoft. I for one expected it to allow me access to any CP/M programs available in the Apple][format.

Not so. Nor do software houses offer terminal configurations for the Apple /// softcard, and CP/M cannot run without program patches. Not even the venerable WordStar of MicroPro can be used without these patches. Apple is in the process of providing some patching routines to owners, but this will still not permit access to most Apple][formatted CP/M software.

The Softcard for the /// also executes programs more slowly than its counterparts for the][, particularly the 6 mhz Appli-Card sold by Personal Computer Products.

In a sense, Apple seems close to disclaiming responsibility for a product that it sells through its own catalog, and attempts to obtain technical information from MicroSoft receive a curt response -- to wit, go to Apple; it is their problem, not ours.

contd.

SOS: Is Help on the Way?

Thus Apple Computer, Inc. wants owners of the /// to do great things with the love of its technical staff: the "sophisticated" lady called SOS. But to paraphrase the brothers Gershwin, it ain't necessarily so.

There has not been a mad rush by software houses to develop SOS based programs. This is due to the relatively small number of Apple ///'s that have been sold, and the extremely volatile market for other computers, particularly the IBM PC.

For Apple /// true believers, much is made of the 100-odd programs that are now available for Apple /// SOS. In IBM PC or Apple][terms, these are hardly impressive statistics. Newness can no longer be touted as an effective excuse. The Apple /// has been sold for two years, over twice as long as its IBM competitor.

The question of available applications software is of paramount importance, as the Apple /// is geared toward software users, not software developers and hobbyists. Thus the existence of a complete assortment of off-the-shelf packages is absolutely essential to the success of the ///.

So what SOS programs have been produced during these 700-plus days of existence? The results of this review are very mixed.

Great Plains Software markets an excellent business accounting package, but only for those who own hard disk systems.

Apple has released as part of its Professional Solutions promotion a data base called Quick File. This is an extremely fast and user friendly program, but is limited to very small data files.

VisiCalc works extremely well on the ///, particularly the new advanced version of this most popular of microcomputer programs. If one has the 256K version of the ///, there is plenty of memory for large templates and highly complex sets of formulas.

By and large, however, there is little that is unique or particularly innovative in off-the-shelf programs for the Apple ///.

What appears to be an upgraded version of an old favorite, CIS COBOL (a CP/M based program), has just been released as Apple /// COBOL. I have not had time to review it thoroughly, but it seems to add few features to the FORMS2 (screen formatting) capabilities of its predecessor.

Most SOS programs are simply adaptations of their Apple][counterparts. The PFS filing system, Senior Analyst financial modeling, Business Graphics and most other Apple 7/ software packages were originally developed for the Apple][. There are differences between the versions for the /// and the][, particularly for programs which require large amounts of RAM. The PFS program, for example, is more flexible on the ///, and can directly interface with the Profile hard disk system. It is difficult for me to imagine a 32,000 record PFS data

base, however, given the lack of data edit and audit checks in that almost totally unstructured program.

Of particular note is the lack of a data base management system for the /// with the repute of dBase or Condor. This is where CP/M excels, with many marvelous and versatile programs available.

This paucity of programs for SOS further emphasizes the need for expanded DOS and CP/M capabilities for the Apple ///. One can say, with little chance of error, that the amount of high quality software in the SOS format will never equal that for those operating systems. Therefore, the original Apple premise for SOS must be revised, and a major continuing role for DOS and CP/M must be assumed.

Write Makes Might

Another area where SOS and CP/M software libraries differ is the availability of word processing packages. Apple Writer III marketed by Apple is, to me, a very unsatisfactory program. It has far more problems than virtues. This fact is well known to Apple, and a revised version of AW III is now in the works.

When the /// was first introduced, Apple advertised a program called Word Painter which was to have been, I believe, a blood relative of WordStar -- the marvelous progeny of MicroPro. Apple Writer III seems to have appeared on the scene when something happened with Word Painter. As I see it, Apple Writer II was adapted to the ///, to fill the need for some kind of SOS-based word processor. This certainly was not a "professional solution". Apple Writer is competent for casual chores, but is not a workhorse in the class of many other programs available for microcomputers.

For a time, Apple Writer was the only processor available for the ///. Quark Engineering then produced a program called Word Juggler. That program has some interesting and innovative features, but does not have the formatting and other capabilities of processors available for CP/M based computers.

Drivers Without Drive

A pet complaint of mine also has been the very limited storage capacity of the standard Apple /// disk drives. The built-in and external drives are single-sided, single-density and permit only 143K bytes of data per 5 1/4 inch disk.

The Apple answer to this data storage problem has been the Profile hard disk system, but this is expensive and is inappropriate for certain applications. IBM offers drives of different capacities, with the top of the line being 320K bytes. Most business machines, among which Apple /// is professed to be, offer 8 inch or 5 1/4 inch drives with double-density, double-sided capabilities. Even the portable Osborne I computer now offers this feature at an additional cost of only \$200.

contd.

To add even more "insult to injury", the well designed KAYPRO II portable will soon be available with an integral 10-megabyte hard disk, at a total list price (basic price including hard disk) of under \$2800. This price even includes Perfect Writer, Speller, Calc and Filer at no additional charge. The KAYPRO folks avoided the CP/M configuration problems of the Apple /// by using the Xerox 820 format for their machine.

The small size of the drives for the /// makes booting of some programs a problem, and necessitates the use of multiple drives to reduce disk swapping chores. This limited storage capacity also creates data file problems for small businesses, where simplicity and ease of access are vital. Splitting of data files onto multiple disks creates major data retrieval and verification difficulties.

Apple has just announced an 870K byte drive (the equivalent of six regular 143K drives). It probably will not be available, however, until April or May of 1983. This drive and the recently introduced 572K byte drive from MicroSci may help overcome the inadequacies of the standard Drive ///. Hopefully it will be possible to use them in place of the built-in (boot) drive on the ///. For example, the MicroSci drive could contain all of the superb Perfect Software series for CP/M (Writer, Speller, Filer and Calc) on a single boot disk.

A Professional Solution

In the author's opinion, Apple can rectify the problems in a number of ways. These "solutions" may be in the works at Cupertino. If so, I recommend their quick release. If they are not, I trust that Apple will maintain its already enviable record and supply them post haste. My key recommendations are listed below.

1. Introduce a new system master disk that will permit the Apple /// Softcard to work with CP/M programs formatted for the Apple][. In my opinion, no computer today can be called a business machine unless it affords its owners access to the enormous catalog of CP/M software. While CP/M does have some failings, it is highly popular, and is the industry standard for business computers. In addition, a number of its features are superior to SOS, particularly if one uses floppy disks.

Perhaps a new Apple /// system disk can be compatible with one of the more popular terminal configurations available for the][(the Videx 80 column board?). Barring that, Apple should make available to each of the major CP/M software houses a special terminal configuration for the ///, so it can be included on the configuration menus available for most CP/M programs. I doubt that many software houses will develop a special CP/M configuration for the ///; at least none of those I have called were so inclined.

Without this "fix", the /// is not a viable CP/M machine, and Apple has

failed those of us who purchased this computer because of its announced capacity to access DOS, SOS and CP/M.

2. Provide a means for upgrading the Soft-card from version 2.2 to 3.0 of CP/M. This would place the Apple /// in a class with most other systems of its ilk. A lot of new software will be written for 3.0 level machines. The Apple /// must be in a position to use these programs if it is to have business machine stature. Again, Apple should do this to fulfill explicit as well as implicit promises to its customers.

3. Modify the Apple][emulation Mode of the /// so that it can:

(a) utilize programs that require 64K of RAM, and

(b) take advantage of the upper/lower case, 80-column and other features of the ///.

There are a number of programs available in DOS that may never be available in SOS, including DB Master, LOGO, SuperPilot and Multi-Plan. In addition, Apple][owners who buy a /// should be able to use the vastly superior keyboard of the /// with their old programs, most of which have continuing value and utility, despite their lack of "sophistication".

Let's have Apple][-Plus and/or][e capability for the Apple ///, not an Apple][-Minus.

4. Make certain that any upgraded disk drives can be used for system booting. In retrospect, I think that the built-in drive on the /// was a mistake. It limits access to internal components, and obviously restricts disk drive options. The separate controller card arrangement of the Apple][and IBM PC would have been preferable. For example, the supposedly "primitive" set up for the][permits use of 8 inch drives, a capability lacking on the ///.

Thus, the Apple /// remains a system of promise, after two years of existence. Like most owners of the ///, I feel that I have a good machine. It is now up to Apple to make it a great machine, and a highly valued member of an illustrious family. ☞

President's Corner contd. from pg 6

cost more because of the soldered chips. Obviously, you can peek inside the look-alike and see for yourself whether the chips are socketed.

One disquieting note for me: having had the opportunity to tickle a //e for a day, I tried many of my peripheral cards in it. For some reason I could not get the Micro-soft Z80 card to work. The CP/M master disk would boot but then would hang up. While I assume that the card should have worked, it did make me wonder if there was an incompatibility. ☞

VISICALC AND YOUR INCOME TAX

by Tom Warrick

(Editors' Note: As an undergraduate, the author of this article got an A in Computer Science. As a law student, he got a B- in Income Taxation. The moral of this story is that since most of the information here came from the Form 1040 and its instructions, you should not regard anything here as "gospel." Consult your accountant, attorney or tax adviser -- not this article -- for definitive information on the Internal Revenue Code. Washington Apple Pi and the author do not warrant the accuracy of legal or other statements made here.)

Most people regard filling out Federal income tax forms with all the enthusiasm reserved for chores such as going to the dentist, walking the dog during a driving thunderstorm, and cleaning toilet bowls. With VisiCalc, however, it is possible to simplify this annoying, time-consuming task. More importantly, once you have set up a VisiCalc template ("template" is the name for the data and formulas used by VisiCalc to perform calculations) with the Federal income tax form 1040 and associated schedules, you need make only periodic minor changes to conform with the new tax laws Congress seems to enact with each decline in some Leading Economic Indicator. You can even do some tax planning in advance of the end of the year, which is one of the best means of ensuring that you pay only those taxes that you are required to pay. If you are married, you and your spouse can also decide whether to file jointly or separately.

This article will assume that the reader is familiar with VisiCalc or other, similar "electronic spreadsheet" programs now available for the Apple. These programs essentially let you set up a worksheet on your computer, and see the consequences of a change made to one item on the remainder of the spreadsheet. Many excellent articles and books have been written about these programs, and many commercial packages are available that help you use VisiCalc with a minimum of effort. Some of these packages even handle income taxes, but these cost \$70 and up, and may cover more forms than the average taxpayer would ever need.

This article will cover how to set up a VisiCalc template for the Internal Revenue Service Form 1040 and Schedules A and B. Note that you cannot use the template discussed here to print out your tax forms directly, which is a feature found in many of the more sophisticated tax preparation packages.

To gain the maximum benefit from this article, have before you your 1982 Federal Income tax forms and associated documents, such as records of income and expenses.

Following the conclusion of the text of this article are a printout of the VisiCalc

template used in standard form and in formula form. You may enter that template directly if you can deduce how to do so. Alternatively, a copy of the template can be downloaded from the Washington Apple Pi ABBS, and you may be able to make a copy of the template at the Washington Apple Pi office if you call in advance to make sure that a computer is available.

I. SETTING UP THE TEMPLATE

The first step in setting up a VisiCalc template is to boot VisiCalc or, if VisiCalc is already on your Apple, clear the memory and the screen. Set the recalculation order to "Row" and ensure that recalculation will be done manually, not after every entry. Use the default column width of nine, which allows you to see four columns on the screen.

II. INCOME

In general, columns A and B of the template are used for labels, columns C and D are for numbers, and E is the appropriate line number on the appropriate form. A number not preceded by a letter refers to the Form 1040. Schedules are noted as such. Lines such as "A-1" refer to Schedule A, line 1. Asterisks are a note of caution: another form or schedule is required, or there is some peculiar aspect to the item. You should read the 1040 instructions for further information.

First, enter the total number of exemptions in C2: one for yourself, one for each of your dependents, and others for special characteristics. This number is used later in calculating the dollar value of your exemptions.

Enter your total annual wages and salaries on D4. Remember to attach your W-2 to the 1040.

If you have over \$400 in interest, or if you bought an "All-Savers" certificate, you will need to fill out Schedule B, which is located on the reverse side of Schedule A. Indicate interest received by you on C5-C8. The total will appear in D9, which uses the VisiCalc function @SUM(C5...C8). If you add or delete any lines, make sure the @SUM function remains correct. (This admonition applies throughout: use care in inserting or deleting lines so that VisiCalc functions do not become incorrect.)

Dividends appear in C10-C11. Remember that money market funds are usually dividends, not interest. By law, you are entitled to exclude the first \$100 (\$200 for married people filing jointly) of most dividends from income. D13 performs this calculation. Note that it is not simply 100, because if you had less than \$100 in dividends, deducting \$100 would make your total dividends negative. The correct VisiCalc

contd.

THE PRIME PLOTTER™

A comprehensive plotting package to meet the exacting needs for most business, technical, and scientific applications.

The most powerful, versatile, flexible and complete plotting package ever developed for the Apple. With data management • statistical analysis • X-Y plotting • PIE Charts • Graphics • Slide Show/replay • and much more.

An OPEN-ENDED SYSTEM with built-in capabilities for CUSTOMIZATION and ADD-ON applications.

REMARKABLY POWERFUL

In one session, using only THE PRIME PLOTTER, you can: Create data files • Perform trend analysis and curve fit regressions • Plot the data, the fit or any function/mathematical subroutine • Save or print any screen at any time • Edit, add or delete units and then save the file for a **demonstration** • Over **one hundred** such **replay** files, each full of charts, can be stored on one disk • Then... sit back and watch a step-by-step **REPLAY** of the whole show.

HOW DOES IT WORK?

The Prime Plotter is a modular system where each of its elements, such as the statistics, the plotting routines, and the character sets, can be replaced by another module. Thus, the base system can continuously be extended and enhanced by add-on modules.

EASE OF USE

The Prime Plotter is a menu-driven system • **Default** parameters are displayed and can be changed before each step • **Simple** and **easily** learned terminology • **Prompts** with legal range for each input • **Value** or **expression** input • **Excellent error handling** • **Optional inverse cursor** with top-bottom/left-right scrolling • And... you will discover much more.

EXTENSIVE DOCUMENTATION

A comprehensive **manual** with step-by-step tutorial and samples to ignite your creativity • A **reference card** • **Demo files** • **Continuous support** with a **free** subscription to our **user newsletter** and periodic new **add-on** Modules (see below).

FEATURES CHECK LIST

General: No limit overlay and/or frames within one screen • **Multi-screen** display of both **graphics** and **text** • **Over 100 colors**.

Data Management: Convert DIF files • **Create** data files • **Edit, transform, add,** or **group** data sets • **Display, save,** or **print** data and statistics.

STATISTICS

- Curve Fit Regressions:** Linear • Logarithmic • Exponential • Geometric • Inverse • Inverse Log • Spillman • Nth Order.
- Trend Analysis:** Averaging • Moving Average • Smoothing • Growth Rate • Frequency & Cumulative histograms • Logistic curve.
- Distributions:** Normal • Gamma • Chi-square tests and contingency table analysis.

In Addition: **User defined functions and sub-routines** • Basic stats on any data set (sum, mean, S.D. etc.) • **Customized** Modules (see below).

X-Y CHARTS

Options: **Data/fit** • **Log scale** • **HI-LO** • **Error bars** • **Axis of origin** • **User defined parameters** for frame, axes, tic marks, grids, labels and graph types.

Graph Types & Parameters: Over 20 **symbols** for **scatter** • **Variable line thickness** • **Dotted line** with variable increments • **Variable step** for **area fill** • **Bars** with variable width and 6 filling methods in 15 steps • **3-D bars**, or **3-D area fill** in 4 directions, variable width and filling step • Up to 15 **multiple bars** on same **tic mark** • 10 different figures for **unique figure** charts.

PIE-CHARTS

User Defined: **PIE size** (horizontal & vertical) • **Location** • **PIE area used** • **3-D PIE width** • **Unlimited** number of pieces • **Unlimited overlay** of filling methods per piece • **1-5 groups** of **pushed** and/or **exploded** pieces.

LABELING

Two methods, shape table and a special **character generator**, provide: **Uppercase** • **Lowercase** • **Small letter** • **Greek alphabet** • **Scientific symbols** • **Your own shapes** or character set (compatible with the **Apple Tool Kit™** sets) • **Placement** in any screen location • **8 different directions** • **Multi-level super and sub script** • **Variable forward-backward spacing** • **8 different rotations** with shapes.

Designs: **Bold** • **Partially bold** (horizontal or vertical) • **Double size** • **Double bold** • **Inverse** type and **double width**, or **double height** characters with the character generator • **Additional 20 unique typeset designs**.

Automatic label generation and **placement** with **justification, prefix and suffix** • **Centering** or plotting at predefined locations • **Manual** placement of several labels in one operation • **Expression, keyboard cursor,** or **paddles/joystick** inputs.

GRAPHIC UTILITIES

Inverse/invert, fill, or **frame** areas, even **copy** to another area • **Free-draw** of lines and shapes • **Shape** drawing.

SLIDE SHOW/REPLAY

Review your work at any time, stop at any moment and **print** the image or **save** it to disk. With this power, you can design unique **multi-screen presentations** of graphs, titles, data display and stats. **Switch** between the hi-res and the text screens, insert **delays**, plan an **erase**, or **replot** mode, and store the whole show in a fraction of the usually required space. You can also **compress images** for quick load (instead of redraw) and even **chain** files for an **hour-long show**, with **hold, jump** backward-forward, **print,** and **save** functions at your disposal.

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- MAPPING** module.
- THE PRIME TYPESETTER™** For the creation and management of shape tables, character sets, figures, typesetting designs, and much more.
- Customized statistical** modules can be ordered for a nominal fee.

Requires: Apple II plus (48K) with a language card or 16K RAM card in slot 0 • DOS 3.3 • At least one disk drive • A printer • A graphic printer interface card, like the Grappler™ or Plaso, is recommended.

See a demonstration at your local computer store or send for a **demo disk**, \$15.00, refundable with purchase.

Introductory Price: Only \$239.95

At your dealer, or directly from:

PRIMESOFT Corp. P.O. Box 40, Cabin John MD. 20818 Phone: (301) 229-4229. Personal check, Visa, or MasterCard accepted.

FIG. TRAVEL TIME/TR DISTRIBUTION

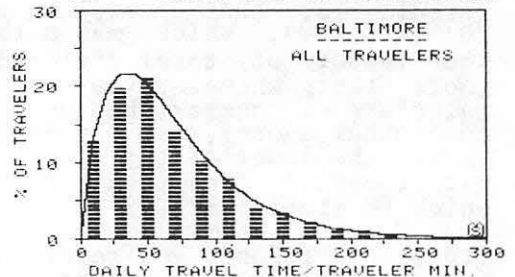
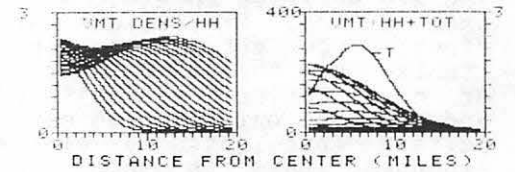
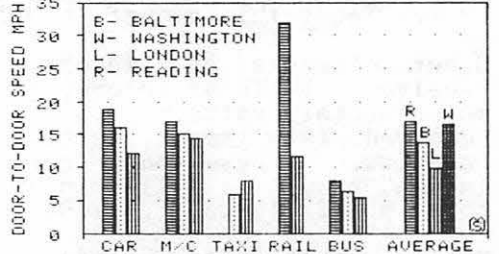


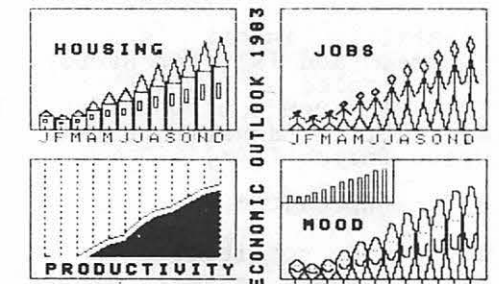
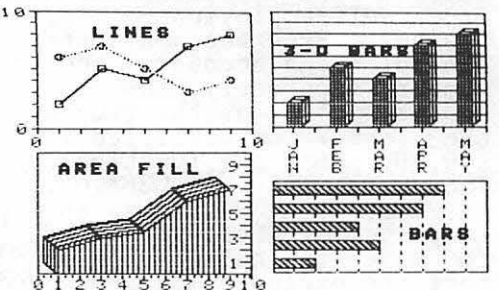
FIG. SPEED BY MODE



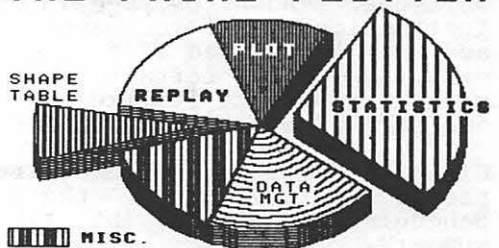
REGULAR BOLD HORIZONTAL VERTICAL
DOUBLE BOLD VARIABLE
WITH SUPER AND SUBSCRIPT
SPACING

THE PRIME PLOTTER DESIGNS

ROTATION
DIAGONAL
ROTATION



THE PRIME PLOTTER



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formula for the exclusion is thus $\text{@MIN}(C12,100)$, which makes the deduction the lesser of total dividends or \$100. (Note that whenever you are required to calculate a number, but not greater than some other number, use the @MIN function to return the lower of the terms surrounded by parentheses.) The result is shown in D14, which is simply C12-C13.

State tax refunds you received during 1982 (i.e., for 1981 taxes) are income during 1982 if you deducted them from income in 1981. Enter this amount in D15.

Other elements of income are alimony received, business income, capital gains, supplemental gains, pensions, rents received, farm income, certain unemployment benefits. These and a catch-all "Other Income" should be filled in at D16-25. The total at D27 is $\text{@SUM}(D4...D25)$.

You are entitled to exclude certain amounts from income. "Exclusions" are not "deductions;" you get the latter only if you itemize and the former whether you itemize or not. Exclusions are listed at D29-D38, and include unreimbursed moving expenses, certain (but not all) employee business expenses, payments into an Individual Retirement Account or a Keogh plan, interest penalties caused by early withdrawals from certain savings account or certificates of deposit, and alimony paid to an ex-spouse.

There is also a special deduction for married people filing jointly, calculated using Schedule W. C35 should contain the lower of the spouses' "Qualified Earned Income," which is the sum of wages, salaries and tips and the net profit or loss from self-employment, minus Employee Business Expenses and contributions to an IRA or Keogh account. You must enter this number separately, as it is calculated nowhere else on the template. C36 takes the lesser of Qualified Earned Income or \$30,000 using the function $\text{@MIN}(C35,30000)$. The next line is C36*.05. If you are married, you must use this part of the template carefully: Use the "/R" command to move the calculation at C37 to D37 so that the exclusion can be added properly.

Disability income is also excluded from income, and is noted at D38. Adjustments are totaled at D40 with a $\text{@SUM}(D29...D38)$. The difference between Total Income (D27) and Total Adjustments (D40) is Adjusted Gross Income (D42).

III. DEDUCTIONS

If you do not itemize deductions, you can still deduct a small proportion of your charitable contributions using a simple worksheet shown on page 13 of your 1040 instructions. If you have unearned income and can be claimed as a dependent by your parents, or for certain other conditions, you may have to itemize your deductions. See page 12 of the instructions.

Given today's economic environment, many people will itemize their deductions. Schedule A is divided into five parts and a summary.

The first part is for medical expenses, and is from a computational standpoint the most difficult. Fill in at C44 the cost of medicines and drugs. VisiCalc will fill in the next line, 1% of Adjusted Gross Income. The difference is shown on line C46, using the formula $\text{@MAX}(C44-C45,0)$ to prevent you from increasing your income if the cost of your medicines is not very great. (Note that whenever you are required to calculate a number "but not less than zero," use the @MAX function to return the greater of the terms in the parentheses.) In C47, enter the amount you paid for health insurance premiums. Enter other medical expenses in C48. The sum of C46...C48 is shown in C49 as total medical expenses. VisiCalc will then calculate 3% of Adjusted Gross Income for you at C50, and deduct this from the total medical expenses, again using $\text{@MAX}(C49-C50,0)$ to ensure that the number does not become negative. C52 calculates one-half of your insurance premiums but not more than \$150 using $\text{@MAX}(C47/2,150)$. The actual amount you may deduct is shown in D53, which is simply $\text{@MAX}(C51,C52)$.

State and local income taxes, real estate taxes, sales taxes and other deductible taxes are listed in C54...C57 and summed at D58. Similarly, mortgage interest, credit card interest and other interest are listed in C59...C61 and summed at D62. Charitable contributions are shown in D63.

Casualty deductions, which are computed differently this year from past years, are entered at C64. Union dues are listed at C65, and tax return preparation fees are at C66. Did you know that your Apple may be depreciable? Get Forms 4562 and its instructions on depreciation and, if you can, enter the depreciation expense at C68. Other miscellaneous expenses are at C68. Note that if your Apple is a depreciable asset, you may also be able to deduct the cost of certain supplies such as paper, ribbons and disks.

The total itemized deductions is done by a $\text{@SUM}(D53...D69)$ at D70. On D71, enter \$2,300 if you are filing as a single person or as a head of household, \$3,400 if married filing jointly or a surviving spouse with a dependent child, or \$1,700 if married filing separately. This is the "standard deduction," and you are allowed to deduct only the amount by which your actual itemized deductions exceed this standard amount. This calculation is made at D73, and is $\text{@MAX}(D70-D71,0)$.

IV. TAX

On line 35 of the 1040, you should write the difference between Adjusted Gross Income and the amount of your total deductions (or qualifying charitable deductions if appropriate). This calculation is made at D74 of the VisiCalc template, as D42-D73. D75 multiplies C2 by \$1,000 to get the amount of your personal exemption. This is subtracted from D74 to get Taxable Income at D77.

Taxable Income is not, for most people, the amount on which you actually pay tax. The "real" tax tables, as specified in the Internal Revenue Code, is what you see on

contd.

page 29 of the 1040 instructions. But in order to simplify things for those people with a taxable income of less than \$50,000, the IRS has provided Tax Tables, located on pages 23-28 of the instructions. To use these tables, you merely look up your income, and find the appropriate column at the top of the appropriate page. What has in fact occurred is that the IRS has rounded your taxable income to the midpoint of the \$50 range in which your taxable income lies. (If your taxable income is less than \$3,000, the range is \$25.) Thus a taxable income of \$11,740.81 is rounded to \$11,725. A taxable income of \$11,700.00 would be rounded to \$11,725. The tax is computed to the nearest dollar using the tax rate schedules. The formula for computing this on VisiCalc, so that amounts greater than \$50,000 are preserved correctly, is:

```
@IF(D77<3000,@ERROR,@IF(D77<50000,@INT(D77/50)*50+25,D77))
```

Note that if your income is less than \$3,000, it will give you "@ERROR" rather than an incorrect answer. (If your taxable income is less than \$3,000, you can modify this formula or do it by hand.) You may come out a few dollars ahead or behind because of this formula, but you can take comfort in the fact that, overall, the citizenry as a whole comes out even.

Rather than store four pages of tax tables, the VisiCalc template uses the tax rate schedules. The sample shown is for single persons. To change it to another category, substitute the amounts shown on the tax rate schedules on page 29 in the appropriate schedule. The numbers in the column "Over--" in the schedule should replace A83 through A96. Note that A97 must hold a number larger than either taxable income or the highest amount shown in the "Over--" column. The rate is the percentage shown in the "Enter on Form 1040, line 38" column. Be sure to enter the rate as a fraction of 1, NOT a percentage.

The numbers in the third column of the VisiCalc template, at C84 through C96, are calculated by this formula, using the first non-zero rate as an example:

```
@MAX(@MIN(A85,D78)-A84)*B84,0)
```

The way the tax rate schedule actually works is that a single person pays zero percent on the first \$2,300 of taxable income, 12% on the next \$1,100 (i.e., the amount between \$2,300 and \$3,400), 14% on the next \$1,000 (i.e., the amount between \$3,400 and \$4,400), 16% on the next \$2,100 (i.e., the amount between \$4,400 and \$6,500), and so on. The VisiCalc formula does the same calculation. The term "@MIN(A85,D78)" selects the lower of your income or the next higher bracket amount. From this is subtracted the number in the "Over--" column for the particular rate. The difference is the amount on which you pay the applicable tax rate shown in B84. Of course, in order to prevent this number from becoming negative when the bracket amount exceeds your taxable income, the entire amount is surrounded by the @MAX function so that the calculated number does

not go below zero.

The amounts in the column C are summed up at D98 and rounded to the nearest dollar if required by the Tax Tables, using this formula:

```
@IF(@AND(D78<50000,D78>=3000),@INT(@SUM(C84...C96)+.5),@SUM(C84...C96))
```

Certain items are allowed by the IRS as credits to income taxes. The ones most commonly used are child credit expenses, the partial credit for political contributions, and the investment tax credit (remember your Apple?). These are shown on the VisiCalc template at D99, and the balance -- but not less than zero -- is shown on D100 using the formula @MAX(D98-D99,0). Other taxes should be entered at D101. The Total Tax, displayed at D103, is simply D100+D101.

V. DO YOU GET A REFUND?


Enter at D105 the total amount withheld for Federal income taxes from your income, as shown on your W-2. Enter estimated tax payments and other payments at D106 and D107. The total paid will appear at D108, which is @SUM(D105...D107).

The difference between D103 and D108, shown at D110 and calculated as D108-D103, is the amount or your refund if the sign of the result is positive. Consider rewarding yourself: Buy a new game for your Apple.

If the amount is negative, you must, alas, pay the IRS. But then, no one said it would be fun.

contd.

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Calif. Comp. Sys. asynchronous serial.....	119
Kensington Systems Saver Fan	66
MicroSoft	
16K RAM card	66
Z-80 Softcard with CP/M	214
Premium System (both of above plus Videx 80- column card with inverse video ROM, soft- switch, and Osborne CP/M manual	434
T6 Products	
Game Paddles	28
Joy Stick	40
Select A Port	40
Videx	
Enhancer II	99
Function Strip	59
Videoterm 80-column card	237
Wesper	
Wizard 16K RAM card	64
Wizard 80-column card	164

DISK DRIVES--

MicroSci A2 5 1/4" (100% Apple compatible) with controller card	348
without controller card	258
MicroSci A40 5 1/4" disk drive with controller card	409
without controller card	339
Rana Elite 1, 5 1/4" with controller	376

MODEMS--

D.C. Hayes Smartmodem	204
Micromodem II (with terminal program)	269
Novation Apple Cat II	264
Universal Data Systems 212LP (1200 baud)	375

MONITORS--

Zenith 12" green screen	99
Sanyo 9" hi-res green screen	154
12" diagonal green screen	124
Adek 12" 300G hi-res green screen	146
Adek Color I	300
NEC 12" hi-res green screen.....	159
USI 12" amber screen	159

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Visifile	169
Visiterm	75
Visidex	169

COMMUNICATIONS--

ASCII Express	54
Visiterm	75
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dBase II	425
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SuperFile (CP/M; manage reprints, bibliogra- phies, retrieve any text file by key word) ..	179

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Epson, New FX-80 (160 characters/sec!)	529
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Graphtrax + upgrade for older MX-100.....	59
NEC 8023A	444
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83A	648
IDS Prism 80	999
Prism 132	1249
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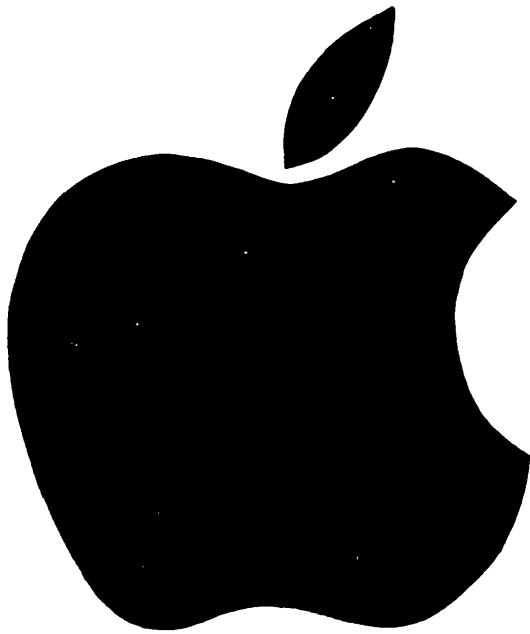
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VISICALC INCOME TAX TEMPLATE IN STANDARD FORMAT

30

ROW / COL	A	B	C	D	E	ROW / COL	A	B	C	D	E
1					FORM 1040 LINE #	57					
2	EXEMPTIONS		1		6E	58	-OTHER TAXES	0.00			A-14
3						59	TOTAL TAXES		2663.00		A-15
4	WAGES, SALARIES			20000.00	7	60	INTEREST-MORTGAGE	4500.00			A-16*
5	INTEREST-BANK 1	300.00			SCHED. A	61	-CREDIT CD	12.34			A-17
6	BANK 2	50.00			SCHED. A	62	-OTHER	0.00			A-18
7	S & LOAN	75.00			SCHED. A	63	TOTAL INTEREST		4512.34		A-19
8	OTHER	15.00			SCHED. A	64	CHARITABLE		175.00		A-20/23
9	TOTAL INTEREST			440.00	8	65	CASUALTY	0.00			A-24*
10	DIVIDENDS-MON. MKT	175.34			SCHED. B	66	UNION DUES	0.00			A-25A
11	-EXXON	23.50			SCHED. B	67	TAX RETURN PREP.	0.00			A-25B
12	TOTAL DIVIDENDS	198.84			9A	68	DEPRECIATION-APPLE	218.57			A-26*
13	LESS \$100 EXCL.	100.00			9B	69	MISCELLANEOUS-OTHE	100.00			A-26
14	NET DIVIDENDS			98.84	9C	70	TOTAL MISCELLANEOUS		318.57		A-27
15	STATE TAX REFUNDS			250.00	10	71	TOTAL ITEMIZED DEDUCTIONS		8452.03		A-28
16	ALIMONY			0.00	11	72	LESS STD. DEDUCTION		2300.00		A-29
17	BUSINESS INCOME			0.00	12*	73					A-30 &
18	CAPITAL GAIN			0.00	13*	74	TOTAL DEDUCTIONS		6152.03	1040/34A	
19	40% CAP GAIN			0.00	14*	75	LINE 35		12636.81		35
20	SUPPLEMENTAL GAINS			0.00	15*	76	PERSONAL EXEMPTION		1000.00		36
21	PENSIONS, ETC.			0.00	16-17*	77					
22	RENTS, ETC.			0.00	18*	78	TAXABLE INCOME		11636.81		37
23	FARM INCOME			0.00	19*	79	T.I. FOR TAX TABLE		11625.00		
24	TAXABLE UNEMPLOYM.			0.00	20*	80					
25	OTHER INCOME			0.00	21*	81	TAX COMPUTATION				
26						82	TAXABLE INCOME TABLE				
27	TOTAL INCOME			20788.84	22	83	"OVER--" RATE				
28	LESS:					84	0	0.00			
29	MOVING EXPENSE			0.00	23*	85	2300	0.12	132.00		
30	EMPLOYEE BUSINESS			0.00	24*	86	3400	0.14	140.00		
31	PAYMENTS TO AN IRA			2000.00	25*	87	4400	0.16	336.00		
32	PAYMENTS TO KEOGH			0.00	26	88	6500	0.17	340.00		
33	EARLY WITHDRAW PEN			0.00	27	89	8500	0.19	437.00		
34	ALIMONY PAID			0.00	28	90	10800	0.22	181.50		
35	DED. FOR MARRIEDS	18000.00			SCHED. W	91	12900	0.23	0.00		
36	LINE 6	18000.00			SCHED. W	92	15000	0.27	0.00		
37	MOVE TO COL "D"?	900.00			29*	93	18200	0.31	0.00		
38	DISABILITY INCOME			0.00	30*	94	23500	0.35	0.00		
39						95	28800	0.40	0.00		
40	TOTAL ADJUSTMENTS			2000.00	31	96	34100	0.44	0.00		
41						97	41500	0.50	0.00		
42	ADJUSTED GROSS INCOME			18788.84	32 & 33	98	99999999				
43	DEDUCTIONS:				SCHED. A	99	TOTAL TAX DUE		1567.00		38*
44	MEDICINES	534.67			A-1	100	CREDITS		50.00		41-49*
45	1% OF A.G.I.	187.89			A-2	101	BALANCE		1517.00		50
46	NET MEDICINES	346.78			A-3	102	OTHER TAXES		0.00		51-59*
47	MEDICAL INSURANCE	350.00			A-4	103					
48	OTHER MEDICAL EXP.	650.00			A-5*	104	TOTAL TAX		1517.00		59
49	TOTAL MED. EXP.	1346.78			A-6	105					
50	3% OF A.G.I.	563.67			A-7	106	TOT. FED. TAX WITHHELD		1810.35		60*
51	MEDICAL > 3% OF AGI	783.12			A-8	107	EST. TAX PAYMENTS		0.00		61
52	1/2 OF INSURANCE	150.00			A-9	108	OTHER PAYMENTS		0.00		62-66
53	NET MEDICAL DED.			783.12	A-10	109	TOTAL PAID		1810.35		67
54	TAXES-STATE	1500.00			A-11	110					
55	-REAL EST.	1000.00			A-12	111	NET TAX REFUND/DUE		293.35		
56	-SALES, ETC.	163.00			A-13*		(REFUND:+, DUE:-)				

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VISICALC INCOME TAX TEMPLATE IN FORMULA FORMAT

```

>E111:/FR
>B111:" DUE:-)
>A111:"(REFUND:+
>E110:/FR
>D110:+D108-D103
>B110:"EFUND/DUE
>A110:"NET TAX R
>E109:/FR
>D109:/--
>E108:/FR"67
>D108:@SUM(D105...D107)
>B108:"D
>A108:"TOTAL PAI
>E107:/FR"62-66
>D107:0
>B107:"MENTS
>A107:"OTHER PAY
>E106:/FR"61
>D106:0
>B106:"PAYMENTS
>A106:"EST. TAX
>E105:/FR"60*
>D105:1810.35
>C105:"HELD
>B105:" TAX WITH
>A105:"TOT. FED.
>E104:/FR
>E103:/FR"59
>D103:+D100+D101
>A103:"TOTAL TAX
>D102:/--
>E101:/FR"51-59*
>D101:0
>B101:"ES
>A101:"OTHER TAX
>E100:/FR"50
>D100:@MAX(+D98-D99,0)
>A100:"BALANCE
>E99:/FR"41-49*
>D99:50
>A99:"CREDITS
>E98:/FR"38*
>D98:@IF(@AND(D78<50000
D78>=3000),@INT
(@SUM(C84...C96)+
.5),@SUM(C84...C96))
>B98:" DUE
>A98:"TOTAL TAX
>A97:/FI99999999
>C96:@MAX((@MIN(A97,
D78)-A96)*B96,0)
>B96:.5
>A96:/FI41500
>C95:@MAX((@MIN(A96,
D78)-A95)*B95,0)
>B95:.44
>A95:/FI34100
>C94:@MAX((@MIN(A95,
D78)-A94)*B94,0)
>B94:.4
>A94:/FI28800
>C93:@MAX((@MIN(A94,
D78)-A93)*B93,0)
>B93:.35
>A93:/FI23500
>C92:@MAX((@MIN(A93,
D78)-A92)*B92,0)
>B92:.31
>A92:/FI18200
>C91:@MAX((@MIN(A92,
D78)-A91)*B91,0)
>B91:.27
>A91:/FI15000
>C90:@MAX((@MIN(A91,
D78)-A90)*B90,0)
>B90:.23
>A90:/FI12900
>C89:@MAX((@MIN(A90,
D78)-A89)*B89,0)
>B89:.22
>A89:/FI10800
>C88:@MAX((@MIN(A89,
D78)-A88)*B88,0)
>B88:.19
>A88:/FI8500
>C87:@MAX((@MIN(A88,
D78)-A87)*B87,0)
>B87:.17
>A87:/FI6500
>C86:@MAX((@MIN(A87,
D78)-A86)*B86,0)
>B86:.16
>A86:/FI4400
>C85:@MAX((@MIN(A86,
D78)-A85)*B85,0)
>B85:.14
>A85:/FI3400
>C84:@MAX((@MIN(A85,
D78)-A84)*B84,0)
>B84:.12
>A84:/FI2300
>B83:0
>A83:/FIO
>B82:/FR"RATE
>A82:/FR""OVER--"
>C81:" TABLE
>B81:"LE INCOME
>A81:/FR"TABAB
>E80:/FR
>B80:"TATION
>A80:"TAX COMPU
>E79:/FR
>E78:/FR
>D78:@IF(D77<3000,
@ERROR,@IF(D77<
50000,@INT(D77/50)
*50+25,D77))
>B78:"TAX TABLE
>A78:"T. I. FOR
>E77:/FR37
>D77:+D74-D75
>B77:"NCOME
>A77:"TAXABLE I
>E76:/FR
>D76:/--
>E75:/FR36
>D75:1000*C2
>B75:"EXEMPTION
>A75:"PERSONAL
>E74:/FR35
>D74:+D42-D73
>A74:"LINE 35
>E73:/FR"1040/34A
>D73:@MAX(D70-D71,0)
>B73:"UCTIONS
>A73:"TOTAL DED
>E72:/FR"A-30 &
>D72:/--
>E71:/FR"A-29
>D71:2300
>B71:"DEDUCTION
>A71:"LESS STD.
>E70:/FR"A-28
>D70:@SUM(D53...D69)
>C70:"UCTIONS
>B70:"MIZED DED
>A70:"TOTAL ITE
>E69:/FR"A-27
>D69:@SUM(C64...C68)
>C69:"S
>B69:"CELLANEOU
>A69:"TOTAL MIS
>E68:/FR"A-26
>C68:100
>B68:"EOUS-OTHER
>A68:"MISCELLAN
>E67:/FR"A-26*
>C67:218.57
>B67:"ION-APPLE
>A67:"DEPRECIAT
>E66:/FR"A-25B
>C66:0
>B66:"N PREP.
>A66:"TAX RETUR
>E65:/FR"A-25A
>C65:0
>B65:"S
>A65:"UNION DUE
>E64:/FR"A-24*
>C64:0
>A64:"CASUALTY
>E63:/FR"A-20/23
>D63:175
>B63:"E
>A63:"CHARITABL
>E62:/FR"A-19
>D62:@SUM(C59...C61)
>B62:"EREST
>A62:"TOTAL INT
>E61:/FR"A-18
>C61:0
>B61:"OTHER
>A61:/FR"-
>E60:/FR"A-17
>C60:12.34
>B60:"CREDIT CD
>A60:/FR"-
>E59:/FR"A-16*
>C59:4500
>B59:"MORTGAGE
>A59:"INTEREST-
>E58:/FR"A-15
>D58:@SUM(C54...C57)
>B58:"ES
>A58:"TOTAL TAX
>E57:/FR"A-14
>C57:0
>B57:"ER TAXES
>A57:/FR"-OTH
>E56:/FR"A-13*
>C56:163
>B56:"ES, ETC.
>A56:" -SAL
>E55:/FR"A-12
>C55:1000
>B55:"L EST.
>A55:" -REA
>E54:/FR"A-11
>C54:1500
>B54:"TE
>A54:"TAXES-STA
>E53:/FR"A-10
>D53:@MAX(C51,C52)
>B53:"AL DED.
>A53:"NET MEDIC
>E52:/FR"A-9
>C52:@MIN(C47/2,150)
>B52:"SURANCE
>A52:"1/2 OF IN
>E51:/FR"A-8
>C51:@MAX(C49-C50,0)
>B51:"% OF AGI
>A51:"MEDICAL>3
>E50:/FR"A-7
>C50:+D42*.03
>B50:"I.
>A50:"3% OF A.G
>E49:/FR"A-6
>C49:@SUM(C46...C48)
>B49:"ED. EXP.
>A49:" TOTAL M

```

contd.

```

>E48:/FR"A-5*
>C48:650
>B48:"ICAL EXP.
>A48:"OTHER MED
>E47:/FR"A-4
>C47:350
>B47:"NSURANCE
>A47:"MEDICAL I
>E46:/FR"A-3
>C46:@MAX(C44-C45,0)
>B46:"INES
>A46:"NET MEDIC
>E45:/FR"A-2
>C45:+D42*.01
>B45:".I.
>A45:"1% OF A.G
>E44:/FR"A-1
>C44:534.67
>A44:"MEDICINES
>E43:/FR"SCHED. A
>B43:"S:
>A43:"DEDUCTION
>E42:/FR"32 & 33
>D42:+D27-D40
>C42:"OME
>B42:"GROSS INC
>A42:"ADJUSTED
>D41:/--
>E40:/FR"31
>D40:@SUM(D29...D38)
>B40:"USTMENTS
>A40:"TOTAL ADJ
>D39:/--
>E38:/FR"30*
>D38:0
>B38:"Y INCOME
>A38:"DISABILIT
>E37:/FR"29*
>C37:+C36*.05
>B37:"OL "D"?
>A37:"MOVE TO C
>E36:/FR"SCHED. W
>C36:@MIN(C35,30000)
>B36:"LINE 6
>E35:/FR"SCHED. W
>C35:18000
>B35:"MARRIEDS
>A35:"DED. FOR
>E34:/FR"28
>D34:0
>B34:"AID
>A34:"ALIMONY P
>E33:/FR"27
>D33:0
>B33:"HDRAW PEN
>A33:"EARLY WIT
>E32:/FR"26
>D32:0
>B32:"TO KEOGH
>A32:"PAYMENTS
>E31:/FR"25*
>D31:2000
>B31:"TO AN IRA
>A31:"PAYMENTS
>E30:/FR"24*
>D30:0
>B30:"BUSINESS
>A30:"EMPLOYEE
>E29:/FR"23*
>D29:0
>B29:"PENSE
>A29:"MOVING EX
>E28:/FR
>A28:" LESS:
>E27:/FR"22
>D27:@SUM(D4...D25)
>B27:"OME

```

```

>A27:"TOTAL INC
>D26:/--
>E25:/FR"21*
>D25:0
>B25:"OME
>A25:"OTHER INC
>E24:/FR"20*
>D24:0
>B24:"NEMPLOYM.
>A24:"TAXABLE U
>E23:/FR"19*
>D23:0
>B23:"ME
>A23:"FARM INCO
>E22:/FR"18*
>D22:0
>B22:"C.
>A22:"RENTS, ET
>E21:/FR"16-17*
>D21:0
>B21:" ETC.
>A21:"PENSIONS,
>E20:/FR"15*
>D20:0
>B20:"TAL GAINS
>A20:"SUPPLEMEN
>E19:/FR"14*
>D19:0
>B19:"AIN
>A19:"40% CAP G
>E18:/FR"13*
>D18:0
>B18:"AIN
>A18:"CAPITAL G
>E17:/FR"12*
>D17:0
>B17:"INCOME
>A17:"BUSINESS
>E16:/FR"11
>D16:0
>B16:"ALIMONY
>E15:/FR"10
>D15:250
>B15:" REFUNDS
>A15:"STATE TAX
>E14:/FR"9C
>D14:+C12-C13
>B14:"IDENDS
>A14:" NET DIV
>E13:/FR"9B
>C13:@MIN(100,C12)
>B13:"00 EXCL.
>A13:" LESS $1
>E12:/FR"9A
>C12:@SUM(C10...C11)
>B12:"IVIDENDS
>A12:" TOTAL D
>E11:/FR"SCHED. B
>C11:23.5
>B11:"-EXXON
>E10:/FR"SCHED. B
>C10:175.34
>B10:"-MON. MKT
>A10:"DIVIDENDS
>E9:/FR"8
>D9:@SUM(C5...C8)
>B9:"NTEREST
>A9:" TOTAL I
>E8:/FR"SCHED. A
>C8:15
>B8:"OTHER
>E7:/FR"SCHED. A
>C7:75
>B7:"S & LOAN
>E6:/FR"SCHED. A
>C6:50
>B6:"BANK 2

```

```

>E5:/FR"SCHED. A
>C5:300
>B5:"BANK 1
>A5:"INTEREST-
>E4:/FR"7
>D4:20000
>B4:"LARIES
>A4:"WAGES, SA
>E3:/FR
>E2:/FR"6E
>C2:/FII
>B2:"S
>A2:"EXEMPTION
>E1:"40 LINE #
>D1:/FR"FORM 10
/W1
/GOR
/GRM
/XH18
/GFS
/GC9
/X!/X>A1:>C2:;/GF$
/GC9
/X-/X>A110:>D110:;

```

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BEGIN

DUP ID. CR PFA LFA @ DUP 0=
 UNTIL DROP ; ;S

```

( ?PRIMARY <wordname> - disassemble
  first screen of) (a Forth word only
  if it is a primary)
: ?PRIMARY (* BASE @ HEX *)
  (*COMPILE*) ' 2 - DUP DUP @ - -2 =
  IF ( WORD IS PRIMARY )
  @ 3A ! 0 XREG C! FESE CALL
  ELSE ( WORD IS NOT PRIMARY )
  ." WORD IS NOT A PRIMARY!" CR DROP
  ENDIF (* BASE ! *) ; ;S

```

- MAY THE FORTH BE WITH YOU! -

THE BOTTOM LINE

by Leon H. Raesly



This month I wish to talk about selection of a data base (DB) for business and personal use. A data base is a program which creates and manages a file (usually a disk) composed of a number of individual records, each record containing one or more fields. For instance, I might have a file of names and addresses. Each person's name and address would comprise a record. The first name would be a field, as would the last name, the street address, etc.

I have used several data bases, including Data Perfect, DB Master, CCA, PFS, Visi-File, and have worked some with D Base II. I have also used a number of other programs, including some of my own, that are essentially very specialized data bases. Throughout these last two and a half years, I have developed some rating criteria that I use. I even have them on a fill-in-the-blank form. If I had discovered these criteria earlier, it would have saved me a lot of grief and money. I would like to share these with you, and the reasons I have chosen them. The criteria that I use are:

0. The capacity to be copied by some method.
1. Use standard text files, or the files they use must be convertible to standard text files.
2. Be transparent to some word processor for unusual formatting.
3. Search capabilities on multiple criteria.
4. A method of fast search and retrieval for edit functions.
5. Fast sort routines, with the ability to access the sort file at a later time without having to resort.
6. Fast print routines.
7. A form of report generator available within the program.
8. More than 25 fields for each record.
9. A method of generating labels from within the program.
10. A method of modifying the data base to add new fields, or subtract old ones.
11. A method to replicate a new, empty data base without having to create a new data base from scratch.
12. A manual which is well organized, and allows me to learn the basics of getting started with it in a short time, without the need to become technically expert before I can begin to use the data base,

I evaluate each DB starting with the zero (0) criteria, which is a pass/fail answer. Then each of the next twelve criteria are given a rating from zero (0) to ten (10). I then sum the scores. Unless there is some absolutely outstanding feature that would override the evaluation, any program that scores less than sixty (which is the fiftieth percentile) is rejected. An example of such an "absolutely outstanding feature" for me is CCA, a DB that scores less than forty when I score it on my evaluation sheet. With my version of CCA, I was given a set of fairly intelligible instructions on interfacing my own text files with CCA, so that I might then access them through CCA for editing directly. So I can now use CCA, and don't have to write my own editing routine. But even more important for me, is that once they have been accessed by CCA, I can now use their routine to convert my files to Visicalc files! A very handy feature.

0. The capacity to be copied by some method. I have discussed this criterion before in earlier columns. We have a number of inexperienced, but willing-to-learn, operators that we use. Part of the value we offer to them is the opportunity to learn different programs on a computer. And a part of learning, and gaining experience, is that mistakes happen. And I can't be down for three weeks waiting for a replacement disk. I can't protect myself against program bugs, but I can at least protect myself against operator difficulties, by always using a backup copy, and keeping the original as an archive master. Any DB that does not pass # 0 goes no further. If the dealer says that it can be copied with this, or that program, I ask him to show me. Do it. I have discovered that many dealers know very little about most of their products. If I am told that they don't know, my response is for them to call me when they find out, and in the meantime I will go to another dealer!

1. Use standard text files, or the files use must be convertible to standard text files. While not a pass/fail question for me, it almost is. Too many times I have wanted to run some other program, or do something else with the data, which I already have created with one program, only to find that either those files are not accessible because the DB does not use standard files, or the new program does not. So I must re-enter all the data, and then reverify it.

2. Be transparent to some word processor for unusual formatting. This is another application that I believe is very important for business or personal use. Even though you may not visualize a need for this in your use now, in my experience such applications will develop if your program has that capability. I covered one such application in this column in the December

contd.

and January issue of WAP. I use a rating of zero for no capability, and five for the capability with difficulty, adding a point for each subjective increase in ease, to the maximum of ten for complete transparency.

3. Search capabilities on multiple criteria. If I need to find all entries for a particular staff member for the month of June, the program must be able to search the staff I.D. field AND the month field. For evaluation, I rate ten points for any program that will search on five or more criteria on an "AND" type search, i.e. month AND staff I.D. I deduct two points for each criterion less than five, and give a zero rating for a program that will only search on one criterion.

4. A method of fast search and retrieval for edit functions. Again, a subjective rating. I consider fast as less than a minute to find a record by one or more criteria when searching a file of 1000 records. Do not be fooled by the ability of the program to find the record number fast, many can do this. If I don't know the record number, I must still find it, and taking fifteen minutes to find a record (or even worse, for the program to tell me that it can't find what I want that way, and I have to try again another way!) is intolerable for business use. Scoring for this tends to be either high or low, with very little in the mid-range.

5. Fast sort routines with the ability to access the sort file at a later date without having to resort. For rating, a slow or medium sort without the ability to reuse the sort file later would be rated zero, while a slow or medium sort with the ability to access that sorted file tomorrow without resorting would qualify as a six or a seven. I consider a fast sort one that takes three minutes or less for a file of 500 records. Incidentally, I consider the need for access to a previously sorted file without having to resort so important that the highest rating I will give this criterion for a program that does not allow for it, is a four.

6. Fast print routines. This is fairly straightforward. I have one program (DB Master) that takes me three hours and fifteen minutes to print a file of 486 records. This is with a simple report format. Another program I use, Data Perfect, takes me sixteen minutes to print a file of 803 records. Guess which one would rate a ten and which one would rate a zero on this criterion!

7. A form of report generator within the program. Most contemporary programs have this, and I am generally rating the flexibility of the report formatting. If it has that capability, I give it a five and then add points for other features. I add points for more than one line of heading (I don't add points for more than one line of data, as I consider that the report becomes too unreadable); one point for print width larger than eighty columns (two points if the program will go a full one hundred and thirty-two columns); two points for the ability to reconstruct a new print format

by adding or subtracting fields, headings, etc. from the previous one without having to start over. I subtract six points if it will not save a print format to disk.

8. More than twenty-five fields per record. This is a totally arbitrary number; however, I have found that it fits our need. I start at a rating of five and add one point for each three fields over twenty-five for a maximum of three points, and also add up to two points for width of field over twenty characters. If character length of a field is fixed at less than twenty, I subtract one point for each character less than twenty.

9. A method of generating labels from within the program. We often need mailing labels from many of our files. If they can be done within the report generator, this rates a five. If they have a separate "label" generator, this rates a ten.

10. A method of modifying the data base to add new fields, or subtract old fields. I give a rating of zero if the program is unable to do this, a rating of five if it can do it with difficulty, and a ten if it is very easy. For the purposes of the rating, either being able to directly create new fields within the data base, or of creating a new format in a new data base and then merging the old data, will be rated as being able to handle this criterion. I also subtract three points if I have to buy a secondary, or utility, program to accomplish this task.

11. A method of replicating a new, empty data base without having to create the new data base from scratch. This, combined with the ability to add or subtract fields saves much time. A zero if no ability, and a five if some ability, and then subjectively adding points for simplicity, to a maximum of ten points. I also subtract three points if I have to pay additional funds for a secondary, or utility, program to accomplish this task.

12. A manual which is well organized, and allows me to learn the basics of getting started with it in a short time, without the need to become technically expert with the program before I can begin to use it. Really, two different things are rated here. The first is the organization and clarity of the manual, and the second is the helpfulness of the dealer. When buying a program that costs from \$100 to \$300, I have no hesitation in asking the dealer to show me the functions of the program before I buy, and to let me practice. If that dealer has difficulty with me using his Apple and trying his program before I buy something that expensive, I go to another dealer!

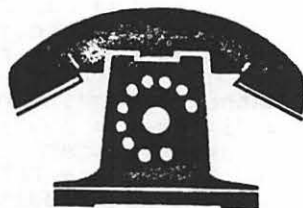
So there you have it. Using this scale, or your own modification of it, can save you frustration and money, and help you begin to make sense of the plethora of data base programs available on the market today. Incidentally using these rating scales for three programs developed the following scores: CCA = 35, DB Master = 56, and Data Perfect = 91, each out of a possible 120 points. CCA passes the "Copy" criterion

contd. on pg 51

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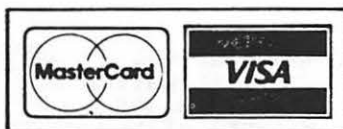
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COLOR PLOTTING FROM EQUATIONS

by A.R. Rumble

I spent many hours during my engineering career looking up values in tables, calculating plotting coordinates with a slide rule, and later a mechanical calculator, and then manually plotting on graph paper. Now as a retiree and Apple][+ owner, it is my pleasure to feed it an equation and then sit back and watch it "do its stuff". I haven't yet learned assembly language so I get by with Applesoft. I present in this article some tips and techniques for those in the same boat. No one needs to be scared off by the word "equations" in the title, as the ones used are quite simple basically, about as simple as will plot curves.

First, a few notes on terms. X is used to designate the horizontal coordinate and Y the vertical one. This is conventional but not requisite. They may be called by any letters desired. The procedure is to assign to one variable in an equation a sequence of values and then have the computer calculate the corresponding values of the other variable or variables, and then plot the sequence of coordinate pairs. Usually a FOR...NEXT or other loop is used. The variable to which values are assigned is called the independent variable, and the other variable (or variables) is called dependent. In this article, where the word "increment" is used, the reader can generally add "or decrement". The Manual referred to is the Applesoft Reference Manual.

One thing that takes a little getting used to is that the computer's plotting origin is at the upper left corner of the screen, and Y coordinates are numbered from the top of the screen downwards. Frequently, the simple basic equation has to be added to because it does not locate the curve at the location on the screen that one desires. Space does not permit any discussion herein of the manipulation of equations. But this is easy to find elsewhere. The main attention here is on color.

PROG. I, HIRES COLOR VS X, when run, plots a chart which pictorially shows a number of peculiarities (mentioned only briefly in the Manual) of Hires plotting in color. Three horizontal line segments are plotted for each of the seven colors. All segments, including the STEP 1 ones, are plotted point by point, rather than by a command to HPLOT from the initial to final point. Some of the segments are black and therefore invisible. The first and second segments (counting black ones) from the left are plotted with X incremented by 2 each time. The rightmost segment has two subportions, the first with X incremented by 1 and the last with an increment of 3. It sounds peculiar to write of plotting a black point on a black screen, but it is convenient to do this in order to distinguish between that and merely skipping over that position on the screen. The computer

probably has already calculated the value of the dependent variable for that point, and if it is a black point, that is time wasted.

Mention may be made of some of the peculiarities shown by the chart. Any coordinate pair with X even will be plotted as a black point if the color is 1 or 5. Likewise for color 2 or 6 if X is odd. No black points will be plotted, regardless of the X value, if the color is 3 or 7; but the resulting color will depend on the X value of a particular point. Only in the case where two points are immediately side by side, or nearly so, will the color be white, which is the nominal color for these two numbers. If the dots are separated, i.e. STEP 2 or greater, then they will be a color other than white, the color depending on whether X is odd or even. The chart shows which color. The quarter circle on the chart for color 7 shows the variations in dot colors as the orientation of adjacent dots gradually changes from side by side to above/below one another. A similar change occurs also for color 3. The first half of the quarter circle has X incremented each time by 1, while for the second half Y is incremented each time by 1. The short sequence of color 1 dots near the end of the quarter circle is another peculiarity, not fathomed by me. The reader can see References (1) and (2) for more on Hires color peculiarities.

One should increment X by an even integer when X is the independent variable and color 1, 2, 5, or 6 is to be used. Whether the initial X value should be odd or even depends on which one of these colors is used. Every other plotted dot will be black if an odd increment is used. This is a waste. The black dots are hardly noticeable in the STEP 1 portions on the chart for these four colors, but can be seen in STEP 3 portions. Compare dot spacings for these colors with that for colors 3 and 7. A minimum (useful) increment of 2 does not result in an unacceptably large Y increment unless the slope is too great. As the steepness of the slope increases, so do the gaps between successive dots. Within the limitation discussed above, color 1, 2, 5, or 6 can be used for many curves, and has the advantage that dots are of a single color. PROG. II, AERIAL DISPLAY, exemplifies this. The trajectories basically are parabolas $Y = X^2$ or a constant. A section of sine wave has been superimposed on the second trajectory to produce the wiggle. The reason for using X^2 instead of X^2 is discussed later in this article.

The use of color 3 or 7 has a couple of convincing advantages, namely:

- (a) no black dots are plotted regardless of the X value, and
 - (b) because of (a), useful increments of
- contd.

less than 2 can be used.

More on this later. The disadvantage of using either of these colors is the capriciousness of the dot colors actually plotted. Two dots x,k and $(x+1),k$ will both be white; but x,k and $(x+3),k$ will be different colors, not white. Points x,k and $x,(k+1)$ will be different colors, not white.

The use of color 3 or 7 is indicated where X is not the independent variable. As Y is incremented, some X coordinates will be odd and some even, therefore some black dots or sequences of black dots would be plotted if the color were not 3 or 7.

The use of color 3 or 7 is also indicated where quite steep slopes are encountered. An increment of 1 in the independent variable causes an excessive increment in the dependent variable, evidenced by large gaps between successive dots. Table 1 below illustrates how reducing the independent variable increment to less than 1 can reduce the gaps between successive dots. The equation is $Y = 4*X$.

TABLE 1.

X	Y	INT (X)	INT (Y)
1.	4	1	4
2.	8	2	8
3.	12	3	12

1.00	4	1	4
1.25	5	1	5
1.50	6	1	6
1.75	7	1	7
2.00	8	2	8
2.25	9	2	9
2.50	10	2	10
2.75	11	2	11
3.00	12	3	12

The INT values are the ones the computer plots. Notice that the Y value increments have been reduced from 4 to 1 by reducing the X increment from 1 to .25. This procedure would be of no use with color 1, 2, 5 or 6 because INT(X) values are both odd and even, and one or the other would plot black dots.

The use of relatively small increments of the independent variable for steep portions of a curve, as outlined above, is fine but to use the same small increments for the whole curve could result in an excruciatingly long plotting time. This can be avoided by using different increments for different portions of a curve, matching the increment to the slope. It is not necessary to use a fixed increment for even a portion of a curve. The increment can be made to depend on the previous value of X, Y, or whatever. An example follows:

An equation which is quite simple in polar coordinates is that of a logarithmic spiral $R = \text{EXP}(K*A)$ where A is the angle in radians, R is the distance from the center of the spiral, and K is a constant. But our Apple plots only in rectangular coordinates, so the conversion formulas must be applied. A is the independent variable,

and R, X, and Y the dependent ones. PROG. III, SPIRAL, uses an A increment which is inversely proportional to the preceding value of R. This results in almost constant dot spacing, as will be seen when the program is RUN.

Another simple equation in polar coordinates is that of the n-leaved rose $R = K * \text{SIN}(N*A)$ or $R = K * \text{COS}(N*A)$. K is the length of a petal (or leaf) and N determines the number of petals, which is N if N is odd, and $2*N$ if N is even. If the starting value of A is zero, the second equation will start plotting at the tip of a petal, while the first will start between petals. PROG. IV, FLOWER III (so numbered to distinguish it from I and II on WAP Utilities Disk E) uses an n-leaved rose and two leaves of another, as well as a section of parabola as the stem.

The Manual, on page 120, gives tips for speeding up a program. I offer herewith another. Whenever you have an expression which is to be squared or cubed, multiply the expression by itself once or twice; do not use an exponent of 2 or 3. Try the following short program to compare the execution time of the two methods. If one had two squares in an equation, and 250 trips around a loop, that would involve 500 squarings.

```
10 FOR X = 1 TO 500
20 Y = X^2 : NEXT X
30 PRINT "DONE"
```

This requires 24 seconds to execute. When $X*X$ is substituted for X^2 , execution time is 2 seconds. The reason for the difference lies in the routine used by the computer for exponentiation. I suspect that the routine involves the use of series. The Manual, on page 102, states that $\text{SQR}(N)$ executes faster than $n^{.5}$; mathematically they are the same but the routines are different.

Another tip - occasionally one may want to align vertically a point on the HGR screen with a letter or character in the text below the screen, or vice versa. The following are useful, N being the HTAB number:

```
(1) X = 7(N-1)
(2) N = 1 + X/7
```

(1) will align on the leftmost portion of the letter. Add 5 to X for alignment on the right edge of the letter. On the average (2) will give a value of N which is not an integer, in which case it will be necessary to round it off to the next larger or smaller integer, as desired.

Still another tip - not just applicable to curve plotting but for putting three or four lines of text below the HGR screen, and preserving whatever is on it. The Manual states that there is space for four lines of text, but does not give the procedure for putting them there. My attempts to do so were a failure; the first two lines were scrolled upward and the prompt and cursor were displayed. Someone suggested using semicolons to stop scrolling, and this permitted three lines,

contd.

but not four. Finally I appealed to Charles Mesztenyi and he kindly provided the solution, so credit is due to him. The format is shown in lines 250 to 330 of PROG. I, HIRES COLOR VS X. The semicolons stop scrolling, but make it necessary to use HTAB to control where the next line starts. The final VTAB 1 banishes the prompt and cursor up to line 2 where they are hidden by the Hires screen. If a fourth line of text is to be displayed the blank PRINT Command for line 24 should be replaced by a real one with quotation marks and ending in a semicolon.

You may like to try your hand at curve plotting. Try a hyperbola, $X*Y = K$, or $Y = K/X$, where K is a constant, say 3600, or whatever you like. The equation needs no manipulation or other added constants. Just check that your initial value for X doesn't give a Y value off screen. A pocket calculator is handy. After that, if you want to go a step further, you can get a family of hyperbolas by using different values of K, preferably by using an outer loop to vary K. Notice that the curve always passes through the point $SQR(K)$, $SQR(K)$ and this is the closest point to the origin.

References:

1. D. Morganstein and C.K. Mesztenyi, "Connect the Dots", Washington Apple Pi, December 1982.
2. M.A. Iannce, "Color Me Apple", Call-A.P.P.L.E., November 1982.

PROG. I, HIRES COLOR VS X.TEXT

```

10 HGR
20 Y = 5
30 FOR I = 1 TO 7
40 HCOLOR= I
50 FOR X = 1 TO 41 STEP 2
60 H PLOT X,Y: NEXT X
70 FOR X = 70 TO 110 STEP 2
80 H PLOT X,Y: NEXT X
90 FOR X = 160 TO 200
100 H PLOT X,Y: NEXT X
110 FOR X = 201 TO 240 STEP 3
120 H PLOT X,Y: NEXT X
130 Y = Y + 15
140 NEXT I
180 S = 4096:H = 160:K = 159:M = 114
190 FOR X = H TO 205
200 Y = K - SQR (S - (X - H) (X - H))
210 H PLOT X,Y: NEXT X
220 FOR Y = M TO K
230 X = H + SQR (S - (Y - K) (Y - K))
240 H PLOT X,Y: NEXT Y
250 HTAB 1: VTAB 21
260 PRINT "X ODD"; TAB( 11)"X EVEN";
TAB (28)"X BOTH"
270 HTAB 1: VTAB 22
280 PRINT "STEP 2"; TAB( 11)"STEP 2";
TAB (24)"STEP 1 STEP 3"
290 HTAB 1: VTAB 23
300 PRINT TAB( 3)"FROM TOP, COLOR NOS
ARE 1 TO 7";
310 HTAB 1: VTAB 24
320 PRINT ;
330 HTAB 1: VTAB 1

```

PROG. II, AERIAL DISPLAY

```

10 HGR
20 Y = 5
30 FOR I = 1 TO 7
40 HCOLOR= I
50 FOR X = 1 TO 41 STEP 2
60 H PLOT X,Y: NEXT X
70 FOR X = 70 TO 110 STEP 2
80 H PLOT X,Y: NEXT X
90 FOR X = 160 TO 200
100 H PLOT X,Y: NEXT X
110 FOR X = 201 TO 240 STEP 3
120 H PLOT X,Y: NEXT X
130 Y = Y + 15
140 NEXT I
180 S = 4096:H = 160:K = 159:M = 114
190 FOR X = H TO 205
200 Y = K - SQR (S - (X - H) (X - H))
210 H PLOT X,Y: NEXT X
220 FOR Y = M TO K
230 X = H + SQR (S - (Y - K) (Y - K))
240 H PLOT X,Y: NEXT Y
250 HTAB 1: VTAB 21
260 PRINT "X ODD"; TAB( 11)"X EVEN";
TAB (28)"X BOTH"
270 HTAB 1: VTAB 22
280 PRINT "STEP 2"; TAB( 11)"STEP 2";
TAB (24)"STEP 1 STEP 3"
290 HTAB 1: VTAB 23
300 PRINT TAB( 3)"FROM TOP, COLOR NOS
ARE 1 TO 7";
310 HTAB 1: VTAB 24
320 PRINT ;
330 HTAB 1: VTAB 1

```

PROG. III, SPIRAL

```

10 HGR
20 Y = 5
30 FOR I = 1 TO 7
40 HCOLOR= I
50 FOR X = 1 TO 41 STEP 2
60 H PLOT X,Y: NEXT X
70 FOR X = 70 TO 110 STEP 2
80 H PLOT X,Y: NEXT X
90 FOR X = 160 TO 200
100 H PLOT X,Y: NEXT X
110 FOR X = 201 TO 240 STEP 3
120 H PLOT X,Y: NEXT X
130 Y = Y + 15
140 NEXT I
180 S = 4096:H = 160:K = 159:M = 114
190 FOR X = H TO 205
200 Y = K - SQR (S - (X - H) (X - H))
210 H PLOT X,Y: NEXT X
220 FOR Y = M TO K
230 X = H + SQR (S - (Y - K) (Y - K))
240 H PLOT X,Y: NEXT Y
250 HTAB 1: VTAB 21
260 PRINT "X ODD"; TAB( 11)"X EVEN";
TAB (28)"X BOTH"
270 HTAB 1: VTAB 22
280 PRINT "STEP 2"; TAB( 11)"STEP 2";
TAB (24)"STEP 1 STEP 3"
290 HTAB 1: VTAB 23
300 PRINT TAB( 3)"FROM TOP, COLOR NOS
ARE 1 TO 7";
310 HTAB 1: VTAB 24
320 PRINT ;
330 HTAB 1: VTAB 1

```

PROG. IV, FLOWER III

```

10 HGR
20 Y = 5
30 FOR I = 1 TO 7
40 HCOLOR= I
50 FOR X = 1 TO 41 STEP 2

```

contd. on pg 43

LOGOSIG NEWS

TURTLE TRACKS



by Nancy C. Strange and Ron Murray

The LOGOSIG meeting on February 19 will be the first in a series on the Logo language. LOGOSIG members will be leading the studies. Harold Abelson's book Apple Logo will be used as the structure. Everyone is encouraged to read ahead and come to the meetings prepared to discuss and share on the topic of the day.

The first meeting will be led by Dagobert Soergel who will present Chapters 2 and 3 regarding "Programming with Procedures." The March meeting will be on Chapter 4: "Workspace, Filing and Debugging."

* SPECIAL NOTE: TODAY'S MEETING WILL BE *
* AT USUHS, BLDG. A, LECTURE ROOM A, *
* RATHER THAN THE ELF FACILITIES - DUE *
* TO THE RESCHEDULING OF WAP DATE. *

ATTENTION all Apple Logo language users. If you consider yourself a serious user, please contact me at 691-1619.

Last month one of our members, Ron Murray, shared his adventure to LOGOLAND at our meeting. He has written it up for all WAP and it follows this item. Thanks for sharing, Ron.

WAP GOES TO LOGOLAND

I was fortunate enough in my Christmas vacation travels to pass through two major activity nodes for Logo enthusiasts, one in New York City, and the other in Paris, France. In each place I was able to talk to some of the people involved with Logo, and to see hardware and software developments.

Part I: LCSi, New York City

The first node is at 220 Fifth Avenue, N.Y.C., the U.S. marketing and training office of Logo Computer Systems Inc. (LCSi), the producers of Apple Logo. There I met Barbara Bowen, Connie De Franco, and Michael Tempel, the training and marketing personnel for LCSi. My discussions with Michael Tempel ranged from plans to expand Logo, to plans for improving the Logo training network, to a discussion and demonstration of the prototypical sprite board.

According to Tempel, The Apple Logo currently available is essentially "finished", with no extensions planned. Although there exists a prototype "Big Logo", with 11,000 nodes and a few more primitives, there are no plans at present to market it and the associated memory board. Present priorities seem to be to adapt Logo to other machines (Atari, IBM), to translate it into other languages, and, of course, complete the oft-discussed "sprite" board.

With an estimated Logo user's population of

15-20,000, there is an effort at present to distribute programs in Logo to all interested persons, through user's groups, (like our own), and (at last!), Apple computer dealers. LCSi has in draft form a training manual to be distributed to dealers and interested groups. This manual consists of a modular series of presentations on Apple Logo, suitable for groups of varying composition.

We proceeded to a demonstration of the prototype "sprite" board. A new name is being sought for those graphic entities, the name "sprites" having been preempted by Texas Instruments, Inc..

The sprite board appears to be a TI 9918 graphics chip with 16K of display memory, plus two extra, empty sockets. The disk based software routines add several new primitives to Apple Logo, including the ability to save and load pictures from the disk, redefining the character set in run as well as edit mode, control of up to 30 turtles, all with pens. There are no limits to the length of the lines drawn by the sprites; that is in the WRAP mode you can fill the screen with a pencolor. Sprites and text characters can appear on screen at the same time; indeed, one can edit sprites, text, or procedures with the sprites zooming around at the same time. The sprite shapes are defined in advance and are read in as part of the initialization file.

The shapes are defined as filled shapes only, and can be redefined on the fly by reading in the appropriate file from the disk. If one really wanted to get serious about multi-turtle drawing effects, it is possible to use property lists to assign given turtle states to the sprites. This technique was explored in the August '82 issue of "BYTE". One can also change the color of a character as well as that of the "tile" in which the character is defined. There is still no window scrolling capability in the graphics mode.

Another interesting primitive is STAMP, which will print the sprite's shape and color on the background plane; this works for moving or stationary sprites. In addition to the above, there are primitives for collision detection (TOUCHINGP), and for color overlap (COLOROVER). The last primitives I saw demonstrated were MOVE :SPEED :TIME, with which an assigned sprite is moved for a given time at a given speed, and SLIDE :DISTANCE :TIME, with which a sprite is moved a given turtle distance on the screen within a given time.

Now for the not-so-good news... Tempel guessed that the sprite board and hardware would sell for not less than \$200 and not more than \$500. In other words, we still don't know how much it will cost when it is brought to market. There is still no tech-

contd.

nical manual available for Apple Logo, though there is one in the works. LogoSig has been promised a draft of this work for evaluation and comment. There will be no improvements in I/O capabilities, except for what is done at the user level in assembly language. However, the people at the Boston LCSi branch (the technical branch) are interested in contact with Logo users, and are eager to work on problems and ideas that arise.

Part II: Le Centre Mondial, Paris, France

My travels through the ever widening realm of Logoland next took me to Paris, France, where, literally around the corner from the residence of the President of France, is situated Le Centre Mondial L'Informatique et Resources Humaine. The World Center, as it is mercifully abbreviated, is the headquarters of a French effort to introduce microcomputer technology to developing countries, to institute a computer literacy program at all levels of French society, and to develop a small and inexpensive computer for wide dissemination.

After passing through the main entrance one ends up in the first of three rooms full of, alternately, computers on sawhorse tables and kids. There is a familiar sign stating, in effect, "welcome to the turtle". There were quite a few people there, visitors from other countries, teachers from the various lycees, and LOTS of kids. Many were playing with video games, a few were writing short programs in Basic, and quite a few were programming in Logo.

Surprisingly, only one-third of the computers were Apples; the others were a French computer called the Goupil 2001, a modular 16-bit machine that also runs a version of Logo.

Apple Logo has been completely translated into French; all that was necessary to do was to translate the list of words Logo "knows" (seen via the .CONTENTS command), as well as the error messages, which are also lists. They have also produced a version of Logo in Wolof, the predominant language of the people of Senegal. The list of commands: REPETEZ 4 AVANCE 60 DROITE 90 draws the box shape familiar to all Logophiles.

Though many of the adults there seemed interested in the computers, they seemed more inhibited at the machines than did the kids, who fairly leapt at the machines. There were mostly boys there, with the few girls doing Logo rather than playing video games. I watched a young boy trying to draw a filled circle on the color extension display of the Goupil 2001; he had a fairly large bug in his program, but since I didn't speak French (Logo) yet, I couldn't help him out.

The Goupil 2001 appeared to be an interesting machine, if you call a 16-bit modular machine with an international keyboard, 80-character green text display, function keys, two disk drives, a number pad, a color display attached by a single cable, that also runs Logo interesting. If one could get used to diacritical marks being

where the numbers are on American keyboards, and to the slightly different placement of letters, playing with Logo on the Goupil can be quite fun. I ran the kid's circle drawing procedure on my Apple back home, and the Goupil Logo seems to be at least five times faster.

I talked for a while with Olivier Schmidt, one of the two people who deal with 50 trainees and who introduce the 150+ new visitors per day to Logo. While acknowledging the current use of computers for CAI in a small number of French schools, he expressed hopes for the wide spread of the self directed computing style that is one base of the Logo philosophy. He remarked that parents pose the greater difficulty in teaching Logo to kids, as their expectations of learning how to compute are more in line with the heavily structured French educational system.

Several days later, I talked with Bob Lawler about The World Center, the "international Logo network", and about "the progressive construction of mind". Lawler is one of several American computer scientists and psychologists who were involved with the creation of the center in 1982. He is currently involved in a Logo (Wolof version) computer literacy program in Senegal. One of his hopes for Logo is that it will be translated into as many languages as possible, in order that an international Logo network can materialize as people learn Logo in their language as opposed to the need to learn some English to use Basic or Pascal on micros. For your information, the Wolof word for Lawler's BEACH micro-world is XAM.

According to Lawler, such a network will permit "the transfer of ideas as computer programs", using Logo as a communicative language as well as a computing language. He informed me that Logo has made it's way as far south as Argentina, and showed me a book on Logo that had been published in Spanish by Horacio C. Regini, titled: "Alas Para La Mente" (Ediciones Galapago, Avenida L. N. Alem 1074, 1001 Buenos Aires). Subtitled "Logo:Un Lenguaje de Computadoras y un Estilo de Pensar" (Logo, a Computer language and a Thinking Style), the book is a very good introduction to Logo, although it is aimed at the high school and instructor level rather than at the younger user.

No formal Logo network exists as yet, since Logo for micros is barely a year old; it will be necessary for Logo groups to organize and contact each other.

There are no Logo clubs in Paris, partially due to the scarcity of microcomputers in the home, and partially because the French government wants to disseminate Logo in a machine manufactured in that country. The Goupil 2001, mentioned earlier, is not an economical choice, as they cost Fr. 30,000 (\$4,200) compared to the Euroapple II Plus' Fr. 12,000 (\$1,700). There is a school dedicated to teaching Logo, which was formed expressly for that reason; they use Apples there. The preference of the French government for computers of their manufacture in their home and overseas projects

contd.

reportedly precipitated the departure of Seymour Papert, the "inventor" of Logo, from the World Center.

Lawler revealed how he thought Logo would develop as a rather complex language in the snugly fitting environment of the Apple computer. As there is relatively little nodespace (a measure of memory in a Logo system), "large" programs will have to be parceled up and read in and out of memory as related workspaces. For more permanent changes, there is the possibility of creating primitives using an assembler (written in Logo).

Lawler's work at the World Center, apart from the Senegal project, revolves around studying technology and the social construction of mind. He has been observing the progress of the learning of mathematics skills in children over a period of months and years, using a constant observation approach pioneered by Jean Piaget.

I asked if other cultures will create a more satisfactory niche in their societies for computers and the people who know how to use them. He opined that the effects of learning a self-directing language like Logo in one's own language and style will be less destructive of cultural patterns than the more typical schooling concept.

After passing through just these two Logo activity nodes, it seems that Logo is definitely being taken more seriously by all persons involved than any other computer language to date. LCSi's concern appears to be the wide distribution of the language on a number of machines, with some emphasis on improving graphics capabilities as a means of engaging the young. The World Center and researchers like Bob Lawler are concerned about both society-wide changes wrought by the computer revolution, as well as its implications in theories of how and why we think and act. &

Color Plotting contd. from pg 40

```

60 H PLOT X,Y: NEXT X
70 FOR X = 70 TO 110 STEP 2
80 H PLOT X,Y: NEXT X
90 FOR X = 160 TO 200
100 H PLOT X,Y: NEXT X
110 FOR X = 201 TO 240 STEP 3
120 H PLOT X,Y: NEXT X
130 Y = Y + 15
140 NEXT I
180 S = 4096:H = 160:K = 159:M = 114
190 FOR X = H TO 205
200 Y = K - SQR (S - (X - H) (X - H))
210 H PLOT X,Y: NEXT X
220 FOR Y = M TO K
230 X = H + SQR (S - (Y - K) (Y - K))
240 H PLOT X,Y: NEXT Y
250 HTAB 1: V TAB 21
260 PRINT "X ODD"; TAB( 11)"X EVEN";
    TAB( 28)"X BOTH"
270 HTAB 1: V TAB 22
280 PRINT "STEP 2"; TAB( 11)"STEP 2";
    TAB( 24)"STEP 1 STEP 3"
290 HTAB 1: V TAB 23
300 PRINT TAB( 3)"FROM TOP, COLOR NOS
    ARE 1 TO 7";
310 HTAB 1: V TAB 24
320 PRINT ;
330 HTAB 1: V TAB 1
    
```

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APPLESEEDS

Appleseeds is a group of kids who meet during the monthly WAP meeting. Our meetings consist of a speaker (first 30 min.), presentations, and discussion of general points of interest. If you have special knowledge in a topic relating to the APPLE and would like to give a presentation for Appleseeds, please contact David Stern at 881-2543.

The meeting plan for Appleseeds has been revised:

10:00 - 10:30 : SPEAKER
10:30 - 11:00 : Q&A SESSION W/SPEAKER
11:00 - 11:30 : DEMONSTRATION OF NEW SOFTWARE

The speakers for the next few meetings are listed below:

FEBRUARY - MACHINE LANGUAGE - TOM WARRICK
MARCH - PADDLES (AND OTHER GAME CONTROLLERS) - TOM RILEY
APRIL - APPLE //E - DAVID STERN
MAY - APPLESOFT (SPECIAL PROGRAMMING FEATURES) - MARK PANKIN

Appleseeds needs knowledgeable people to provide presentations on computer topics which will be of educational value to our members. If you have a topic which you believe would be of interest, please contact David Stern.

REVIEWS:

] PROGRAM NAME : REPTON []
] PUBLISHER : SIRIUS SOFTWARE []
] PRICE : \$39.95 []
] RATING : 9 []
] REVIEWER : SETH WEINSTEIN []

Repton is an excellent scrolling shoot-out game. In Repton, the player controls a spaceship capable of flying backwards and forwards, firing huge blasts of fireballs, putting up shields, and firing a devastating "smart" bomb which will destroy all enemies on the screen. Also included is the instructions option, a series of displays showing how to play the game. I recommend this game very highly.

] PROGRAM NAME : TUBEWAY []
] PUBLISHER : DATAMOST []
] PRICE : \$34.95 []
] RATING : 8 []
] REVIEWER : DAVID STERN []

First there was Tunnel Terror, a computer adaption of the arcade game Tempest. Tunnel Terror was good, but not good enough. Then came Tubeway. Tubeway is an almost perfect adaption of Tempest. Complete to the last detail, Tubeway gives a terrific adaption of Tempest. Tubeway is fast, has excellent sound, and terrific control. I suggest that anyone who liked Tempest or Tunnel Terror should check out Tubeway.

HOOKING YOUR APPLE UP TO A STEREO by David Stern

The tiny speaker located inside the Apple does not come close to emitting the quality of sound which the Apple is capable of creating. However, I have heard that hooking your Apple directly to the high level (auxiliary) inputs of a stereo can cause damage to your Apple.

My solution is quite simple and inexpensive--and has not yet caused me any problems with my Apple. I wired the 8 ohm secondary of an inexpensive (\$1.29) audio isolation transformer (Radio Shack part No. 273-1380) to the Apple's speaker output. Then I wired the 1000 ohm primary to a cable with a jack at one end which can plug directly into my stereo. I then plugged the jack in the high level auxiliary (or equivalent) input, turned my stereo on, set it to monophonic (due to the fact that there is only one input from the Apple) and booted up my favorite game. The volume was a little too high, so I put a trim pot on the primary side.

The problem arose that now my Apple was no longer portable. To solve this problem, I wired a jack to the Apple's speaker without actually disconnecting the speaker itself. Now I can use the Apple's speaker alone, plug in an extension speaker, or use my special cable (with the audio isolation transformer) to connect my Apple to the stereo.

HIGH SCORES

If you have a score which is greater than one of those listed, or if you are good at a certain game and wish to have that game listed, please contact David Stern.

GAME	SCORE	APPLESEED
ALIEN RAIN	592,080	STEVE GREEN
ICBM STRIKE	107,352	S.C.D.
BUG ATTACK	57,530	DAVID HECKER
BANDITS	33,135	DAVID STERN
CANNONBALL BLITZ	136,210	MIKE FORMAN
ABM	26,000	S.C.D.
SNEAKERS	47,810	ANDREW KAPLAN

contd. on pg 54

HOME CONTROL: WHAT IT CAN DO

by Russ Eberhart

To the question, "What can I do with microcomputer home control in my home?", the answer is, "Almost anything you can conceive of." It would literally take dozens of pages to enumerate all, or even most, of the possibilities.

In this article, some of the more common (and a couple of uncommon) uses of home control systems are reviewed. In future articles, equipment used to implement home control will be discussed. In particular, systems available as plug-in or add-on units for the Apple II and IIe will be reviewed.

The most common uses of home control systems fall into one of four areas: control of lights and appliances, control of heating/air conditioning systems, monitoring security systems, and keeping track of upcoming events by means of memoranda.

The control of lights and appliances can be done on a pre-determined or random basis. For example, the radio can be programmed to turn on each morning at 7:00 a.m., while lights can be set to turn on and off at random times while you're on vacation. Lights can also be dimmed, the stereo turned on and off, etc. Your sauna or hot tub can even be turned on and ready when you get home from your skiing trip.

Your heating/air conditioning system can be controlled on an hourly, daily, and weekly schedule. The exact profile of how you want your thermostat set can be programmed for several weeks in advance. During the winter, for example, you may want your thermostat set back at night, up for an hour in the morning (until you go to work), then back during the day, and up again in the evening when you get home. On weekends, a completely different temperature profile may be desirable.

The monitoring of security-related sensors can be another important function of home control systems. The sensors can be scanned several times each second, and alarms sounded locally and/or automatic dialing units activated to notify police. The detection of an intrusion may cause all outside lighting to be turned on; detection of smoke may turn on all interior lighting to facilitate escaping the structure.

The home control system can keep track of, and help remind you of, upcoming events, such as birthdays and appointments. Recurring events, such as putting out the garbage each Thursday, can be left in the system for automatic repetition.

A home control system described in the February 1983 issue of Softalk has to be one of the more unusual. Among other things, it monitors the use of a litter box by a cat; a ventilation fan is turned on a short time after the box is used; and after

the box has been used a predetermined number of times, a memorandum to clean the box appears on the monitor screen.

Most home control systems now available use the BSR ultrasonic technology to transmit control signals to appliances and thermostats. The BSR Model X-10 is also sold under the trade names of Sears' "Home Control System" and Radio Shack's "Plug 'n Power". I will examine the BSR technology in more depth in future articles.

Complete home control systems that can be plugged into Apple II and IIe computers are available from two sources. A system named "Waldo" is available from ARTRA, Inc., P.O. Box 653, Arlington, VA 22216, phone 703-527-0455. The price of Waldo depends upon system configuration, and ranges from about \$600 to \$900. A system named "TomorrowHouse" is available from Compu-Home Systems, Inc., 3333 E. Florida Avenue #81, Denver, CO 80210, phone 303-777-6600. The price of TomorrowHouse depends upon system configuration, and ranges from about \$900 to \$1,200. (None of the prices include the cost of the computer.) I will review each of the systems in more detail in future articles.

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EDITING LONG APPLESOFT PROGRAMS WHICH BUMP INTO THE HIRES SCREEN by Jim Allison

POKE 103,X:POKE 104,Y

This article describes a method of modifying existing long Applesoft programs. It is intended for the novice who has learned a little BASIC, and would like to do something which seems impossible at first glance. The modification of APPLEPLOT's printing routine is used as an example. A listing of the changed lines for the C.ITOH/NEC 8023 printer with the PKASO NE12 interface card follows the article. The basic instructions are:

1. Load the program from disk.
2. Take out original disk and insert an initialized work (blank) disk.
3. Save the program so you will have a copy of the original program easily available for reference.
4. List the program. You will only be able to list the first part of the program, which is loaded below \$2000. The first line will probably be something like:

1 POKE A,X:POKE B,Y

This is your clue to the way to get at the last part of your program. The numbers A and B are the decimal equivalents of the hex address of the last Applesoft line in memory before the Hires page 1 (where the program is to jump to the next Applesoft statement to be executed above the Hires screen). As you may have guessed, the numbers X and Y are the decimal equivalents of the low and high bytes, respectively, of the hex address of the next Applesoft statement to be executed. If you are confused by now, don't worry; I'll now explain how to use the above information without really understanding it!!

First, you must realize that making ANY changes to the first section of the program will alter the numbers required for A and B above. It is possible to edit the first part of the program and make it work, but you will need to find the location in memory of the last Applesoft statement which does not extend into Hires page 1 area beginning at \$2000. In order to do this you should read and understand the article "On The Overall Structure Of Applesoft" by Charles Mesztenyi, WAP Newsletter, Nov 1981, p32ff and "Space War (Or How To Live With The Hires Page)" by David Morganstein, cf, Dec 1981, p17ff. Fortunately, editing the rest of the program is much easier; you must only fool your APPLE into thinking that the upper part of the program is the whole program. You do this by setting LOMEM to the address of the first statement above the Hires screen (the X and Y values mentioned above). This is easier to accomplish than you might think - LOMEM's value is stored by the APPLE in locations 103,104 (hex 67,68), so all you do to fool the infernal machine is to :

When you LIST the program, lo and behold!, your listing will start at the Applesoft statement which begins the upper part of the program. You can now edit to your heart's delight. When you are satisfied that there are no more typing errors and are ready to run the program, you will, of course, want to save it and THEN try it out. First, you must tell the APPLE where the real beginning of the program is located. If you did a fresh boot of the system before you began this project, then this should be at hex \$0801. Therefore, just execute the POKE statement:

POKE 103,1:POKE 104,8

Now you may safely SAVE and RUN the program to see the effects of your work. A sample set of commands for adding your own printer and interface driver to APPLEPLOT is presented below.

1. LOAD APPLEPLOT
2. BSAVE APPLEPLOT LOGO,A\$2000,L\$2000
(Saves the boot up logo so you can add it back if you loaded a graph to test your program changes.)
3. POKE 103,113:POKE 104,73
(The X and Y decimal values taken from line 1 of the program.)
4. List and edit the file as you wish
5. POKE 103,1:POKE 104,8
6. SAVE <new name>
7. RUN
(Should you want to change some more, repeat from line 1, only LOAD <new name> of course!)

NOTE: Not much modification can be done which lengthens APPLEPLOT, as it is already very long. To add your printer driver you will have to delete the existing program lines for the SILENTYPE or QUME (possibly both). Be careful what you delete, as there are many subroutines which are not associated with the printer in that section of the program. Compare the listing of the original program with the listing at the end of the article to get an idea as to which lines were deleted.

The listing following this article is a driver for APPLEPLOT to drive a C.ITOH (or NEC 8023) printer with a PKASO NE12 interface card. Lines 940-958 put the printer's name on the screen and wait for a <cr> to continue. The actual printer driver routine begins at line 1070 which checks the printer status to see if there is paper and the printer is on-line. Line 1075 prints the default printer setting parameters. (Answering the question with

contd.

<cr> returns to menu, N sets the default printing parameter and prints the graph, and Y allows you to choose the printer parameters you wish to use (lines 1090 thru 1099)). Line 1100 allows you to change your mind. Line 1190 actually prints the graph and tells you it is printing (if you can't hear your printer). You are then returned to the main menu to do as you please.

Many thanks to those of you who responded to my request for help on the ABBS.

Listing

```

940 HOME : PRINT TAB( 12);"PRINT THE
    GRAPH": PRINT : PRINT "(ONLY AVAILABLE
    FOR THE PRINTER BELOW)": VTAB 23:
    PRINT TAB( 10);"(PRESS CTRL-C FOR
    MENU)"
953 GG$ = "C.ITOH/PKASO": GOSUB 955: GOSUB
    1070: RETURN
955 VTAB 14: PRINT "=====> ";; INVERSE :
    PRINT GG$;; NORMAL : PRINT "? (RTN)";:
    GET VT$: IF ASC (VT$) = 13 THEN RETURN
956 IF ASC (VT$) = 3 THEN 960
958 VTAB 14: PRINT "=====> ";; INVERSE :
    PRINT GG$;; NORMAL : PRINT "? (RTN)";:
    GET VT$: IF ASC (VT$) = 13 THEN RETURN
959 POP : GOTO 940
960 POP : GOTO 20
982 RETURN
984 IF LEFT$ ( RIGHT$ ( FILE$, 3), 1) = CHR$
    (44) THEN F$ = LEFT$ ( FILE$, LEN
    ( FILE$) - 3): GOTO 988
986 F$ = FILE$
988 RETURN
990 FILE$ = " ": F$ = "": VT = PEEK (36) - 1
992 GET F$: IF F$ = CHR$ (13) THEN 1000
994 IF F$ = CHR$ (8) THEN T = LEN
    ( FILE$): IF T = 1 THEN 992
996 IF F$ = CHR$ (8) THEN FILE$ = LEFT$
    ( FILE$, T - 1): POKE 36, VT + LEN
    ( FILE$): CALL - 868: GOTO 992
998 PRINT F$;; FILE$ = FILE$ + F$: GOTO 992
1000 IF LEN ( FILE$) < 2 THEN FILE$ = CHR$
    (13): RETURN
1002 RETURN
1058 POKE 34, 1: VTAB 2: CALL - 868: GOSUB
    1062: HOME : VTAB 22: PRINT TAB(13);
    "(CNTRL C FOR MENU)": VTAB 10: PRINT
    TAB(14);: FLASH : PRINT "PRINTING
    GRAPH": NORMAL : CALL 672: PRINT :
    PRINT CHR$ (17): PR# 0: IN# 0: CALL
    1002: RETURN
1062 VTAB 22: PRINT TAB( 8): CALL - 868:
    PRINT "(PRESS SPACE BAR TO CONT)";:
    GET T$: PRINT : IF T$ < > CHR$ (32)
    THEN 1062
1064 RETURN
1066 TEXT : HOME : VTAB 10: PRINT TAB(7);
    "PRINTER CARD NOT IN SYSTEM": GOSUB
    1062: GOTO 20
1068 XB = INT (100 * XB + .5) / 100: YB =
    INT (100 * YB + .5) / 100: XM = INT
    (100 * XM + .5) / 100: YM = INT (100 *
    YM + .5) / 100: XX$ = STR$ (XB): YX$ =
    STR$ (YB): XM$ = STR$ (XM): YM$ = STR$
    (YM): RETURN
1070 IF INT ( PEEK (49296) / 16) < > 5
    THEN PRINT : PRINT "CHECK PRINTER":
    FOR L = 1 TO 1000: NEXT L: GOTO 1070
1075 TEXT : HOME : PRINT TAB(14);"C.ITOH/
    PKASO": PRINT TAB(6);"NORMAL, 2X,
    CENTERED, HORIZ": POKE 34, 2: VTAB 10:
    PRINT TAB( 3);"CHANGE PARAMETERS?
    (Y/N)";: INPUT "": VT$
1080 IF VT$ < > "Y" AND VT$ < > "N" AND

```

```

VT$ < > QZ$ THEN 1075
1085 IF VT$ = QZ$ THEN RETURN
1086 IF VT$ = "Y" THEN 1090
1087 IF VT$ = "N" THEN PRN = 2: GOTO 1190
1090 CLEAR : HOME : VTAB 5: PRINT TAB(6);
    "ANSWER EACH QUESTION (Y/N)": POKE
    34, 2: PRN = 0
1092 VTAB 10: PRINT TAB( 8);"2X SIZE ?";:
    INPUT "": SZ$: IF SZ$ < > "Y" AND SZ$
    < > "N" THEN 1092
1093 IF SZ$ = "Y" THEN PRN = PRN + 2
1094 VTAB 12: PRINT "WHITE ON BLACK ?";:
    INPUT "": WB$: IF WB$ < > "Y" AND WB$
    < > "N" THEN 1094
1095 IF WB$ = "Y" THEN PRN = PRN + 32
1096 VTAB 14: PRINT TAB( 2);"ROTATE 90 DEG
    ?";: INPUT "": PRT$: IF PRT$ < > "Y"
    AND PRT$ < > "N" THEN 1096
1097 IF PRT$ = "Y" THEN PRN = PRN + 8
1098 VTAB 16: PRINT TAB( 5);"FLUSH LEFT
    ?";: INPUT "": PFLEF$: IF PFLEF$ < >
    "Y" AND PFLEF$ < > "N" THEN 1098
1099 IF PFLEF$ = "Y" THEN PRN = PRN + 16
1100 VTAB 20: INVERSE: PRINT "DO YOU WISH
    TO CHANGE ANYTHING? (Y/N)";: NORMAL :
    INPUT "": CHG$:
1110 IF CHG$ < > "N" THEN 1090
1190 POKE 34, 1: VTAB 2: CALL - 868: GOSUB
    1062: HOME : VTAB 10: PRINT TAB(14);:
    FLASH : PRINT "PRINTING GRAPH": NORMAL
    : PRINT : PRINT CHR$ (4)"PR#1": PRINT
    CHR$ (9); PRN"H"
1192 PRINT CHR$ (4)"PR#0": PRINT CHR$ (4)
    "IN#0": CALL 1002
1210 GOSUB 1062: GOTO 20

```

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ZCPR - A Z80 REPLACEMENT FOR THE CP/M CCP An Overview

by Walt Mills

This article is intended for those persons who are currently using CP/M on their APPLE. If you intend to implement CP/M in the future this overview may be confusing, so beware that many of the commands herein are not available under Digital Research's CP/M.

CCP is short for Console Command Processor. It is the portion of CP/M that takes your input lines and interprets these commands to usable statements. A typical example is the DIR command; this command gives you a listing of all programs in the "catalog" of your diskette. The CCP is about 2K long and resides in the upper portion of memory. ZCPR is intended to replace the original CCP supplied by Digital Research and gives you many new commands and features. ZCPR is public domain software and instructions for implementation may be found at the end of this article.

One of the first (and obvious) advantages of ZCPR is the drive search feature. ZCPR will search the logged disk first for any Command file, then check Drive A, User Area 0, for the file and execute that file if found. This means that if you are logged to Drive B and you type "STAT" Drive B will be searched first, then Drive A and STAT executed (if it is on the disk in Drive A). Another feature is the GO command. This command will begin executing any program located at 100H (normally the last executed program).

Naturally, ZCPR supports all of the normal resident commands such as DIR, ERA, TYPE, SAVE and REN. However, most of these commands have additional parameters under ZCPR. "DIR" will give a directory listing of all \$DIR files, while "DIR *.* S" displays only \$SYS files. "ERA" will list each file as it is erased while "ERA *.*" will prompt with "ALL?", giving you the opportunity to abort the command. The "TYPE" command will type a file to the screen with page pauses at every 24 lines and "TYPE filename P" will type without paging. The "SAVE" command allows you to save by Decimal or Hex and by Pages of Sectors. The "REN" command will prompt if you try to rename a file to an existing file name, thus keeping you from accidentally erasing files.

ZCPR adds a few new resident commands to your bag of tricks (no pun intended): LIST, USER, DFU, JUMP and GET.

LIST will list a file to the LST (printer) device without the need for a Ctrl-P. USER sets the current user number (i.e. A1: for user #1). DFU sets the default user number to search for unfound files on the logged disk. JUMP will begin execution at a specified memory location much like a CALL in Basic. GET allows a program to be loaded to a specific memory location.

One example of GET and JUMP would be to load a program at 2000H with "GET 2000H filename" and use "JUMP 2000H" to execute (assuming that "filename" had previously been assembled for 2000H).

I have replaced the Digital Research CP/M CCP on all of my master disks with the ZCPR CCP without any problems at all. ZCPR is a public domain program written by the CCP-GROUP (Richard Conn, Keith Peterson, Frank Wancho and Ron Fowler) and may be found on most Remote Bulletin Boards (RBBS). The original design of ZCPR was for RBB systems, and the assembly file contains many user options like eliminating REN or ERA from the normal built in command list and thus disallowing anyone from renaming or erasing the system files in the remote mode.

Installation of the ZCPR System is a relatively simple procedure. One begins with the assembly file and edits it to reflect all of the changes necessary for his system (CCP starting point, type of system, features allowed, etc.). Next one simply uses ASM or MAC to assemble this to a HEX file. Finally, using the file CPM56 and DDT one merges the new HEX listing into the CPM56.COM file and executes the command "CPM56 B:" to install the new system on the disk in Drive B. Full and comprehensive instructions are included with the download of this program. I have placed a new CP/M disk in our library titled ZCPR PROGRAMS, which contains all of the necessary text and assembly files, as well as two pre-assembled .COM files called NZCPR14(2). NZCPR14 is the final version 1.4 ZCPR for use with the 80 column card and NZCPR142 is for use with the standard APPLE 40 column format. The file "READ.ME" gives a short definition of each file on the disk.

At this writing there is a new release planned for ZCPR called ZCPR2 which is a major rewrite of the ZCPR system and it should contain all of the above plus many more features. I am in the process of downloading the manuals now and I will make them available to the library soon. If you have any questions concerning the ZCPR system, please call me at (703) 241-8677 during the day and I will attempt to get you the answers. I am by no means the expert on this subject, but I do have the working knowledge to get you up and running. Good luck and have fun!

Tutorials contd. from pg 49

these or any other tutorial topic.

VOLUNTEERS ARE NEEDED

We need members who are both willing and experienced to volunteer to lead one (or more) session tutorials on Visicalc, dBase 2.0, BASIC, FORTRAN and other topics of interest to our members. If you are willing, please contact Stephen Stern at 881-2543 or WAP250 on the ABBS.

WAP TUTORIALS

by Stephen Stern

One of the major advantages of belonging to a user club like Washington Apple Pi is that the more experienced members can share their knowledge with their less experienced counterparts. In this spirit the WAP Tutorials have been established.

The tutorial is a volunteer-led Saturday seminar where attendees usually have a chance to interact with the seminar leader. The seminar leader is experienced in a computer specialty such as VisiCalc or ScreenWriter. Where the subject matter permits, attendees are encouraged to bring their own Apples. Our experience has been that hands-on experience is a far better method of learning. The cost to members is reasonable, usually \$15 for a Saturday morning session. Where the format of the tutorial permits attendees to bring their Apples, we charge \$5 less if you bring an Apple. Registration is on a first come first served basis; attendance is limited to 25.

Non-members are permitted for a \$5 surcharge. Registration priority is naturally given to members.

The tutorials being arranged for the Spring of 1983 are:

WORD STAR, the CP/M word processor, led by Dave Inouye on March 12 at UHUHS, 9:30 AM. Fee \$15; deduct \$5 if you bring an Apple; add \$5 for non-members.

INTRODUCTION TO DB MASTER, the most popular Apple data base manager, led by Dave Einhorn on April 9 at USUHS, 9:30 AM. Fee is \$10; add \$5 for non-members (DO NOT bring your Apple).

ADVANCED DOS TECHNIQUES led by Richard Untied on May 14 at USUHS, 9:30AM. Fee is \$15; add \$5 for non-members. While the format of this tutorial does not lend itself to attendees using their Apples during the seminar, a \$5 discount will be offered to four attendees volunteering to bring their Apples for the instructor's use.

LOGO, the innovative educational language. This tutorial will be sponsored by the LOGOSIG this Spring. Look for further announcements or contact Nancy Strange (703-691-1619) or Ron Murray (328-3553).

Remember registration is on a first come first served basis. If you plan to attend please complete a registration form on the last page of the newsletter and mail it soon with your registration fee.

Future tutorials are being planned for ScreenWriter, the popular Apple word processor; FORTH, an innovative language for your Apple; and Stock Market applications for your Apple. Please fill out the survey on the last page if you are interested in

contd. on pg. 48

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A PAGE FROM THE STACK

by Jill and Vance Giboney

(Ed. Note: The first part of this column was originally intended for the February issue, but was received too late to go in. Following it will be this month's column).

This month we're adding three new disks to the library:

Volume 128 - Games D
Volume 129 - GLAQ
Volume 130 - Diversi-DOS

The Games D disk contains the following programs:

AWACS - An Applesoft Hires game. You command a fleet of planes and must defend your base from enemy fighter planes.

BLACK FRIDAY - An Applesoft text game for 1 to 4 players. You get to invest \$5000 then buy and sell your shares during the following years.

CHASE - An Applesoft Lores game. You're chased by robots.

D&D ITEMS - A game utility in Applesoft for Dungeons & Dragons. This program stocks a lair with magic items for you.

DIVE BOMBER - An Applesoft Hires game. You drop bombs in order to clear out a pass.

GOLF - An Applesoft text game that allows you to select your club in a given situation.

LIT'L RED BUG - An Integer Basic driving game that lets you use a paddle to steer as you try to stay on the road.

LOST TREASURE HUNT - An Applesoft text game. You have a map and try to find the treasure that's hidden on the island.

REAL TIME LANDER - An Applesoft lander game that uses Hires as you try to land a lunar lander safely.

SUBSCAN - An Applesoft Hires shooting game for two players that pits a plane against a submarine.

WALL - A machine language program in Lores for two players. You try to keep your lines from crossing. Instructions are in WALL-INSTRUCTIONS.

WIZARD'S CASTLE - An Applesoft game that lets you wander around a wizard's castle.

The GLAQ disk contains the "Global-Local Adaptive Quadrature" program. It is described as follows:

"GLAQ is an iterative, adaptive quadrature routine used for estimating the integral (I) on the interval (A to B) of a user-

supplied function using the 7-point Gaussian and 15-point Kronrod rules of integration."

Also on the disk are two files of documentation in a variety of formats. All are presented as REMs in Applesoft programs. The GLAQDOC files give the documentation for the working of the program, and the GLAQHELP files give you the introduction.

The Diversi-DOS disk is a commercial offering from Diversified Software Research. The disk is unlocked and offers you a modified DOS that speeds up disk access, a keyboard buffer program, a print buffer program, and a DOS-mover that puts Diversi-DOS on a RAM card. All the documentation is on the disk and is available when you boot it.

DSR has offered this disk to all Apple computer clubs and computer stores for free distribution. The catch is that they're asking you to send them \$25 if you decide to keep it. In other words, DSR is letting you try out the program and trusting that you'll pay them if you want the programs.

WAP has decided to add the disk to the library just as we would any other disk. Whether or not you pay DSR for it is up to you. We might, however, point out that it's nice to have a software publisher confident enough of their product to believe that you'll be willing to pay for it AFTER you've given it a good trial on your own system.

(Following is this month's column):

This month we're adding three new disks to the library: a new Personal/Education disk, and the two latest IAC disks.

Volume 131 - Personal/Education 2 contains the following programs:

ARITHMETIC TABLES - An arithmetic drill program.

CALENDAR - Another program to print a calendar in 80 columns.

FLASH SPELLING - A spelling drill program.

FOOD VALUES - This program shows you the food values of selected foods.

GEOGRAPHY - A game to help teach geography.

GEORGE'S MORSE CODE - Gives the morse code for what you type in.

GRADE AVERAGE - Computes number and letter averages for grades.

IDEAL BODY WEIGHT - Computes your ideal body weight.

contd.

LIFE EXPECTANCY TEST - Predicts your life expectancy.

MATH PRACTICE - Another arithmetic drill program.

MUSIC COMPILER - Allows you to compose and play tunes.

RECIPE BOX - Allows you to enter and file recipes.

RECIPE CALORIE COST - Counts the calories, recipe costs, and converts the quantities for different numbers of servings.

REMEMBER NUMBERS GAME - Gives you a technique for remembering numbers.

TELEPHONE ACRONYMS - Makes up acronyms to help you remember phone numbers.

TIME BETWEEN DATES - Gives you the time in days, weeks and years between specified dates.

TIME TEACHER - Drills on telling time using a Hires clock.

TWELVE MONTH REMINDER - Allows you to enter and retrieve reminders.

VOCABULARY - Gives you a definition and clues while you try to guess the word.

The new WAP Volume 132 is the IAC disk #19 which contains a number of utilities. The catalog listing for the disk is as follows:


```
*T 001 ADDRESS INDEX *****
*A 006 ADDRESS INDEX.INSTRUCTIONS
  A 091 ADDRESS INDEX.LC
*A 053 BIRTH/ANNIVERSARY LIST
*A 004 CONVERT APPLEWRITER
*T 001 CRAE/AP *****
*A 004 CRAE/APA
*A 018 CRAE/APA.INSTRUCTIONS
*I 020 DISK SECTOR MAP
*T 001 DISPLAY ASC PAGE BY PAGE ****
*A 004 DISPLAY ASC PAGE BY PAGE.INST
*B 002 DISPLAY ASC PAGE BY PAGE.OBJ
  A 007 HELLO
*T 001 HUFFIM *****
*A 016 HUFFIN
*A 004 HUFFIN.INSTRUCTIONS
*T 001 JOYSTICK *****
*B 034 JOYSTICK WIRING DIAGRAM
*T 018 JOYSTICK.INFO
*A 005 JOYSTICK.INSTRUCTIONS
*T 001 LC-KILLER *****
*A 004 LC-KILLER.INSTRUCTIONS
*B 002 LC-KILLER.OBJ
*A 010 LOAN PROGRAM
*T 005 MEMAP (EXEC)
*A 005 PADDLE TEST
*T 001 POKE 33 *****
*A 018 POKE 33.INSTRUCTIONS
*B 002 POKE 33.OBJ
*R 002 POKE 33.OBJO
*T 004 POKE 33.SOURCE
*T 001 PUF *****
*A 008 PUF.INSTRUCTIONS
*B 004 PUF.OBJ
*T 019 PUF.SOURCE
*A 008 RAM TEST 48K
*A 025 SECTOR LIST
*A 005 TEXT TO APPLEWRITER
```

```
*B 005 TEXT TO APPLEWRITER.X
*B 018 TEXT.JOYSTICK.INFO
*T 001 TRACK 35 *****
*A 028 TRACK 35.INSTRUCTIONS
*B 002 TRACK 35.OBJ
*R 003 TRACK 35.OBJO
*T 008 TRACK 35.SOURCE
*T 001 UN-NEW *****
*A 004 UN-NEW.INSTRUCTIONS
*B 002 UN-NEW.OBJ
*T 008 UN-NEW.SOURCE
```

The second IAC disk we're adding this month is WAP Volume 133 - IAC 20. This is a hybrid disk which is described as follows:

"This hybrid disk is a mixture of Pascal and DOS 3.3. The first 17 tracks (from 0 to 16) contain Pascal programs, while the remaining 18 tracks (17 to 34) bear DOS 3.3 programs. Therefore you cannot boot with this disk. Instead, boot with another DOS 3.3 disk first.

"Of note are two programs on the disk: 'Hybrid Huffin' which has been modified to work with this hybrid disk, to transfer Pascal text files to DOS; and the 'Puffin' program in Pascal to transfer files from DOS to Pascal.

"While you will want to delete files from this disk, keep its format as a handy utility to interface between DOS 3.3 and Pascal." 

Bottom Line contd. from pg 35


with DOS 3.3 CopyA, and both DB Master and Data Perfect are "backupable" with Locksmith or Nibbles Away II.

HARD TO FIND ITEMS

I have just located a source for colored ribbons for the Epson MX 70 or 80. The cost is \$5 each, or \$30 for a dozen of one color. Reloads (with return of your old ribbon and case) are \$2.50 each. They have black, red green, blue and brown ribbons. The source is: A R Systems, 35 Cherry Court, East Northport, NY 11731. These can be very useful when pre-printing invoices in multiple colors.

WAP BUSINESS SIG

Last month we had two presentations on programs for the Apple to prepare personal and business taxes. The first was a presentation by Dave Einhorn on the Tax Preparer by Howard Soft, 8008 Girard Avenue, La Jolla, CA 92037. The second was by K.C. Shaw on using Visicalc for personal taxes and budgeting.

In the upcoming February meeting John New has planned a review of the highlights of that meeting, plus a presentation on the use of Visicalc for stock and commodities value tracing. I hope to see you all there. Thanks for listening. 

EDSIG NEWS

by Peter Combes

EDSIG Calendar

Tuesday, March 1st at 7.30 p.m.

Languages for Education - Brian McLaughlin.

All EDSIG meetings are held in Lecture Room A, Building A, of the Uniformed Services University of the Health Sciences, on the campus of the National Naval Medical Center, 4301 Jones Bridge Road, Bethesda, MD.

Meeting Reports

Tuesday, February 1st at 7.30 p.m.

Program Demonstrations

Meteor Multiplication - Rosalind Stern
Sherman - Brian McLaughlin

Brian McLaughlin showed a massive program - 5000 lines of Pascal - which he had written as a first attempt at a system to teach high level computer languages.

For the first language, Brian chose to teach PILOT, as this is "an easy language to learn and the commands are very short." The program is already being used in a trial version at Catholic University.

The program has its own text editor, and starts with a long, effective tutorial on the use of the editor. Screen editing always looks easy to the initiated, but is the area in which beginners seem to have the most difficulty. Certainly people would learn Screenwriter][or Appewriter][more quickly if such a tutorial were available for those word processors.

Later, the screen is divided, and the right hand side of the screen is used to display a model program. A number of programs can be selected by the user, and the master program will accept any PILOT program provided it uses the same subset of PILOT. The master program actually makes suggestions as to how the user can modify the PILOT program, and demonstrates its effect on one portion of the screen. The user is encouraged to write and edit his own PILOT programs and watch their results on the screen. The master program will step through the PILOT program indicating on a listing (on yet another screen section) which command is being executed, much in the manner of "6502 Simulator", though the two programs were developed quite independently. The split screen simultaneously displays "Messages", "Output", "Computer Memory" and "Program".

An 80 column board is necessary, and the heavy hardware load - 80 column board, 16K card, and special keypad - has been an obstacle to distribution of the program. The Apple][e has 16K card as standard, an 80 column board as a low cost option, and "Open Apple" for special commands, so this may be one of the first programs more prac-

ticable on the][e than on the][.

Rosalind Stern, Director of Computer Education at McLean School, Potomac, showed "Meteor Multiplication" by DIM. Like the popular "Master Type" it uses the techniques of arcade games to motivate what would otherwise be a dull, repetitious process of drill and practice.

Menacing spacecraft, marked with sinister codes like "6 x 7", approach the user's ship in the middle of the screen. To fire, the user has to turn his ship towards the attacker and correctly type the result of the multiplication. With its arcade like speed and constant variety, "Meteor Multiplication" certainly holds attention - the EDSIG chairman had to be dragged off it at one point.

E-Z Learner, from Silicon Valley (bought from the Program Store at White Flint) was a much more conventional shell game, with a positively Stone Age interactive routine. "This is the question - press the space bar to see the answer". Users are even asked to score themselves as to whether or not they got the answer right - some very high scores should be in the offing.

Forthcoming Events - Dianne Lorenz

COMPUTER COURSES and WORKSHOPS

COMPUTERS for CHILDREN:

1. ELF - Classes in programming in BASIC (ages 10 and up) and in LOGO (ages 6 - 12). Parent/child classes in both languages. Special classes for children with learning disabilities. Bethesda. 493-9696
2. Hands-On Science - Computer programming on the Atari for children ages 6 and up in addition to various science offerings. Silver Spring. 649-6921
3. Montgomery College - 'Family Computing' - a course to familiarize you with your microcomputer.

COURSES for ADULTS:

1. ELF - Business Software - featured workshop for March. Three consecutive Saturdays from 1 to 3 p.m.. Classes in "Getting Comfortable with Computers" and BASIC programming for adults offered evenings and weekends. Special classes for parents and children to learn computing together. Bethesda. 493-9696
2. L. Morganstein Consultants - Two courses for April: Fundamentals of Microcomputers - Understanding the Apple and An Introduction to BASIC programming. Two consecutive Saturdays. Computer Consumer Workshop - how to deal with dealers. Gaithersburg. 972-4263.

contd.

3. Learning Works (657-4488) and Open University (966-9606). Many speciality classes in computing in addition to programming.
4. Montgomery College - Community Services - Fundamentals of Computing, special applications software for home and business, programming. Rockville. 279-5206.
5. Trinity College - Lunchtime Learning Seminars. A one-credit course beginning February 15. Hands-on experience with microcomputer and popular home and business software. Call 269-2000 for additional information.

SPRING CONFERENCES and WORKSHOPS:

1. American Association for Higher Education. March 27-39. Washington Hilton. Washington, DC. Campus computing, teleconferences, and other computer-related workshops for teachers and administrators. Call 293 - 6440.
2. TERC 'Microcomputers in Education' Workshops. Feb. 23 - 25. New Rochelle, New York. March 7-9. Oxford, Ohio. Workshops include hands-on experience in teaching math and science with computers, and computers as lab instruments in addition to programming in Pascal, BASIC, and Logo. Call (617) 547-3890 for additional information.
3. National Topical Conference on the Use of Microcomputers in Special Education. March 10-12. Hartford, Conn. Contact John Grossi, Conference Manager, Council for Exceptional Children. Reston, Va. 620-3660.
4. Fifth Conference on Communications Technology in Education and Training. March 21-23. New York Hilton. Use of telecommunications and computers for instruction and training. Call (301) 593-8650.
5. Microcomputers in Education. March 17-19. Arizona State University, Tempe, AZ. The theme of the third annual conference is "Forward to the 3 C's: Communicating, Calculating and Computing." Call (602) 965-7363.

SCREENWRITER HOT LINE FOLLUP UP

by Peter Combes

Mark Crosby reports that the Foreign Character Flag was intended to be able to put foreign characters into ScreenWriter text. However, this was never implemented, and the (partial) note in the Help section and the Flag indicator in Command are all that remain. Mark also reports that other commands that went the same way were

```
.li (line increment)
.ld (line decrement)
```

- even though they are listed in the manual.

Bob Trexler has also been talking to On-Line, and sends the information as to how to get an alternate character set into the 70 column display as well as the 40 column one.

1. Follow the instructions on p.36 of the February issue.
2. Exit to Basic
3. Load APP2
4. 7830 PRINT D\$"BLOAD RUSS2, A\$1000"
8830 PRINT D\$"BLOAD RUSS2, A\$1000"
9830 PRINT D\$"BLOAD RUSS2, A\$1000".
5. SAVE APP2
6. RUN UPSIDE DOWN (yes - again!)
OUTPUT: RUSS2
INPUT : RUSSIAN
7. PR#6 to return to ScreenWriter
8. Go back through "Customize" off the main menu.

By Murphy's Laws, any article on word processors must contain typos and glitches, and the article in last month's magazine was no exception. It was a change of daisy wheel in last month's issue that made the accents on Bogotá look so strange. Some overenthusiastic proofreading put an extra " into the command for reintroducing a macro - it should be "macro (no second)".

My own contribution to the confusion was to put a typo into my explanation of how to use the "l" command for a quick print. l40,l,l,l will give a 40 column print out, single spaced, visible control characters, and prints through slot l. Other possibilities are explained on page 99 of the manual.

Will ScreenWriter survive the introduction of the Apple //e? The big selling point that you didn't need a lower case adaptor or an 80 column card is undercut now that the //e offers both economically.

Apple Writer // now looks a good buy, but it is limited in file size and is said not to access the extra memory of the //e. However, if you have an Apple][, ScreenWriter is selling much more cheaply at the moment, and could be a good choice if you have two disk drives.

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Writers and Columnists for the WAP Newsletter are asked to get their copy in by no later than the 5th of the month. We need time to prepare the copy and to plan the newsletter layout so that it maintains a good appearance. This is very difficult to do when material arrives at the 11th hour. We appreciate all the effort that the writers are putting into the newsletter, but your cooperation in this matter will make for a better product, which in turn will benefit us all.

FIRST IMPRESSIONS OF THE APPLE DOT MATRIX PRINTER

by Bruce F. Field

I just purchased the new Apple Dot Matrix Printer (DMP) and want to take a few minutes to pass along my initial observations.

This printer is almost identical to the NEC 8023 and C. Itoh Prowriter printers. I am told that the print mechanisms are identical and are all made by TEC (more on this later). As far as looks go, except for the Apple logo, the case is almost the same as the C. Itoh. There are two small differences however. The Apple printer has some sound-proofing material on the inside of the case that the C. Itoh and NEC do not, and the paper shroud over the printhead is slightly different. Electrical differences are that the Apple has a 3K buffer where the C. Itoh does not. (I am told that the NEC does have a buffer but I don't know how big it is.)

The basic features of the printer are: 8 X N characters, with a 9 wire printhead to print the characters 8 dots high and also print an underline. There are 10 different character print widths, 9, 10, 12, 15, 17 characters per inch, and elongated characters that produce half as many characters per inch. In addition there are two character sets where the character spacing is proportional to the character width. Most printers (and typewriters) print exactly 10 (or 12) characters per inch regardless of the size of the character. In the proportional mode an 'l' takes up less room than an 'm' and the printing looks more like it is typeset. Printing is either bi-directional or uni-directional. The basic printing speed is 120 characters per second. Any of the character sets can be printed in "bold" or emphasized print. In addition there is the provision for loading in an alternate character set. Special foreign language symbols are included and can be switched in to replace some of the standard symbols. There is a switch (also under software control) that controls whether the numeral zero has a slash through it or not. This is great for word processing where slashed zeroes are an annoyance.

Graphics are excellent. Dot densities as high as 144 by 144 dots per inch are available. This allows printing of the hi-res screens double size and still have them completely fit on the page. Or you can print hi-res screens 1 and 2 side by side for improved resolution.

I think the print quality is slightly better than the Epson printers. The dots tend to overlap more so that there is no white space between them, thus producing a better formed character.

It's unfortunate that the one thing Apple Computer contributed in the development of the printer, the instruction manual, is a disaster. The manual consists of 27 pages of how to set up the printer and assumes

that you are using an Apple parallel interface. Even at that the instructions are contradictory and confusing. First it tells you to remove the cover, remove the packing material, snap the cover back on, and you're ready to go.... except you haven't put the ribbon in yet. Oh, on the next page you remove the cover put the ribbon in, and now you're ready to go. The manual tells you how to perform the self-test and connect the Apple parallel interface and that's it, end of manual. A diskette is included that demonstrates some of the properties of the printer but is of no use as a reference source. Ninety-nine percent of the useful information is contained on a 16 by 5 3/4 inch reference card. (What a stupid size, you can't even photocopy it well.) However this lacks detail in certain areas, and is downright wrong in others. The total documentation of the alternate character set is: ESC I<list>EOT - Load custom characters.

The printer deserves an "A", the documentation an "F".

Is the Apple DMP really the same as the C. Itoh and the NEC? All the computer salesmen assure me that they are, but - they take different ribbons, and require different switch settings on my Grappler + interface. I throw this in as a caution: in my shopping around, probably half of everything I was told was wrong. Admittedly this is partially due to poor documentation by the printer manufacturers. For example, the 3K buffer in the Apple printer is not mentioned anywhere in the documentation; I found it by doing a test printout and noting that the computer finished before the printer. But, if you're not sure about something I wouldn't take anybody's word for it. I'd make them demonstrate it.

Appleseeds contd. from pg 44

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(Ed. Note: The Appleseeds Corner as submitted contained a review of the LISA computer by David Stern. Since there was already such a review in this issue, we have deleted that portion of this column.)

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