For The Serious User Of Personal Computers

COMPUTIST

Issue 60 October 1988

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RDEX Features:

Reading from Protected Disks—By Bill Jetzer

EDASM Transfer Utility—By M.M. McFadden

Amper QuickDraw II Routines—By M.M. McFadden

Slow Speeds for Arcade Games—By John Bishop

A Patch for Copy II Plus—By Marc Batchelor

The Product Monitor—By Jeff Hurlburt

Low Cost Alternate Languages—By Michael J. Paris

Another Copy-Protection Scheme for DOS 3.3—By Stanley Planton

Change Appleworks Cursor—By Jack R. Nissel

RDEX Softkeys:

Ace Programmer ● Aesop's Fables (GS) ● Apple GEOS v2.0 ● Artic Antics ● Creating the Constitution ● Crossword Magic 4.0 ● Death Sword ● Dome Bookkeeping ● Essential Data Duplicator III (EDD 3) ● Garfield Deluxe Edition ● Gauntlet IIgs ● J & S Gradebook ● Kings Quest IIgs ● Kings Quest I (GS) ● Lazer Maze ● Leisure Suit Larry ● Magical Myths ● Mastertype v2.1 ● Mavis Beacon Teaches Typing ● Mind Prober/Mind over Minors ● NATO Commander v1.2 ● Paperboy ● Pegasus ● Pinball Construction Set ● Pool 1.5 ● RAD Warrior ● Railroad Works ● Road Rally USA ● Robomath ● Science Tool Kit ● Search and Rescue ● Showoff ● Social Studies Vol 1 ● Social Studies Vol 2 ● Solo Flight ● Space Quest ● Springboard Publisher ● Spy vs Spy III ● Star Fleet I v2.1 ● Tales of Fantasy: The Dark Tower and Frog & The Fables ● Tapper ● Troll Courseware: Maps & Globes - Latitude & Longitude ● Type! ● Ultima V ● Wagons West ● Zorro

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Softkey: ■Clipper ■DoubleDOS v1.0 ■LoadCalc v4.13 ■Mind Prober

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First the bad news

I just recieved issue #8 of Apple Assembly Line. On the first page is a notice that it will be the last issue I receive. No, my subscription hasn't run out. It's the last issue that anyone will receive. Apple Assemble Line is no more. It's income has fallen to the point where Bob Sander-Cederlof can't continue to publish. He is going to work for Applied Engineering.

I'm sorry to see AAL go, but I understand about the drop in income. We've been hit just as hard. With us, it's an especially funny joke. (Black humor.) I've talked on the phone and answered letters from people who are non-subscribers. I've asked them why they haven't subscribed. The usual answer is that they haven't gotten around to it. (Huh!) I've also been told, by numerous people, of wholesale copying of COMPUTIST by clubs or other groups. So here's the joke; if COMPUTIST goes the same way as AAL due to lack of income caused by non-subscribing readers and excessive zerox copies. Well, maybe it's not funny to you but the software companies would split a gut.

For Toddlers

Kathleen Herrman (Computing for 1-3 year olds, COMPUTIST #58) wrote to let us know that the program she refers to in her article is available for $10 from; Peter Vasilev, 370 Calle La Montana, Moraga, CA 94556. Those of you with toddlers who have outgrown the "carpet commando/sticky-fingered curtain climber" phase may want to give this some serious consideration.

Rumors

I'm interested in starting a rumors & propaganda page. I know that the RDEX open format allows you to write anything you want but I thought it would be neat to sift out the rumors and such and put them all in one place. With all the people who read COMPUTIST (including those who don't subscribe), we should be able to come up with some interesting tid-bits. It should make good reading and may even generate some controversy. So, if you hear something or read something or even know something, send us a postcard with all the details. You don't have to sign the postcard but do send it.

Ultima V and Bard's Tale III

We've gotten a lot more input on these two adventures. I'm going to have to bend a rule that already has a number of kinks in it. I try to limit my editorial meddling in RDEX to some occasional help with spelling or grammar. But with the number of near indentical letters that I've recently received, I'm going to have to get out my razor and do some hacking and chopping. I apologize in advance for any hurt feelings but I'm going to combine the letters about Ultima V into one and the letters about Bard's Tale into another. I think it's better to have all the pertinent data in one place. It's certainly more useful. I'm ignoring the comment from the volunteer editor on the corner workstation (who shall remain nameless for his own protection) to the effect that I should spread the data thoughout the issue and make it hard on the non-subscribers who just make copies. Because of the necessary editing, you won't see the combined tables and charts until the next issue.

Format errors

I apologize for the great number of text and other strange format errors in COMPUTIST #59. (The key icon with the dash at the bottom of the first column on page 33 is the strangest.) Eight corrected pages somehow didn't make it into the final layout. My fault for trying to do everything myself. (Where were the rest of you when that issue was being finalized?) Also, the authors list should have included four more names; Don Westcott, Bob Igo, Brian Hatch and Richard (Gramps) Pirong. I guess I answered my own editorial question from COMPUTIST #59.

Etc...

Mike stopped by and updated our COMPUTIST Shopper Ad. Lots of new stuff. Check it out.

BUGS

COMPUTIST #56, page 19. Softkey for Railroad Works - In step 6, **C6ØØG** should be removed.

COMPUTIST #56, page 2Ø. The controller for Pitfall II - Add this line: 1ØØ5 POKE 47426,24

COMPUTIST #56, page 25. Super Sunday Football General Manager - In step 6 the the BSAVE should be **BSAVE RWTS.SUPER SUNDAY GEN MANAGER,A$19ØØ,L$8ØØ.**

COMPUTIST #58, page 13. Infocom Decoder Revisited. See Ryan Lanctot, page 31.

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Readers Data

For serious users of Apple computers: II, II+, //c, //e, IIgs, Macintosh

New COMPUTIST readers using Apple IIs are advised to read this page carefully to avoid frustration when attempting to follow a softkey or entering the programs printed in this issue.

What is a softkey, anyway?

Softkey is a term which we coined to describe a procedure that removes, or at least circumvents, any copy-protection on a particular disk. Once a softkey procedure has been performed, the resulting backup copy can usually be copied by the normal copy programs (for example: COPYA, on the DOS 3.3 System Master disk).

Commands and control keys

Commands which a reader is required to perform are set apart by being in boldface and on a separate line. The [RETURN] key must be pressed at the end of every such command unless otherwise specified. Control characters are specially boxed. An example of both is:

6 [CTRL-P]

Press [6]. Next, place one finger on the [CTRL] key and then press [P]. Don't forget to press [RETURN].

Other special combination keypresses include [CTRL-RESET] or [Open-Apple-CTRL-RESET]. In the former, press and hold down [CTRL] then press [RESET]. In the latter, press and hold down both [CTRL] and [Open-Apple] then press [RESET].

Software recommendations

The Starter Kit contains most of the programs that you need to "Get started". In addition, we recommend that you aquire the following:

- Applesoft program editor such as "Global Program Line Editor (GPLE)".
- Assembler such as the "S-C Assembler" from S-C software or "Merlin/Big Mac".
- Bit-copy program such as "Copy II Plus", "Locksmith" or "Essential Data Duplicator (EDD)".
- Text-editor (that produces normal sequential text files) such as "Applewriter II", "Magic Window II" or "Screenwriter II".
- "COPYA", "FID" and "MUFFIN" from the DOS 3.3 System Master disk are also useful.

Super IOB and Controllers

This powerful deprotection utility (in the COMPUTIST Starter Kit) and its various Controllers are used in many softkeys. (It is also on each **Super IOB Collection** disk.)

Reset into the Monitor

Softkeys occasionally require the user to stop the execution of a copy-protected program and directly enter the Apple's system monitor. Check the following list to see what hardware you will need to obtain this ability.

Apple II+, //e, compatibles: 1) Place an Integer BASIC ROM card in one of the Apple slots. 2) Use a non-maskable interrupt (NMI) card such as *Replay* or *Wildcard*.

Apple II+, compatibles: 1) Install an F8 ROM with a modified reset-vector on the computer's motherboard as detailed in the "Modified ROM's" article (COMPUTIST #6 or Book Of Softkeys III) or the "Dual ROM's" article (COMPUTIST #19).

Apple //e, //c: Install a modified CD ROM on the computer's motherboard. Cutting Edge Ent. (Box 43234 Ren Cen Station-HC; Detroit, MI 48243) sells a hardware device that will give you this important ability but it will void an Apple //c warranty.

Apple //gs: If you have the 2.x ROM, there is a hidden classic desk accessory (CDA) that allows you to enter the monitor. In order to install the new CDA, you should enter the monitor before running any protected programs (CALL -151) and press "# [RETURN]". This will turn on two hidden CDAs, *Memory Peeker* and *Visit Monitor*. Thereafter press [Open-Apple-ESC] to go to the Desk Accessories menu. Select "Visit Monitor" and there you are. Use [Open-Apple-Y] to exit.

Recommended literature:

- ***Apple II Reference Manual***
- ***DOS 3.3 manual***
- ***Beneath Apple DOS & Beneath Apple ProDOS***, by Don Worth and Pieter Lechner, from Quality Software

Keying in Applesoft programs:

BASIC programs are printed in a format that is designed to minimize errors for readers who key in these programs. If you type:

10HOME:REMCLEAR SCREEN

The LIST will look like:

```
10 HOME : REM CLEAR SCREEN
```

...because Applesoft inserts spaces into a program listing before and after every command word or mathematical operator. These spaces don't pose a problem except when they are inside of quotes or after a DATA command. There are two types of spaces: those that have to be keyed and those that don't. Spaces that must be typed appear in COMPUTIST as delta characters (^). All other spaces are there for easier reading. NOTE: If you want your checksums (See **Computing checksums**) to match up, only type spaces within quotes or after DATA statements if they are shown as delta (^) charactors.

Keying In Hexdumps

Machine language programs are printed in COMPUTIST as hexdumps, sometimes also as source code. Hexdumps are the shortest and easiest format to type in. You must first enter the monitor:

CALL -151

Key in the hexdump exactly as it appears in the magazine, ignoring the four-digit checksum ($ and four digits) at the end of each line. When finished, return to BASIC with:

3D0G

BSAVE the program with the filename, address and length parameters given in the article.

The source code is printed to help explain a program's operation. To enter it, you need an "Assembler". Most of the source code is in *S-C Assembler* format. If you use a different assembler, you will have to translate pieces of the source code into something your assembler will understand.

Computing checksums

Checksums are 4-digit hexadecimal numbers which tell if you typed a program correctly. There are two types of checksums: one created by the *CHECKBIN* program (for machine language programs) and the other created by the *CHECKSOFT* program (for BASIC programs). Both are on the "Starter Kit".

If your checksums do not match the published checksums then the line where the first checksum differs is incorrect.

CHECKSOFT instructions: Install Checksoft (BRUN CHECKSOFT) then LOAD your program. Press [&] to get the checksums. Correct the program line where the checksums differ.

CHECKBIN instructions: Enter the monitor (CALL -151), install Checkbin at some out of the way place (BRUN CHECKBIN, A$6*0000*), and then LOAD your program. Get the checksums by typing the Starting address, a period and the Ending address of the file followed by a [Open-Apple-Y].

SSSS.EEEE [Open-Apple-Y]

Correct the lines at which the checksums differ. ..... RDEXed

EXchange

etc... who want all their software backed up and COPYA-able

when writing a letter to the...

RDEX editor

RDEX stands for:

Reader's Data EXchange

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Doodlebug

† Softkey for...

Crossword Magic 4.0
Mindscape

Use the Sword of Kadash controller from COMPUTIST #27. When the controller asks which side, use (B) BACK. The controller is also on the Super IOB Collection, Volume 2.

Nathan Mourfield

I have some information for you. I loved Danny Pollak's character editor. Then I found that the character editor was on the Britannia disk. That was all right except it didn't work. Most of his adventure tips didn't work for me either. Except for that, I'm fine with Danny.

The word of passage is VERAMOCOR, I think. Also, you can see additional clues in the program, like the 13 question of the code.

If anyone with an Apple needs help on Ultima I-IV, just write.

Andrew Grogan

I have made my very first crack which was actually easier than I thought. I would like to share my joy because I am very pleased with your magazine. It is now my turn to pay back all of the other RDEX contributors out there. This worked for me.

Softkey for...

Pinball Construction Set
Electronic Arts

■ Requirements

☐ Blank Disk
☐ Sector Editor
☐ COPYA

[1] Boot your DOS 3.3 System Disk

[2] Tell DOS to ignore checksum and epilog errors and run COPYA

POKE 47426,24
RUN COPYA

[3] Make the following sector edits to the copy you just made.

Trk	Sct	Byte(s)	From	To
$03	$06	$4A-4C	?.	EA EA EA

The title screen of this program is on tracks $04, $05 and can be loaded using Keith Parker's Picture Loader (COMPUTIST #54) in the forward mode.

(?) Does anyone have a crack for Lode Runner and Championship Lode Runner. Also, why doesn't turning off the checksum and epilog errors not work?

Mike Maginnis

Playing Tips for...

2400 A.D.
Origin

- Confiscated equipment is stored in the only open box in the storeroom at the Social Rehab Center.
- Buy at least three items from Wes and say bye. Talk to him again and you'll get the broken plasma rifle.
- Hugo will fix the plasma rifle.
- The passcard number for the blueprints room is: 6435.
- Les will build the field disperser.
- The door to get the Transporter Guidance Device is off the railroad tracks of the South Station. The passcard number to get through the door is: 569A.
- To get through the protector robots to get the guidance device, use a Direct Override on them.
- LETSGO
- From the back of the City dump on the path: 2N, 1E, 1N, 2E, 1N, 3E, 3S, 1E, 3S, 3W, 3S, 1E, 2S, 2E, 2S, 5W, 2N, 3W, 2N, 4W, 1N, 5W, 1N, 2W, 2S, 3W, 2N, 3W, 3S, 5W, 2S, 1E, 2S, 4E, 2S, 1W, 6S, 2W, 2N, 2W, 2N, 4W, 2N, 6E, 2S.
- Ø7, 18, Ø9, 12, 15
- Lower, lower, lower, upper, lower
- PERABR, EDDONE, CHLOBU (not necessarily in that order)
- The Guidance Device is on the south counter of the third room.
- Maze to IQ & energy boosts: take the corner doors until you get to the room with 2 corner doors—one leads to the IQ boost, the other leads to energy. REMEMBER the way back.

Readers Data EXchange

Rosalie Beals Huntley

I use Copy II Plus v8.1 and an EDD 4 Plus card and backup 70% of my software. I need to know how to backup the other 30%. I have no programming knowledge so I really need step by step help at the start. Any suggestions would be useful.

? I have a few questions: (sorry if they seem dumb)

1. Should I use a ProDOS manual instead of a DOS 3.3? I don't use DOS 3.3 software.
2. Would Beneath Apple ProDOS be better than DOS?
3. Is Multiscribe GS or Appleworks 2.0 a text editor?
4. Is the GS Utility with fast copy ok or do I need COPYA?
5. With EDD and Copy II, I can change parameters and do a disk scan, do I still need a sector-editor, disk-search utility and assembler?
6. How do I back up a 3.5 disk for my GS that is protected by the "key disk" system? Do any of your back issues address this?

Thank you for your help. I am sure once I get started I will enjoy your magazine and all it has to offer.

1&2. Yes, learn how to use ProDOS. When you are familiar with ProDOS then DOS 3.3 will be easy.
3. Yes, and much more besides.
4. It is better to stick with the exact program calls in a softkey procedure. Sometimes another copy program may be used but usually the procedure will tell you that also. (IE. Use COPYA or any whole disk copier.)
5. Copy II Plus comes with a sector editor and disk scanner. (Read the documentation.) An assembler is only necessary if you want to assemble your own source code as would occur if you wanted to make your own changes. We always print the hex code to simplify entry of binary programs.
6. Key disk protection must be removed on a program by program basis, although sometimes a procedure for one program will work on other programs by the same company. Write to RDEX with the name of the program that is troubling you. If we don't have a softkey, we'll put it on the Most Wanted list.....RDEXed

Ken Burnell

Since I'm writing a letter anyway, I would like to say that I like the "new" format with lots of softkeys and, especially, the new covers. I never did like those [expensive] flashy covers that you went to back in'83. I support your adding IBM RDEX's, I think it's a good survival idea. And, if you have to cut some more like down to six issues a year, I'd support that too. Anything to keep COMPUTIST alive.

By the way, since I have mostly old games (own four Apple II's - no IIgs yet) and am not into Adventure games, I have to admit that your APT's are just about the most interesting thing in the magazine to me these days. I would like to see more of them. I particularly appreciated the one for Marble Madness. How about an APT for the Amiga version of Marble Madness? Now that we know how to get into the Water Maze, how in heck do you cross it?

Keep on publishing.

Eric Delbridge

A.P.T. for...

Space Quest IIe
Sierra On Line

Mathew and John Paul Ownby's Space Quest IIgs APT in COMPUTIST #53 for editing your buckazoids did not work on my Apple IIe version, obviously. To change your buckazoids to 255 on the IIe version, simply save a game in the 'a' position on your save game disk. Save the game after you have the thirty buckazoids from selling the skimmer. Then take out a sector editor and read track $00, sector $03, byte $06. Change the byte to $FF and write the sector back to disk. Here are some more playing tips if you are stuck after changing into a Sarien (these work with IIgs and IIe versions.)

1) Instead of getting into the trunk, you can move the trunk, take jetpack off, open trunk, put jetpack in trunk, close trunk, get on the trunk, and open the vent. Then enter vent and go up the tube on the ladder. Kick the stuck vent and remove it; you will be in the laundry room.

2) Once you've become a Sarien, exit the laundry and take the elevator on the left.

3) Once out of the elevator, go left until you see an up elevator. Get in. Get off on the upper level. Go right until you get to the armory where the droid is. Show him your ID Card, and while he is getting your pulseray, take one of the gas grenades, then take your pulseray.

4) Go left one screen. Get directly over the Sarien Guard. Drop grenade. He will be knocked out!

5) Backtrack to the star generator. Search guard. Take remote. Press button. Walk up to the generator. Look at panel. Move the arrow to the numbers '6858'. Move the arrow to enter. Leave the room. If the security droid is in the next room, you cannot kill it. Go right to the generator room, then go back. He will not be there. If you encounter another Sarien, shoot him as soon as he appears or he will fry you. Get on the down elevator. Take the elevator to the right. Enter the pod. Press launch. That's it!

? HELP! Does anyone know how to get a cab in Infocom's Sherlock Holmes mystery, the Riddle of the Crown Jewels?

? Does any reader know how to edit number of planes and bombs, etc. on Broderbund's Wings of Fury?

Dr. George Sabeh

I recently purchased Sierra On-Line's new issue of Leisure Suit Larry for Apple II series computers. I looked through the back issues of COMPUTIST for a softkey. I could only find one for the Apple IIgs. This led me to review the back issues for other software by Sierra. The softkey by Jean-Micheal Georges in COMPUTIST #30 contained the information I needed to deprotect the program. Now in cookbook fashion here is the softkey.

softkey for...

Leisure Suit Larry
Sierra On-Line

■ **Requirements**

☐ COPYA
☐ Sector Editor with search
☐ Five blank disk sides

1 Copy all five sides using any fast copy program such as COPYA, Locksmith fast copy etc.

2 Search for the sequence 20 00 FF (JSR $FF00). I found this on track $02, sector $08, starting at byte $0D. You need to search the Boot side only. Change this sequence to EA EA EA. This should give a COPYA unprotected copy of the game. Now you can enjoy the program without fear of crashing.

I hope this information will be of some assistance to your readers. Keep up the good work and consider me a permanent subscriber to an excellent magazine.

Brian Hatch

Warning: The following APT's will only work on a cracked copy of Lode Runner.

While making my own boards for Lode Runner, I often wish to borrow a board from the original, modify it, and save it on my data disk. But Lode Runner responds with "USER NOT ALLOWED TO MANIPULATE MASTER DISKETTE". If you search the disk for CC CF C4 C5 A0 D2 D5 CE CE C5 D2 FF (Which spells "LODE RUNNER" with a delete after it) and change the FF to 00 it will fix that problem.

I found it at track $0C, sector $0F.

Trk	Sct	Byte(s)	From	To
$0C	$0F	$FF	FF	00

This sector also contains the Hi-Score board. Each name takes up 8 bytes. For example, if the Hi-Score was by BOO, who reached level 10 with a score of 00053545, the first eight bytes of the sector would read C2 CF CF 0A 00 05 35 45. The first three bytes are the name, the next is the level in hex, and the last four contain the score. To change the name to BRI on level 79, score of 99999999, enter C2 D2 C9 4F 99 99 99 99 at byte $00 of the sector.

Stephen Lau

A couple of IIgs programs just came out, and it's time to get "cracking" again. I'll try to show how I find the protection, so that novices to IIgs cracking can crack some of their own programs in the future. Again credit should be given to my friend, Danny, for his assistance.

**IIgs Softkey for...*

Showoff

Broderbund Software

■ Requirements

☐ Apple IIgs with 512K
☐ Sector Editor (such as Copy II Plus)

Showoff is another winner from Broderbund Software. Anyone can easily make a slide show within minutes. I recommmend this program to any IIgs user.

A fast copy yields no errors at all, but the program instructs you to insert the program disk just before it starts. Um ... sounds like a nibble count again. Since many IIgs programs use the same nibble count protection, and on the same track (20 and 21), I try auto nibble count on track $20 and $21 with Copy II Plus and it works. As pointed out by Brain Troha in COMPUTIST #54, the protection code is similar for any software that counts track $20 and $21 (the guy who developed it must have sold it to several companies). So I tried searching for A2 20 A0 01 and came across it on block $17C.

```
69  LDA #$0000
6C  STA $001E1A
70  PHP
71  SEP #00110000
73  LDX #$20        track and
75  LDY #$01        side to count
77  JSR $0057       count nibbles
7A  BCS $1091       carry set = bad sectors
7C  JSR $0076       check the no. of nibbles
7F  BCS $1091       branch any error to $91
81  LDX #$21        track and
83  LDY #$01        side to count
85  JSR $0057       count nibbles
88  BCS $1091       carry set = bad sectors
8A  JSR $0092       check the no. of nibbles
8D  BCS $1091       branch any error to $91
8F  PLP
90  RTS             return to caller
91  ... .....       routine to tell user to
                    insert program disk
```

Pretty simple? Since this routine returns to the caller after a succesful check, we can simple put a RTS at byte $70 and bypass the whole protection scheme. And that's it! The program now works like a charm.

Make the following sector edits:

Block	Byte(s)	From	To
$17C	$70	08 E2 30 A2 20	60 E2 30 A2 20

**IIgs Softkey for...*

Gauntlet IIgs

Mindscape, Inc.

■ Requirements

☐ Apple IIgs with 256K
☐ Joystick recommended

Yes, Gauntlet, as seen in the arcade, is now on the IIgs. But don't hold your breath. If you think that it will be as good as the arcade, since it's a IIgs specific version, don't buy it. The graphics of the title screen and the menu is great, but when you play, uh...

I don't know how the folks at Mindscape could come up with such a thing for the IIgs. The Atari ST version (for those who don't know, Atari ST has only a 512 color palette as opposed to IIgs 4096) is so beautiful on the back of the IIgs package that it convinced me to buy it. I was deeply disappointed with the graphics quality.

Well, enough complaints. When I set out to deprotect it, I only got an error on block $07. When I tried to bit copy it, the program would boot a little further, and then hang up again. It couldn't be a nibble count. Frustrated, I took a peek at the catalog of the disk and noticed a file called LEVEL 8. Strange, why is there no LEVEL 1 or 2 or 7, but only LEVEL 8? I BLOADed the file and scanned through it. I came across some routines that looked like a synchronize protection. Sure enough, I booted the original and there is a quick movement of track head before it runs. They are coming out with synchronize protection for the IIgs!

I tried copying it with Copy II Plus with sync option, wasted an hour, and it still would not boot. This time I placed a BRK right at the start of LEVEL 8 and the program bombed right before hearing the sync check. I then searched through the memory for any jumps to $9000 (the start of level 8) and came across one at $8799.

```
$8799 JSL $009000 check sync
$879D CMP #$0002  2 = not original
$87A0 BEQ $87A5
$87A5 JMP $80D5   continues execution
$87A7             hangs up
```

So I tried replacing it with LDA $000900 and BRA $87A5, and it worked! Later, I examined how it checks the disk. It seeks to track $00, reads the bad block, and then immediately seeks to the next track and reads the sector that it first came across. If it is not the same sector to be read, it proves that it is not the original disk. Otherwise, it continues to check the next track. This protection is rather sophisticated. I wonder why they didn't invest as much on making the program as they did on protection. They could have come out with a program as good as the one on the Atari ST.

Make the following sector edits:

Block	Byte(s)	From	To
$17C	$199	22 00 90 00 C9 02	AF 00 90 00 80 03

**IIgs Softkey for...*

Kings Quest IIgs
Leisure Suit Larry
Space Quest

Sierra On Line, Inc.

■ Requirements

☐ Apple IIgs with 512K
☐ Sector editor

Excellence is simply the best word to describe Kings Quest for the IIgs. Along with the traditional On Line 3-D animation and humors, this program has exceptional sound effects not found in older Sierra releases. From the door you open, the stone you moved, the goat, anything that you do has great digitized sound. I hope that any following IIgs games would be of this quality.

Tradition dictates Sierra protection, this one has a bad block on $634. I quickly copied both disks and searched for the protection code that Sierra has used in its earlier releases. I did the edit and it worked like a charm. Since many have already discussed Sierra protection, I will not explain it further. I have come up with a generalization on backing up any Sierra 3-D animated adventures.

[1] Copy the disks and ignore any errors on block $634.

2 Search for 22 00 00 00 C9 01 00 F0 04 22 00 00 00 22 00 00 00 AE 00 00 and change the last 22 00 00 00 (before AE 00 00) to AF 00 00 00. I found it on mine at:

Block	Byte(s)	From	To
$A0	$BB	22	AF

I have tried this procedure on Leisure Suit Larry, Space Quest, and Kings Quest. So far they have all worked. It may work with further Sierra releases.

A quick note. I have just acquired Police Quest and was surprised that it has no protection. Is Sierra dropping protection on all their further releases?

Softkey for...

Springboard Publisher

Springboard, Inc.

■ Requirements

☐ Apple IIgs, IIe, IIc
☐ 128K minimum
☐ RAM disk recommended
☐ Unidisk (for 3½" version)

This program is really high quality. Springboard Publisher does most things that Pagemaker does on a Mac. Though the program is quite slow, it is acceptable on a IIgs with a large ram disk, and the company promises to release version 1.1 later with faster speed (free to owners of 1.0) and later a IIgs specific version. The program comes with free artwork, too.

A quick inspection reveals a bad block on $63F and can easily be copied by Copy II Plus. It doesn't work with Diversi Cache, which has to be turned off during the protection check. The program, like other IIgs programs, takes a long time to load, and it's even longer if you use the ram disk since it copies the program onto it. That is where Diversi Cache came in handy which sped up disk loading as much as 3 to 1 with a 512K cache (I think it belongs to every IIgs users library). So I set out to deprotect it and make it compatible with Diversi Cache.

Since the disk is supplied on a ProDOS 8 disk, the bad block could and should be checked through the ProDOS 8 MLI subroutine, which is 20 00 BF. The command for a block read is 80. So I broke into the monitor with Diversi Cache when it told me to insert the original disk, and searched for 20 00 BF 80. Bingo, I found it at $7778. Searching for the call to this routine reveals the following.

```
76E9 JSR $77EF set up prefixs
76EC BCS $7726 and other routines
76EE JSR $772E
76F1 BCS $7726
76F3 LDX #$96  restore marker to 96
76F5 JSR $778B
76F8 BCS $7726
76FA LDX #$06  block $63E
76FC LDY #$3E
76FE JSR $7778 read
7701 BCS $7726 if error then not original
7703 LDX #$06  block $63F
7705 LDY #$3F
7707 JSR $7778 read
770A BCC $7726 if no error then not original
770C LDX #$D6  set marker to D6
770E JSR $778B
7711 BCS $7726
7713 LDX #$06  block $63F
7715 LDY #$3F
7717 JSR $7778 read
771A BCS $7726 if error then not original
771C LDX #$96  restore marker
771E JSR $778B
7721 LDX #$00  clear accumulator
7723 RTS
7726 LDX #$96  restore marker
7728 JSR $778B
772B LDA #$FF  set FF in accumulator (fail)
772D RTS
```

Since it expects a zero in accumulator on returning, simple enough, we can just put CLC, LDA #$00, RTS at the start of the routine and it should work. I sector edited it but it doesn't work! What have I missed? I entered the monitor again and found that the code CLC, LDA #$00, RTS that I had put in had been scrambled. Incidentally, I found that the code is self-relocatable (just like IIgs programs) and any locations with direct memory addresses are changed before it is executed. Such as the first instruction has been changed to JSR $77EF instead of $8122 on disk. So, this time I put the patches at $76FA, since these instructions do not address memory directly and so will not be changed. And it now works!

Make the following sector edits:

Block	Byte(s)	From	To
$2B9	$14B	A2 06 AD 3E	18 A9 00 60

Tips for cracking IIgs 3½" disks

If you want to crack 3½" disks, first try fast copying it. Notice any errors. Then boot and see what disk operating system it used (ProDOS 8 or 16). If it is PRODOS 16 and has a bad block, search for 22 A8 00 E1 22, the command for block read through ProDOS 16. If it is ProDOS 8, try searching for 22 00 BF 80. The program might read the block through a direct smart port call, but that's very unlikely. If you don't have any errors, this must be a nibble count. (Except some EA stuff like Instant Music or Deluxe Paint that use bit insertion) Try searching for A2 20 A0 01. Hope this helps.

I have a very severe problem with my IIgs. When I first bought it, I had the old ROM (version 00). Last year I bought Wordperfect, and it works well. In January, I received an update to 2.0 that used the standard IIgs interface. However, it doesn't work. The program needs the new ROM and I promptly contacted my dealer, they said they don't have the new ROM right now, and they have to get it from Apple. Fine. I can wait. During this time, I noticed some problems using Sierra adventures with Diversi Cache on the old ROM, the program crashed when a particular sound is generated. Three months later, no answers. I call back my dealer and they say they haven't got it yet. It is very true what the RDEX editor said in COMPUTIST #54, that "Apple dealers are uniformly unhelpful unless you want to buy some software or hardware at their inflated price". Well, if anyone knows how to get a new IIgs ROM without going through local dealers, or if I can substitute an EPROM, let me know through COMPUTIST. Has anyone got the same problem? If any more programs come out that do not work on the IIgs old ROM, I will bomb my dealer. Any suggestion is greatly appreciated.

(?) Lastly, so many readers are recommending Senior Prom that I have some comments. What should we IIgs owners do? Be jealous of IIe and IIc owners? I urge any IIgs owners to write to COMPUTIST crying for a IIgs Senior Prom and hope that Cutting Edge will come out with one so that we IIgs owners can also benefit from it.

Happy cracking.

Bill Jetzer

I have discovered a bug. The bug is either in the May or June issue. In the May issue, the RDEXed told J. D. Tischer to use [Ctrl] [ESC] when activating the 2 hidden CDA's on the IIGS. In the June issue, Guillermo Castano de la Serna says you must press [ESC]. He says nothing about the Open-apple key or the Ctrl key.

By the way, I personally don't care if you include IBM or MacIntosh softkeys in RDEX, as long as they are kept in their own section. I am referring specifically to Daryl C. Keppler's letter in the June issue. He says that he won't accept your publishing IBM material and he doesn't like your publishing MacIntosh material either. The way I see it, it's just more for his money. The cost of subscription hasn't gone up, and there's still the same amount of Apple II softkeys and programs. If, in the future, he is asked by a business or school to deprotect IBM or MacIntosh software, he will be glad to have the information readily available.

(?) I have a IIc with the enhanced ROM and when I'm in the monitor and press [Ctrl] [E] [RETURN], I get something like this:

```
M=00 A=FF X=00 Y=FF P=00 S=FF
```

Reader's Data Exchange

What does the M stand for? It's not even mentioned in the Apple IIc Reference Manual, and changing its contents seems to have no effect upon anything.

The correct keys are [CTRL]-[RESET]. As to the "M=ØØ", You've got me. Anyone out there have any ideas?

..... *RDEXed*

Reading From Protected Disks

■ **Requirements**

☐ Super IOB 1.5

One of the most popular techniques for deprotecting software is the swap controller. Although it can be relatively easy to use, and if you are a novice it might be your only alternative, it can be frustrating if you don't have a convenient way into the monitor. Also, the RWTS subroutines take up an additional 1Ø sectors of disk space each. So I decided to find a better way. After disassembling DOS's RWTS subroutine and reviewing The DOS Alterer (COMPUTIST #37), I have come up with a series of pokes that will eliminate the need for most swap controllers. For DOS 3.2 (13-sector) disks, however, you must use a swap controller in order to get the copy into DOS 3.3 format. You can use the pokes with RWTS.13 in a swap controller as shown at the end of the article to avoid having to capture the protected disk's RWTS. For a particular poke, refer to the tables at the end of the article.

Ignore Address/Data Prologues

It is possible when reading from a disk to ignore one or two address and/or data markers. This is useful for disks whose markers differ from track to track. A good example of this is General Chemistry #8, whose softkey appeared in Computist #54. The first and third address and data markers are different on several tracks, requiring over thirty separate data lines in the controller. Instead, you could tell DOS to ignore the first and third address and data markers, and it should do just fine.

You can safely tell DOS to ignore any one of the three address or data markers, or the first and third, or the second and third. You may not ignore all three, or the first and second.

WARNING: It seems that DOS 3.2 is more picky than DOS 3.3. Apparently, it only works to ignore address and data markers "sometimes". Also, in the sample DOS 3.2 to DOS 3.3 controller, in line 1Ø1Ø, ST and LS should both be set to 12 instead of 15.

Ignore Address or Data Checksum

Checksums provide DOS with a way to be sure the data and address has been correctly written to or read from the disk. Protected disks will sometimes alter these checksums, thereby preventing normal DOS from reading the disk. You can, however, tell DOS to ignore the address or checksum or both, usually with no problem. You should be careful when ignoring checksums, as it may allow erroneous information to pass as valid data. General Chemistry #8 also uses this as a form of protection.

Ignore Address or Data Epilogues

Some disks use epilogue bytes that deviate from the normal DE AA, as a means of protection. Some disks set them to a particular value, but some ignore them altogether. You can ignore either the address or data epilogues or both, with no harmful side effects. This is yet another one of General Chemistry #8's protection schemes.

Ignore Read Errors

This is probably the most widely used method of reading protected disks. By telling DOS to ignore any read errors it comes across, it will ignore bad epilogues, so you need only one poke instead of two. However, it will also ignore all other read errors. If you know there are bad epilogues and you use this technique, but the disk still can't be read, use the "Ignore Epilogues" pokes instead of this, and then try other pokes to counteract the other errors.

Ignore Track

Sometimes, a protected disk will modify the track values after the address markers. A good example of this is Lords Of Conquest. On track $6, the values after the address markers would indicate track $5. You can tell DOS to ignore the track value, and the track can then be read. In this case, the track contained no vital information once the disk was deprotected, but only made writing the controller easier. But there's no reason why another program wouldn't put useful code on a track such as this.

Standard RWTS Locations

I have included a table of standard RWTS locations to be used with a sector editor to make modifications to WORKING BIT COPIES ONLY. Never modify an original disk! There are two blanks in the tables: writing the address and data checksums. This process involves more than just one poke, and I don't know a lot about it. If someone reading this has any information, I'm sure it could be of use to someone.

Example Controllers

If you have Lords Of Conquest, type in the controller at the end of the article and save it. Install it into Super IOB 1.5 and run it. I know that a softkey for Lords Of Conquest appeared in Computist #53, but my subscription started with Issue #55, so I don't know what that controller looked like. I made up this one myself.

Also included is a sample swap controller for converting a disk from DOS 3.2 to DOS 3.3. It first loads in RWTS.13 in line 1ØØ1Ø. In line 1Ø11, it swaps the two RWTS routines. Modifications are made in line 1Ø12, and the two RWTS routines are swapped back in line 1Ø13. At that point, the copy process continues normally. You could also convert all the DOS 3.2 pokes to their relocated (start = $19ØØ instead of $B8ØØ) addresses and skip lines 1Ø11 and 1Ø13.

I have talked about General Chemistry #8 quite a bit, but I don't have it or the article accompanying its softkey. I got all my information from the library disk which was sent to me by the good people at Computist because some of my softkeys appeared in that issue. I won't even attempt to write a new controller without the original disk to experiment with.

Controller

```
1ØØØ REM LORDS OF CONQUEST
1Ø1Ø TK=Ø:LT=35:ST=15:LS=15:CD=WR:FAST=1
1Ø2Ø POKE 48584,71: GOSUB 49Ø: GOSUB 61Ø
1Ø3Ø POKE 48584,36: GOSUB 49Ø:T1=TK:TK=PEEK
     (TRK) - 1: RESTORE : GOSUB 31Ø:TK = T1:
     GOSUB 61Ø: IF PEEK (TRK) = LT THEN 1Ø5Ø
1Ø4Ø TK=PEEK (TRK):ST=PEEK (SCT): GOTO 1Ø2Ø
1Ø5Ø HOME : PRINT "COPY^DONE" : END
5ØØØ DATA 2^CHANGES
5Ø1Ø DATA 3,9,239,96
5Ø2Ø DATA 12,4,221,7
```

Checksums

1ØØØ	- $356B	1Ø5Ø	- $EAFD
1Ø1Ø	- $2544	5ØØØ	- $1BC6
1Ø2Ø	- $BCF7	5Ø1Ø	- $BF6C
1Ø3Ø	- $DC83	5Ø2Ø	- $8D69
1Ø4Ø	- $A65A		

Controller

```
1ØØØ REM SAMPLE CONTROLLER, DON'T TYPE IT IN!
1Ø1Ø TK=Ø:LT=35:ST=12:LS=12:CD=WR:FAST=1
1Ø11 GOSUB 43Ø: REM SWAP RWTS ROUTINES TO MAKE
     MODIFICATIONS
1Ø12 REM MAKE MODIFICATIONS TO RWTS.13 HERE
1Ø13 GOSUB 43Ø: REM SWAP RWTS ROUTINES AGAIN
1Ø2Ø GOSUB 43Ø: GOSUB 46Ø: GOSUB 61Ø
1Ø3Ø GOSUB 43Ø: GOSUB 46Ø: GOSUB 61Ø: IF PEEK
     (TRK) = LT THEN 1Ø5Ø
1Ø4Ø TK=PEEK (TRK):ST=PEEK (SCT): GOTO 1Ø2Ø
1Ø5Ø HOME : PRINT "COPY^DONE" : END
1ØØ1Ø PRINT CHR$ (4) "BLOAD^RWTS.13,A$19ØØ"
```

Readers Data EXchange

Reading from protected DOS 3.3 disks

Description	Hex	Decimal	Description	Hex	Decimal
Address Marker #1:	$B957	47447	Data Marker #1:	$B8E9	47337
Check:	FØ	24Ø	Check:	F4	244
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Marker #2:	$B961	47457	Data Marker #2:	$B8F3	47347
Check:	F2	242	Check:	F2	242
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Marker #3:	$B96C	47468	Data Marker #3:	$B8FE	47358
Check:	E7	231	Check:	E7	231
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Checksum:	$B98A	47498	Data Checksum:	$B92E	47406
Check:	B7	183	Check:	13	19
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Epilogues:	$B98F	47503	Data Epilogues:	$B933	47411
Check:	FB	251	Check:	FB	251
Ignore:	ØE	14	Ignore:	6A	1Ø6
Read Error Flag:	$B942	47426	Track Checker:	$BDC8	48584
Check:	38	56	Check:	24	36
Ignore:	18	24	Ignore:	47	71

Standard DOS 3.3 RWTS Locations

Description	Reading Hex	Reading Decimal	Writing Hex	Writing Decimal
Address Markers:	$B955:D5	47445,213	$BC7A:D5	48250,213
	$B95F:AA	47455,170	$BC7F:AA	48255,170
	$B96A:96	47466,150	$BC84:96	48260,150
Address Checksum:	$B96E:ØØ	47470,Ø		
Address Epilogues:	$B991:DE	47505,222	$BCAE:DE	48302,222
	$B99B:AA	47515,170	$BCB3:AA	48307,170
Data Markers:	$B8E7:D5	47335,213	$B853:D5	47187,213
	$B8F1:AA	47345,170	$B858:AA	47192,170
	$B8FC:AD	47356,173	$B85D:AD	47197,173
Data Checksum:	$B9ØØ:ØØ	47360,Ø		
Data Epilogues:	$B935:DE	47413,222	$B89E:DE	47262,222
	$B93F:AA	47423,170	$B8A3:AA	47267,170

Reading from protected DOS 3.2 disks

Description	Hex	Decimal	Description	Hex	Decimal
Address Marker #1:	$B978	47480	Data Marker #1:	$B90A	47370
Check:	FØ	240	Check:	F4	244
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Marker #2:	$B982	47490	Data Marker #2:	$B914	47380
Check:	F2	242	Check:	F2	242
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Marker #3:	$B98D	47501	Data Marker #3:	$B91F	47391
Check:	E7	231	Check:	E7	231
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Checksum:	$B9AB	47531	Data Checksum:	$B94F	47439
Check:	B7	183	Check:	13	19
Ignore:	ØØ	Ø	Ignore:	ØØ	Ø
Address Epilogues:	$B9BØ	47536	Data Epilogues:	$B954	47444
Check:	FB	251	Check:	FB	251
Ignore:	ØE	14	Ignore:	6A	1Ø6
Read Error Flag:	$B963	47459	Track Checker:	$BDBB	48571
Check:	38	56	Check:	24	36
Ignore:	18	24	Ignore:	4D	77

— tables continued on next page —

I was surprised when I looked through COMPUTIST back issues section and couldn't find a softkey for EDD III. Here is my softkey. I have also included a small program which will allow the user to decide whether or not the disk being copied must be write-protected.

Softkey for...

Essential Data Duplicator III

Utilico

■ Requirements

☐ 128K Apple
☐ 1 disk with at least 62 sectors free

Recently, a teacher at my school gave me his copy of EDD III, saying that he had no use for it. I looked through the back issue section of my latest COMPUTIST to see if someone had already deprotected it. I found several softkeys for EDD IV, but none for EDD III, so I took it upon myself to remedy the situation.

The Protection

The protection was quite good, as you might expect from a copy program. When I booted the disk, the hi-res title picture was loaded almost immediately and the disk arm made a series of rapid movements—halftracks no doubt. However, after the program was loaded, it was completely loaded. It never read anything else from the disk. The best route seemed to be to convert it to a BRUNable file.

I tried using a small machine language controller with EDD III which was to leave me in the monitor as soon as the program was loaded, but it didn't work. It seems that EDD III trashes all the memory not occupied by the program. I tried hiding the controller in the language card, but that didn't work either. Although it only requires 48K, EDD III also turns off the language card in case the computer has 64K. Finally, I booted it into the auxilliary memory of my IIc, moved the data back into main memory, and saved it as a binary file.

The Procedure

1 First, boot a disk with at least 62 sectors free:

```
PR#6
```

2 I don't have XFER.BOOT, but with a little help from an enhanced IIe programmer's guide, I came up with the following routine. The disassembly shows what you have entered.

```
CALL-151
300:A9 00 8D ED 03 A9 C6 8D EE 03 38 2C 58
    FF 4C 14 C3
```

Readers Data EXchange

Standard DOS 3.2 RWTS Locations

Description	Reading Hex	Decimal	Writing Hex	Decimal
Address Markers:	$B976:D5	47478,213	$BEF5:D5	48885,213
	$B980:AA	47488,170	$BEFA:AA	48890,170
	$B98B:B5	47499,181	$BEFF:B5	48895,181
Address Checksum:	$B98F:00	47503,0		
Address Epilogues:	$B9B2:DE	47538,222	$BF29:DE	48937,222
	$B9BC:AA	47548,170	$BF2E:AA	48942,170
Data Markers:	$B908:D5	47368,213	$B893:D5	47251,213
	$B912:AA	47378,170	$B898:AA	47256,170
	$B91D:AD	47389,173	$B89D:AD	47261,173
Data Checksum:	$B921:00	47393,0		
Data Epilogues:	$B956:DE	47446,222	$B8DE:DE	47326,222
	$B960:AA	47456,170	$B8E3:AA	47331,170

```
0300 LDA #$00   Put $C600 into $3ED.3EE
0302 STA $03ED
0305 LDA #$C6
0307 STA $03EE
030A SEC        Set for Main → Card
030B BIT $FF58  Set V flag to use aux stack
030E JMP $C314  Go to the XFER routine
```

[3] Turn on your 80 column card (IIc users can skip this part).

3(P)

[4] Boot the EDD III disk.

6(P)

[5] Once you hear the beep (IIe users will also see the serial number/copyright page) press (RESET) to regain control. EDD III is now in auxiliary memory. All you have to do is move it into main memory.

CALL-151
300:18 A0 00 4C 11 C3
3F8:4C 00 03
800<800.3FFF(Y)

```
0300 CLC        Set for Aux ◄ Main
0301 LDY #$00   Optional on IIc
0303 JMP $C311  Go to AUXMOVE routine
03F8 JMP $0300  Point Ctrl-Y vector to our routine
```

[6] Make the program jump to the copyright notice when BRUN.

800:60 0C *was F2 26*

[7] Put the last used slot into $FF for EDD III.

CA4:AD E9 B7 85 FF *was CD 36 1C D0 37*

[8] For some reason, when an error occurs, flow of the program goes to $3EE8 where a message appears telling you to insert the EDD disk to verify a file and then the computer hangs. An RTS at the beginning of this routine stops it:

3EE8:60 *was 84*

[9] You can now save EDD III as a binary file.

BSAVE EDD III, A$800, L$3800

You now have a deprotected version of EDD III!

Notes

I didn't include the hi-res picture as part of the file, as loading it would only increase the file size to 90 sectors and increase loading time greatly.

If you use EDD III a lot, you must have a steady supply of write-protect tabs; it requires the original disk which you are copying to be write-protected at all times and won't let you proceed until it is. For this reason, I have written a small utility that lets you turn this feature on or off. Type in the listing at the end of the article. Make sure you save it before you run it because it modifies the starting location of the APPLESOFT program and then re-runs itself. When you run it you will be prompted to insert the disk with the deprotected version of EDD III. Then you will be asked if you want the original disk to be required to have the write-protect tab. Answer "Y" for yes, or press "N" or <RETURN> for no. The program will then make the proper pokes to the file and prompt you to insert a disk for saving the modified version. Press any key to save the resulting program.

By the way, I found something interesting at the back of the manual (which dates back to 1984). Under the heading "General Recommended Reading" was the name and address of Hardcore Magazine. (COMPUTIST)

EDD III Utility{X}

```
1 REM *
2 REM * EDD III UTILITY *
3 REM * BY BILL JETZER *
4 REM *
10 IF PEEK (104) < > 64 THEN POKE 104,64: POKE
    103,1: POKE 16384,0: PRINT CHR$ (4)
    "RUNEDD^III^UTILITY"
20 CALL - 1220: HOME : PRINT CHR$ (21): TEXT
30 VTAB 1: HTAB 13: INVERSE : PRINT "EDD^III^
    UTILITY" : NORMAL : POKE 34,1
40 VTAB 11: GOSUB 130
50 PRINT CHR$ (4) "BLOADEDD^III"
60 HOME : VTAB 10: PRINT "DO^YOU^WANT^EDD^III^TO^
    REQUIRE^ ORIGINAL^ DISKS^ TO^ BE^ WRITE^
    PROTECTED?^NO" CHR$ (8) CHR$ (8);
70 GET A$: IF A$ = "N" OR A$ = CHR$ (13) THEN PRINT
    : POKE 2079,76: POKE 2080,104: POKE
    2081,8: GOTO 100
80 IF A$ = "Y" THEN PRINT "YES" : POKE 2079,48:
    POKE 2080,71: POKE 2081,32: GOTO 100
90 GOTO 70
100 PRINT : GOSUB 130
110 PRINT CHR$ (4) "BSAVE^EDD^III, A$800,
    L$3800"
120 END
130 HTAB 13: PRINT "INSERT^DISK^WITH" : HTAB 9:
    PRINT "DEPROTECTED^FILE^VERSION" : HTAB
    16: PRINT "OF^EDD^III"
140 PRINT : HTAB 8: PRINT "PRESS^ANY^KEY^TO^
    CONTINUE" : WAIT 49152,128: POKE 49168,0:
    RETURN
```

Checksums

1	- $97CE	60	- $54ED
2	- $F48B	70	- $3FBB
3	- $B8EC	80	- $81F2
4	- $3E53	90	- $2A60
10	- $4DC0	100	- $7D52
20	- $2A83	110	- $BE3D
30	- $1FAD	120	- $59B0
40	- $2F7C	130	- $B24A
50	- $ADA3	140	- $8111

Softkey for...

Death Sword

Epyx

■ Requirements

- ☐ Super IOB 1.5
- ☐ 1 blank disk

-or-

- ☐ A normal ProDOS disk with BASIC.SYSTEM and a file copier
- ☐ 1 ProDOS formatted disk whose volume name is /DEATH.SWORD

The protection used on Death Sword is fairly simple. First, it uses altered epilogues which stop a whole disk copier from reading it. Second, it uses a "nibble find" routine which searches the disk for a pattern of bytes which are located somewhere on track $0, probably somewhere in the large sync byte area at the beginning of the track. If the pattern isn't found, the disk reboots.

To deprotect Death Sword, type in the controller at the end of the article and save it. Install it into Super IOB 1.5 and run it.

Death Sword is under ProDOS format, and it incorporates the nibble finder into the ProDOS boot loader blocks. A two byte sector edit is performed by the controller to jump over the nibble finder:

Trk	Sct	Byte(s)	From	To
$00	$0E	$04-05	A9 00	F0 79

If you would rather have the game in a completely normal ProDOS format, follow this procedure:

[1] Boot the Death Sword disk.

[2] After the ProDOS message is displayed, watch the disk drive light. When it flashes off and then on again, hit CTRL-RESET and you will be left in the monitor.

[3] Insert a normal ProDOS disk and start your file copier by executing the ProDOS quit code:

300:20 00 BF 65 6 3 4 0 0 0 0 0 0 N300G

[4] You will be asked for the volume name of your disk, type it in this format:

/VOLUME.NAME

[5] You will be asked for the next SYStem program you want to use. If your file copier is a SYStem program, (such as UTIL.SYSTEM from Copy II Plus v6.0 and up), type in its name. If your file copier must be run from BASIC, type in BASIC.SYSTEM.

[6] Copy all the files from the Death Sword disk onto an already formatted ProDOS disk whose volume name is /DEATH.SWORD.

[7] The ProDOS used on Death Sword has been modified to ignore epilogue bytes. It can easily be converted to a the normal Apple version. First boot a ProDOS disk and get into BASIC. Load the file:

BLOAD PRODOS,A$2000,TSYS

Make the changes:

55ED:D0 *was 90*
55F7:D0 *was 90*
56CC:38 *was 18*

Save the file back to the disk:

BSAVE PRODOS,A$2000,TSYS

A Few Notes

Death Sword's "nibble find" routine searches for the following sequence: FC EE EE FC E7 EE FC E7. There must be something magical about that sequence, because I found that same pattern of bytes on Animate by Broderbund, and World Karate Championship by Epyx.

That's all for now. Now go out there and dismember some barbarians! (Don't worry about the mess; the gremlin will clean it up).

Controller

```
1000 REM DEATH SWORD
1010 TK=0:LT=35:ST=15:LS=15:CD=WR:FAST=1
1020 POKE 47426,24: GOSUB 490: GOSUB 610
1030 POKE 47426,56: GOSUB 490:T1=TK:TK=PEEK
     (TRK) - 1: RESTORE : GOSUB 310:TK = T1:
     GOSUB 610
1040 IF PEEK (TRK) = LT THEN 1060
1050 TK = PEEK (TRK):ST = PEEK (SCT): GOTO 1020
1060 HOME : PRINT "COPY*DONE" : END
5000 DATA 2*CHANGES
5010 DATA 0,14,4,240
5020 DATA 0,14,5,121
```

Checksums

1000	- $356B	1050	- $9114
1010	- $2544	1060	- $FEE3
1020	- $B5FB	5000	- $AFE0
1030	- $BB1C	5010	- $BE26
1040	- $C168	5020	- $5A51

M.M. McFadden

EDASM Transfer Utility

■ **Requirements**

☐ EDASM (ProDOS version)

One of the more popular assemblers these days is the ProDOS version of the old DOS Toolkit assembler, EDASM. It is available through Apple as ProDOS Assembly Tools.

Even though it operates under ProDOS (or perhaps because of it), EDASM can be rather slow at times - especially when creating more than one code file from a single source file.

Every time EDASM creates object code, it must check to see if there is an old file with the same name, delete it if there is one, create a new file, and begin writing. On most disk drives, this takes a little bit of time. Although the time span is much shorter than it used to be under DOS 3.3, it is still annoying.

A much better idea is to load EDASM onto the built-in RAM disk, and use it there (you must have an extended 80-col card on a IIe. The IIc and IIgs have it built-in). Complicated disk accesses are accomplished in fractions of a second. IIgs owners have an added bonus: while the IIgs fast mode cannot enhance floppy drive speed, it will cut /RAM disk access time in half.

If we transfer BASIC.SYSTEM (so that we can return to BASIC and test our program) and the three EDASM files, we will still have 43 blocks left - more than enough for most programs. It is recommended, however, that you store your source files on more permanent media. It should be possible to select files as "/mmm/trans.f" while your prefix is "/ram", allowing you to save files to a disk but assemble to RAM.

But it would be a real pain to break out Copy II Plus or the Filer every time we want to assemble something, so there must be a better way.

Here is a quick and easy solution: a program which automatically copies the four files from the currently prefixed disk to /RAM. In fact, this program will copy just about anything that fits into memory, since all essential data is preserved.

TRANS will copy these files:

BASIC.SYSTEM

EDASM *was Edasm.System, I renamed it to make it easier to type.*

EDASM.ED

EDASM.ASM

EDASM Transfer uses the ProDOS MLI (Machine Language Interface) directly to copy the programs. Look at the assembled listing. Every JSR MLI is followed by a one byte command code, and a two byte pointer to a parameter list.

When copying the files, several different steps involving seven different MLI calls are required:

1) The source disk's PREFIX must be read. Then the main loop begins:

2) The PREFIX is set to read the source disk. Here the parameter lists are set to point to the filename.

3) A GET FILE INFO call is made to read in informations such as file type, creation type, and other goodies.

4) The source file is OPENed (prepared to be read).

5) A GET EOF call is made to find out the file length.

6) The file is READ into memory at $2000.

7) The source file is CLOSEed.

8) The PREFIX is set to the destination disk (/RAM).

7) A new file is CREATEd on the destination disk, with the same characteristics as the original.

8) The destination file is OPENed.

9) A call is made to WRITE the file, and then it is CLOSEed.

Control is finally returned to BASIC, with the prefix set to /RAM. Occasionally, an error will occur during processing. The program will stop, a two digit hex number will be printed, and you will be dumped unceremoniously into the monitor.

Possible error codes

$27 - Generic I/O error. Check disk drive.

$2E - Volume switched. Leave the disk alone during copy.

$42 - Too many files open. Close a few, and try again.

$45 - Volume not mounted. Make sure that the source prefix is set to the disk you are reading from (NOT "PREFIX,D1"), and that there is a /RAM volume.

$46 - File not found. Make sure all of files are there.

$47 - Duplicate file name. Some or all of the files are already on /RAM.

$48 - Disk full. Too much stuff is on /RAM.

$49 - Volume directory full. See above.

There are others, but they are unlikely to appear. Consult one of the manuals listed at the end for further reference.

If you type in the hexdump, BSAVE TRANS, A$1000, L$164 when you are done. (If you use the source listing you will notice something odd... it's written in Merlin assembler format. I switched assemblers a short while ago (Merlin is SO much nicer), but there are very few changes required (the STR opcode just puts the length byte before the string; the REV opcode puts the string in backwards).

Source code is available on the library disk for this issue.....RDEXed

To use, type "-TRANS". It will tell you what files are being copied. Note that the prefix *MUST* be set to the source disk.

For more information on ProDOS and ProDOS MLI calls, see the ProDOS Technical Reference Manual (from Apple) or, better yet, Beneath Apple ProDOS (from Quality Software).

```
1000: A9 00 85 02 20 00 BF C7     $C0D9
1008: 2E 11 A0 0D B9 56 11 20     $8996
1010: ED FD 88 10 F7 20 00 BF     $1AE9
1018: C6 2B 11 A5 02 0A A8 B9     $2344
1020: DA 10 8D 0E 11 8D 1A 11     $F9B5
1028: 8D 3A 11 85 00 B9 DB 10     $5A63
1030: 8D 0F 11 8D 1B 11 8D 3B     $3DB3
1038: 11 85 01 A0 01 B1 00 F0     $CB10
1040: 08 09 80 20 ED FD C8 D0     $D9B7
1048: F4 20 8E FD 20 00 BF C4     $B8CA
1050: 19 11 A0 04 A2 04 B9 19     $13AC
1058: 11 9D 0D 11 C8 E8 C0 08     $8788
1060: D0 02 A0 0E C0 12 90 EE     $CFD8
1068: 20 00 BF C8 39 11 B0 64     $576A
1070: AD 3E 11 8D 40 11 8D 52     $4909
1078: 11 20 00 BF D1 51 11 AD     $D84B
1080: 53 11 8D 43 11 8D 4B 11     $34FE
1088: AD 54 11 8D 44 11 8D 4C     $6E67
1090: 11 20 00 BF CA 3F 11 B0     $0B4D
1098: 3B 20 00 BF CC 4F 11 20     $14CF
10A0: 00 BF C6 31 11 20 00 BF     $2CAE
10A8: C0 0D 11 B0 27 20 00 BF     $9F25
10B0: C8 39 11 AD 3E 11 8D 48     $4B53
10B8: 11 20 00 BF CB 47 11 B0     $D670
10C0: 13 20 00 BF CC 4F 11 E6     $4B81
10C8: 02 A5 02 CD E2 10 F0 03     $8DE4
10D0: 4C 15 10 60 20 DA FD 4C     $924E
10D8: 59 FF E3 10 F1 10 F8 10     $5070
10E0: 02 11 04 0C C2 C1 D3 C9     $C83D
10E8: C3 AE D3 D9 D3 D4 C5 CD     $0F44
10F0: 00 05 C5 C4 C1 D3 CD 00     $5358
10F8: 08 C5 C4 C1 D3 CD AE C5     $0FA9
1100: C4 00 09 C5 C4 C1 D3 CD     $47E1
1108: AE C1 D3 CD 00 07 00 00     $5E8F
1110: C3 00 00 00 01 00 00 00     $076B
1118: 00 0A 00 00 00 00 00 00     $B78E
1120: 00 00 00 00 00 00 00 00     $076E
1128: 00 00 00 01 00 03 01 00     $AD80
1130: 03 01 34 11 04 2F 52 41     $D90C
1138: 4D 03 00 00 00 18 00 04     $FA50
1140: 00 00 20 00 00 00 00 04     $CE72
1148: 00 00 20 00 00 00 00 01     $BFF2
1150: 00 02 00 00 00 00 8D BA     $E953
1158: E7 EE E9 F9 F0 EF E3 A0     $F3D6
1160: F7 EF CE 8D                 $5BEA
```

Amper QuickDraw II Routines

■ **Requirements**

☐ Apple IIgs

A while back I wanted to do some quick super-hires graphics from Applesoft on my IIgs. Since I didn't have a program that would let me do this, I decided to write one myself.

When you BRUN AMPERQD, the file will set up the ampersand vector at $3F5 to point to itself, and then start up the QuickDraw toolbox. If you BRUN it again, it will realize that QuickDraw is running and exit without doing anything.

You will then have the following commands at your disposal:

& HGR Clear screen to current super-res color (320 mode).

& HGR2 Like HGR, but in 640 mode.

& ON Turn super-res on.

& TEXT Turns super-res off.

& HCOLOR = nn set color to nn (0 - 15).

& HPLOT aexpr1, aexpr2

& HPLOT TO aexpr3, aexpr4

& HPLOT aexpr1, aexpr2 TO aexpr3, aexpr4 (TO aexpr, aexpr...) Plot a point at xx,yy, or a line if two or more points are given. The syntax is exactly the same as the Applesoft HPLOT statement.

While it doesn't support fancy box or circle drawing, it does provide the same rudimentary commands that BASIC programmers have come to know and love.

Notes on AmperQD

The code runs from $7000 - 71FF. QuickDraw uses a buffer which runs from $7200-$74FF. 32K at $E1/2000 - $E1/9FFF is used for screen memory, and an additional 5K or so is set aside for various uses. Note: if the direct page buffer (00/7200 - 00/74FF) gets mangled, QuickDraw will probably hang after the next call.

Despite assurances to the contrary, the QDShutDown call does *NOT* free up the Super Hires graphics memory. This makes it hazardous to shut QuickDraw down, because it will refuse to restart if the screen memory is in use by *anyone*. The memory must be freed first, but the Memory Manager has conspired with QuickDraw to prevent this from happening. (A DisposAll call returned without errors, but the Memory Peeker CDA showed it to be still in use!)

If you munge the buffer or manage to shut down QuickDraw, the only way I know of restarting it is to clear the memory handles with [⌘⊖RESET]. Note that it IS possible to BSAVE a good copy of the direct page buffer, and then BLOAD it if damage occurs.

If you would like to try freeing the memory yourself, AmperQD always uses UserID 1080 (the 128th ID issued to an application). I chose to use a constant UID because of the spasms QuickDraw had regarding who was using the Super Hires page.

The code was assembled with Merlin 16, although any assembler that supports macros and the full 65816 instruction set will work (i.e., ORCA/M). The code is fairly straightforward, using Applesoft to parse the options and IIgs toolbox calls to draw lines, change colors, etc. Note that the toolbox calls do no range checking, and neither do I.

I have included a brief BASIC program that shows off AmperQD's features. While AmperQD may not be as fancy as other similar programs, it is the most intuitive and probably the shortest (410 bytes or so).

As always, to conserve space, the source code is not printed here but is available on the library disk for this issue.....RDEXed

AMPERQD.TEST

```
100 PRINT CHR$ (4) "BRUNAMPERQD"
110 & HCOLOR= 1: & HGR
120 REM try &hgr2 also!
130 FOR A = 0 TO 319: IF A / 20 = INT (A / 20) THEN
    & HCOLOR= A / 20
140 & HPLOT A,0 TO A,199: NEXT
150 & HCOLOR= 0: & HPLOT 1,1 TO 318,1 TO 318,198
    TO 1,198 TO 1,1: & HCOLOR= 7: & HPLOT TO
    318,198
160 FOR DL = 1 TO 1000: NEXT
170 & TEXT : & ON : GOTO 170
```

Checksums

```
100  - $3AAC     140  - $101C
110  - $6A01     150  - $AE5C
```

120	- $07D5	160	- $0026
130	- $779D	170	- $D41D

Save the following code after you enter it.

BSAVE AMPEROD, A$7000, L$19A

```
7000: A9 4C 8D F5 03 18 FB C2      $852F
7008: 30 A9 93 70 8D F6 03 F4      $0A8D
7010: 00 00 A2 04 06 22 00 00      $58F8
7018: E1 68 F0 03 82 43 01 A2      $1F4F
7020: 01 02 22 00 00 E1 A2 03      $7DEC
7028: 02 22 00 00 E1 F4 00 6D      $394C
7030: F4 00 00 F4 00 00 AD C0      $CBF3
7038: 70 48 A2 04 02 22 00 00      $5B12
7040: E1 90 46 F4 00 00 F4 00      $2E4B
7048: 00 48 A2 0B 2A 22 00 00      $E969
7050: E1 68 8F 82 70 00 68 8F      $0DDD
7058: 84 70 00 F4 00 00 F4 6D      $B485
7060: 70 A2 0C 20 22 00 00 E1      $2EF0
7068: 38 FB 4C 59 FF 51 44 53      $8FFD
7070: 74 61 72 74 55 70 20 45      $5650
7078: 72 72 6F 72 20 77 61 73      $24E2
7080: 20 24 00 00 00 00 0D 0A      $62F8
7088: 00 A2 04 36 22 00 00 E1      $1202
7090: 82 62 00 AE AD 70 CA 30      $0A87
7098: 33 DD AE 70 D0 F8 20 B1      $6C68
70A0: 00 18 FB C2 30 48 8A 0A      $0265
70A8: AA 68 7C B4 70 06 91 90      $77B9
70B0: B4 89 92 93 CF 70 D4 70      $A381
70B8: EA 70 F5 70 00 71 29 71      $4C5B
70C0: 80 10 00 00 00 00 00 00      $4CA3
70C8: 00 00 00 00 4C C7 DE A9      $B504
70D0: 00 00 80 03 A9 80 00 48      $D698
70D8: A2 04 16 22 00 00 E1 AD      $51BE
70E0: C2 70 48 A2 04 15 22 00      $FCB9
70E8: 00 E1 A2 04 0A 22 00 00      $61EE
70F0: E1 82 6E 00 60 A2 04 0B      $BF54
70F8: 22 00 00 E1 82 63 00 60      $8363
7100: 38 FB 20 F8 E6 8A 8D C4      $A996
7108: 70 0A 0A 0A 0A 18 6D C4      $F713
7110: 70 8D C2 70 8D C3 70 18      $94F3
7118: FB C2 30 AD C4 70 48 A2      $4464
7120: 04 37 22 00 00 E1 82 39      $CF43
7128: 00 E2 30 B2 B8 C9 C1 F0      $2E20
7130: 23 C2 30 20 65 71 A2 04      $B14F
7138: 3A 22 00 00 E1 AD C6 70      $FE49
7140: 48 AD C8 70 48 A2 04 3C      $3532
7148: 22 00 00 E1 E2 30 B2 B8      $7134
7150: C9 C1 D0 0E 38 FB 20 B1      $724F
7158: 00 18 FB C2 30 20 65 71      $8EC4
7160: 80 E3 38 FB 60 68 8D CA      $2AE2
7168: 70 38 FB 20 67 DD 20 52      $EDC1
7170: E7 A5 50 8D C6 70 A5 51      $083B
7178: 8D C7 70 20 BE DE 20 67      $FBB3
7180: DD 20 52 E7 18 FB C2 30      $2B46
7188: A5 50 8D C8 70 AD C6 70      $9700
7190: 48 AD C8 70 48 AD CA 70      $86DA
7198: 48 60                        $7E2E
```

Alan Zimbard, M.D.

Here are some answers to the questions posed by Dorothy Dow in COMPUTIST #55.

Q. Do I need DOS 3.3?

A. The IIgs (or any Apple II for that matter) does not need a Disk Operating System (DOS) to function. If you turn on your computer without a disk in the drive all the instructions in ROM still load normally and you can dither away to your hearts content writing programs etc., but you will not be able to save any of your work.

The Disk Operating System, whether DOS 3.3 or ProDOS controls the way your computer deals with peripherals like disk drives, printers, modems etc. Without the System your computer doesn't know these things exist. Apple's DOS (whether DOS 3.3 or ProDOS) does not reside in ROM and must be loaded in from disk in order to be active. The IIgs is neither a DOS 3.3 or ProDOS machine but runs under whatever operating system has been loaded into its memory. ProDOS, however, is the only system that will take full advantage of the IIgs' awesome capabilities.

Older applications (games etc.) that used DOS 3.3 have a copy of this DOS on the disk. All you do is boot the disk and you're off and running. Your IIgs, with few exceptions, will be able to run any DOS 3.3 application. You do not need to understand the way the operating system works. As with ProDOS everything is taken care of for you.

ProDOS was developed through an evolutionary process to improve DOS 3.3. All the patches and improvements individual programmers made to the old DOS were incorporated into ProDOS. Unless you plan to write programs that will operate under the rules of DOS 3.3 there is no need for you use it. ProDOS and DOS 3.3 are actually more alike than different and if you're going to take the time to learn programming you might as well be current and learn to use ProDOS conventions. If you want to study DOS 3.3 for historical interest a copy of the DOS 3.3 SYSTEM MASTER disk (containing DOS 3.3 plus a variety of utilities) is available from APPLE CO-OP, 290 Southwest 43rd ST. Renton, Washington 98055. (206) 251-9798. Another excellent source on DOS 3.3 is "The DOS-Talk Scrapbook" by Tom Weishaar (accompanying disk also available) publisher of Open-Apple. The address is Open - Apple, P.O. Box 11250 Overland Park, Kansas 66207.

When following a softkey procedure that calls for DOS 3.3, it's best to stick with the requirements list. At least until you know enough about programming to be sure that any substitutions will work. . . . . RDEXed

Q. What is GPLE?

A. GPLE is the Global Program Line Editor by Neil Konzon published by Beagle Bros. Software 6215 Ferris Square, Suite 100 San Diego, CA 92121 (619) 452-5500. It is a utility which allows editing of BASIC program lines much as you would do on a word processor, avoiding Apple's tedious "Escape Mode" editing.

It is only necessary if you intend to do a lot of BASIC programming. There are other utility programs that do much the same. . . . . RDEXed

Q. Do I need a CD ROM to enter the Monitor?

A. As far as entering the Monitor, there is no need to purchase a CD ROM to have this ability on the IIgs. If you have the latest (2.0) ROM upgrade *(you will see ROM VERSION 01 on the screen during booting)* do the following:

[1] Turn on your computer. You do not need a disk in the drive.

[2] Press [RESET] to get the Applesoft prompt.

CALL -151 *to enter the Monitor*
*Shift-3*

[3] Now bring up the control panel by pressing [ESC]. You will see two new CDA's (Classic Desk Accessories) called Visit Monitor and Memory Peeker. Choose Visit Monitor and there you are! These two new CDA's remain accessible until you power-down. This method cannot be used with certain protected programs that run with interrupts disabled, meaning you can't get to the Desk Accessories.

A second method which I use, while not cost free, has the advantage of working with all programs plus the ability for making hard copies. The Fingerprint GSI, from Thirdware Computer Products, 4747 N.W. 72nd Avenue, Miami, FL 33166, (305) 592-7522 is a printer control card for slot #1 designed to give you additional control over IIgs graphics by freezing any program and taking control of the computer until you press [ESC]. When the special "Fingerprint" key is hit the program halts and a menu screen appears. From here one keystroke takes you to the Monitor. You can dump the screen to a printer anytime you want. Hitting the escape key returns you to the original program. I have found it to work with all programs, protected or otherwise.

I hope this information has been helpful.

Michael Smith

Softkey for...

Tapper
Sega

■ **Requirements**

☐ COPYA
☐ Sector Editor
☐ One Blank Disk

An examination of the orginal disk reveals that the epilog bytes have been changed from DE AA to AA DE. All that needs to be done is to tell DOS 3.3 to ignore epilog errors, copy the orginal disk with COPYA, and normalize epilog checking on the backup disk's DOS with some sector edits.

[1] Boot DOS 3.3, tell it to ignore address and data epilogues.

```
CALL-151
B988:18 60
B925:18 60
```

[2] Use COPYA to copy the disk.

```
RUN COPYA
```

[3] Make the following sector edits on the backup disk. Be sure to write the modified sector back to the disk.

Trk Sct Byte(s)	From	To
$00 $03 $99	AA	DE
$00 $03 $A3	DE	AA
$00 $03 $F5	AA	DE
$00 $03 $FF	DE	AA

Have fun with your new backup disk.

Edward Teach

Softkey for...

Mastertype v2.1

Scarborough

■ **Requirements**

☐ Apple IIe or IIc with 128K
☐ COPYA
☐ COMPUTIST ISSUE #55

Charles Taylor was just a little quicker then I was on this disk, but his softkey was a great help to me. The problem that he was having was in trying to place a faster DOS on the disk. The secret to this protection, other than that already discussed in issue #55, is that the read translate table has been altered. Setting this back to an abnormal value allows the disk to be cataloged. To fix this disk do the following:

[1] Run COPYA and wait till the Slot/Drive prompt comes up, then press [C].

```
RUN COPYA
[C]

70
CALL-151
BAAA:00
B942:18
3D0G
RUN
```

Now let COPYA do its thing. After it gets done type CATALOG and the files that did not appear before will now be readable. When entering the sector edits from Mr. Taylor I did not use the flashing characters. BRUN, BLOAD and CATALOG were typed just as they appear on this page. (Unless of course you see flashing letters on your page). Since the HELLO file is an EXEC file type:

```
UNLOCK HELLO
DELETE HELLO
10 HOME: HGR: VTAB24
20 ? "MAKE SURE 'CAPS LOCK' KEY IS
    DOWN": VTAB1
30 ? CHR$(4) "BLOAD DM"
40 POKE 41868, PEEK (43634): POKE 41869,
    PEEK (43635)
50 ? CHR$(4) "BLOAD LOGO"
60 ? CHR$(4) "BRUN AUXLOAD.OBJ"
SAVE HELLO
LOCK HELLO
```

The only problem remaining is that the program will run, but will not catalog itself from within the program. This is not a major problem since you can now catalog the disk. If you select catalog from the screen prompt, the disk will tell you to reboot, but it will at least now run under a fast DOS. Also, using a normal DOS means that you do not have to swap between a data disk and the program disk. Enjoy!

Crossword Magic 4.0 by Mindscape

This is really a request for help. This disk has been making me nuts for about six months. Have you ever worked on a disk and knew what the protection was, but could not figure a way around it?

Crossword Magic 4.0 is really inventive in the way it is protected. There is no DOS used to load the program into the memory. The entire disk is loaded by the BOOT ROM, using track $00, sector $00. This is the reason that all the tracks have a track number of $00. It also slows down the examination of the code on the disk. However, I hope that giving the information I have discovered about the disk will allow someone out there to suggest the next step for me to try. First things first, My initial step is always to make a COPYA version of the disk to examine the code. This duplicate will not boot into track one, but lets make a copy anyway. Add the following lines to Super IOB 1.5 and EXEC in any simple controller to make a copy:

```
525 IF CD = RD AND ET = 1 THEN GOSUB 710
526 IF CD = WR AND ET = 1 THEN GOSUB 730
527 IF CD = RD AND JH = 1 THEN POKE 47426,24
700 REM IGNORE TRACK #'S ON SOURCE DISK
710 POKE 48621,76: POKE 48622,16: POKE
    48623,190: RETURN
720 REM FIX DOS' TRACK VERIFY ROUTINE
730 POKE 48621,164: POKE 48622,46: POKE
    48623,204: RETURN
10115 A$ = "IGNORE TRACK NUMBERS ON SOURCE N" +
    CHR$(8): HOME: VTAB12: GOSUB 450: GET A$:
    IF A$ = "Y" THEN ET=1
10116 A$ = "IGNORE CHECKSUMS AND EPILOGS N" +
    CHR$(8): HOME: VTAB12: GOSUB 450: GET A$:
    IF A$ = "Y" THEN JH = 1
```

What these changes do is poke DOS to jump past the verify track routine (line 710), then restores the track verify (line 730) and then allows any data checksum or epilogue to be ignored (line 527). Answering the two new questions "Y" (lines 10115 and 10116) allows the Super IOB to copy the disk. I have installed these modifications in my permanent copy of the Super IOB since many disks simply need the epilogues ignored. This, with any generic controller, copies most disks.

Now that we can read the copy of the disk. Read track $00 sector $00. Starting at byte $59 and going through byte $7F is the loader program.

```
0859 A9 09     LDA #$09  Set page 9
085B A2 09     LDX #$09
085D 20 B2 08  JSR $08B2 Load page 9
0860 20 00 09  JSR $0900
0863 20 82 08  JSR $0882
0866 A9 55     LDA #$55  Set page 55
0868 A0 01     LDY #$01
086A A2 0B     LDX #$0B
086C 20 B2 08  JSR $08B2 Load page 55
```

It goes on to load pages $04, $02 and $07, the text pages and the keyboard buffer. All of this with the BOOT ROM and directly accessing the stepper motor. Now the really fun part. Search the disk for occurrences of C08C (disk access). Most of them look like a normal DOS, however, at track $02, sector $0B and track $0E, sector $00 are some sort of signature check. (Read a few bytes store them in specific memory locations). Such untrusting people at Mindscape! I tried placing "00" (break) at various locations and then saving the code (0860:00 00 00, move page 9,boot a DOS, save page 9) the problem with this is that as soon as I try to reload over the screen locations the code gets trashed. My next try was to move C600.C6FF to 9600 and try to modify it to ignore track numbers (if Christopher Dean can do it why can't I). This resulted in another failure. I am about to officially give up on this disk and admit defeat. So tell me, does Mindscape get to win this one?

Stephen Lau

Just after I sent a letter to RDEX, I received COMPUTIST #56 and was wondering why the Goonies softkey doesn't work for Jack R. Nissel. Well, I have to apologize, Jack, I carelessly omitted the info on how to make a

Readers Data EXchange

Datasoft RWTS which is needed by the controller, and also I left out line 1ØØ1Ø in the controller which loads the RWTS. The controller in the softkey used the RWTS we are supposed to create to read in data. Since the RWTS has now been omitted, the controller will bomb. Also, the reason that you drop into the monitor when you used the copy you made with the controller in Computist #44 before writing is that you have a IIgs, and that *you have the new ROM*. I just got the new ROM from the dealer and verified that the routine that I used in the controller to make the patches is not there now in the new IIgs ROM.

So, if you want a backup of Goonies, do as Jack says in COMPUTIST #56.

To apologize to Jack and all other COMPUTIST readers who tried the softkey, here is the Zorro softkey that Jack requested.

Softkey for...

Zorro

Datasoft

The softkey for Zorro by Clay Harrel is incomplete. Since Jack asked for a softkey for Zorro, I examined the one in COMPUTIST #44 closely. Yes, Clay Harrel defeated the signature check, but he did nothing to the flags for checking! These flags are later checked by the program, your disk will still boot as though it passed the test, but whenever you pick up something, it falls, which makes the game impossible to complete. So, here it is, Jack, hope that softens some of your frustration due to the Goonies softkey.

[1] Use the controller for Goonies & Zorro (from COMPUTIST #44), answer Z to Zorro & Goonies.

[2] Make the following edits to the copy.

Trk	Sct	Byte(s)	From	To
$0C	$07	$6D	A5 D7	A9 00

A.P.T. for...

Thexder

Sierra On Line

For those IIgs Thexder owners who are about to smash their monitors for the game over message, do the following sector edits: (to a backup of course!)

Block	Byte(s)	From	To
$586	$27	F8 38 AD A8 59 F0	F8 38 AD A8 59 80

And now you have infinite shields and energies!!! So crash into anything and waste the master computer.

Alien Mind

I'm glad that the quality of IIgs games continues to improve. By this time you should have already seen (if not owned) Alien Mind and Defender of the Crown. I was suprised to find that Defender of the Crown is not protected (as far as I can tell), and that Alien Mind is *severely protected*.

Alien Mind is the only IIgs program that is not supplied on a PRODOS 8 or 16 disk. The disk has normal block/sectors from track $ØØ through track $Ø2 side 1, the rest use a address header of D5 AA AA and 4 & 4 encoding to read in stuff. Since the loading of the operating system (usually PRODOS 16) is completely bypassed and most of the program is stored as 4 & 4 encoding, the program loads in lighting speed. The screen appears in about 3 seconds, and the sound in about 1Ø seconds.

Deprotection will require a program utilizing extensive calls to smart port to read in each track and write them in normal format (kind of like Super IOB swap controller). The program has to be modified to read blocks. Numerous other minor things make this task very difficult, if not impossible. The only solution seems to be to use Copy II Plus to bit copy it. However, no one realized that the 3½" bit copy program of Copy II Plus was so poor before the release of Alien Mind, since no program required a bit copy of so many tracks. If you bit copy a normal disk with Copy II Plus, you will find more bad block errors on the copy than your fingers and toes can count. Even with specific headers and careful manual bit copying, the disk will hang at some place (probably a bad block). To make things worse, there seems to be a synchronize protection too (luckily, the routine responsible for the check resides on track $ØØ, and so is modifiable if needed). Well, I'm giving up. Any IIgs expert's help is greatly appreciated, how about Mr. Brian Troha?

****IIgs Softkey for...***

Paperboy

Mindscape

■ Requirements

☐ Apple IIgs with 256K
☐ Copy II plus or any block editor

More junk from the famous IIgs junk maker. This time a friend of mine bought it and so I'll help him to make a back up. The protection is similar to that on Gauntlet (see page 9) and has a read error on block $ØØ7. The disk bombs after the title page is shown. I cataloged the disk, hoping to see a level 8 file. Well, no luck this time. Tracing through the program, however, I was able to find the offending code.

```
CLC           clear carry flag
XCE           switch to native mode
REP %00110000
LDX #$2142
LDY #$0000
JSL $009000   check
SEC           set carry flag
XCE           switch back to emulation mode
STA $2145     store result at 2145
CLC           clear carry flag for adding
ADC #$98      add 98
STA $21CB     store at 21CB
RTS           return from subroutine
```

Notice that the code is very similar to that on Gauntlet. A look at the subroutine finds that, upon a successful check, it returns with the accumulator holding $Ø2 (same as Gauntlet). So I overwrote the subroutine with the following code:

```
LDA #$02
STA $2145
CLC
ADC #$98
STA $21CB
RTS
```

The disk works now and seems to have no problems.

[1] Copy the disk and ignore the error on block $ØØ7.

[2] Sector edit:

Block	Byte(s)	From	To
$D0	$128	18 FB C2 30 A2 42 21 A0 00 00 22 00	A9 02 8D 45 21 18 69 98 8D CB 21 60

Softkey for...

Mavis Beacon Teaches Typing

Electronic Arts

■ Requirements

☐ Apple II, IIgs with 512K
☐ Copy II Plus or any other block editors

Mavis Bacon Teaches Typing is a very good program that teaches, of course you know from the title, typing. The graphics are very nicely done, with guide hands and car racing to help you to type fast. A fast disk copy reveals some errors on track $4F and the protection is not compatible with Diversi Cache. I booted the disk and was prompted to insert the original disk. I bombed into the monitor with Diversi Hack (or you could use visit monitor) and scanned for a read block command, \22 A8 00 E1 22\<n/0.FFFFP, where n is the bank number you are searching.

Bingo, I found one at $Ø3/D5E6. Tracing back, I found the subroutine starts at $D5BB. However, this routine does not check for any read errors, so this must be done at the main routine. This time I searched for \22 BB D5 Ø3\<3/Ø.FFFFP.

This time I found three occurences at $Ø43F, $Ø46D and $Ø49A. Tracing backwards, I found the subroutine starts at $Ø3AØ. Since the routine is quite long, I won't list the code. However, you could follow my procedure and list the code yourself at your leisure. A search for the call to $Ø3AØ turns up $6C9F. I replaced the call with a LDA instruction and bingo, it works! So, disk copy the disk and make the folloing sector edits.

Block	Byte(s)	From	To
$3B3	$8D	F4 3A Ø6 F4 Ø1 ØØ 22 ØØ ØØ ØØ	F4 3A Ø6 F4 Ø1 ØØ AF ØØ ØØ ØØ

Softkey for...

Magical Myths

Unicorn Software

■ **Requirements**

☐ Apple II, IIgs with 512K
☐ Copy II Plus or any other block editor

Magical Myths is an educational program that teaches Greek Myths. The program employs very nice graphics and crystal clear digitized voice that tells you "That's right", "Whoops!", "Please type in your name", etc. A fast copy yields no error at all. Hmm, probably a nibble count. A search for A2 21 AØ Ø1 found the offending code:

```
PHB             save data bank
PHP             save status bank
PHK             save program bank
PLB
PHA
JSL $ØØ6A66     initialize
PLA
SEP %ØØ11ØØØØ
LDX #$21        track 21
LDY #$Ø1        side
JSR $6A3F       count nibbles
BCS $1191       if read error bombs
CPX #$BØ        count
TYA
SBC #$1D
BCC $1189
CPX #$78
TYA
SBC #$1E
BCS $118D
LDX #$2Ø        track 2Ø
LDY #$Ø1        side
JSR $6A3F       count nibbles
BCS $1191       if read error bombs
CPX #$4Ø        count
TYA
SBC #$1F
BCC $1189
CPX #$Ø8
TYA
SBC #$2Ø
BCS $118D
...
RTL
```

Since the subroutine returns to the caller if the count is successful, I placed a RTL at the start of the subroutine, and it works!

Block	Byte(s)	From	To
$1EE	$141	8B Ø8 4B AB 48	6B Ø8 4B AB 48

More on Tower of Myraglen

As requested by Jim Hart, I am listing a disassembly of the protection of Tower of Myraglen. But please note that the code is quite scattered and includes some other set up routines to confuse the cracker. So I ignored some parts of the code and you should also ignore any code without comments. You could disassemble it yourself by first diskcopying the disk, ignoring the error on block 7. Boot the copy and when it says "Boot from original disk", eject the disk and press [RESET] two times. When the "Check startup device" message appears, press [RESET] once more. You should be in BASIC. Enter the monitor and type **1/81EFL**. Then just fool around.

The main call is to this subroutine:

```
CLC             clear carry flag
XCE             native mode
REP #3Ø
PHD             save registers
PHB
PHX
PHY
JSL $Ø183Ø2
BCS 8211
JSL $8216
JSL $Ø183D7
PHA
LDA $87C7
PHA
...
```

A disassembly of the call to 83Ø2 yields:

```
PHK             store program bank
PLB
STX 87BC        store device name
STY 87BE        store device name
JSL $E1ØØA8     call PRODOS 16
    2Ø ØØ       2Ø = get device number
    BC 87 Ø1 ØØ Ø187BC = addr of parm table
BCS 8327        error bombs
LDA #$ØØØØ43
AND #ØØFF
TAX
LDA $87CØ       store device number
STA $85A6
STX $85A8
RTL
```

Thus the first call is only to get the device number, which is needed to issue a read block command. The second call to $8216 sets up the screen. The final call to $Ø1/83D7 is really messy, through some subroutine calls (JSR) and branch instructions, control is passed to $8894:

```
LDA #$FF        set data buffer
STA $8A9D
LDA #$ØØ
STA $8A9C
REP #$3Ø
JSL $E1ØØA8     call PRODOS 16
    22 ØØ       22 = read block
    99 8A Ø1 ØØ $Ø1/8A99 = addr of parm tbl
REP #$1Ø
SEP #$2Ø
PHP             manipulate result
...
```

A look at the parm table list:

```
8A99: Ø1 ØØ     device # from 1st call
      AA ØØ FF ØØ data buffer
      Ø7 ØØ ØØ ØØ block to read
```

Thus the program set up (through some confusing jumps) a read block $ØØ7 command, and the result should be a read error. The routine finally returns with a value of $ØB in the accumulator. In the softkey I changed the compare accumulator with #$ØB, branch if not equal instructions into a load accumulator with #$ØB, branch always instructions. Hope that helps, Jim.

Some Notes on Electronic Arts

I would like to clear some confusion over the protection on Electronic Arts (EA) 5 1/4" disks. Please note that for all Apple drives, if you write something on a specific track, the signal will bleed over to the adjacent half-tracks.

Most EA programs before Legacy of Ancients have a read error on track $Ø6 using fast copy. This was often incorrectly referred to as a nibble count by COMPUTIST contributers. Track $Ø6 gives a read error because it has an image of track $Ø5 written on it. Tracks 5, 5.25, 5.5, 5.75 and 6 all have an image of track 5 (probably written with a special extra wide head).

Earlier EA stuff (like Seven Cities of Gold & Adventure Construction Set) only check the sectors on track 5, 5.5, and 6, and expect all tracks to have no read errors and a track mark of 5. You cannot just copy track 5, 5.5 and 6, since if you copied track 5 and then 5.5, the signal at track 5.5 will bleed over to track 5, making it unreadable. But it is possible to copy these disks by bit copying track 5.25 and track 6, since the two tracks we wrote this time are separated by three-quarter tracks, it is far enough to prevent the two from interfering with

each other, and since track 5 and track 5.5 are only .25 track from 5.25, both 5 and 5.5 will have a valid image of track 5 by just writing 5.25, therefore track 5, 5.5 and track 6 will all be readable. Later EA disks (like Skyfox) check all tracks (5, 5.25, 5.5, 5.75 and 6) making them impossible to bit copy.

Some Notes on Epyx

On almost all Epyx programs from Summer games to Arctic Antics, a protection known as Prolok is used. This protection is also used by many other firms (like Broderbund in Wings of Fury and Where in Europe is Carmen Sandiego). The disk (usually track $00) has a sector with about $5B bytes of 96 followed by 100 bytes of E7. The first few E7s following the last 96 have a specific number of zero bits following each of them, and the protection checks for them. This bit insertion protection for a series of bytes is impossible to copy with normal bit copiers, since bit copiers cannot determine the exact number of zero(es) after each byte, let alone determine the exact number of zero(es) after a series of bytes. You can only copy it with EDD or Copy II Plus by using very advanced parameters. You can just bit copy it with EDD IV Plus if you happen to have enough bucks to buy it. EDD IV Plus has a hardware card that enables it to read the extra zero(es) after each byte.

The read routine usually looks like this:

```
2012 LDA #$80     set up no. of tries
2014 STA $67
2016 LDX $6B      load slot no.
2018 DEC $67
201A BEQ 207A
201C JSR $B944    read address header
201F BCS $207A    error bombs
2021 LDA $2D      get sector no.
2023 CMP #$05     should be 5
2025 BNE 2018     else re-read
2027 LDY #$00     max. no. of nibbles
                  before data header
2029 LDA $C08C,X  read a byte
202C BPL $2029
202E DEY
202F BEQ 207A
2031 CMP #$D5     find data header
2033 BNE 2029     if not retry
2035 LDY #$00     should find E7 in $100
                  bytes
2037 LDA $C08C,X  read a byte
203A BPL $2037
203C DEY
203D BEQ 207A
203F CMP #$E7     find first E7
2041 BNE $2037
2043 LDA $C08C,X  read second byte
2046 BPL $2043
2048 CMP #$E7     should be E7
204A BNE $207A    else bombs
204C LDA $C08C,X  read third byte
204F BPL $204C
2051 CMP #$E7     should be E7
2053 BNE $207A    else bombs
2055 LDA $C08D,X  clears the latch
2058 LDY #$10     max. no. of errors
205A LDA $C08C,X  read a byte
205D BPL $205A
205F DEY
2060 BEQ $207A
2062 CMP #$EE     find EE
2064 BNE $205A
2066 LDY #$07     check 7 bytes
2068 LDA $C08C,X  load a byte
206B BPL $2068
206D CMP ($1E),Y  1E contains 80 and 1F
                  contains 20 hence it is
206F BNE $207A    comparing the bytes to
2071 DEY          bytes at location 2080
2072 BPL $2068
2074 JSL $130A
2077 CLC
2080: EE EE FC E7 EE FC E7
```

A legal byte always has its hi-bit set (1). You don't see a nibble dump with bytes less than 80, do you? To understand the routine you need to know how the disk drive reads a byte. The drive has a latch, and the latch is eight bits wide. When the drive reads a byte, the highest bit (7th) of the data byte enters first into the lowest bit position of the latch. The next bit (6th) then enters into the lowest bit of the latch pushing the first bit over to the next bit position. This continues until the highest bit of the data (7th) has been pushed into the highest bit (7th) of the latch, then the BPL intruction (test to see if bit 7 is not set) of the read loop is not taken and so a byte is read. Then when the latch holding a byte detects another set bit (1) coming (the 7th bit of the next byte), it clears itself to $00 (8 zero bits) and lets the 7th bit enter into the lowest (0th) bit of the latch and the whole process is repeated. Any extra zero bits after a byte are not read into the latch. The byte in the latch is simply held longer than usual as the latch waits for the next set bit (1) of the next byte to be read. The following example shows a bit stream consisting of a FF 96 loading into the data latch.

```
00000000 11111111 10010110  The latch clears
    itself as it detects a 1 bit coming (from
    the 7th bit of FF), assuming it just read a
    byte.
00000001 11111111 0010110-  7th data bit
    enters latch as bit 0.
00000011 11111110 010110--  6th data bit
    enters, 7th data bit shifted left to bit 1
    of latch.
00000111 11111100 10110---  and so on...
00001111 11111001 0110----
00011111 11110010 110-----
00111111 11100101 10------
01111111 11001011 0-------
11111111 10010110 --------
```

The 7th data bit entered the 7th bit position of the latch, the BPL instruction is not taken, the accumulator then holds FF, the byte is thus read.

If the next byte is 96, then when the latch detects the first set (1) bit of the 7th data bit of 96 (100 0110), it clears the latch and the whole process is repeated, got it? Suppose the FF is a 10 bit sync byte (1111 1111 00), so it has 2 extra zeroes. When the latch reads all of the bits of the FF byte (1111 1111), it then reads a 0 bit, and it does nothing, the latch still holds the FF. It then reads another bit, which is also zero, and so it does nothing again. Then it reads a 1 bit (from the 7th bit of the next data byte), and it clears itself and repeats the whole load and shift process. So, to a LDA C08C,X and BPL instruction, sync bytes and normal bytes are the same, only that sync bytes stay in the latch longer.

Traditional nibble copiers used this kind of command to read nibbles, hence it is *impossible* to determine the number of zeroes after each byte, they simply don't appear in the latch. So nibble copiers have to rely on the user and make intelligent guesses as to where the sync bytes are. More advanced copiers like EDD use another kind of read routine enabling it to determine the number of zeroes after each byte with high accuracy (but not 100%, that's why EDD cannot copy Prolok protection). That is the reason why EDD is so powerful, but discussing it's read routine is out of the scope of this article.

Prolok protection uses a different I/O technique, using LDA C08D,X to deliberately clear the latch *before* the whole byte is read. One thing to notice is that the series of E7s have 1, 2, 0, 1, 2, 0, 1, and 1 zeroes after each of them respectively. (See box below.)

Now look back into the subroutine, after finding the data header, the routine looks for the first E7, then it reads two more, then *it clears the latch*! At this time, the first 3 bits of the next E7 have already entered the latch, and *are cleared by the LDA C08D,X command*. Thus the 2nd bit of the fourth E7 becomes the 7th bit, the 1st bit becomes the 6th bit and the 0th bit becomes the 5th bit, the extra zero becomes the 4th, the 7th bit of the next byte becomes the 3rd, and so on until the 4th bit of the next byte becomes the 0th bit. The byte read becomes an EE, instead of E7 in the nibble dump. *Notice* that the extra zero after the first E7 is read into the latch as part of a bit of EE. In this way, the pattern of

```
          | EE | | E7 | | FC || EE | | E7 | | FC || EE | | EE |
E7E7E71110011101110011001110011111100111011100111001110011111100111011100111011100
      | E7+1 | | E7+2 |  | E7+0 || E7+1 | | E7+2 |  | E7+0 || E7+1 | | E7+1 | | E7+0 |
All of the remaining E7s are normal (without extra zeroes).
```

extra zeroes after each E7 can be determined to be 1, 2, Ø, 1, 2, Ø, 1, and 1 by making sure that the bytes read after clearing the latch are EE E7 FC EE E7 FC EE EE. If this all sounds too deep for you (its rough water for the novice), try reading Beneath Apple DOS, and Disk and Disk Hardware in Copy II Plus menu appendix A. Hope this solves the confusion.

For Mr. Ron Balewski: The Locksmith 6.Ø auto boot code tracer, traces disks by emulating the 65Ø2 CPU. Since emulating requires much more time to run the same program, your computer will not be able to keep up with disk access as usual. Everything, including disk reading, will be slowed down. In order to make disk access possible, the designer reads the whole track into a buffer, and whenever a byte is to be read, the tracer returns a byte *from the buffer*. This makes tracing possible. When you use it to trace Arctic Antics, however, it will still return bytes from the buffer whenever a byte is to be read. So even if the clear latch command is taken, the byte read (expected to be EE) will still be a E7, since *that is what the tracer read into the buffer well before the protection routine is running*. Got it?

Well, enough of this for now. See you next time. Happy cracking.

Ron Dippold

Softkey for...

Ultima V

Origin

Ultima V provided another clear example of copy protection coming between the user and the program. The computer that I use most of the time is an Apple IIgs with the old Disk II drives, on which Ultima V runs perfectly. However, at times I have to move to a IIgs with a DuoDrive, and the game will not even boot at all on this computer. A call to Origin only revealed that "Ultima V will not work with DuoDrives." I don't know if that's totally true or not, but it certainly was valid in my case, so the only thing to do was to break Ultima V.

Here, we are in luck. Of the eight disk sides, only the boot disk is protected, and the protection is pitiful. Ultima V was seven months overdue, and my guess is that they didn't have the time to put a decent protection on the game. With that background, let's take a look at the boot disk.

With a nibble editor (Copy II Plus, etc.) or some other utility, it can be seen that tracks $ØØ, $Ø1, and $Ø2 are not protected at all, which makes the job that much easier. Now, examine track $Ø3. Predictably enough, the checksums and epilogues are altered. However, there is one more tricky detail. The sectors are not numbered from $ØØ to $ØF, but from $11 to $2Ø! And that's the whole protection.

There are a couple of easy ways to fix this, but I chose one that most people could relate to: Super IOB 1.5. We will modify RWTS to read the Ultima V disk. Luckily, the elimination of one of the routines to check the epilogues will leave just enough room for the code to translate the sector numbers. I realize that the code that I have provided for the controller and the RWTS routine are lengthier than necessary, but they are easier to understand.

[1] Boot a normal DOS 3.3 disk.

[2] At the Applesoft prompt, enter the monitor.

CALL -151

[3] Make a copy of RWTS.

1900<B800.BFFFM

[4] Disable some checking.

1A2D: 18 60

[5] Disable the rest of the checking, and translate sector numbers.

1A88: A0 00 38 A5 2D E9 11 85 2D A9 AA 18 60

Here's what you just entered:

```
A0 00  LDY #$00 preserve original exit value
38     SEC
A5 2D  LDA $2D
E9 11  SBC #$11
85 2D  STA $2D
A9 AA  LDA #$AA preserve original exit value
18     CLC
60     RTS
```

[6] Save the RWTS to disk for Super IOB to use.

BSAVE ULTIMAV.RWTS,A$1900,L$800

[7] Use Super IOB and the Ultima V controller to copy the boot sides.

[8] Copy the rest of the sides any way you want to.

That's all! There shouldn't be any "hidden protection" popping up later, as I have completed the game with no such problems. It is, by the way, an excellent game, and well worth the money.

Controller

```
1000 REM ULTIMA V CONTROLLER
1001 REM 1ST PART: THE 1ST 3 TRACKS
1010 TK=0:LT=3:ST=15:LS=15:CD=WR:FAST=1
1020 GOSUB 490: GOSUB 610
1030 GOSUB 490: GOSUB 610: IF PEEK (TRK) = LT
     THEN 1050
1040 TK=PEEK (TRK):ST=PEEK (SCT): GOTO 1015
1050 TK=3:LT=35:ST=15:CD=WR
1060 GOSUB 360: GOSUB 490: GOSUB 610
1070 GOSUB 360: GOSUB 490: GOSUB 610
1075 IF PEEK (TRK) = LT THEN 1100
1080 TK=PEEK (TRK):ST=PEEK (SCT): GOTO 1060
1100 HOME : PRINT "COPY^DONE" : END
10010 PRINT CHR$ (4) "BLOAD^ ULTIMAV.RWTS,
     A$1900"
```

Checksums

```
1000  - $356B      1060  - $A448
1001  - $7F4B      1070  - $2104
1010  - $3D93      1075  - $C4E7
1020  - $337B      1080  - $78EA
1030  - $DDCB      1100  - $ABA7
1040  - $44DE      10010 - $8E3F
1050  - $2404
```

Jack R. Nissel

Softkey for...

Railroad Works

CBS Software

Softkey for...

Lazer Maze

Avant-Garde

■ Requirements

☐ A blank disk for each title
☐ FID from your DOS 3.3 system disk
☐ A way to reset into the monitor

[1] Boot your DOS 3.3 system disk. Insert a blank disk in the drive and INITialize it.

INIT HELLO
DELETE HELLO

[2] Boot the original disk and when the Applesoft prompt appears reset into the monitor.

[3] Remove the original disk and insert the initialized disk. Move the RWTS to a safe place and boot your initialized disk.

6800<B800.BFFFM
C600G

[4] Put the disk with FID into the drive.

CALL-151
BLOAD FID,A$803
B800<6800.6FFFM
803G

[5] Follow the prompts and copy all files from the original to the blank disk. When asked for the file name enter "=" and when asked if you want prompting enter "N".

You can put a fast DOS on your copy but for Railroad Works use Pronto-DOS since Diversi-DOS will not allow the copy to boot properly.

Readers Data EXchange

† *Softkey for...*

Ace Programmer
Robomath
Mindplay

Both of these titles can be deprotected by using the softkey for Mindplay software in COMPUTIST #52

***IIgs Softkey for...*

Kings Quest I (GS)
Sierra On-Line

■ Requirements

☐ A blank 3.5 disk
☐ Any fast copy program that can ignore errors
☐ A sector editor

[1] Copy the original disk to your blank disk and ignore a read error if one is encountered.

[2] Scan the disk for ØØ FØ 1E 22 ØØ and change the FØ to 8Ø. I found it on block $Ø73, byte $1D7.

Block	Byte(s)	From	To
$Ø73	$1D7	FØ	8Ø

[3] Write the sector back to the disk.

***IIgs Softkey for...*

Aesop's Fables (GS)
Unicorn Software

■ Requirements

☐ 2 blank 3.5 disks
☐ Any fast copy program
☐ A sector editor

[1] Copy both of the original disks to your blank disks.

[2] . Make the following sector edit to disk 1.

Block	Byte(s)	From	To
$316	$1BØ	FØ	8Ø

[3] Write the sector back to the disk.

Scott M. Simon

Type! by Broderbund has been on the most wanted list for quite a while. This krack was right under our noses, so let's get started and get a readable copy from the original disk.

Softkey for...

Type!
Broderbund

■ Requirements

☐ Apple II and up
☐ Editor
☐ Disk

[1] First, let's use COPYA and DOS 3.3 minus some error checks. Boot a DOS 3.3 system disk.

```
LOAD COPYA
BLOAD COPY.OBJØ
7Ø
CALL-151
B942:18
B925:18 6Ø
3DØG
RUN
```

[2] When COPYA is finished get out your sector editor (like COPY II Plus) and sector edit the disk to wipe out the nibble count routine.

Trk	Sct	Byte(s)	From	To
$ØØ	$ØA	$2D-2E	2Ø ØØ Ø1	EA EA EA

Softkey for...

Tales Of Fantasy Series:
The Dark Tower
The Frog & The Fables
Microzine

■ Requirements

☐ 64K Apple II and up
☐ COPYA
☐ Copy II Plus
☐ Blank Disk

The Tales of Fantasy series by Microzine is quite good for a story book game. The disk is fairly simple to deprotect. Upon examination of the copied disk, I located a JMP to reboot (4C ØØ C6). I then examined the disk and changed a LDA command to load track $Ø6. That enabled me to catalog the disk. After looking at the catalog. I noticed a couple of hello programs and experimented to find the right one to load. I then used the rename feature of COPY II Plus and renamed the startup file to HELLO. The disk still did a disk check but I found that all that was need was to change one command from B3 to AØ on track $Ø1, sector $Ø7. That was it and it works for both programs.

[1] First, let's use COPYA and DOS 3.3 minus some error checks. Boot a DOS 3.3 system disk.

```
LOAD COPYA
BLOAD COPY.OBJØ
7Ø
CALL-151
B942:18
B925:18 6Ø
3DØG
RUN
```

[2] When COPYA is finished use COPY II Plus to sector edit the disk to wipe out the nibble count routine and change the startup program to HELLO.

Trk	Sct	Byte(s)	From	To
$ØØ	$ØB	$42	34	Ø6
	$ØC	$49-4B	4C ØØ C6	EA EA EA
$Ø1	$Ø7	$72	B3	AØ

Softkey for...

Arctic Antics
Spy vs Spy III
Epyx

■ Requirements

☐ 64K Apple II and up
☐ COPYA
☐ Sector Editor
☐ Blank Disk

This disk was a little more difficult. I want to thank Glen Craig for his assistance and Willem Moolenaar COMPUTIST #5Ø for the right routine to insert and get this Epyx disk working. Basically all I did was to get the disk in a readable format to find the nibble count routine. Then I listed the machine code for that track and knocked out any branches that would pass the nibble routine. With the routine that Willem provided, I was able to get the disk to load and run. So my thanks to both of you. Here is what I did.

[1] First, let's use COPYA and DOS 3.3 minus some error checks. Boot a DOS 3.3 system disk.

```
LOAD COPYA
BLOAD COPY.OBJØ
7Ø
CALL-151
B942:18
B925:18 6Ø
3DØG
RUN
```

[2] When COPYA is finished get out your sector editor (like COPY II Plus) and sector edit the disk to wipe out all branches as listed, then change the nibble count routine to a load routine.

Trk	Sct	Byte(s)	From	To
$00	$0B	$51-52	D0 F4	EA EA
		$5A-5B	D0 4C	EA EA
		$63-64	D0 43	EA EA
		$76-77	D0 F4	EA EA

Insert Willem Moolenaar's routine.

Trk	Sct	Byte(s)	From	To
$00	$0B	$7A-87	A0 07 BD 8C C0	EA EA A9 FC 85
			10 FB 99 F0 00	F0 85 F3 A9 EE
			EA 88 10 F4	85 F1 85 F2

David L. Perez

Softkey for...

RAD Warrior

Epyx

■ Requirements

☐ Apple IIe
☐ Disk Drive
☐ Blank disk
☐ DOS 3.3 disk

[1] Boot your DOS 3.3 system Disk.

[2] Tell DOS to ignore checksum & epilog errors and use COPYA to copy the original to your blank disk.

```
POKE 47426,24
RUN COPYA
```

[3] Make the following sector edits to the copy.

Trk	Sct	Byte(s)	From	To
$00	$05	$43-44	?	EA EA
		$4C-4D	?	EA EA
		$55-56	?	EA EA
		$68-	?	EA EA EA EA EA EA A9 FC
				85 F0 85 F3 A9 EE 85 F1
				85 F2

Softkey for...

Mind Prober/Mind Over Minors (the Teacher's edition)

Human Edge Software

This program is the equivalent of Mind Prober, i.e. it asks whether the person you are assessing is friendly, out going, quiet, etc. Then after answering agree or disagree to 65 questions, the program assesses the responses and outputs a report on the subject to screen or printer. The Teacher's Edition is very helpful in explaining what tact the teacher might take with some students. I deal with many behavior disordered children and have found this program very useful. However, it writes the assessment when complete back to disk. I was apprehensive about writing information back to the original, so I set out to back it up. I had a difficult time, so after I had a bit-copy, I decided to unprotect it.

I found I could COPYA it but it wouldn't run. When I cataloged the directory I found a couple of interesting things. First was a file called Runtime. Runtime is short for Runtime Library. It is the pre-emptive program used with BASIC programs that have been compiled into machine language. I knew that in loading the main Mind Over Minors program I would first have to have the Runtime Library program in memory. I then tried to BLOAD/BRUN a couple of the other files on the disk. Then I decided on the obvious, which was to load and list the Hello program. In this loader they first BLOAD RUNTIME then BRUN GR.OBJ.. I wrote my own loader then saved it as my Hello program to the COPYA copy of my Mind Over Minors. The program now runs fine minus the protection scheme.

[1] Use COPYA to copy the program disk and disks #1, #2 & #3.

[2] Put the program disk in the drive.

```
UNLOCK HELLO
DELETE HELLO
```

[3] Enter this short hello program and save it to the program disk.

```
4000 PRINT CHR$(4)"BLOAD RUNTIME"
     CHR$(13) CHR$(4) "BRUN GR.OBJ."
SAVE HELLO
```

You're done!

† *Softkey for...*

Wagons West

Focus Media

The softkey for American People by Focus Media (COMPUTIST #56) also works on Wagons West.

John Bishop

Slow speeds for Arcade Games

So you've got yourself some nice games to play with on your computer. But while you're blasting away at the aliens or driving furiously through the mazes, your little brother or sister, or your young child, just sits and stares. Sure the games look fun, but they're just too fast for the little kid's reflexes. So what do you do? What any good computist would do: jump into the code and slow the game down.

Although it might seem at first like a monumental task to dig through the two hundred or so sectors of data in the typical game just to try and slow it down, it really isn't very hard. It took me just twenty minutes to complete the process the first time I tried it. There are a couple conditions that the game must meet before it can be patched. First, it must be deprotected. Fortunately, with back issues of COMPUTIST, this isn't too hard. Second, the easiest modifications are done to single load, single file games. "Slow-ups" can be done to whole disk programs, but these are more complex.

The general idea behind the modifications is that you want to add a bit of code to the program that does nothing but waste time. The simplest way to do this is with a five byte loop:

```
A9 xx     LDA #$xx
20 A8 FC  JSR $FCA8
```

where xx is any number ($00-FF) with higher numbers producing longer delays. The trickiest part is finding somewhere to put the loop. Every game that uses the joystick pushbutton must address either $C061 or $C062. If the game uses the joystick it must use location $C070. And every game that uses the keyboard must address location $C000. By searching the file for one of these locations, and then replacing it with a jump to your delay loop, you can slow down the whole program. An extremely useful utility for doing this is Enrique Gamez's Crucial Code Finder (CCF) found in COMPUTIST #6. If you don't have this handy utility, any file ZAP program should work. Let's go step by step through the process on the old classic Galaxian.

[1] First turn on the computer and immediately press [RESET], then zero all RAM memory.

```
300:00
301<300.BFFFM
```

[2] Now boot the disk with Galaxian on it, and BLOAD the file. Search through memory for *empty spaces*. Stay away from the hi-res pages ($2000-$6000) because they often get written to and moved about during the game. The best places to try are very high and very low memory locations. When you find a suitable place, *write it down*. For some reason I usually use $BA69, I don't even remember why any more.

[3] BRUN your ZAP program, or if you're using CCF, BRUN it. If you're using CCF, be sure to note the BLOAD address of the game by checking locations $AA72 and $AA73 *before* you BRUN the utility. The start of the game is stored here in lo/hi format. For my copy of Galaxians, it was $1FDC.

Now search the program for the bytes AD 61 C0. You might find these bytes more than

once. Write them down. If you're experienced in poking through games, you'll quickly recognize which one is the pushbutton reference that is important. Otherwise, trial and error with modifying each reference should quickly produce the proper one.

[4] When you find the bytes (I found them at $2AA5 with CCF) change them to a JSR to the free space in memory you found earlier:

2AA5:20 69 BA

If you're using a ZAP program, you'll have to write this sector back to disk and continue the rest of the process by hand each time you BRUN the game.

[5] Now insert the delay loop, add on the pushbutton reference you overwrote earlier, and RTS back to the main program:

BA69:A9 xx 20 A8 FC AD 61 C0 60

[6] Check out you're handywork by starting up the game:

1FDCG

The only flaw to this is that you have to add the mod to the program each time you play it, and this can get tedious. One way to solve this problem is find out where the game starts, count backwards $09 bytes, and put the delay loop there (don't forget to tell the program to JSR there instead of $BA69 if you do this). Then count back $03 bytes before the delay loop and add a jump to the start of the program (4C DC 1F). BSAVE the whole game back to disk with a starting address $0C bytes less and a length $0C bytes more. This doesn't always work though because many games go through several memory moves after they are loaded, and you're mod might get overwritten. Another place to squeeze the loop in is where the game changes the reset vector. If there's a couple extra bytes to this code you can often put the delay loop there. Other places are at the end of hi-res pages and where copy protection routines used to be.

Don't save the modified file over your original. Make a backup for safety in case it doesn't work.

Here are modifications for some of the games I have. Be careful when you do these because the locations might be different for your copy. *Remember: "xx" is a number you select to set the delay. Larger numbers are longer delays and make the game run slower. Enter a number for the "xx" when you make these mods.*

Autobahn
B40:20 00 90
9000:A9 xx 20 A8 FC AD 00 C0 60
7FDG

Genetic Drift
43E0:20 69 BA
BA69:A9 xx 20 A8 FC AD 00 C0 60
FFDG

Buzzard Bait
79E0:20 69 BA
BA69:A9 xx 20 A8 FC 2C 70 C0 60
7FDG

Sabotage
216C:20 69 BA
BA69:A9 xx 20 A8 FC AD 00 C0 60
1D00G

Spy's Demise
69DE:20 69 BA
BA69:A9 xx 20 A8 FC AD 00 C0 60
3FEDG

A.E. Stingray

This slow down mod is my favorite because it allows for variable speeds. By holding down pushbutton 1 (the one that doesn't shoot) you can slow down the game. Just release the button when it gets to the speed you want. If you overshoot and make it too slow, keep holding down the button and the speed will slow all the way down and then jump back up to normal.

Trk	Sct	Byte(s)	From	To
$13	$05	$24-26	AD 61 C0	20 61 03
	$06	$09-0B	AD 61 C0	20 61 03
	$07	$E5-E7	AD 61 C0	20 61 03
$02	$04	$65-	A9 00 F0 14 A9	4C 59 FF AD 62
			01 D0 10 A9 02	C0 10 03 EE 6A
			D0 0C A9 03 D0	03 A9 01 20 A8
			08 A9 04 D0 04	FC AD 61 C0 60

Be sure to write all these sectors back to disk!

Swampfox

Softkey for...

J & S Gradebook
J & S Software

■ **Requirements**

☐ Apple II, IIe, IIgs
☐ /RAM Disk with at least 150K
☐ Apple System Utilities Disk

Note: When I refer to /RAM5 use the name of your /RAM Disk.

[1] Boot the J & S Grade Book disk. When the title page comes up press [RESET].

BLOAD PRODOS,TSYS,A$2000
CREATE /RAM5/PRODOS,TSYS
CLOSE
BSAVE /RAM5/PRODOS,TSYS,A$2000,$3A00

[2] Boot the Apple System Utilities disk. Format a blank disk with the volume name "TEST" and copy ProDOS 1.1.1 to /TEST. (Not enough room for a newer version.)

[3] Copy the following files to /RAM5.
SYSUTIL.SYSTEM
UTIL.0
UTIL.1
UTIL.2

[4] Quit and exit to BASIC.

-/RAM5/PRODOS

[5] Put J & S Grade Book in drive 1 and copy all files from J & S Grade Book to /RAM5 except PRODOS and SWITCH1.1.

[6] Boot the Apple System Utilities Disk. Copy all files from /RAM5 to /TEST except PRODOS, SYSUTIL.SYSTEM, UTIL.0, UTIL.1, and UTIL.2. Quit to BASIC.

[7] Change the startup program.

UNLOCK /TEST/STARTUP
LOAD /TEST/STARTUP
100 POKE 768,96:POKE 771,96
SAVE /TEST/STARTUP
LOCK /TEST/STARTUP

All done.

Marc Batchelor

A Patch for Copy II Plus v6.?, 7.?, 8.?

It seems strange to not be writing in with a softkey, but I do have a quick and dirty modification to Copy II Plus v8.3 that relieves a lot of irritation. As the program stands, it is great. It has a lot of utilities, and its bit copy routines are among the best available. But there are some irritating facets about the program that can really drive you batty.

For example, the format disk routine; When you want to format a disk, you simply choose the FORMAT DISK option, and after selecting the operating system under which to format, you also must select the disk drive. You are then prompted to insert a disk, and you must press "Y" saying that you are ready to format. After the format is over, you are prompted to press return (although any key will do) and you are returned to the main menu from where all this began. Now, this is fine if you only want to format *one* disk. However, I buy my disks in bulk (quantities of 100 or more), and I like to get them all formatted at once. This business of returning to the main menu every time is frustrating. I have to press return through several options and press that one "Y". But there is a fix for this.

$9390 is the start of the formatting routine.
$93A1 is the bulk of the formatting code.
$636B is the message printing routine.
$6C7C-755A are all of the messages.

A little explanation of the message printing routine is in order. If you load the accumulator with a value, and then perform a JSR to $6B6E, one of the messages (stored between $6C7C and

$755A) will be printed. This is the best way to compact code and minimize run time. So to try it, type:

E

```
:65
6B6EG
```

You should see the message "FORMAT COMPLETE". If not, you did something wrong, and should try it again. Any way, this is the message that we want to find as it is the *end* of the formatting routine. So, halt Copy II Plus during execution and search for: A9 65 20 6E 6B. Didn't work did it? I tried the very same thing. The problem is that there are two (2) messages printed at the end of the formatting routine. Message 1 being "FORMAT COMPLETE" and the other being "PRESS RETURN TO CONTINUE". Search memory for: A9 65. Success, we find an A9 65 4C 08 7C at $948C. At $7C08 is a JSR to $6E6B followed by an LDA and then another call to $6E6B. This is the ticket. All we have to do is re-route the call to the beginning of the formatting routine, and we are set.

1 Use a disk searcher to locate A9 65 4C 08 7C and change it to 4C 90 93 EA EA

You are done! Now, instead of telling you that the formatting process is complete and returning to the main menu, the program says: "INSERT DISK TO FORMAT", "READY TO FORMAT?". Just press 'Y' to format another disk or 'N' or escape or anything else to escape.

Bill Wilson

Softkey for...

NATO Commander v1.2?

MicroProse

■ Requirements

- ☐ Blank Disk
- ☐ Sector editor
- ☐ Apple IIe
- ☐ One disk drive

NATO Commander is an older (1984) game published by MicroProse and simulates a World War III battle for Europe on an operational level. As with most MicroProse software, they have abused and insulted the user by installing incredibly pervasive copy-protection on NATO Commander. I ended the title of this crack with a question mark, since MicroProse is infamous for having yet another undiscovered layer of protection. As it stands, this softkey will at least allow a user to get into the main game routine. I have not extensively play-tested beyond this point, but would not be surprised if, at some point in the game, all Warsaw Pact units turn into full-strength armored divisions or something similar. Note that this is only conjecture on my part.

Let's take a look at the protection I found and disabled on the disk. MicroProse avoided obvious measures such as changing address and data marks on the disk, so the disk will copy easily with a copy program that will ignore the errors on track $22, such as the Locksmith Fast Copy. How very considerate of them. Any catalog attempt will only generate a "Disk Full" message. The game uses DOS 3.3 (or something very similar) and the catalog track is located on track $07. If you wish to be able to catalog the copied disk, copy track $07, sector $0, to track $11, sector $0. (An empty sector on V1.2 .) Additionally, the DOS is copied into RAM at $DD00 - $FFFF. I suspect the motivation here was to make more room for program code, however, this move of DOS will no doubt confuse would-be disk crackers if they've never heard of the "high-DOS" technique.

The "Hello" program is binary and fairly obviously named "HELLOPROT.OBJ". Its function is to make a nibble count on tracks $21.5 and $22. If it likes what it sees, the address $DB3A (the Applesoft interpreter entry point) is stored in reverse-byte order at $0200. Here is another cute little twist. The program loads on memory page 2, which is the keyboard buffer. Any attempt to control-reset into the monitor and examine it will "plow" several bytes of code, since keystrokes were made. This is beatable in this case by loading the program from disk (using normal DOS 3.3 booted from another disk) into an address like $0800 so it can be examined at leisure. If the nibble count goes well, the accumulator and Y-register are loaded with bytes that point to a command (in ASCII at $02A9). The command is "Ctrl-D (alert DOS a command for it follows) RUN \ Ctrl-M (Return key)". Then it jumps indirectly to the address pointed to by $0200. "\" is the name of the initial Applesoft file to be run. Of course, the effect of this is to run "\".

All of the Applesoft programs on disk are also protected! They have an anti-list capability built into them that works in this manner. Every few lines, there is a REMark statement followed by eight control-H's (backspaces to cover the statement from prying eyes), eight spaces, a control-M (carriage return), a control-D (to signal DOS), and the command "FP". When listing, the Applesoft lister prints characters to the screen or printer. By outputting the control-D, DOS is alerted and the FP (similar to the "NEW" command) command is executed. The FP is followed by $00's which indicate an end of program. This is infuriating protection, since the A/S programs can only be listed for one or two lines before the FP command is executed and trashes the listing. If you wish to list the A/S programs, scan the entire disk for the bytes "04 46 50". Change the "04" in each case to "20" (space). Without the "04" (control-D), the FP will be ignored by DOS and the program will list normally. Why doesn't this protection blow out the A/S program when it is running? When the program is running, the FP won't stop it since it is inside a REM statement. The A/S interpreter ignores all lines starting with REM. It is not necessary to change the 04's for this crack, however, it should be done if you want to examine the program logic.

The next layer of protection I discovered involved the process of chaining the A/S programs. The program "C" (for Chain, I imagine) is used to chain A/S programs. C loads at $0208 (again where it is hard to examine) and is activated by an A/S call to $03C1, the entry point for C. This code follows:

```
03C1 4E 22 02  LSR $0222
```
Change byte at $0222 from $91 (STA) to $48 (PHA)

```
03C4 A4 0A     LDY $0A
```
load value $9F from loc $0A into Y

```
03C6 30 02     BMI $03CA
```
Always branch over next two bytes that are there only to confuse the listing

```
03C8 AD 2D A9  LDA $A92D
```
looks legitimate, but not used

```
03CA A9 BB     LDA #$BB
```
get 1st byte of 'jump through stack' address

```
03CC 0E CF 03  ASL $03CF
```
modify the byte in $03CF from $A4 (LDY) to $48 (PHA) this pushes the 1st byte of the 'jump through stack' address onto the stack

```
03CF A4        LDY
```
before modification

```
03CF 48        PHA
```
after modification

```
03D0 4C 17 02  JMP $0217
```
go to next part of code these three bytes are not in the C file—they are placed at this address by earlier program instructions

```
0217 AD 83 C0  LDA $C083
```
access specific higher memory banks

```
021A AD 83 C0  LDA $C083
021D 98        TYA
```
xfer value of $9F from Y to accumulator

```
021E 69 02     ADC #$02
```
add $02 to $9F to get $A1 in accumulator

```
0220 05 D6     ORA $D6
```
logical-OR value $A1 with value $82 stored at address $D6. This results in $A3 being stored in accumulator

```
0222 91 8D     STA ($8D),Y
```
original value at $222-changed by action at $3C1!

```
0222 48        PHA
```
push second byte of jump through stack address onto stack, leaving a return address of $BBA3 after next RTS is executed

```
0223 8D 25 02  STA $0225
```
modifies instruction, but is only present to camouflage the actual instruction sequence

```
0226 60        RTS
```
jump through stack to $BBA3

At $BBA3, the program "P" (for protection, doubtlessly) is called at RAM $D000. This program executes more nibble counts and stores the values 00 F9 D0 07 D0 07 00 00 00 00 starting at address $0026 if the nibble counts succeed. If the nibble count is good, the accumulator is loaded with $00, if not it is loaded with $FF. "P" then returns to the routine at $BBA3. The $BBA3 routine checks the accumulator. If the accumulator is not zero, it pushes an RTS opcode into $BCCF, thus rendering that subroutine disabled. If the accumulator is zero, a LDX immediate ($A2) opcode is pushed into $BCCF, rendering it functional. Then, a jump is made to $0208, which is the first byte of "C". The chaining process goes on normally from there.

How did I find all of this? I made a bit-copy of NATO Commander so that the nibble counts would succeed. Then I modified the A/S code on disk with a sector editor. The modification turned on the text screen and jumped to the system monitor at $FF59. The modification was placed in the instruction that preceeded the A/S instruction to CALL 961 ($3C1). I booted the disk and was rewarded with a "beep" and the monitor prompt. Once in the monitor, I scanned the code following $3C1 at my leisure.

To defeat this, I made sector edits to "C", "S.2" (this has the $BBA3 routine), and "P". These follow:

C

```
03C4 A0 9F     LDY #$9F
```
always load Y with value $9F
```
03D0 4C 17 02  JMP $0217
```
ensure these instructions are present

(Sector edits are at the end of this article.)

S.2

```
BBA6 EA        NOP
```
remove branch instruction that disables
```
BBA7 EA        NOP
```
routine at $BCCF

P

```
D000 A0 09     LDY #$09
```
prepare to move ten bytes
```
D002 B9 28 D4  LDA $D428,Y
```
from $D428-$D431
```
D005 99 26 00  STA $0026,Y
```
to $26-$2F
```
D008 88        DEY
```
adjust loop counter
```
D009 10 F7     BPL $D002
```
loop until ten bytes moved
```
D00B A9 00     LDA #$00
```
force accumulator to be zero
```
D00D 60        RTS
```
return to routine at $BBA3

D428- 00 F9 D0 07 D0 07 00 00 00 00 *bytes stored by good nibble count*

This completes the modifications to NATO Commander. As I said before, I offer no guarantees that this is a complete deprotect.

Here are the sector edits (and cookbook instructions):

[1] Copy NATO Commander with a copier (such as Locksmith Fast Copy) that will ignore errors on track $22.

[2] Sector Edit:

Trk	Sct	Byte(s)	From	To
$04	$0A	$07	A9 17 8D D1 03	A9 3A 8D 00 02
			A9 02 8D D2 03	A9 DB 8D 01 02
			A9 ...	A9 82 85 D6 4C
				A1 02
$0D	$0A	$C0	A4 0A	A0 9F
		$CC	00 00 00	4C 17 02
	$0B	$03	C8	CB
$03	$09	$05	18 90 0F 9A 96	A0 09 B9 28 D4
			21 01 60 D5 AA	99 26 00 88 10
			96 DE AA D5	F7 A9 00 60
	$0E	$47	D0 08	EA EA

[3] If you want to be able to catalog the disk and load its programs from DOS 3.3, copy track $07, sector $00, to track $11, sector $00.

[4] If you want to list the A/S programs, search the disk for all occurences of 04 46 50 and change the 04 to 20.

Let me know via letters to the Apple RDEX editor if you discover further protection in the game. Thanks.

I have play-tested the game a bit and found to my chagrin that if you don't have the "countercodes" asked for by the program, the game map will not update unit movement after turn one. I left the instructions for the game packed away at my parent's home 2,000 miles away! This seems to be yet another protection measure: if you don't have the game documentation, you can forget playing beyond turn one! Can anybody send me the codes/countercodes via the RDEX editor? Please! That's another one I owe MicroProse.

The Pirate King

Softkey for...

Apple GEOS v2.0

Berkeley Softworks

■ **Requirements**

☐ COPYA
☐ A sector editor
☐ Eight blank disk sides

The Lock

The origional GEOS boot disk has a hidden bit pattern on one of its tracks. This pattern cannot be sector copied because it is not in any of the sectors. It also cannot be bit copied because part of it is written as sync bytes (extra zeros in the bit stream). Instead of trying to analyze the pattern I decided to remove it.

Bootup

The first stage of boot is located on track $00. The main portion of the GEOS code is then loaded from tracks $01 through $0D. The code of both sections on the disk is "scrambled", making it impossible to search the disk for code. I decided to make my search in RAM.

After booting each section into RAM, I studied the code and found two subroutines that checked for the bit pattern. At the end of each routine I found two exits: one for "pass", and one for "fail". I decided to modify each "fail" exit to indicate "pass".

Further Security

The first boot section was written in such a way as to make it difficult to analyze. Most of the code is "protected" with a checksum check. This means that if the code is modified the sum of the bytes will change, causing the execution to bomb. It turns out that swapping two bytes preserves the checksum. The other routine was not protected in this way, so changing a single byte worked fine.

The Patch

Since a disk search was impossible, I had to study the code in RAM to find out which sectors loaded where in RAM. This helped me to determine which sectors needed to be modified. Each byte in the sector is "EXCLUSIVE-OR"ed with some value (different for each byte, I think) while being loaded into RAM. I didn't care what this value was for each byte, but I knew some facts from Boolean algebra. I was able to determine what to change the disk byte to. After making the changes to the disk I soon had GEOS up and running.

Warning

As with all software *this softkey may not work on all versions of GEOS.* If you run into any other version of GEOS, let me know.

[1] Copy all GEOS disks using COPYA or any sector copier.

[2] Apply the following sector edits to /GEOS.BOOT and /GEOS.BACKUP.

Trk	Sct	Byte(s)	From	To
$00	$05	$BD	C6	57
		$C0	57	C6
$04	$03	$FC	7F	5F

Jeff Hurlburt

The PRODUCT MONITOR

Ratings

✪✪✪✪✪	SUPERB
✪✪✪✪	EXCELLENT
✪✪✪	VERY GOOD
✪✪	GOOD
✪	FAIR
✋	POOR
✋✋	BAD
✋✋✋	DEFECTIVE

TimeOut from Beagle Bros

■ **Requires:**

- ☐ "Appleworks" 2.Ø or later
- ☐ 128K Apple II series
- ☐ one 3½" or 5¼" drive
- ☐ 512K Apple IIgs and two 3½" drives recommended

One might suppose that, being the most widely used word processor in the known universe, "Appleworks" would leave little room for improvement. Well, how about printouts in multiple IIgs/Mac fonts, spelling checking, on-line thesaurus, custom macros, word counts, and file encryption?— for starters! These and other most-wanted enhancements come to you via Beagle Bros's "TimeOut" series.

"TimeOut" is a collection of separately packaged units (e.g. "TimeOut SuperFonts", "TimeOut DeskTools", etc.), each of which comes with its own manual and software on both 3½" and 5¼" media. Whether you add just one or all (thirteen or so) units, "Appleworks" will boot about as quickly as before and, in fact, look and act much the same.

Except for a mod so that RESET now returns you to the main "Appleworks" menu, and a set of handy OPTION key commands from "TimeOut UltraMacros", "TimeOut"s features are accessed via a special menu called-up when you enter CMD-ESC. You have, so to speak, stepped out of "Appleworks" (hence the notion of "time out"), into a world of related applications. Suppose, for instance, that you are editing a document and wish to check your spelling. If "TimeOut QuickSpell" has been added to your copy of "Appleworks", then entering CMD-ESC and selecting "QuickSpell" loads TO.QUICKSPELL; and the routine checks your spelling and lists 'unknown' words— all in about 15 seconds for a 1ØK document on a IIgs. Following standard protocol, one or more ESC's gets you out of a "TimeOut" application and back into "Appleworks".

Naturally, the kind of power boost represented by "TimeOut" comes with a price tag beyond mere dollars and cents. Your souped-up "Appleworks" will cost some memory and a fair chunk of disk space— how much depends upon the number of units you 'tack on'. Another expense is greater system complexity, especially on 5¼" and single-drive 3½" setups. Basically, the more memory and disk space you have on-line, the simpler things become. On a two-drive, 1.25 Mbyte IIgs, even a comprehensive "TimeOut" implementation (e.g. seven or eight packages) is nearly 'transparent'; but, for the IIe/5¼" user, running a big "TimeOut" setup is likely to be the decisive experience in a move to the IIgs.

'Getting a handle' on "TimeOut" and assessing tradeoffs is easy once you identify the main components. First, there is the system 'glue', TIMEOUT itself. This is a patch to "Appleworks" which locates and hooks up your "TimeOut" applications, presents the menu, and launches selected functions. Any "TimeOut" package can handle the patching; and, unlike some "Appleworks" add-ons, it need be done only once.

At the second level are the applications, files with names like TO.THESAURUS and TO.FILEMASTER, which do the actual work. Often these must access font, dictionary, synonym, and other support files. The typical "TimeOut" package also includes a BASIC program to handle installation plus TO.UTILITIES, a 'housekeeping' application which lets you "configure" other applications. Finally, there will usually be one or more example files referenced in manual tutorials.

When you first patch "Appleworks" you tell the BASIC installer program where TIMEOUT is to look for the application files (e.g. a pathname) and whether or not to expect more than one diskette during startup. Later, via the "Utilities" function, you configure each application. That is, you tell "QuickSpell" where to look for its dictionaries, "Thesaurus" where to find its synonyms file, etc.. You may also specify that an application (not just its location) be loaded upon booting. This "memory-resident" configuration option lets a function respond more quickly, but at the price of additional memory and longer boot times. As illustrated in the earlier "QuickSpell" example, non-resident applications are fast enough for most situations; AND they use almost no memory except when actually selected.

In principle, "TimeOut"s approach is both flexible and simple; but things become a bit dicey when it comes to simplifying the business of user installation. Rather than just listing and describing each application file and each support file; and leaving it up to you to decide where to move what; Beagle Bros wants you to depend upon its in-package BASIC installers. Unfortunately, some of these will transfer applications files, but no support stuff. Many will insist upon taking you through TIMEOUT patching, whether or not "Appleworks" is already patched; and some installers work just fine. The manuals, excellent in other respects (tutorials, hints, etc.), are similarly 'spotty'.

Happily, setting up your "TimeOut" stuff IS easy. The secret is Apple user common sense and a dash of 'hacker' nerve. The common sense says: "Use 'Copy II Plus' to move any needed files the installer omits". Hacker nerve says: "I may forget something; but, what the heck!" Indeed, if you do forget something, "TimeOut" will let you know without bombing your diskettes— this is a very forgiving system.

In the long run, unless you are running a hard disk, the REAL challenge is ARRANGING all those nifty "TimeOut" files. (Everyone knows that hard disk types have infinite capacity, right?!) For 3½", two drive systems, the most convenient BIG setup is to put all the TO.xxx-named applications files and smaller support files on the same diskette as "Appleworks". Larger support blocks (e.g. "QuickSpell"s dictionaries, "SuperFonts"s font files, etc.) can go on your 'standard' startup data disk. This way, "Appleworks" startup time is increased only a few seconds.

Beagle Bros claims that its "TimeOut" products will be compatible with "Appleworks" version 2.Ø or later. No doubt, Beagle has some kind of commitment from Claris; but it doesn't take a marketing whiz to see that "Appleworks" is a much more attractive product now, than it was last year. Whatever additional improvements Claris may introduce, I suspect "TimeOut" compatibility will be staunchly maintained. It took Beagle Bros and "TimeOut" to drag dear old "Appleworks", 'kicking and screaming', into the IIgs era.

The Packages

This month's focus is upon what I consider to be the 'basic two' "TimeOut" units. Other members of the series include "QuickSpell": a spelling checker/corrector with provisions for customized dictionaries and word counting, "Thesaurus": a synonym finder, "Graph": for creating bar, pie, etc. charts from spreadsheet data, "UltraMacros": to add ready-made or

custom commands, "DeskTools": for an on-line calculator, calendar, notepad, etc., and "SideSpread": a utility for lengthwise printout of many-columned spreadsheets.

TimeOut Superfonts

by M. Somonsen

$69.95 Beagle Bros

Of all the "TimeOut" packages, "SuperFonts" has to rank as THE essential "Appleworks" enhancement. Now you can get proportionally spaced printouts in one or more IIgs/Mac fonts (including nearly fifty on-diskette files) in character sizes ranging from 6 through 127 point.

After setting options for Page Setup (i.e. y/n for "Tall Adjusted" and "50% Reduction") and Print Quality ("Draft", "Standard", and "High"), just about everything else is in-document programmable. You specify font, size, and style (e.g. regular, italics, outline, shadow, and inverse) via simple "< >" commands. For example, "<1=times.12>" and "<2=new.york.12>" at the start of a document, load in the two fonts and assign reference numbers. Subsequent "<2>" and "<1>" entries in the text then switch between the fonts during printout, with "<OB>" (for "Outline Begin"), etc. to handle style shifts. Similarly, "<p1=FROG.PIC>", "<p2= GAME.MAP>", ... load in and tag hires or double hires PICTURES! As with font changes, a simple command (e.g. "<p1>") is all you need to printout the picture. Supporting virtually every popular Apple compatible printer, if "TimeOut" can be said to have a 'flagship package', "SuperFonts" is it!

TimeOut FileMaster

by R. Brandt

$49.95 Beagle Bros

While "Appleworks"'s built-in file-handling capabilities are usually adequate, this is small comfort on those occasions when something more is needed. Well, "FileMaster" is not "Copy II Plus-in-'Appleworks' "; but it comes close enough to earn a few cheers. For any on-line disk, files may be cataloged, copied, compared, renamed, locked/unlocked and even rearranged. Of course you may also copy, compare, and format disks, as well as create and copy subdirectories, and use "erase" to quickly produce data diskettes.

"FileMaster"'s way of doing things does, admittedly, take some getting used to. For instance, assigning Disk and File activities to separate menus means that, occasionally, one must enter CMD-RETURN to specify a "current disk". Yet there is no on-screen prompt for this option, nor for any of the "special" file commands. Among the latter is "View Files", a very handy way to look at (CMD-V) or printout (CMD-H) a full-screen listing of up to 100 names in the current file list. "Arrange Files" (CMD-A) lets you arrange a file list alphabetically or by size, type, or date. Finally, while "FileMaster"'s standard file listing is slightly more informative than "Appleworks"'s own; it's too bad Beagle passed up the opportunity to build-in a for-real CATALOGing function. Still, 'warts and all' the first time you NEED one of "FileMaster"'s new functions, you will be mighty glad it's just a CMD-ESC away.

Gauntlet

by Atari Games

$39.95 Mindscape

■ **Requires:**

☐ 256K IIgs
☐ one 3½" drive
☐ joystick optional

Direct from the arcade parlor to you, "Gauntlet" is a blow-away-the-monsters, top-view maze adventure with at least one unusual attribute. For the lone player, controlling a single hero, the premium is squarely upon quick response and accuracy, joystick control is indispensable, and a speedy demise is all but assured. BUT, should you (or, better, another player) opt to bring a second character into the fray, the game becomes ridiculously easy. Controls are responsive and so simple (mainly movement and 'fire') that keyboard-only direction of the second hero poses no great inconvenience.

Listing a choice of four characters (warrior, valkyrie, elf, and wizard), a few well-defined monsters, and numerous power-enhancing items— all in a many-leveled dungeon of multi-screen mazes— "Gauntlet" documentation promises an interesting strategy challenge. Regrettably, as usually happens with gaming parlor retreads, the promise goes unfulfilled. Sound, just 'passable', and graphics are the first casualties. In double hires color, the tiny hero, monster, and item figures emerge as blocky splotches, often against a vast expanse of gray maze floor. You are assured that the "animation of the arcades" is right there "on your home screen"; but, at this resolution, who can tell?

Still, the more imaginative adventurer might tolerate such deficits, were there something resembling a real challenge and/or a solid goal. "Gauntlet", however, urges you to "go as far as you can" and to score the maximum points. Since, as long as one hero is alive, the other can always regenerate, getting to 'Level whatever' of the dungeon is no great feat. True, his/her points are reset to zero; but, with no High Scores record, why should anyone care?

As might be anticipated, being virtually immortal and supplied with inexhaustible supplies of ammunition (hammers, arrows, etc.), does tend to 'wash out' the alleged special attributes of your heros. Indeed, "Gauntlet", itself, is a wash-out. Somehow, we got to Level 25 before falling victim to the only really dangerous 'monster' in the whole dungeon: Boredom!

Fast Frames, Updates, etc.

SoftSwitch Replies

Responding to the June review of Roger Wagner Publishing's "SoftSwitch", both Roger Wagner and Ken Kashmarek (the author) have zeroed-in on my comment to the effect that saving 133K seems like overkill for 64K or smaller programs. Roger Wagner notes: "The main reason we always save 133K chunks in saving programs is to reduce not only the amount of potential confusion to the user, but also the likelihood that his program would crash if he were to ask to save an incorrect memory size."

Ken Kashmarek comments: "If SoftSwitch was to be successful, there is every compelling reason to switch the entire 128K. There were too many failures when this was not done. We cannot accurately determine, under all circumstances, what memory in bank 1 was or was not being used. Most users don't know, so they could not make the correct selection. The memory options you suggested were all tried and discarded as prone to failure."

"While you felt we were saving too much memory, some SoftSwitch critics felt we were not saving enough. The 133K includes 5K of IIGS Desk Manager saved areas that belong to the running application. We did not include the shadowed hires, double hires, and super hires areas (a whopping extra 48K)."

As to my questioning of the decision not to switch ProDOS 16 programs, Ken observes: "Of the commercial applications available, none stay within 512K. Even code from Apple Computer cannot load in a bare bones 256K anymore ... . Thus, for the expanded memory card within the budget of most IIGS owners (one megabyte size), it is not possible to switch one ProDOS 16 application."

Defending the Crown

In Cinemaware's new adventure/wargame, "Defender of the Crown", crunching the opposition takes a lot of practice. You can take it on the chin for however many sessions it takes to 'learn the ropes'; OR you can employ a touch of Realtime Situation Control to make those 'practice games' into victories!

As usual, the "Visit Monitor" CDA (or some equivalent) must be installed before booting the game. During play, press CMD-CTRL-ESC to call up the CDA menu, select "Visit Monitor", and enter Ø3/BCØØ.BC2F (RETURN) to view the main status bytes for you and your five rivals (arranged in six-byte sets). Whether "Wolfric the Wild" or some other Saxon, your parms are always first in each set: INCOME ($Ø3/BCØ3), LEADERSHIP ($Ø3/BCØF), JOUSTING ($Ø3/BC15), SWORD FIGHTING ($Ø3/BCØB), and TREASURY ($Ø3/BC2D).

For long play, with plenty of opportunity to practice jousting, sieges, and sword fighting, all you really need is a big army. This you obtain by juicing-up your treasury (e.g. $Ø3/BC2D: FØ). Of course, you will certainly want to try your hand at raids and fair maiden rescues(!); so, just boost your sword fighting skill (e.g. $Ø3/BCØB: 1F). Thusly imbued with truth, justice, and raw power, you are ready to hone your technique AND to guarantee that the Crown of England doesn't fall into the wrong hands!

Bootable Backups

Regarding Brian Troha's fine "Multiscribe 3.Ø IIgs" exposition (COMPUTIST #56): why not just $ØF6: 82 47 ØØ (in block $538) and hop over everything?

☆ ☆ ☆ ☆ VOTE!!! ☆ ☆ ☆ ☆

To celebrate the '88 elections, it seems only proper to stage an Official Computist 'Best New Stuff' vote. Sections are 1. Best Game, 2. Best Adventure, 3. Best Sports Simulation, 4. Best 'Productivity' Package (e.g. painters, word processors, etc.), 5. Best Utility (e.g. copiers, DOS enhancers, etc.), 6. Best Music Package, 7. Best Miscellaneous (i.e. whatever).

Rules: To qualify, a 'candidate' must be a 1987 or 1988 release for the Apple IIe or IIgs. You may vote in any or all sections. You may list up to three products per section. Each list should be headed by the section name followed by titles in order of preference. (i.e. First listed = "1st Place", etc..) A product may be listed in more than one section, if it fits. Be sure and note version (IIe or IIgs), if it matters. Feel free to jot down any comments; but try to keep everything, ballot plus comments, to no more than two sheets.

Each voter gets just one ballot. However, up to four voters may send their ballots in a single envelope, as long as each ballot is signed. Ballots should be sent to me at 7814 Santa Elena, Houston, Texas 77Ø61. The deadline is November 3Ø, 1988. The results should be in print by the January issue.

Don't miss this chance to support the products YOU like. **VOTE '88!!!**

Vendors

Beagle Bros.: 6215 Serris Square, Suite 1ØØ, San Diego, CA 92121 (8ØØ-345- 175Ø, in California call 8ØØ-992-4Ø22)
Cinamaware: 4165 Thousand Oaks Blvd., West Lake Village, CA 91362 (8Ø5-495-6515)
Mindscape: 3444 Dundee Road, Northbrook, IL 6ØØ62 (312-48Ø-7667)

Michael J. Paris

Low cost alternate Languages

I suspect that there are a number of people who are interested in learning new computer languages but who can't justify the cost of the high priced packages. I wish that I had known about the sources available when I first started exploring new languages.

Here is an sample of what can be obtained for a reasonable sum (under $5Ø) and what source(s) can be used.

FORTRAN, COBOL, Pascal, Forth, C, and BASIC are all languages that are well known and are fairly common. Furthermore, most of them are popular on microcomputers. Even though FORTRAN and COBOL are more often thought of as belonging on mainframes, they are also available for many small computers, including Apples.

There is a problem, however. How can someone who is interested in learning one or several new languages develop a feel for them without mortgaging the old homestead to purchase the latest and greatest version of each one? It is not unusual for the price of a language system to be several hundred dollars.

It doesn't seem to be well known, but there are a number of sources of low cost languages and even though they may not all be full-featured, they can easily provide a good taste of the essence of the language. In fact, some of the low cost versions are (or claim to be) complete sets or even supersets of the standard language. Some, of course, are only subsets. Even so, they can provide enough of a base in the language for a budding programmer to decide whether it is worth the additional money required to move up to a full implementation.

Quite a few of the versions available will only run under either MS-DOS or CP/M. Since the only way that I am aware of for running MS-DOS programs on an Apple is with a $5ØØ+ Applied Engineering Transporter setup, I am going to concentrate on the CP/M systems.

There are a variety of sources for CP/M cards. I bought mine from a discounter who sold the Applied Engineering Z-8Ø Plus which comes with its own operating system (a CP/M work-alike called CP/AM). I have seen ads for it recently for around $1ØØ. That is the largest single expenditure required. The language systems are all much less expensive.

If you already have a Gold Card or a PCPI card or any of the other CP/M adaptors for your Apple then you will not need to worry about obtaining either the hardware or (probably) the system software since you have some kind of workable setup right now. If you are lucky, your system includes the CP/M utilities like PIP, DDT, ASM, and several other handy (though not absolutely necessary) files.

It is also possible to get CP/M cards for under $4Ø. The main problem with these is that they rarely come with an operating system. There are some public domain CP/M-type systems around but you will need a friend who has a running system to get yours up and going.

CP/M is very different from either DOS 3.3 or ProDOS. On the other hand, if you have any experience with MS-DOS you will find that the conversion is pretty simple. MS-DOS was a take-off of sorts on CP/M. Your best bet is to get a few good reference books at your local bookstore because the documentation that comes with the CP/AM system is rather sparse. Some other systems may be better documented so it may pay to wait until you know for sure what your system is like before you get too many books. On the other hand, a couple of good references (such as CP/M Bible by Waite and Angermeyer) might be a sound investment in any case.

There are some additional things that you may want to include that will make things considerably easier even though they are not required. A 64K machine seems to be sufficient for most, if not all, of the languages I have found. For the sake of convenience you may want to have some extended memory. Even the 64K that you find on your eighty-column card if you have an Apple IIe will be helpful when

used as a RAM drive. I prefer to transfer most or even all of the files that I am going to be working with onto a RAM drive and do all the editing, compiling, and linking from there. It saves wear and tear on the disk drives and speeds everything up by a marked amount.

I like to use a 3½" drive for most of my work because it stores things more quickly and I can put all the related files on the same disk. The newer CP/AM system allows its use and I can keep an entire language system together.

Now to the languages. The ones that I have found that run under CP/M are Nevada FORTRAN and Nevada COBOL from Ellis Computing (5655 Riggins Court, Suite 10, Reno, Nevada 89502). C from MIX Software (1132 Commerce Drive, Richardson, Texas 75081). Turbo Pascal from Borland International (call 1-800-255-8008 for orders or the dealer nearest you).

There also a number of others available that I have not had a chance to work with. For example, Ellis publishes a version of Pascal, a version of PILOT and a version of BASIC along with an editing system. All of these run under CP/M as do a variety of public domain languages such as ACTOR, BASIC-E, PILOT, FELIX, and others too numerous to list.

Nevada FORTRAN v.3 is a subset of FORTRAN IV. It sells for about $40 and comes with a manual of which roughly 170 pages are devoted to the language and the way it is implemented under CP/M. An additional 50 pages (approx.) cover the assembler module and use thereof. This version of an 8080/Z-80 assembler is included with the FORTRAN package. No tutorial is supplied although there are several example programs listed for both the FORTRAN section and the assembler section. If you want to learn FORTRAN with this package you would do well to get at least one good textbook/tutorial for the language. This version includes several extensions to the ANSI standard and also omits several ANSI standard components such as double precision and EQUIVALENCE statements.

Naturally, you do not expect full mainframe capability on a 64K system. On the other hand, this package provides a great deal of power for the money and when you master the system you will not need much additional work to feel at home with a full implementation. That, after all, is the reason for getting a $40 system instead of a $400 system that requires more memory than you can shake a stick at.

The assembler module can be used to assemble some of the source files found in the public domain programs that abound. Be careful though, some assemblers that operate under CP/M require slightly different formats and you may find that a file needs to be edited before it will assemble correctly. This is not a problem that is confined solely to Z-80 and related systems. It is also true for 6502 assemblers. Try assembling an S-C assembler source file with the Merlin assembler and you will see what I mean. The situation is not necessarily bad, you just need to be aware that different programmers have different priorities and therefore will produce assemblers that handle source files in a different manner than others.

Nevada COBOL is similar to Nevada FORTRAN in a way. It sold for about $40 but unfortunately has been discontinued. It may be possible to obtain it from a vendor who still has it in stock or a used software dealer. It appears to me to be a subset of COBOL 74. The 170 page (approx.) manual contains a brief introduction to the language, a short primer, and several example programs. Once again, you will be best off if you get a good textbook/tutorial to use with this version. Quite a number of commands are not available but can usually be worked around without too much trouble. COBOL is a verbose language and it is not surprising that something had to be left out to make it fit into a microcomputer. Nonetheless, the compromises that had to be made seem to be well chosen and, for the price, you will be getting a lot of useful experience with the language.

Ellis publishes a book of applications programs for their version of COBOL; it is about 75 pages long and contains four packages for budgeting, personal finance reporting, labeling, and a PRECOBOL processor.

If you are going to use the Ellis packages, you will want a text editor of some kind. Ellis sells an EDIT program that is considerably better than the primitive editing programs that come with the CP/M system (ED or TED). There are other editors that I prefer, but this one is not at all bad, and there are several very desirable features.

Turbo Pascal. When it comes to Pascal, everyone has heard the name of Turbo Pascal. It is a very good, fast, forgiving system. I don't suppose that it is the very best that there is, but for the money (or even a lot more) it can't be touched. It frequently sells at discount for less than $40 although the latest prices that I have seen are slightly higher. It comes with a 375 page reference manual (some of which is given over to IBM-specific commands) that covers the Turbo system (including the editor), the Pascal implementation (with numerous examples), CP/M information, differences between Turbo and UCSD Pascal, and several appendices covering such topics as installation for specific hardware systems, compiler directives, errors, and so forth.

The editor that comes with the Turbo Pascal system is good enough to use for a lot of things, not just writing Pascal programs. I have used it instead of the Ellis editor for FORTRAN and COBOL. It is Wordstar based so if you are familiar with that command structure you will feel right at home. If you don't like the key mapping, you can change it to whatever you want. I left it just about the way it came except for mapping in the arrow keys. Since Wordstar and Turbo both use the Ctrl-K as a prefix key and that is the up-arrow in the Apple, I made some simple changes in the installation so that the up-arrow would work as expected, moving the cursor up instead of putting me in a command mode.

C. If you want to learn C, I really doubt if there is a bargain to match the package availiable from MIX. For under $40 you get the language, linker, and compiler system; the split-screen editor system; and the ASM package. If you are buying the system to use on an MS-DOS machine or with the Transporter, you also get C-trace, a source code debugger. Unfortunately, C-trace does not work with CP/M. Even so, the deal is unbeatable. The system comes with a 430 page manual which includes a tutorial along with the reference section. It claims to be a full featured, standard implementation of the Kernighan & Ritchie C compiler suitable for development systems used by beginning to intermediate-level programmers and I have no reason to doubt that this is so. There are a few extensions to the standard and only one restriction.

You can't possibly go wrong with this system. There is even a money back guarantee. The editor is so good that I use it for all the programs that I write under CP/M. It has even more features than the Turbo system and also follows the Wordstar protocol. In fact the whole package would be worth the price for the editor alone. While there are probably other editors that can do more or even do it more easily, I would be amazed if you could find one at this price and then have a fine C system thrown in too. This system was voted a Best Buy by Computer Shopper magazine and with good reason. It would be worth buying a CP/M card just so you could run it.

What about languages that don't require CP/M to run? There are several in the low cost range that are available. Along with several versions of BASIC there is Forth.

Forth is a strange language, at least it is to me. Nonetheless, it is very interesting and very powerful. Best of all, it is practically free. A version called FIG-Forth is available from several public domain sources. I bought mine from the Big Red Apple Club (BRAC) (423 Norfolk Avenue, Norfolk, NE 68701) for the cost of the disks ($3.50 each). It is written to run under or from Integer BASIC. I don't know how it does that, but that is where you start — right from the ">" prompt you call up the screens that Forth is built with.

FIG-Forth comes on a pair of disks with all the documentation contained on the disk. It is pretty sparse information though. As before, I recommend getting a good textbook/tutorial before tackling too much.

Readers Data EXchange

BASIC. As far as dialects of BASIC are concerned, there are a whole host of them running from some of the public domain versions such as those available under CP/M to the ones that sell for a fortune. Of the versions that can be obtained for reasonable cost, those from John Blankenship (DOS 3.3 or ProDOS) are useful. They provide named subroutines, mixed high-resolution text and graphics, and easily structured programs. The cost has been about $25 for either version or about $40 for both.

Sometimes Z-BASIC can be purchased for about $50, a little above the range that I have been considering here but a BASIC that has received good reviews.

Several versions of BASIC exist that I would like to try out. Applesoft just doesn't have all the neat things built into it that I want and trying to attach everything using the ampersand hook eats up memory like crazy, not to mention blowing the portability. Of course, I can always dedicate an entire disk to a particular version, but that doesn't seem like a very good solution. On the other hand, with a different system or dialect, I run into the same problem anyway. So maybe it all comes out about the same in the end.

There are other languages and versions of languages around that I don't know about which are in the price range I have limited this letter to. I am always looking for new horizons and I wish that companies like Borland would continue to publish their languages in CP/M compatible formats. I would love to get my hands on Prolog. I have seen RPG advertised but I have no idea what the price is. I expect that it is far above what I am willing to pay but maybe I would be pleasantly surprised. It is usually found only on mainframes and maybe some mini's. That is where I was first introduced to it. It is a fun language to work with and I wish I could get an Apple version.

A final thought, you may want to transfer text files from one system to another for various reasons. If you do, you will want to get the Universal File Converter from Quality Software. It allows you to move text files between CP/M, DOS 3.3, ProDOS, and the Apple Pascal environment.

For a minimum inital cost you can explore a host of new languages. If you enjoy mapping new territory, if you want to root around in the world of computer languages, or if you just want to keep your hand in with some of the languages you once learned and have nearly forgotten, now is the time to get started.

Ryan Lanctot

In COMPUTIST #58, I submitted a program called Infocom Decoder. Unfortunately, several errors cropped up which, I fear, were entirely my fault. Add or change the following lines:

40 ONERR GOSUB 800
210 GOSUB 850: Rem...
570 ...:GOSUB 1000
580 ...: GOSUB 940
Delete line 900

Also, in the text reader modifications, there should be a colon after the POKE in line 390.

To appologize and make up for this, I have a hint for readers:

Playing Tips for...

Captain Goodnight

Broderbund

To get rid of the irritating "balloon", edit side #2.

Trk	Sct	Byte(s)	From	To
$0E	$09	$32	00	01

Blaine C. Miskell

Softkey for...

Death Sword

Epyx

A friend just recently purchased Death Sword by Epyx, and wanted to find a softkey that would work. We started looking at back issues of COMPUTIST figuring to find a previous softkey that would work.

We came across the World Karate Championship softkey in COMPUTIST #50 and noticed that the protection scheme was identical.

I used DISKEDIT from my COMPUTIST Starter Kit and checked track $00, sector $0E, and found the bytes to be changed were identical.

[1] Boot your DOS 3.3 system disk.

[2] Tell DOS to ignore checksum and epilog errors and use COPYA to copy the disk.

POKE 47426,24
RUN COPYA

[3] Make the following sector edits to the copy you just made.

Trk	Sct	Byte(s)	From	To
$00	$0E	$24	76	5A
		$29	71	55
		$39	61	45
		$47	53	37
		$54	46	2A
		$5D	3D	21
		$6C	2E	12
		$7B	1F	03

[4] Write the sector back to disk.

(?) Help wanted for: Auto-Duel by Broderbund. How do I load Auto-Duel onto a RAM card. I have a 512K RAM card by Applied Engineering and can get the program to load into RAM but the program will not recognize the RAM drives 1 & 2. The Auto-Duel disk has already been changed using the softkey from COMPUTIST #36.

Jim Bancroft

† *Softkey for...*

Science Tool Kit

Broderbund

COMPUTIST #46 contained the first softkey for Science Tool Kit from Broderbund. COMPUTIST #49 had a description of a version which used a different distribution of data in its boot. Apparently the distribution described in COMPUTIST #49 is the current distribution in use by Broderbund, but the author missed something about it. He says that there are still six (6) pages of data in 4&4 encoding on track $01 but there are only two (2) pages of data there (pages $10 and $11 of memory).

What this means is that the current version will be even easier to softkey.

[1] Follow steps 1 and 2 of the COMPUTIST #49 softkey (or use an NMI card) to capture and modify the track $01 code. Then in step 3 use an **L$2000** not **$6000** as listed. This will give you the needed code from track $01, and you will not have unnecessary code to deposit onto your copy disk.

[2] Use Super IOB with a modification of the controller in COMPUTIST #49. Change line 1020 to read **<9** rather than **<15**. Then insert: `1040 GOSUB430 : GOSUB100 : ST=ST+1 : IF ST<11 THEN 1040`. Be sure you initialize the blank as volume #1.

Even if you found the "bug" correcting 1040 in an issue after COMPUTIST #49, use the line 1040 I have listed above since it is not necessary to have any code whatsoever written to sectors $0B through $0E.

You now have a normalized disk which needs sector editing in order to read itself (while still being able to read the Tool Kits accessory modules) and to disable its nibble counting of track $01. The Zap editor of Bag of Tricks 2 or Tricky Dick of the CIA have the best search abilities

[4] Force the loading of memory pages $10 & $11 of the two aditional sectors of code which we captured from track $01. We are not loading physical sector $0E (logical sector $08) because it is only read while initializing data

disks and it will be read into memory when you carry out that function later. If you want to personalize data disks, sector edit the text of sector $Ø8 on your copy.

Trk	Sct	Byte(s)	From	To
$ØØ	$ØØ	$62-65	FF ØE ØC ØA	ØC ØA FF ØE

[5] Kill the nibble count during boot.

Trk	Sct	Byte(s)	From	To
$ØØ	$Ø9	$Ø8-ØA	2Ø ØØ 11	EA EA EA

[6] Search the disk for the string BB DØ A4 18 6Ø. Change the A4 to ØØ so that the disk can read its new normal epilog (AA) while still being able to read BB epilogs on accesory modules which may not yet be deprotected.

Trk	Sct	Byte(s)	From	To
$ØØ	$Ø6	$6C-70	BB DØ A4 18 6Ø	BB DØ ØØ 18 6Ø
$Ø8	$Ø8	$6C-70	BB DØ A4 18 6Ø	BB DØ ØØ 18 6Ø

We will not kill the code at $946 in memory by editing memory or by editing byte $46 on track $ØØ, sector $Ø1. This is the original code for the boot-up read of track $Ø1. This code is apparently harmless, so let sleeping dogs lie. Our new disk format is unreadable by that code anyway. The boot continues on its way and jumps to $1ØØØ in memory just like it should.

[7] At this point your disk would work the same as one from COMPUTIST #46 or COMPUTIST #49 would have. It is actually a little better because this can read either normal or protected epilogs (AA or BB.) What both authors missed though was that the softkeyed disk could not write to itself. So, you could not change the working setup and save it. Finally, I have found out why.

Search for the string A9 BB 8D 9B 99 which changes the write epilog to BB for writing in program disk format. Change the BB to AA because you changed the program disk format to normal.

Trk	Sct	Byte(s)	From	To
$Ø4	$ØB	$Ø6	BB	AA
$ØC	$Ø2	$56	BB	AA

[8] On track $ØC, sector $Ø8 at byte $57 is a nasty piece of code (A9 BB 2Ø B8 98).

Purpose: Change the second data write prologue byte to BB if the user tries to write with normal epilogs onto a program disk.

Net effect: You will destroy track $ØØ sector $Ø2 of your softkeyed program disk, thus making boot-up impossible.

This code's only purpose was to destroy normalized disks whenever this subroutine is called. Change the BB to AA and it will neutralize this deadly little mole.

Trk	Sct	Byte(s)	From	To
$ØC	$Ø8	$58	BB	AA

[9] Now the disk works great. But let's speed-up the boot by eliminating the delays which leave us admiring the credits. Search for the string 2C 1Ø CØ 38 A9 96. Put 6Ø in place of the 2C and the delay is gone. It boots like lightning. Do a comparison boot with the original. The difference is fantastic.

Trk	Sct	Byte(s)	From	To
$ØØ	$ØA	$69	2C	6Ø

There are still two routines on the disk which are code to do a read of Track $Ø1. They are recognized by the BD 8C CØ followed by C9 D4 or C9 E7. They seem to be uncalled routines, or perhaps we neutralized their caller or the location that they return their values to. On my disk, they are sitting on track $Ø8, sector $Ø5 at byte $9B and track $ØC, sector $Ø3 at byte $84 just waiting to do nasty things to me some day. For that reason I am keeping this disk write-protected whenever possible. Once they try to show-off their bad habits I can kill them.

For the life of me I can not understand why Broderbund went to such lengths to protect a disk which is totally useless without the interface which comes with the program. I guess it prevents purchasing a "replacement" interface by someone who hasn't purchased the program or purchasing "replacements" for all your friends, but an exchange procedure would have been much more friendly. When you take your one and only original into a chemistry lab and pull it out of the drive to put in another disk, you will lose it in the first chemical spill. For that reason I have been advising people not to buy this program; since, there are other more friendly data aquisition packages around such as those from HRM or the Vernier Series.

Hopefully this addition to the COMPUTIST #46 & COMPUTIST #49 softkeys will make the Science Toolkit more usable by other teachers.

Stanley Planton

Another copy-protection scheme for DOS 3.3

■ Requirements

- ☐ DOS 3.3 System Master
- ☐ DOS Boss (suggested)
- ☐ EDD IV
- ☐ Sector editor (COPY II Plus or equivalent)
- ☐ Disk drive with variable speed
- ☐ Locksmith 6.Ø (suggested)

Some of the major goals of copy protection are: to prevent the easy copying of an entire disk, to prevent the transfer of files to other disks, and to prevent the user from finding out what's going on or to lead him astray. We can fairly easily meet most of these goals by a combination of programming and misdirection, in the assumption that most non-hackers won't be able to easily defeat our methods.

The following is an example of how we can move the disk's catalog track to track $23, and mess around with the disk's formatting and DOS's internal instructions enough to meet the above goals. Most of these methods were obtained by "reverse engineering" copy protection methods used by commercial publishers; I kept on wondering "how did they do THAT?" and trying different techniques from COMPUTIST until I could replicate the effect.

In the following we will make gradual changes to a "source" disk, then copy this disk to a *bulk erased blank* or a brand new unformatted disk, using EDD IV to write out a non-standard format to this "target" disk. I am presenting steps to follow in a fairly arbitrary order: some operations could be combined, or your own additions, embellishments, and modifications substituted. The reason for using a magnetically wiped disk is that we probably won't want to copy unused tracks, and the presence of unreadable and unverifiable magnetic "garbage" on a few tracks of the copy will drive some non-hackers to distraction as they try to copy the disk!

[1] Boot your "System Master" disk. Enter your program to protect.

[2] Using Phil Goetz' technique from COMPUTIST #3Ø, modify DOS for an added track.

```
CALL -151
B3EF:24
BEFE:24
AEB5:90
3D0G
```

[3] Insert a blank disk in the drive and initialize it. Label this disk "Source". The result of this operation will be to produce a disk with a normal catalog track $11 (17), but with an added track $23 (35).

```
INIT HELLO                    or whatever
```

[4] Boot the disk you just INIT'ed. Everything OK so far?

[5] Let's get rid of the ability to CATALOG the disk from its DOS.

```
POKE 42350,76
POKE 42351,0
POKE 42352,198
POKE 42353,170
```

Another useful approach is to use DOS BOSS to rename and/or reroute DOS commands and error statements. I've been fond of renaming CATALOG "DOGALOG". You might also try rerouting many commands to the INIT handler. If you make changes with DOS BOSS or any similar program, the preceding edits will be nullified, however, so be careful.

[6] At this point, let's instruct DOS to accept either a D4 AA 96 pattern or the standard D5 AA 96 pattern in its address header. With the source disk in the drive, enter:

CALL-151
B954:4A C9 6A D0 EF
3D0G
INIT HELLO *or whatever*

Remember, if you RESET out of your program and CATALOG, the disk will reboot... We'll use these DOS instructions later as we change address headers on the disk.

[7] Now let's move the catalog track out to the new track $23 (35). (To complete this action, you'll need an abilty to read sectors on track $11 (17) and to write each sector out to track $23 (35) with modifications.)

POKE 44033,35
INIT HELLO

The first sector of the catalog track should now reside on Track $23 (35), sector $00. You should check this with a sector editor.

[8] Now we want to move the rest of the old catalog track $11 (17) out to track $23 (35) to follow sector $00, and make appropriate changes so that the catalog track will work correctly in its new location. Use a sector editor (Copy II Plus v6.0 or higher works well) to READ sector $0F of track $11. Note the data present at bytes $01 and $02 of this sector: 11 0E. **Change** the 11 to a 23, and **write** the changed sector to track $23, sector $0F. **Do not** write it back to track $11.

The 0E value in byte $02 of sector $0F *must* remain the same if you want your catalog track to work right: sector $0F refers DOS to sector $0E, sector $0E refers to $0D, etc. Each sector of the catalog track refers to the next lower sector on the track.

Continue for the other sectors of track $11; READ them from track $11, change the track number to a 23, and WRITE them to track $23. In each sector, the value of byte $01 will become 23, followed by the number of the next sector of catalog data, so they'll read 23 0E, 23 0D, 23 0C, and so forth, when you're done. It is theoretically possible to reroute the catalog track to different tracks and sectors on the disk; if you feel REALLY creative, some experimentation might be called for. In this example, let's stick to track $23 (35).

[9] Now, how do you transfer new files to the disk? You can boot this disk, POKE 44033,17 to restore DOS' ability to read files from a normal disk, load the file(s), POKE 44033,35 to return DOS' attention to track $23 and SAVE the files as normal. If you used DOS BOSS to lobotomize SAVE and BSAVE, you might be regretting it.

[10] Assuming that *you* have no further need for a RESET function on this disk, use your sector editor to read track $00 sector $0D. If the DOS you are using is a normal DOS 3.3, start with byte $50. You should see a pattern of bytes that reads something like this; 60 4C BF 1D 4C 84 1D. (Note that the 1D might have a different value). Change the sequence to read; 60 4C 00 C6 4C 84 1D instead and write the change back to the sector. This will reroute the RESET handler to $C600, the address of the disk controller card, forcing a reboot if someone presses RESET.

The 4C 00 C6 that you substituted for the BF 1D pattern tells DOS to always jump to the disk controller on a RESET.

[11] Dig out COMPUTIST #51 (January '88), and follow my instructions using EDD IV to copy the disk you just produced to a *very* slow drive (290-295 rpm). *Copy only tracks that are used for your programs or for DOS and the new catalog track $23 (35).* Change address headers on every other track to D4 AA 96. Assuming that track $11 (17) now serves no useful purpose, either don't copy it, or copy a catalog track from some OTHER disk to your target disk. (We don't want to make things *easy*, do we?).

When finished, you might want to CERTIFY unused tracks using EDD IV or Locksmith 6.0, or use Locksmith to FORMAT half-tracks in an unused area of the disk. For example, if tracks $03 (3) through $10 (16) aren't in use, you can probably format tracks $3.5 through $0F.5 (15.5), as long as you stay *more than ½ track away* from all used tracks. The reason for this is that the wide read-write head on the drive tends to "bleed" data into adjoining areas as it writes to the disk. The minimum safe distance is 3/4 track separation between a "half-track" and the nearest "whole" track.

These efforts will keep many "expert copiers" out of mischief for a while as they try to replicate "nibble count tracks" and "synchronized half tracks" that serve no other purpose. If you feel really creative, you might use a sector editor to embed "helpful hints" or other snide remarks in some of these half-tracked areas, or use Locksmith 6.0 or EDD IV to write comments for would-be copiers into sync gaps or onto any certified tracks. Since a certified track looks like a "nibble count" track, having one of these is a good deceptive measure.

The end result of this should be a disk that is fairly hard to copy with a bit copier, and one which should resist file copying, as well. The presence of areas of "garbage" on the disk works fairly well to simulate nibble count tracks, and addition of a few "half-tracks" in an otherwise unused area of the disk can drive many sophisticated disk copiers to despair as they try and retry to copy these correctly. If the whole disk is produced at an exceptionally slow speed, it will be almost impossible to replicate on a drive that is spinning at 300 rpm.

Of course, this is only one approach to copy protection; I am sure that many COMPUTIST readers can improve on these techniques! How about it? Can someone show me how to PUT a nibble count on a disk?

Gary Verbuch

Softkey for...

Garfield Deluxe Edition

DLM

■ Requirements

☐ Sector Editor
☐ Blank Disk

About three months ago I was asked by a friend to make a copy of Garfield for him. Apparently he tried quite a few of the popular bit copiers with no results.

The first thing I did was use a nibble editor to check for format alterations. Since the disk uses a normal 3.3 format I then made a copy with COPYA to avoid using an original.

Since the DOS is a normal format I scanned the disk for any unusual disk reads or calls to the RWTS. Seems that approach won't work, nothing showed up from a disk scan so the disk read has to be self modifying code.

When I booted the copy a screen displaying "DISK ERROR, PRESS C TO TRY AGAIN" appeared. Since the disk check appeared to be quite some time after booting I decided against a boot code trace.

By the way, the DOS used by Garfield Deluxe Edition is ProntoDOS, and if you don't already have a copy of this fast DOS I recommend using it as a replacement for 3.3.

Getting back to Garfield, as soon as the prompt appeared during a boot I hit [CTRL-RESET] to try cataloging the disk. Fortunately, all of the DOS commands were not tampered with and I was able to load the Hello program. The Hello program sets Maxfiles to 1 and proceeds to BLOAD START and BRUN MENU. After dissasembling both files I found no offensive code in either. It's time for a process of elimination. The first file after START and MENU is L0 so thats where I proceeded. L0 loads at $6000 and seems to have quite a bit of garbaged code. I don't own an NMI card so

interupting a file during a run seemed futile. The first thing LØ does is JMP to $6EE9 so I followed the code from that point hoping to find a way to circumvent the disk error screen. The process from this point took almost an hour and I never did find the actual disk read. Fortunately, NOPing a JSR to $6FF2 bypassed the disk check and produced a working copy. I stepped thru all the menus of Garfield and found everything to work properly. The protection is only on the boot side of Garfield.

Follow these steps to deprotect Garfield (Deluxe Edition only).

[1] Make a copy of the original with any copier.

[2] Using a sector editor, scan the disk for 2Ø F2 6F. NOP these bytes and write the sector back to disk. Put away the original.

Trk	Sct	Byte(s) From	To
$15	$ØE	$FB-FD 2Ø F2 6F	EA EA EA

Softkey for...

Pegasus
Lucasfilms

■ Requirements

☐ Sector Editor
☐ Blank Disk

Pegasus is a fairly good hydrofoil simulation. To deprotect this ware, use any sector editor and change the following:

Trk	Sct	Byte(s) From	To
$Ø1	$Ø6 $Ø8	Ø3	62
$ØE	$Ø7 $75	22 Ø1 21	EA EA EA

Make sure you write these changes to disk.

Softkey for...

Dome Bookkeeping
Great American Software

■ Requirements

☐ COPYA
☐ Blank Disk

In COMPUTIST #57 there is a softkey for Dome Bookkeeping using Super IOB. Mr. Shireman mentions some protection on his copy other than alternating address prologs (D5 AA 96 and D4 AA 96). The three copies I've come across had no other protection than format alterations. I'm including this softkey for the readers who do not have Super IOB. Concerning the problem with changing the year after it was saved to disk, make another copy of the original.

[1] Boot a DOS 3.3 disk and use COPYA to copy the disk.

```
RUN COPYA
[C]
7Ø
POKE 47426,24        ignore read & checksum errors
POKE 47444,41        ignore the address prolog
POKE47445,Ø
RUN
```

Put the original away.

Formatting Extra Tracks

I was asked recently how to format a DOS 3.3 disk with 36 or more tracks. All of the apple drives I've tested have no problems with formatting and using track 36. There are some high quality drives capable of formatting up to 5Ø tracks (half and quarter tracks not included).

Although there are quite a few methods to add an extra track I'll include the simplest. This patch will work for up to 5Ø tracks.

[1] Boot a DOS 3.3 disk and enter the following POKES.

```
POKE44725, T*4
POKE46063, T          Byte 52 of the VTOC
POKE48894, T
```

T reflects the amount of tracks you want. If you want 36 tracks then T*4 is simply 36*4. Now you can initialize the disk. The VTOC will reflect the additional track or tracks.

Jack R. Nissel

Softkey for...

Search And Rescue
HRM Software

■ Requirements

☐ 1 blank initialized disk
☐ Demuffin Plus
☐ A way to reset into the monitor

[1] INITialize a disk.

```
INIT HELLO
DELETE HELLO
```

[2] Boot the original Search And Rescue disk. When the Applesoft prompt appears reset into the monitor.

[3] Move the RWTS to a safe place.

```
6800<B800.BFFFM
```

[4] Put in your blank initialized disk.

```
C600G
```

[5] Put in your Demuffin Plus disk.

```
CALL-151
BLOAD DEMUFFIN PLUS,A$803
FF59G                 If you hear a beep ignore it
A851G
803G
```

[6] Put in your original disk and copy all of the files to your blank initialized disk.

Softkey for...

Social Studies Vol 1
Social Studies Vol 2
MECC

■ Requirements

☐ 1 blank disk for each title.
☐ COPYA

[1] Boot your DOS 3.3 system disk.

[2] Tell DOS to ignore checksum and epilog errors and use COPYA to copy the disk.

```
POKE 47426,24
RUN COPYA
```

That's it.

Softkey for...

Creating The Constitution
Educational Activities

■ Requirements

☐ 1 blank disk.
☐ COPYA
☐ A sector editor

[1] Boot your DOS 3.3 system disk.

[2] Tell DOS to ignore checksum and epilog errors and use COPYA to copy the disk.

```
POKE 47426,24
RUN COPYA
```

[3] Make the following sector edit to the copy you just made.

Trk	Sct	Byte(s) From	To
$ØØ	$Ø3 $42	38	18

Softkey for...

Road Rally U.S.A.
Bantam Publishing

■ Requirements

☐ 1 blank disk.
☐ COPYA
☐ A sector editor

[1] Boot your DOS 3.3 system disk.

[2] Tell DOS to ignore checksum and epilog errors and use COPYA to copy the disk.

```
POKE 47426,24
RUN COPYA
```

[3] Make the following sector edit to the copy you just made.

Trk	Sct	Byte(s)	From	To
$00	$03	$42	38	18

A.P.T. for...

Kid Niki Radical Ninja

Data East

For unlimited men make the following sector edit to side 1.

Trk	Sct	Byte(s)	From	To
$08	$0B	$34-36	CE 4A 08	EA EA EA

Change Appleworks Cursor

This is from the August 1988 issue of AppleWorks Forum, which I recommend, (along with Open-Apple), to AppleWorks users. Here is how to change Appleworks inset cursor from the blinking underline to a blinking solid-apple.

[1] Get into BASIC. (You can get into BASIC from any TimeOut disk or from the System Utilities Disk that came with your computer.)

[2] Insert a copy of your AppleWorks Startup Disk in drive 2.

```
CATALOG,D2
BLOAD APLWORKS.SYSTEM,TSYS,A$2000
POKE 11681,40                    2DA1:40
BSAVE APLWORKS.SYSTEM,TSYS,A$2000
```

If you use UltraMacros, type APLWORKS .SYS instead of APLWORKS.SYSTEM.

Paul D. Dillon

Softkey for...

Pool 1.5

Innovative Design Software

■ Requirements

☐ Apple IIe or II series
☐ Super IOB
☐ DOS 3.3 System Master

In Computist #50 Mr. Dennis Gaunt requested help with an old game called Pool 1.5. It is an excellent pool simulation game and would be a good "oldie" for some software company to revitalize.

My copy of Pool 1.5 was in DOS 3.2, 13 sector format. Trax, from Bag of Tricks, also showed altered data epilogues and an occasional altered address prologue. The data epilogues were D3 AA EF (normal DE AA EB). The last byte of the data epilogues changed continually through EA, FA, ED, etc.

My first break with Pool 1.5 was COMPUTIST #47 with Mr. Mike Newliep's deprotection of Championship Golf. I ran his controller and the disk was deprotected and worked, however there was a problem with the ball action. They occasionally stuck together. As Mr. Gaunt says, Copy II Plus hi-res disk scan showed tracks 16 through 1D and track 22 to be garbage. I then took Copy II Plus (v 8.3) and used the Manual Bit Copy option to copy tracks $00 through $15 and tracks $1E through $21. Although still copy protected, the disk copied and worked without the garbage tracks. This showed that these tracks are not needed.

Next, I followed the instructions on the COMPUTIST Starter Kit disk and captured the Pool 1.5 RWTS. I then used the Swap Controller from these same instructions and copied tracks $03-15 and $1E-21. The Swap Controller was also modified to copy 13 sector DOS 3.2 and to ignore errors. This I pulled out of the Super IOB article in COMPUTIST #32 and Mr. Newliep's controller. The program then functioned properly and was deprotected. After booting the disk and receiving the DOS prompt, type "BRUN HELLO" to start and run the program.

I used Copy II Plus v5.5 (DOS 3.3 version) and copied Pronto DOS to the disk and this increased the speed of the boot process. Later versions (PRODOS Versions) of Copy Plus wouldn't access the deprotected disk to perform this function.

Follow these steps to deprotect Pool 1.5

[1] Boot your DOS 3.3 System master and make two slave disks. Delete the Hello file.

```
INIT HELLO
DELETE HELLO
```

[2] Now we need to capture the RWTS from the Pool 1.5 disk. Boot the original and press [RESET] after the DOS prompt appears. On my disk, I pressed [RESET] between the time that the prompt appears and before it leaves the screen.

[3] Enter the monitor and move the RWTS to a safe place.

```
CALL-151
1900<B800.BFFFM
```

[4] From the monitor, boot one of the slave disks and save the RWTS. *Note: If you leave the name as RWTS.XXX, you don't have to change anything in line 10010 in the controller.*

```
C600G
BSAVE RWTS.XXX,A$1900,L$800
```

[5] Merge the Swap Controller with Super IOB and run it. Make sure the slave disk containing the captured RWTS is in Drive 1 when you run the merged Super IOB. Put the other slave disk in drive 2 and follow the prompts and copy the original to this slave disk. Be sure and enter NO when Super IOB asks if you want to format before copying. Formatting here would destroy the DOS on the slave disk. While copying tracks $1E-21, the Apple makes a grinding noise as it resets to track $00 for each sector. It takes a little over 4 minutes to copy these tracks, and if it bothers you to hear these strange noises, this is a good time for a coffee break.

Pool 1.5 should now be deprotected and able to function properly. Boot the disk and at the DOS prompt, enter: BRUN HELLO to run the program.

I made the following changes to the Swap Controller listed in the COMPUTIST starter instructions.

1. Changing values for TK (starting track) and LT (last track) (These values must be in decimal format in the controller & LT needs to be one more than the last track that you want to copy; hex $21 = dec 33 so LT = 33.)

2. Adding MB=130 (Maximum Buffer, should be changed to 130 only when a 13 sector disk is read or written.)

3. ONERR GOTO 550 (Subroutine 550 in Super IOB ignores unreadable sectors & is usually used with DOS 3.2.)

4. DOS=13 (DOS specifies the number of sectors to read and is initialized to 16, I needed it set for 13 sectors.)

5. Changed line 1050 and added line 1055 in order to skip over the intervening tracks.

Controller

```
1000 REM POOL 1.5
1010 TK = 3:ST = 0:LT = 34:CD = WR:MB = 130:DOS
     = 13: ONERR GOTO 550
1020 T1 = TK: GOSUB 360: GOSUB 490
1030 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1030
1040 IF BF THEN 1060
1050 ST = 0:TK = TK + 1: IF TK = 22 THEN TK = 30
1055 IF TK < LT THEN 1030
1060 GOSUB 360: GOSUB 490:TK = T1:ST = 0
1070 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1070
1080 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT THEN
     1070
1090 IF TK < LT THEN 1020
1100 HOME : PRINT "DONE WITH COPY" : END
10010 PRINT CHR$ (4) "BLOAD RWTS.XXX"
```

Readers Data EXchange

Checksums

1000	- $356B	1060	- $DE8E
1010	- $5F96	1070	- $D68B
1020	- $5406	1080	- $22C0
1030	- $4207	1090	- $EBAC
1040	- $FE1E	1100	- $8B29
1050	- $B57A	10010	- $746D
1055	- $CC28		

Softkey for...

Solo Flight

MicroProse Software

■ Requirements

- ☐ Apple IIe or II series
- ☐ Sector Editor
- ☐ Disk Copier that ignores errors
- ☐ 1 blank disk

Solo Flight is an excellent flight simulator game. You can see your aircraft on the screen as you fly in various states in assorted weather conditions or fly in a mail run game. It's a slower pace than the jet simulators and a lot easier to fly than Flight Simulator II. The letter in COMPUTIST #56 by the Overlord and Nimrod opened my eyes to another source of deprotection, Copy II Plus Parms. I strongly agree that anytime this is used, the source should be recognized.

I had been trying to deprotect Solo Flight but had been unsuccessful. I did have a backup made from Copy II Plus (v 6.5). I looked at the parameters for Solo Flight in Copy II Plus (v 8.3) and only sector edits were used. I took my original and made a copy with Locksmith 6.Ø Fast Copy and then made the sector edits from the Copy II Plus parms using the Copy II Plus sector editor. The disk was then deprotected and functioned properly during use. There was also an alternate parm listed using only one sector edit, however this parm did not work with my copy.

[1] Use Locksmith 6.Ø Fast Copy or any copier that ignores errors and copy the original.

[2] Use a sector editor and make the following sector edits:

Trk	Sct	Byte(s)	From	To
$ØØ	$Ø2	$2A	38 86 27 8E	AD 78 Ø4 C9 ØD
			78 Ø6 BD BD CØ	BØ 13 C9 Ø9 9Ø
			BD 8E CØ 3Ø 7C	ØF A5 2A C9 ØD
			AD ØØ BC 85 26	BØ Ø9 C9 Ø9 9Ø
			A9 FF 9D BF CØ	Ø5 AD 78 Ø4 85
			1D BC CØ 48 68	2A A5 2A CD 78
			EA AØ Ø4	Ø4 6Ø
$ØØ	$Ø3	$A4-A5	CD 78 Ø4	2Ø 2A B8

The alternate sector edit that didn't work with my copy was to edit track $11, sector $Ø9, byte $8B and change 8B to 11.

I would also like to make a brief comment regarding the Big Blue deprotections. I think one point that is being overlooked in many of the objections to the IBM RDEX is the continued existence of COMPUTIST. I am sure that software companies would love to see this publication fall by the wayside. We subscribers need to pull together and support anything that will increase the subscription base and help COMPUTIST. I am still quite inexperienced and learn something new from each issue. The by-products of deprotection are knowledge of machine language programming and good practical use of the logic thinking process. I am thankful that there are people willing to work as a volunteer staff and continue publishing one of the finest educational and practical computer magazines on the market. One softkey that I would like to see on the IBM RDEX page is one for the new version of Lotus 123.

Softkey for...

Troll Courseware: Maps & Globes - Latitude & Longitude

Troll Associates

■ Requirements

- ☐ Apple IIe or II series
- ☐ DOS system master
- ☐ 1 blank disk

Maps & Globes - Latitude & Longitude is an educational series for young children. It introduces a child to global geography, including latitude and longitude.

I have read in COMPUTIST that it is better to be lucky than smart. This was the case in this deprotection. All attempts to back up this disk using the normal modes with Copy II Plus (v 8.3), Locksmith 6.Ø, and EDD IV (v 4.8) failed. I then checked the disk with Trax from Bag of Tricks. Some tracks were readable and showed address epilogues changed from the normal DE AA to AF AF and also to other combinations such as AF AE and AF AD. A raw nibble dump of the unreadable tracks showed address headers changed from the normal D5 AA 96 to D4 AA 96. Trax is an excellent utility in that it lists all headers and epilogues on a track and highlights abnormalities. It will also give you a raw nibble dump of an unreadable track, allowing you a visual check of this track also.

After investigation of the disk with Trax, I then used COPYA from the DOS system master, telling COPYA to ignore the first byte of the address header and to ignore both bytes of the address epilogue. The disk copied and was totally deprotected by COPYA. Both disk 1 and disk 2 can be copied in this manner.

[1] Boot the DOS System Master and tell DOS to ignore the first byte of the address header and to ignore both bytes of the address epilogue, then run COPYA.

```
CALL 151                 Enter the monitor
B954:29 ØØ               Ignore first byte of address header
B988:18 6Ø               ignore both bytes of address epilogue
3DØG                     go back to BASIC prompt
RUN COPYA
```

Your copy will then be totally deprotected.

Merging Controllers with Super IOB

When I first subscribed to Computist, I had problems merging controllers with Super IOB. The starter kit now alleviates that problem. However, If someone who is new to COMPUTIST wants a simple alternative, this is my method:

Make a bootable DOS 3.3 disk and copy the following files to it.

SUPER IOB
CHECKSOFT
CSAVER
CHECKBIN

Write and save your controllers to this disk.

To merge programs, boot the disk and:

```
BRUN CSAVER
LOAD your.controller
&H                       this holds your controller
LOAD SUPER IOB
&M                       this merges the two programs
RUN                      & follow the prompts
```

Csaver is a program published in COMPUTIST #13. I did not see it listed on the catalog of the starter disk that I have. It may be on newer copies. The other programs are on the starter disk. To check your entries against the published checksums, enter: BRUN CHECKSOFT, then press [&] [RETURN]. You can edit and save the controller to this same disk.

Dan Halfwit

Before I begin, I wish to make one comment regarding SILENT SERVICE and F-15 STRIKE EAGLE. Everyone is going nuts trying to crack them, but did anyone ever try to copy them? It's so easy to make a 1ØØ% reliable copy of these games (and possibly other earlier releases from MicroProse) that it's a joke. And it works with ANY Apple IIe/IIc version. Simple fast copy tracks $Ø-$21 and quarter-track the last track, $22.25. For Copy II Plus users:

TØ-T21, Sector Copy
T22.25

and that's it. No mysterious mine fields or mutating ships.

Readers Data EXchange

Softkey for...

Star Fleet I v2.1

Interstel/Electronic Arts

■ Requirements

☐ Any fast copier
☐ A blank disk

Star Fleet I is a great game. It's sort of two games in one. One with hi-res graphics, or one in 80-column mode. And not even any copy-protection! (Then why am I writing this?)

Good question. The answer is that, even though they are starting to trust us (the honest end user), they still haven't quite let it go all the way. There's a large manual (exactly 100 pages long), and the game prompts the user to enter a word from the book at random. This is a big pain, and no real protection scheme. Perhaps they never heard of a photo-copier. Just something else to annoy us.

Anyway, here is how we get around this little problem. There are a lot of ways to start, but I selected this one. It was a little tedious, but it worked. I scanned both sides of the disk for every occurrence of LDA $C000. For those of us who think in hex, AD 00 C0. I found them in some very interesting places. So, 1 by 1, I replaced them with a JMP $C600. When it scanned the keyboard at a given point, it would reboot the disk instead, giving me a visual clue as to where I was in the program. Crude, but effective. Anyway, the next to the last one I tried was the correct one. After using Copy II Plus and the disk map option, we find this to be in a file called PART1. After a while, we find that parts of the file are encrypted. Why am I not surprised? That's no problem however. PART1 loads at $4000. At the very beginning we see:

```
4027 LDA #00
4029 STA $9506
402C JSR $539C          Password Screen
402F CPX #01            Check Result
4031 BEQ $4036 (+03)    Did it pass?
4033 JMP $40FA          No, Insult the user.
4036 LDA #01
4038 JSR $4318          Start the program
```

I found out the above comments by loading the program and executing them by hand. At first, I NOP'ed the JMP $40FA. I just entered any password and proceeded. But I was still called a spy. So I NOP'ed the JSR $539C. Same problem. So what did I miss? Being blessed with a IIgs, there is a built in memory search routine. "xx xx xx < start.end P" where xx are the bytes in question, and start and end are the range to look at. Don't forget the P.

We find this jump at $4144 and $4278. NOP them and no more problems! (Imagine my surprise.) So it appears that if you enter the password, it loads the X-register with a 1. I'd rather NOP the JMP's and be safe. I played a full game with no surprises. For the curious, there is a lot of space used by the encrypted junk. You could erase it and replace it with whatever.

Step-by-step

1 Copy both sides onto a blank disk.

2 Boot the second side. (To load DOS.)

```
]C                          to get a prompt
BLOAD PART1,A$4000
CALL -151                   enter monitor
4033:EA EA EA
4144:EA EA EA
4278:EA EA EA
402C:EA EA EA
]C                          back to BASIC
UNLOCK PART1
BSAVE PART1,A$4000,L$3F00
LOCK PART1
```

And you're done! Put a faster DOS on the disk or, at least, put normal DOS on the disk. Relax with a pizza and forget the manual.

MOST WANTED Softkeys

ABM Muse
Agent U.S.A. Scholastic
Airheart Broderbund
Algeblaster Davidson & Associates
Algebra I Intelligent Tutor
Alien Mind PBI
Anhk Datamost
Apple Super Pilot ?
Artificial Intelligence Scholastic
Balance of Power Mindscape
Bandits Sirius Software
Bank Street Filer Broderbund
Bank Street School Filer Sunburst Communications
Barron's Computer SAT ?
Battlegroup SSI
Battlezone Atarisoft
Brain Bank The Observatory
Burgertime ?
Captain Goodnight ?
Caverns of Callisto Origin
Certificate Library Vol. 1 ?
Chuck Yeager's Advanced Flight Trainer Electronic Arts
Colossus IV Firebird
Creature Venture Softsmith Co.
Cross Clues Science Research
Cross Country Rally Softsmith Co.
David's Midnight Magic ?
DB Master V4.0 Stoneware
Deathlord Electronic Arts
Epidemic S.S.I.
F-15 Strike Eagle Microprose
Fay: The Masked Woman Didatech Software
Fay's Word Rally Didatech Software
Fortress S.S.I.
Fun Bunch Unicorn
Galaxian Atarisoft
Galactic Gladiators S.S.I.
Game Show Advanced Ideas
Gemstone Healer SSI
GradeBusters 1-2-3 Gradebusters
Gutenburg Jr. Micromation LTD
Handicapping System Sports Judge
Impossible Mission Epyx
Jigsaw Microfun
Joust Atarisoft
Killed until Dead Accolade
Legacy of the Ancients Electronic Arts
Little Computer Peoples House on a Disk Activision
Lollipop Dragon Society for Visual Ed
Cursor Control Adventures
Plotting & Programming Adventures
Letter & Number Key Adventures
Function Key Adventures
Magic Spells The Learning Company
Maxi Golf Thunder Mountain
Micro League Baseball Micro-league Sports
Microzine #25 Scholastic
Mr. Do Datasoft
Mr. Pixel's Cartoon Kit Mindscape
Ms. Pac-Man Atarisoft
Never Ending Story Datasoft
Odin Odesta
On Balance Broderbund
Peeping Tom Microlab
Pensate Penguin
Personal Finance Manager (PFM) Apple Computer
PFS File & Report IIgs Software Publishing Corp.
Pirates Microprose Software
Prime Plotter Primesoft Corp.
Principals Assistant Library Mindscape
Print Master Unision World
Pro-Football Sports Judge
Publisher Springboard
Puzzles & Posters MECC
Quiz Castle Didatech Software
Rescue On Fractalis Epyx
Ruski Duck Softsmith Co.
Scrabble Electronic Arts
S.E.U.I.S. S.S.I.
Smart Eyes Addison Wesley
Snoggle Broderbund
Space Eggs Sirius
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Spare Change Broderbund
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Think Tank Living Video
Tower of Myraglen II (IIgs) ?
Toy Shop Broderbund

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David Kaszuba

These softkeys were sent in by David Kaszuba. They are mostly from BBS's. If included, the softkeys are attributed to the proper "handles". . . . . RDEXed

This softkey is from the Lone Victor.

Softkey for...

Clipper

Here is how to remove the Softguard Superlok 2.03 copy protection from Clipper Winter 85, on the file CLIPPER.W85 105984 bytes. It will only work with this file. So if it doesn't work, you probably have a different file.

With this text file you should find a binary file CLIPPER.BIN. You will need this file, ALTER, DEBUG, and your Clipper System Disk.

Install your copy of Clipper on a hard disk as normal. Using ALTER or a similar utility, un-hide and copy the CLIPPER.W85 file. Next, hide the file again and Un-Install Clipper. Put your system disk away for safe keeping.

Now, using DEBUG execute the following commands:

```
DEBUG CLIPPER.W85
N CLIPPER.BIN
L
RBX
    BX 0000???          debug response
:1
RCX
    CX 1000???          debug response
:9C92
W
    Writing 19C92 bytes  debug response
Q
RENAME CLIPPER.BIN CLIPPER.EXE
DEL CLIPPER.W85
```

You now have a complete working copy of CLIPPER.

Softkey for...

DoubleDOS v1.0

These instructions show you how to bypass the SoftGuard copy protection scheme used on DoubleDOS version 1.00. This is the same scheme used for FrameWork v1.10 and for Wordstar 2000 v1.00. Wordstar 2000 v1.10 does not use a copy protection scheme.

1 Using your valid, original DoubleDOS diskette, install it on a fixed disk.

Softguard hides three files in your root directory: CML0200.HCL, VDF0200.VDW, and DOUBLEDO.EXE. It also copies DOUBLEDO.COM into your chosen DoubleDOS directory. DOUBLEDO.EXE is the real DoubleDOS program, encrypted. When you run DoubleDOS, the program DOUBLEDO.COM loads CML0200.HCL high in memory and runs it. CML decrypts itself and reads VDF0200.VDW. The VDF file contains some code and data from the fixed disk FAT at the time of installation. By comparing the information in the VDF file with the current FAT, CML can tell if the CML, VDF, and DOUBLEDO.EXE files are in the same place on the disk where they were installed. If they have moved, say from a backup & restore, then DoubleDOS will not run.

2 Second, un-hide the three files in the root directory. You can do this with the programs ALTER.COM or FM.COM found on any BBS. Make copies of the three files, and of DOUBLEDO.COM, into some other directory. Hide the three root files again using ALTER or FM.

3 Following the DoubleDOS instructions, uninstall DoubleDOS. You can now put away your original DoubleDOS diskette. We are done with it.

4 Next we will make some patches to CML0200.HCL to allow us to trace through the code in DEBUG. These patches will keep it from killing our interrupt vectors.

```
DEBUG CML0200.HCL
E 3F9
2A.4A                    change the 2A to 4A
E 49D
F6.16                    if any of these numbers don't show up
E 506
E9.09                    it's not working.
E A79
00.20
E AE9
00.20
E 73C 97 FA FA F4 F1 7E  encrypted call to
    0:300
W
Q
```

5 Now copy your four saved files back into the root directory and hide the CML0200.HCL, VDF0200.VDW, and DoubleDOS.EXE files using ALTER or FM.

6 We can now run DOUBLEDO.COM using DEBUG, trace just up to the point where it has decrypted DOUBLEDO.EXE, then write that file out.

```
DEBUG DOUBLEDO.COM
R                        write down the value of DS for use below
A 0:300                  we must assemble some code here

pop  ax
cs:
mov  [320],ax                    save return address
pop  ax
cs:
mov  [322],ax
push es                  set up stack the way we need it
mov  ax,20
mov  es,ax
mov  ax,0
cs:
jmp  far ptr [320]           jump to our return address
G 406                    now we can trace CML
T
G 177                    this stuff just traces past some
G 1E9                    encryption routines.
T
G 54E                    wait while reading VDF & FAT
G=559 569
G=571 857                DOUBLEDO.EXE has been decrypted
RBX                      length DOUBLEDO.EXE = 04800 bytes
:0                                   set BX to 0
RCX
:4800                            set CX to 4800.
NDOUBLEDO                name of file to write to
W XXXX:100               where XXXX is the value of DS that
    you wrote down at the begining.
Q                                    quit debug
```

7 Last, unhide and delete the three root files CML0200.HCL, VDF0200.VDW, and DOUBLEDO.EXE. Delete DOUBLEDO.COM and rename DOUBLEDO to DOUBLEDO.EXE. This is the real DoubleDOS program without any SoftGuard code or encryption. It requires only the DOUBLGD2.PGM and DDCONFIG.SYS files to run.

Softkey for...

LoadCalc v4.13

by the Lone Victor

■ **Requirements**

☐ Copy II PC

Even when copied with Copy II PC, the LoadCalc disk spins in the A drive without running. Here's the procedure to use:

1 Make a backup copy with CopyIIPC.

2 Rename the Loadcalc.exe file Loadcalc.xxx on the copied disk.

```
RENAME LOADCALC.EXE LOADCALC.XXX
```

[3] Put the DOS disk in drive A, Loadcalc.xxx in drive B.

DEBUG B:LOADCALC.XXX
S CS:Ø1ØØ FFFF 7F 16 *Two numbers will show up:*
XXXX:YYYY
E XXXX:YYYY *You will see* **XXXX:YYYY 7F.**
EB *type this after the period*
W
Q
RENAME LOADCALC.XXX LOADCALC.EXE

The backup copy will now run. Note: this procedure will NOT allow LoadCalc to be moved to a hard disk, just allow a back-up copy to be made.

Softkey for...

Mind Prober

by J. R. (Hacker Jack)

The operation to remove the copy protection is very simple. An added benefit to removing the copy protection is the ability to put Mind Prober on your hard disk, without the need to have the original disk in Drive A: at startup time.

Follow the steps below for removing the copy protection. Be sure to do this to a copy, and not to the original disk. Use the DOS COPY command to make a copy onto another floppy, or to move a copy to your hard disk. Then perform the DEBUG steps to the copy.

[1] Rename the file.

RENAME MP.EXE MP.1

[2] Get Debug on line.

DEBUG MP.1

[3] **S Ø FØØØ CD 13**

Note: Two locations should be found, at xxxx:7ØDC and xxxx:7ØEC. If they are not at these two addresses then stop, you must have a different version than I. The values xxxx are unimportant.)

E 7ØDC 9Ø 9Ø 9Ø 9Ø
E 7ØEC 9Ø 9Ø 59 EB
W

Note: A 'Writing DC3A bytes' should be displayed. The above Edit commands tell the Mind Prober program to not bother looking for the bad sector located on the diskette.)

Q
RENAME MP.1 MP.EXE

You should have a non-protected copy.

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*Requires at least 64K of memory.
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Volume 3 of the Super IOB collection covers all the controllers from COMPUTIST No. 39 through No. 53. The following 89 controllers are on volume 3:

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