

For The Serious User Of Personal Computers

# COMPUTIST

Issue 59

September 1988

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## 🍏 RDEX *Features:*

**Boot IIc Utilities on any compatible**—By Jim Gallagher

**Help with Ultima V**—By Les Minaker

**Convert Printmaster graphics into Print Shop graphics**—By Jerry Mulder

**The Invincible Bard (III)**—By Thomas V. Rapheld

**The Deprotection Game**—By Gerald E. Myers

**Patching ProDOS 1.1.1**—By Gerald E. Myers

**The Product Monitor**—By Jeff Hurlburt

**AppleWorks and the ImageWriter II**—By Dr. Frank Lowney

## 🍏 RDEX *Softkeys:*

APBA Major League Players Baseball 🍏 Better Working: Spreadsheet 🍏 Better Working: Word Processor 🍏 Beyond Pinball  
🍏 BoulderDash Construction Kit 🍏 Calendar 🍏 Calendar Crafter 🍏 California Games 🍏 Championship Baseball 🍏 Clip Art  
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🍏 SongWriter 🍏 Spell It! 🍏 Stickybear Reading Comprehension 🍏 Super BoulderDash

**IBM RDEX:** Softkey: ■Chartmaster v6.04 ■Clout v1.0 ■Copywrit ■Graphwriter ■Signmaster v5.04

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# Notes 'n things.....

It's been an interesting month. Submissions are way up and most of you are sending your material on disk. I really appreciate that, it makes the work go a lot faster. In fact, I figure we have enough material for another complete issue so we're going to try to finish #60 ahead of schedule and see if we can't get it out to you a little sooner.

We've got a couple of long articles in this issue. Gerald E. Myers tells the beginner how to get started on disk deprotection. Some good advice of the "Do as I say and not as I did" variety. He makes a good point about careful and complete notes. All of us should listen to that. Then Dr Frank Lowney goes into some detail about how to convince AppleWorks to send escape sequences to your printer so that you can take advantage of all the features of your printer. That includes printing mousetext characters for those of you using an ImageWriter II.

Les Minaker returns with more game information. This time it's Ultima V. Lots of tips and, of course, a detailed APT. He tells you where it is, what it is and how to give it all to you character. You might want to exercise a little restraint in how powerful you make you characters. Les's pages are the hardest to layout. There are so many charts and tables.

While you're into Ultima V, don't miss Jeff Hurlburt's note on using "visit monitor" to APT your way out of tight spots.

We had something of a collision on Bard's Tale III. Four readers sent in information at the same time. I tried to combine the lists of items and character attributes but some errors may have crept in. Not all of the lists agreed on all points. I used the democratic method to decide any conflicts. Majority rules. But the majority isn't always right, so if there are any errors, they are probably mine and I would appreciate a postcard with the corrections. I'll leave some space in the next issue so get them to me quick.

# BUGS

Doesn't anyone have any complaints about errors?

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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 their DOS 3.3 System Master disk).

## Commands and control keys

In any article appearing in COMPUTIST, 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** **Ⓜ**

Press **6** Next, place one finger on the **Ⓜ** key and then press **P**. Remember to enter this command line by pressing **RETURN**.

Other special combination keypresses include **ⓂRESET** or **ⓂⓂRESET**. In the former, press and hold down **Ⓜ** then press **RESET**. In the latter, press and hold down both **Ⓜ** and **Ⓜ** then press **RESET**.

## Special requirements

Special prerequisites for COMPUTIST articles, programs and softkeys are usually listed at the start under:

### ■ Requirements:

## Software recommendations

✓ Applesoft program editor such as *Global Program Line Editor (GPLE)*.

✓ Sector-editor such as *DiskEdit* (in the *COMPUTIST Starter Kit*) or *ZAP* from *Bag of Tricks*.

✓ Disk-search utility such as *The Inspector*, the *CIA* or the *Core Disk Searcher* (in the *COMPUTIST Starter Kit*).

✓ 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.

## Recommended literature:

- ✓ *Apple II Reference Manual*
- ✓ *DOS 3.3 manual*
- ✓ *Beneath Apple DOS*, by Don Worth and Pieter Lechner, from Quality Software
- ✓ *Assembly Language For The Applesoft Programmer*, by Roy Meyers and C.W. Finley, from Addison Wesley

## 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 usually don't pose a problem except in line numbers which contain REM or DATA commands. 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, you must key ONLY the ^spaces after DATA statements.

## 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. A beep means you have typed something that the monitor didn't understand and must, therefore, retype that line.

When finished, return to BASIC with:

**3DOG**

**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 key it in, you will need the *S-C Assembler* or you will have to translate pieces of the source code into something your assembler will understand (see table of *S-C Assembler* directives in COMPUTIST #17).

## Computing checksums

Checksums are 4-digit hexadecimal numbers which tell if you typed a program exactly as it appears in COMPUTIST.

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 appeared in COMPUTIST #1 and *The Best of Hardcore Computing*. An update to *CHECKSOFT* appeared in COMPUTIST #18.

If the published checksums accompanying program listings and hexdumps do not match those created by your computer, then you typed the program incorrectly. The line where the first checksum differs has an error.

## CHECKSOFT instructions:

**LOAD filename**  
**BRUN CHECKSOFT**

Get the checksums with: **Ⓜ** and correct the program line where the checksums differ.

## CHECKBIN instructions:

**CALL -151**  
**BLOAD filename**  
Install *CHECKBIN* at an out of the way place  
**BRUN CHECKBIN, A\$6000**

Get the checksums by typing the Starting address, a period and the Ending address of the file followed by a **Ⓜ**.

**SSS.EEE** **Ⓜ**

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...

## Apple RDEXed

### RDEX stands for: Reader's Data EXchange

That means that when you send in articles, softkeys, APTs, etc., you are submitting them for FREE publication in this magazine. RDEX does NOT purchase submissions nor do we verify data submitted by readers. We will print it and it is the responsibility of the readers to send in responses when anything is wrong.

• Remember that your letters or parts of them may be used in RDEX even if not addressed to the Apple-RDEX editor. Correspondence that gets published may be edited for clarity, grammar and space requirements.

• Because of the great number of letters we receive and the ephemeral and unpredictable appearance of our part-time staff, any response to your queries will appear only in Apple-RDEX, so it would be more appropriate for you to present technical questions to the readers and ask for their responses which will then be placed in the Apple-RDEX.

### Send your articles and letters on DOS 3.3 standard text files

When we get your letter-article in a standard DOS3.3 text file, it is immediately uploaded into the most current RDEX file. Conventional letters must be typed in by us...when we have the time.

• Address your letters, articles, to:

COMPUTIST  
Apple RDEX Editor  
PO Box 110846-K  
Tacoma, WA 98411

Leigh Rowan-Kelly

Softkey for...

### Sea Strike

?

1 Copy the disk with any straight copier, ignoring the Bad Block Error on Block \$007.

2 Sector edit.

Block	Byte(s)	From	To
\$5B4	\$144-148	C9 00 00 00 06	C9 00 00 80 06

This effectively kills the branching routine there and allows the program to run.

Softkey for...

### King's Quest I

Sierra On-Line

I only just received my updated Iigs version from Sierra On-Line today. I must certainly recommend their policy of updating the older Iie version to the newer Iigs version for only \$10. I wish more companies had the same generous attitude!

1 Copy with any standard copier ignoring the Bad Block Error on Block \$634

2 Sector edit.

Block	Byte(s)	From	To
\$A0	\$B7-C1	22 00 00 00 22 00 00 00 AE 00 00	22 00 00 00 AF 00 00 AE 00 00 00

You will note the similarity to the Leisure Suit Larry and Space Quest I cracks although the address is different.

Keep up the good work and keep those cracks coming!

Piff

Playing Tips for...

### Alternate Reality

DataSoft

• Eerie music often indicates you're near a secret door.

• The only way to kill a wraith is to charm him.

• The music that accompanies each life form provides clues to his personality. The more omniscient the music, the more evil an adversary.

• If you are broke and hit-Point poor, head for Northern City Wall in the NW quadrant. The water is free and Packets and Flasks don't come cheaper!

Playing Tips for...

### Auto Duel

Origin

In the beginning of the game...before you have bought a car or anything, enter Joe's bar and sell courier tasks. You should now see thick dots in the place of what should be a blank space to put the name of tasks in. Select those dots to sell (1-3) and you should get a bundle for 'em.

Note: This might only work on my version because it might have some sort of A.P.T. on it.

Kearney J. Gravis

Softkey for...

### Better Working: Spreadsheet

Spinaker

I am writing to tell you how much I enjoy your magazine. I am a fairly recent addition to your list of subscribers (Feb. 88 was my first issue) so I don't really understand the fuss by other readers about the format change. Personally, I like the way the magazine is put together, and I don't know of any others that instruct their readers on how to overcome the hated demon "copy-protection". The instructional value of the softkeys and accompanying articles are literally priceless. Also, I have an Apple Iie Pro and a Franklin Ace 1000+ at home, but use an IBM PCXT clone at work. I appreciate the IBM Softkeys but haven't found as much use for them as I have for the Apple software.

Speaking of softkeys, I would like to share a simple one for the Spinnaker Better Working "Spreadsheet" and it may work for the others in this series:

1 Initialize a blank disk. Use a fast DOS if you want, or use Diversi-DOS as the program works with text files.

INIT HELLO

**2** Boot the "Spreadsheet" disk and immediately press **⌘C** to break out of the Applesoft start up program.

**3** Remove the Better Working disk, insert a DOS 3.3 System Master and run the FID program.

## BRUN FID

**4** Copy all the files on the Better Working disk to the previously initialized disk.

That's all it takes to deprotect this program! I have also installed this program on a RAMdisk to speed up it's operation with no problems. Thanks to the readers and contributors of COMPUTIST for all the fine softkeys. Without their help, I would still be struggling with my EDD IV Plus trying to make copy protected backups, when a better way exists. Keep up the good work, and keep them coming.

Brian Symonds

## Softkey for...

### Cours Et Gagne v1.0

Sam Girgis

## Requirements

- Two blank disks
- Way to reset into the monitor
- Super IOB or COPYB
- Sector editor or FID

A friend of mine asked me to make a back up copy of this French vocabulary game disk for him, as it would not copy with a copy program. So, I copied it with my EDD 4 Plus card, and winced when the copy wouldn't boot, even though the disk seemed to copy perfectly.

In my experience this usually means some sort of disk check routine. I have a meager knowledge of machine language and usually, when this situation occurs, I am unable to copy a disk. So I dug out my Bag of Tricks, and discovered that only the first 9 sectors of the disk could be read. On the basis of the information that the EDD 4 program and Bag of Tricks gave me, it appeared that this disk had a modified DOS (also when the disk was booted the familiar BASIC prompt appeared).

Using a Senior PROM card and memory snooping, I discovered the following:

- (a) Modified address prologue bytes of EF XX DD.
- (b) Modified address epilog bytes of CB B7.
- (c) Modified data prologue bytes of B9 B9 AB.
- (d) Modified data epilogue bytes of B2 EA E9.
- (e) Modified volume number.

(f) A modified checksum and on checking further, 14 bytes were modified in the nibble translate table (and a similar number of course in the byte translate table).

(g) Track \$11 would read with the modified address and data markers but not with the modified translate table and it was completely blank.

(h) At \$AC01 was a 23 meaning that the catalog track was on track \$23.

With a modified DOS such as this it becomes more of a chore to write a controller for SIOB than to try to capture the RWTS with a monitor reset and then use the swap controller or COPYB to copy the disk (don't forget the disk has a track \$23). By using a monitor reset with my Senior PROM card, and both of these methods, I was able to copy the disk (I like to use two methods and then compare the copies to see if any sectors did not copy properly).

Once the disk was copied, I copied track \$23 to track \$11 (the usual catalog track) and the disk worked perfectly. However, when the disk was copied using a fast copy program ignoring track \$23, the disk would not boot, meaning of course that I had to either modify the catalog track on track \$11 to change \$23 to \$11, or to use FID to move the files to a normally formatted DOS 3.3 disk (using ProntoDOS to speed up the boot up of course).

When I used FID to move the files to a normal disk, the disk worked perfectly, and could be copied with any copy program including COPYB.

## STEP-BY-STEP

**1** You need to INIT a disk with \$23 tracks (decimal 36). I used the method described in OPEN-APPLE Vol 1, No.3, pg. 31. This article also gives a program to determine the maximum track capacity of your own disk drives. To make this disk, boot a standard DOS 3.3 disk, press **⌘RESET** to get the BASIC prompt, type NEW, remove the disk from the disk drive, insert your blank disk, then type the following lines, ("T" should be the number of tracks in decimal, in this case 36):

```
POKE 48894,T
POKE 44725,T*4
POKE 46063,T
INIT HELLO
```

You now have a DOS 3.3 disk with \$23 tracks.

**2** You now need to capture the protected disk's RWTS. To do this, boot the protected disk, and when the BASIC prompt appears, reset into the monitor by your favourite method. Then move the RWTS to a protected area (\$8000 for COPYB, \$1900 for SIOB). BSAVE the RWTS to your SIOB or COPYB disk.

**3** Now run SIOB with the swap controller, or COPYB, and copy tracks \$03 to \$10, and \$12 to \$23 onto the blank disk you made in step 2. Because track \$11 on the protected disk was not written with the protected RWTS's translate tables, SIOB or COPYB will not be able to copy it - but no matter since all the sectors are conveniently blank.

**4** On the disk you have just made, if you now copy track \$23 to track \$11 (remember normal DOS uses \$11 as the catalog track) you will have a bootable disk but it will have \$23 tracks which is a pain to copy with most fast copy programs such as Locksmith Fast Copy (OPEN-APPLE gives a method for modifying COPYB to copy more than \$22 tracks).

**5** Now INIT a normally formatted DOS 3.3 disk, and then run FID (or use Copy II Plus) to copy the files from the disk with \$23 tracks to the normally formatted DOS 3.3 disk (you could also use a sector editor to change \$23 to \$11 on track \$11 in the catalog and the VTOC). You can now add your favorite fast DOS, and you are finished. Bonne Chance!

If you wish to write a controller for SIOB to read the original disk, then it helps to have an index (for example an Appleworks database) of your COMPUTIST magazines with protection and deprotection methods for the programs listed - you can search for articles that have controllers that overcame similar problems (in this case there are at least 16 programs that have similar protection schemes, with a good discussion being given for the Ultima series).

Since Larry Newby's letter and my letter in COMPUTIST about indexes, I have had several requests for a copy of my index, but no one other than Larry Newby has sent me a copy of their index. You send me yours, and I'll send you mine!

Jim Gallagher

## Softkey for...

### Super BoulderDash

Electronic Arts

## Requirements

- A whole disk copier that ignores errors
- A sector editor
- Blank disk
- Super BoulderDash original

I noticed that a few people had trouble with their unprotected copies of Super BoulderDash. When they ran them, the graphics would screw up. Well, this crack should keep your madness from increasing. When I first cracked it, I had the same problems (with the graphics) and decided to live with them for a while. After



# Readers Data Exchange

about 5 minutes of playing the game, I decided that I had already lived with them too long. I decided to nuke the protection completely.

- 1 Copy the disk (both sides).
- 2 Perform the following sector edits:

Trk	Sct	Byte(s)	From	To
\$01	\$06	\$08	03	62
	\$0B	\$B3	8A	60
	\$0C	\$00	4C 69 05	EA EA EA

Remember that these may not be in the same spot on your copy. Verify the fact that you are changing the correct byte before you make the change.

A.P.T. for...

## Super BoulderDash

To make your Super BoulderDash into a trainer do the following sector edits.

For Side One:

Keep timer from counting down:

Trk	Sct	Byte(s)	From	To
\$0D	\$0D	\$FC-FD	C6 1B D0	EA EA 80

Keep men from being decreased:

Trk	Sct	Byte(s)	From	To
\$0E	\$07	\$1A-1B	D6 28	EA EA

The hexadecimal value for the right arrow:

Trk	Sct	Byte(s)	From	To
\$0E	\$08	\$14	93	95

The hexadecimal value for the left arrow:

Trk	Sct	Byte(s)	From	To
\$0E	\$08	\$2C	A0	88

Jump ahead or back a cave by increasing or decreasing \$2A:

Trk	Sct	Byte(s)	From	To
\$0E	\$08	\$2F-30	A5 4D	80 2B
		\$58-65	?	E6 2A 80 CC A5 2A 2A C9 00 F0 A9 C6 2A 80 C2

Keep some old subroutines from being performed:

Trk	Sct	Byte(s)	From	To
\$0E	\$08	\$66-79	?	All EA's

These allow you to choose any level on any cave at the beginning of the game:

Trk	Sct	Byte(s)	From	To
\$0E	\$09	\$07	03	05
		\$65	03	05
		\$79	03	05

Keep men from being added at every 500 points:

Trk	Sct	Byte(s)	From	To
\$0E	\$0C	\$CF-D0	F6 28	EA EA

When the disk is booted a message asks if you will use an Apple Joystick or the Joypport. If you are tired of typing in your response every time perform the following sector edits and the correct one will always be chosen for you. Make sure that the correct number is substituted for xx so the joystick that you use will always be chosen. To select the Joypport: xx=\$CA. To select the Apple Joystick xx=\$C1.

Trk	Sct	Byte(s)	From	To
\$0E	\$0A	\$64-6B	?	EA EA EA EA EA EA A9 xx

For Side Two:

Keep time from counting down:

Trk	Sct	Byte(s)	From	To
\$0D	\$0C	\$36	C6 1B D0	EA EA 80

Go ahead a cave when the right arrow is pressed:

Trk	Sct	Byte(s)	From	To
\$0E	\$06	\$17	AD A2 19 C9	E6 2A 80 CC

Keep men from being decreased:

Trk	Sct	Byte(s)	From	To
\$0E	\$06	\$D9	D6 28	EA EA

The hexadecimal value for the right arrow:

Trk	Sct	Byte(s)	From	To
\$0E	\$07	\$D3	93	95

The hexadecimal value for the left arrow:

Trk	Sct	Byte(s)	From	To
\$0E	\$07	\$EB	A0	88

Go back a cave when the left arrow is pressed:

Trk	Sct	Byte(s)	From	To
\$0E	\$07	\$EE	?	A5 2A C9 00 F0 CB C6 2A 80 EF

These allow you to choose any level on any cave at the beginning of the game:

Trk	Sct	Byte(s)	From	To
\$0E	\$08	\$8A	03	05
		\$E8	03	05
		\$FC	03	05

For the joystick edit (see above). Make sure that the correct number is substituted for xx so the joystick that you use will always be chosen. To select the Joypport: xx=\$CA. To select the Apple Joystick xx=\$C1.

Trk	Sct	Byte(s)	From	To
\$0E	\$09	\$E7	?	EA EA EA EA EA EA A9 xx

These edits allow several things. You may want to use all of them or part of them. If you use them all here is what you get, what you lose, and what you still have.

### What You Will Get

- Unlimited men and time.
- By pressing the right arrow key, you can go ahead one cave.
- By pressing the left arrow key, you can go back one cave. (If you're on a bonus level, it won't go back, you'll just start the bonus level over.)

Also, if you decide to do these sector edits, make sure that you also do the ones that keep the men from being decreased because this routine is jumped to when you press one of the arrow keys.

You no longer have to enter which joystick you want to use. You can now choose any level (from 1-5) on any cave. The original package only let you go up to level 3 except on cave A.

### What You Will Lose

- You can't pause the game with the spacebar any longer but it is not necessary because the time doesn't count down.
- You can't turn the sound off and on with S any longer.

### What You Still Have

- R to restart the game.
- ESC to restart the cave you are on if a man is trapped.

Softkey for...

## MultiScribe 3.0

Styleware

### ■ Requirements

- MultiScribe original (version 3.0)
- Blank disk
- Whole disk copier
- Sector editor

I recently purchased this program because I wanted to create nicer documents than could be done on just a "regular" word processor.

After getting MultiScribe home, the first thing I did was make a copy. Since the program was around \$70.00 I hoped that it might not be protected. I used Copy II Plus to copy it and got no errors so I assumed that there was no protection. It booted up fine and got to the part where it asks if a mouse will be used and then says to turn the disk over for side two. When

I turned it over, side two wouldn't load. The program just kept asking for me to put in side two.

Putting two and two together, I figured that they must be using a nibble count routine. A nibble count is done by loading \$C08C (reading a byte off the disk) into the accumulator and then comparing it with what is supposed to be on the original disk. If it differs, the program either crashes or acts as if the program disk is not in the drive. I searched the disk with the Copy II Plus sector editor (I used the sector editor even though it is ProDOS) for BD 8C C0 (LDA C08C,X) and found what I was looking for on track \$0F, sector \$0C. If you want to know what a nibble count looks like, list this one from 01 - 4D (with the sector editor). You'll see a lot of compares (CMP's). If one of these compares is false, the program branches to the "crash" at \$4E. If you look at address \$4A (of the same track) you'll see what happens if all the compares are true (if the original is in the drive). By putting these commands (the commands at \$4A) ahead of all the compares, you can circumvent the protection and side two will load fine. This is how it's done:

**1** Copy both sides onto the blank disk.

**2** Using your sector editor, read in track \$0F, sector \$0C, side one of the copy and make the following sector edits:

Trk	Sct	Byte(s)	From	To
\$0F	\$0C	\$01	BD 8C C0 10	A9 00 18 60

**3** Write the sector back to the copy.

*Softkey for...*

**The Movie Monster Game**  
**California Games**  
**BoulderDash Construction Kit**  
 Epyx

**Requirements**

- The Movie Monster Game original
- Blank disk
- COPYA
- Sector editor

When I bought The Movie Monster Game I assumed that since it was an Epyx product it would be protected in the "usual" Epyx manner. I got out COPYA and poked 47426,24 and copied both sides. Naturally it copied. Naturally it wouldn't boot. I messed around with it for a while and was about to give up for the day when I discovered something odd about it. When I booted side two, a message came on the screen telling me to insert side one and press **RETURN**. I assumed that as soon as I

pressed **RETURN** it would reboot. But I was wrong. I inserted side one and pressed **RETURN** and it loaded the program. I figured that this would do for a backup for the time being. I used it that way for about six months. It got to be quite tedious putting in side two and flipping the disk every time I wanted to play the game so I decided that a "real" crack was in order.

I read in track \$00, sector \$00 with my Copy II Plus sector editor. I noticed (as mentioned in the softkey for California Games in COMPUTIST #52, pages 18-19) a jump (JMP) to \$BB00 (4C 00 BB) at address \$4A. \$BB00 is track \$00, sector \$05. This is where the protection is checked. With a simple sector edit that puts the correct values in the correct locations, it loaded.

As to why it works, on some programs (quite a few from Epyx) the disk is checked for certain bytes (signature check) that assure the disk in the drive is an original and not a copy. This is done by reading the byte off the disk and comparing (CMP) it with what it is actually supposed to be. If it isn't the same, the program will crash.

A question may arise as to how the copy program won't copy the correct bytes from the original. One way this is done is to write all the originals at a certain drive speed. If the program is copied at another speed then it won't write it correctly. There are other methods such as synchronizing the start of every track to the same place. On a circular disk, there is no beginning or end of a track (just as there is no beginning or end of a circle). Certain protection schemes will use a drive that writes all the tracks starting at the same place. When the program is run, it is checked to see if the beginnings and/or endings of the tracks all match up. If they don't the program won't load or will crash. A regular disk copier can usually copy these disks but it won't place all the track beginnings at the same place. That is why it won't load. By removing the check (or checks) you can get around any protection.

**1** Boot your DOS 3.3 system disk.

**2** Tell DOS to ignore errors and use COPYA to copy both sides of the disk.

**POKE 47426,24**  
**RUN COPYA**

**3** Using your sector editor, write the following onto side one of the copy.

Trk	Sct	Byte(s)	From	To
\$00	\$05	\$00	?	A9 EE 85 F1 85 F2 85 F5
				A9 FC 85 F0 85 F3 85 F6
				A9 E7 85 F4 85 F7 A2 03
				A9 00 A8 85 F8 A9 B7 85
				F9 B5 F0 51 F8 91 F8 88
				D0 F7 E6 F9 CA 10 F2 A6
				2B 6C FD 08 18 60

The same softkey works for California Games with no changes and it works for Boulder Dash Construction Kit with the only change being in step one. You only need to copy the front side.

*Softkey for...*

**GoldFinger**  
 Mindscape

**Requirements**

- The GoldFinger original disk
- COPYA
- Sector editor

GoldFinger has an easy protection to remove. All that's needed is a quick run of COPYA without checking the errors and a single sector edit. If you look on track \$00, sector \$0C you'll find the protection at \$90. At \$90 there is a branch to \$C600. This is to reboot the computer. By placing a RTS (similar to BASIC's RETURN) the rest of the program will be loaded.

**1** Poke out some error checks and use COPYA to copy the disk.

**POKE 48712,24**  
**POKE 47426,24**  
**RUN COPYA**

**2** Use your sector editor to change the branch to an RTS.

Trk	Sct	Byte(s)	From	To
\$00	\$0C	\$90	C6	60

**Boot IIC Utilities**  
 on any compatible

**Requirements**

- System Utilities original
- Blank disk
- Whole disk copier, such as Copy II Plus

A note to Larry D. Hough about forcing the System Utilities to load on his Franklin Ace (or any Apple compatible, non IIC computer) here's how it's done:

**1** Copy the original onto the blank disk.

**2** Boot the copy and press **CC**.

**3** Make some changes to the hello program and save it.

**UNLOCK STARTUP**  
**1100 GOTO 2000**  
**SAVE STARTUP**  
**LOCK STARTUP**

If the screen is garbled or the text doesn't look good, it's because you need mouse-text. Try putting a PRINT CHR\$(17) on line 1040 and see if that works. If that doesn't work then try a PRINT CHR\$(18) on line 1040.

One note for Apple IIc users. I discovered that location \$C060 (49248) is the location that tells whether the 80/40 column switch is in or out. I don't know if that is common knowledge or not but I had never seen it anywhere. If you look at this location with a PEEK(49248) you will get a value either greater or less than 127. If it is greater than 127 then the 80/40 switch is in. If it is 127 or less, then the 80/40 switch is out.

☐ I have a program called Repton by Sirius Software that I just can't crack. Can anyone help me. And, one last request. I also have Cyclod by Sirius and I noticed that the softkey was printed in COMPUTIST #38. Since it hasn't been printed in a while, is their any possibility of a reprint of that. I can't get that one cracked either.

**I** COMPUTIST offers data pages. If you would like to give Karen a call, or send her a letter, letting her know what previous softkey you need. She'll send it out to you. The cost is \$1.00 plus 10 cents for each page copied. The softkey for Cyclod is two pages.  
..... RDEXed

Bill Jetzer

### Softkey for...

## Dazzle Draw

Broderbund

#### ■ Requirements

- 64k (to deprotect it, 128k to use it)
- One blank disk
- ProDOS disk containing the files PRODOS and BASIC.SYSTEM
- Super IOB 1.5
- Sector Editor

Dazzle Draw is a powerful double hi-res drawing tool that allows even a novice to produce artistic creations. It is very user friendly, with pulldown menus and a help feature which explains any option you choose. In fact, the program is outstanding in every respect but one: it's protected.

### The Protection

Older versions of Dazzle Draw let the user make one backup copy, but the version I have (released in January, 1987) didn't even do that. Instead, you can buy another copy from Broderbund for the low, low price of \$10!

Tracks \$00-\$1E were in a semi-normal

format, only using altered epilog bytes as protection. Tracks \$1F-\$22, however, were a different story. There is nothing on these tracks that even resembles sectors, but they contain code which is vital to the program.

### The Plan

Obviously, tracks \$1F-\$22 couldn't be COPY'd, since they don't contain sectors. The code from those tracks had to somehow be placed into memory so that the program could continue to load. The only alternative seemed to be to convert the code into a system file that would automatically be executed after ProDOS.

### The Softkey

To deprotect Dazzle Draw, follow these steps:

☐ Type in the controller at the end of the article and save it to disk. Install it into Super IOB 1.5 and run it. It will copy tracks \$00-\$1E.

☐ Use your sector editor to make the following patch to the copy.

Trk	Sct	Byte(s)	From	To
\$00	\$00	\$43	?	D6 08
		\$D6	?	A9 E3 8D 2A 60 A9 08 8D 2B 60 4C 00 60 A9 00 8D 2A 60 A9 64 8D 2B 60 A2 00 B5 00 9D 00 6C E8 D0 F8 4C 59 FF

☐ Boot the copy and wait for the drive arm to stop moving (about a second after the screen clears).

☐ While the drive is still running, remove the copy and insert the original Dazzle Draw disk. The above patch will load all of the code from the abnormal tracks, move the contents of the zero page to a safe place, and jump to the monitor.

☐ Now you need to make several patches to the program in memory. After the deprotection process, ProDOS will be executed before the Dazzle Draw code instead of after it, so you can save some loading time by making the code jump over the routine that loads ProDOS.

**6404:23 65**

Add some code to turn on the disk drive.

**602C:BD 8A C0 BD 89 C0 18 60**

Lastly, a new routine must be constructed to save the printer/input device/file system information. This information was originally saved onto one of the abnormal tracks, which can't be done after Dazzle Draw is deprotected.

**710F:20**

**7110:00 BF CB 3B 71 B0 06 20**

**7118:00 BF CC 43 71 60 03 24**

**7120:71 00 20 00 11 2F 44 44**  
**7128:2F 44 41 5A 5A 4C 45 2E**  
**7130:53 59 53 54 45 4D 02 00**  
**7138:18 07 00 04 00 F0 66 05**  
**7140:00 00 00 01 00**  
**7403:20 00 BF C8 1E**  
**7408:71 B0 12 AD 23 71 8D 37**  
**7410:71 8D 3C 71 8D 44 71 20**  
**7418:00 BF CE 36 71 60**

☐ Insert your ProDOS disk and boot it.

**C600G**

**DO NOT** **GCORESET** It will destroy some of the code.

☐ Get back into the monitor:

**CALL-151**

☐ Since ProDOS system files are executed at \$2000, we have to construct a relocater for the contents of the zero page and the code from tracks \$1F - \$22.

**2000:A9 28 85 3C 85 3E A9 20**  
**2008:85 3D A9 3D 85 3F A9 00**  
**2010:85 42 A9 60 85 43 A0 00**  
**2018:20 2C FE A2 00 BD 00 6C**  
**2020:95 00 E8 D0 F8 4C 00 60**

☐ Move the Dazzle Draw code to its new location:

**2028<6000.7CFFM**

☐ Save the code to your ProDOS disk:  
**BSAVE DAZZLE.SYSTEM, AS2000, LS1D28**

☐ Start up your sector editor (you may have to reboot if your sector editor is under DOS 3.3) and copy the ProDOS boot loader blocks (blocks \$000 and \$001) onto the copy by reading sectors \$0C, \$0D, and \$0E of track \$00 from the ProDOS disk and writing them to the copy. Now read sector \$00 of track \$00 from the ProDOS disk and make the following changes:

Trk	Sct	Byte(s)	From	To
\$00	\$00	\$87	?	08
		\$A7	?	0C

Write the sector back to the copy. The first change tells the boot loader to load in 8 ProDOS blocks (16 DOS 3.3 sectors) instead of just 6. The second tells it to keep looking for the file PRODOS, which is in the eighth block loaded.

☐ Now, have the copy mark the blocks on tracks \$1F - \$22 as free; DAZZLE.SYSTEM will occupy some of these blocks. Read in track \$00, sector \$03, make the following changes, and write the sector out to the copy:

Trk	Sct	Byte(s)	From	To
\$00	\$03	\$1F	?	FF FF FF FF



**13** The next change will make the Dazzle Draw copy execute the ProDOS quit command instead of rebooting when exiting the program or when **RESET** is pressed. (This step may be skipped if you so desire.)

```
Trk Sct Byte(s) From To
$14 $0F $80 ? 20 00 BF 65 86 03 04 00
                00 00 00 00 00
```

This changes the quit message that appears when you exit Dazzle Draw to inform you that you are quitting to ProDOS instead of rebooting.

```
Trk Sct Byte(s) From To
$13 $0A $33 ? 72 65 70 61 72 65 20 74
                6F 20 6C 65 61 76 65 20
                44 61 7A 7A 6C 65 20 44
                72 61 77 20 2D 20 A0 52
                04 43 6C 69 63 6B 20 4F
                6B 61 79 20 74 6F 20 71
                75 69 74 20 74 6F 20 50
                72 6F 44 4F 53 20 20 A0
```

**14** You are now ready to put DAZZLE.SYSTEM on the copy. First, boot your ProDOS disk and load DAZZLE.SYSTEM.

**BLOAD DAZZLE.SYSTEM,A\$2000**

Insert the copy and save the file:

**CREATE DAZZLE.SYSTEM,TSYS**  
**BSAVE DAZZLE.SYSTEM,A\$2000,L\$1D28,TSYS**

You now have a deprotected program disk! The demo side of the disk can be copied with any whole disk copier like COPYA, so make a backup of that and you're all done.

## Extra Features

Dazzle Draw uses an old version (1.0.2) of ProDOS. You may want to use a more current version or one with a more friendly quit code on the copy. All you have to do is copy your version of ProDOS over Dazzle Draw's version in the /DD/UTILITIES subdirectory.

In the /DD/UTILITIES subdirectory, there are two slide show programs: SLIDE1.SYSTEM, which it uses for 5.25 inch slide show disks, and SLIDE2.SYSTEM, which I assume it uses for 3.5 inch slide show disks. I don't have a 3.5 inch disk drive, so that's only a guess.

Whichever slide show program you use, you might want to make it more user friendly by making it quit to ProDOS instead of rebooting. Here is the procedure to follow for SLIDE1.SYSTEM (you must be using ProDOS when making the changes to the slide show programs):

**1** Load the file into memory:

**PREFIX/DD/UTILITIES**  
**BLOAD SLIDE1.SYSTEM,A\$2000,TSYS**

**2** Enter the monitor:

**CALL-151**

**3** Change a few quit messages:

**229C:F4 EF A0 D0**  
**22A0:F2 EF C4 CF D3 A0**  
**2698:D1 D5 C9 D4 A0 A0**

**4** Add the quit routine and the routine to set up the reset vector:

**2F83:20 00 BF 65 89**  
**2F88:17 04 00 00 00 00 00 00**  
**2F90:A9 83 8D F2 03 A9 17 8D**  
**2F98:F3 03 4C 6F FB**

**5** Change the address that gets JuMPed to when you quit:

**26AD:4C 83 17**

**6** Make the reset vector patch:

**21F0:20 90 17 EA EA EA**

**7** Save the file:

**UNLOCK SLIDE1.SYSTEM**  
**BSAVE SLIDE1.SYSTEM,A\$2000,TSYS**  
**LOCK SLIDE1.SYSTEM**

To make the same patches to SLIDE2.SYSTEM, follow this procedure:

**1** Load the file:

**PREFIX/DD/UTILITIES**  
**BLOAD SLIDE2.SYSTEM,A\$2000,TSYS**

**2** Get into the monitor (if you're not already there):

**CALL-151**

**3** Change a few quit messages:

**2291:F4 EF A0 D0 F2 EF C4**  
**2298:CF D3 A0**  
**26C5:D1 D5 C9**  
**26C8:D4 A0 A0**

**4** Add the quit routine and the routine to set up the reset vector:

**35FD:20 00 BF**  
**3600:65 03 1E 04 00 00 00 00**  
**3608:00 00 A9 FD 8D F2 03 A9**  
**3610:1D 8D F3 03 4C 6F FB**

**5** Change the address that gets JuMPed to when you quit:

**26DA:4C FD 1D**

**6** Make the reset vector patch:

**21B4:20 0A 1E EA EA EA**

**7** Save the file:

**UNLOCK SLIDE2.SYSTEM**  
**BSAVE SLIDE2.SYSTEM,A\$2000,L\$1617,TSYS**  
**LOCK SLIDE2.SYSTEM**

## A Few Final Notes

Normally, the RAM disk drivers are overwritten with the execution of the copy of ProDOS resident on the Dazzle Draw disk. However, if you have a large RAM disk (such as Applied Engineering's RAMworks) which resides in some place other than slot 3, drive 2 (you can use the SLOTCHANGER program included with RAMworks to change the emulated slot and drive), the first patch in step 5 will leave the RAM drive intact. To take advantage of this, keep a copy of DAZZLE.SYSTEM in your RAM disk. Just prior to executing it, put the Dazzle Draw copy in slot 6, drive 1. Upon execution, DAZZLE.SYSTEM will read code from it. When you're done using Dazzle Draw, quit and your RAM disk will still be intact.

If you do keep DAZZLE.SYSTEM in a RAM disk, and you try to save the setup, it will be saved onto the copy in slot 6, drive 1. You must then recopy DAZZLE.SYSTEM to your RAM disk.

## Controller

```
1000 REM DAZZLE DRAW CONTROLLER
1010 TK = 0:LT = 31:ST = 15:LS = 15:CD = WR:FAST
    = 1
1020 POKE 47426,24:GOSUB 490:GOSUB 610
1030 POKE 47426,56:GOSUB 490:GOSUB 610
1040 IF PEEK (TRK) = LT THEN 1060
1050 TK = PEEK (TRK):ST = PEEK (SCT):GOTO 1020
1060 HOME:PRINT "COPY^DONE":END
```

## Checksums

```
1000 - $356B    1040 - $E8BD
1010 - $0F00    1050 - $0803
1020 - $B5F9    1060 - $2DC6
1030 - $6E9F
```

Klaus Iden

Softkey for...

**SongWriter**

Scarborough, Inc.

### Requirements

- Apple II Plus, Iie or Iic
- Super IOB v1.5

This music program is modeled after the old player piano. You can write music, though not sophisticated, and play around with sounds and songs. You can save your creations for later use and you can incorporate them in your own programs. For its price its a good buy and can be a lot of fun to use by adults as well as children.

Although designed for users ages 5 - adult, the disk is copy protected, a practice that does not encourage unsupervised use by little hands. The protection technique involves altering the data prologs from D5 AA AD to D5 AA 97 and the use of constantly changing epilogs. The controller below, takes care of both of these.

When you initialize data disks from within the unprotected program, you will also have DOS added (unlike the original). Therefore before booting up a data disk, delete the file "H" from it and add your own hello program (just remember to call it "H").

The documentation mentioned that "you can add music to your own programs written in BASIC", however nowhere could I find a description of how to do this. For this reason, I present the following which should get you started. When you initialize a data diskette from the program, a binary file "PLAYER" is transferred to your data disk. After the softkey, you can transfer this directly off your program disk. The code is relocatable (that means you can put it anywhere in memory). The songs are loaded into high memory (from \$9898 - down), therefore only one DOS buffer is allowed and your program must start with a "MAXFILES 1" statement. Songs can be up to 10000 bytes in length, so the "PLAYER" code must be loaded below the longest song you intend to use. A good safe place would be 32768 (\$8000). A typical BASIC program might be:

```

10 PRINT CHR$(4) "MAXFILES^1": REM CLEAR SPACE
   FOR YOUR SONG
20 PRINT CHR$(4) "BLOAD^PLAYER,^A32768"
30 PRINT CHR$(4) "BLOAD^FIRST.SONG"
   Your Program Goes Here From Line 31-239
240 CALL 32768: REM START THE MUSIC
250 PRINT CHR$(4) "BLOAD^SECOND.SONG"
260 CALL 32768: REM PLAY IT
    
```

### Checksums

10	- \$9FA3	240	- \$5EFD
20	- \$D7F6	250	- \$FBEB
30	- \$AF72	260	- \$6BA8

### Step by Step

**1** Boot up a disk, preferably with a fast DOS. Drop into the monitor, make a slight change to the DOS, and initialize a blank disk.

**CALL -151**  
**A3A1:A3 A3**  
**INIT HELLO**

**2** Install the Songwriter controller into Super IOB v1.5, and use the resulting program to copy Songwriter.

**3** Enjoy your COPYA-able disk!

### Controller

```

1000 REM SONGWRITER CONTROLLER
1010 TK = 3:LT = 35:ST = 15:LS = 15:CD = WR:FAST
   = 1
1020 GOSUB 490: RESTORE : GOSUB 210: POKE
   47426,24: GOSUB 610
1030 GOSUB 490: GOSUB 230: GOSUB 610: IF PEEK
   (TRK) = LT THEN 1050
1040 TK = PEEK (TRK):ST = PEEK (SCT): GOTO 1020
1050 HOME : PRINT "FINISHED" : END
5000 DATA 213,170,151
    
```

### Checksums

1000	- \$356B	1040	- \$4E64
1010	- \$2445	1050	- \$D87F
1020	- \$7B90	5000	- \$1DA0
1030	- \$2ABB	0	- \$0000

Les B. Minaker

Let me take this opportunity to endorse COMPUTIST's reason for being and the increased information that the expanded format allows. It is very hard to find a magazine that will even discuss copy protection much less publish methods of circumventing it! I do, however, feel that the IBM section is worthless. If there was sufficient interest in that type of magazine, I am certain that it would have been started a long time ago. I suggest that Softkey Publishing begin a separate publication if there is enough interest or publish the IBM RDEX only every other month. This would allow more space for us Apple users (so I'm a little greedy)! Don't get the wrong idea, I think that IBM machines are decent, high power devices. They however, find there biggest audience in offices not homes (I can hear the IBM users protesting now!) and, because of this, I think that space in a hobbyist magazine is wasted on IBM articles.

Anyways, keep up the good work.

A.P.T. for...

## Ultima V

Origin Systems

### Requirements

- Apple II series computer (that includes the II Plus)
- ProEdit or similar ProDOS block editor
- A backup of the Britannia disk - easily made with Locksmith Fast Copy 6.0

### Introduction and Review

As most of you out there in magazine land

have likely realized, Ultima V is here! Published by Origin Systems (who else?), it is one awesome game. The game is an elaborate extension of Ultima IV, so keep your old maps (you know, the ones you made with Ultimapper IV and Ultima IV Towne Mapper) and notes. Although the layout is not exactly the same, it's close enough to allow you to use your old maps and stuff.

Here the purpose of the game is to rescue Lord British from the Shadowlords. The explanation of how he managed to get himself captured is explained in the documentation.

As usual the graphics and playability are fantastic. The Ultima series has set the standard for playable fantasy games. This one is no exception.

There have been a number of new commands added to the game. Some of these are: (P)ush-allows you to move chairs and tables; you can select an active player to perform all lock (J)immying etc.; you can (Q)uit and save almost anywhere; sound is now toggled by **[CS]**; to exit the scene of combat you simply press **[ESC]**; and, for those with IIGs machines the **[CT]** will toggle between 1 and 3.5 MHz.

Lord British has also added a few new means of transportation. Namely skiffs and magic carpets. The advent of 'true night' has also been added to the game. When it gets dark, it gets REAL dark!

All in all, this game is amazingly amazing!

### Hi-Res Screen Images

For those who are interested in trapping Hi-Res pictures; I have found that many of the screens can be trapped by hitting **[RESET]**. I should caution you, however, that it doesn't always work. There is no pattern, but two things usually occur. The first is a complete lock out of the keyboard after reset. That means your computer just sits there with garbage on the screen. The other possibility I have found is the re-booting of the machine upon reset. If this occurs insert your favorite graphic trapping program (I use Graphic Grabber because I like to employ the images I trap to create new graphics for The Print Shop) and let the machine re-boot. You should now have the screen image on page 1 and garbage on page 2. On to the good stuff.

### The Sector Edits

The character data for Ultima V can be found on block \$01D. Using the below charts the attributes can be found and altered to suit your desires. Because the game is written on ProDOS disks, I used COMPUTIST's own ProEdit to perform these edits. You could use DiskWorks or some similar program but, since DiskWorks requires open and closed Apple commands, which my trusty II+ does not have,

# Readers Data Exchange

and using a joystick to activate commands is a royal pain, I found that ProEdit was much more suited to my needs. (That's just a little plug for the software published in COMPUTIST over the years!)

There seems to be 16 characters, including the player's character, available for gaming. However, I haven't been able to insert any of the characters beyond Jaana (#6) into my party. I suspect it has something to do with who is still alive or something to that effect. If any industrious reader can figure out why this happens, I would appreciate if you could send a note to the RDEX editor.

The data is stored in a decimal format. That is, the data has maximum values of 99. If two bytes are used to represent the data the maximum value is 9,999. If this looks familiar, it is!

### Some valid bytes to use when stuffing your characters

**Sex:** male - \$3E, female - \$3F  
**Status:** not present - \$FF, present - \$00  
**Health:** good - \$C7, dead - \$C4, poisoned - \$D0, sleeping - \$D3  
**Class:** avatar - \$C1, bard - \$C2, fighter - \$C6, mage - \$CD

### Other important locations in block \$01D

\$180-\$181 food	\$1F0 shard of falsehood	\$1F7 skull keys
\$182-\$183 gold	\$1F1 shard of hatred	\$1F8 Lord British's amulet
\$184 keys	\$1F2 shard of cowardice	\$1F9 Lord British's crown
\$185 gems	\$1F3 spyglass	\$1FA Lord British's sceptre
\$186 torches	\$1F4 HMS Cape plans	\$1FB black badge
\$187 grappling hook	\$1F5 sextants	\$1FC woden box
\$188 magic carpets	\$1F6 pocket watch	

### Character data from block \$01D

name	player	Shamino	Iolo	Mariah	Geoffrey	Jaana	Julia	Dupre
status	\$80	\$90	\$A0	\$B0	\$C0	\$D0	\$E0	\$F0
sex	\$81	\$91	\$A1	\$B1	\$C1	\$D1	\$E1	\$F1
class	\$82	\$92	\$A2	\$B2	\$C2	\$D2	\$E2	\$F2
health	\$83	\$93	\$A3	\$B3	\$C3	\$D3	\$E3	\$F3
strength	\$84	\$94	\$A4	\$B4	\$C4	\$D4	\$E4	\$F4
intelligence	\$85	\$95	\$A5	\$B5	\$C5	\$D5	\$E5	\$F5
dexterity	\$86	\$96	\$A6	\$B6	\$C6	\$D6	\$E6	\$F6
magic points	\$87	\$97	\$A7	\$B7	\$C7	\$D7	\$E7	\$F7
current hit points	\$88-\$99	\$98-\$99	\$A8-\$A9	\$B8-\$B9	\$C8-\$C9	\$D8-\$D9	\$E8-\$E9	\$F8-\$F9
maximum hit points	\$8A-\$9B	\$9A-\$9B	\$AA-\$AB	\$BA-\$BB	\$CA-\$CB	\$DA-\$DB	\$EA-\$EB	\$FA-\$FB
experience points	\$8C-\$9D	\$9C-\$9D	\$AC-\$AD	\$BC-\$BD	\$CC-\$CD	\$DC-\$DD	\$EC-\$ED	\$FC-\$FD
experience level	\$8E	\$9E	\$AE	\$BE	\$CE	\$DE	\$EE	\$FE
name	Katrina	Sentri	Gwenno	Johne	Gorn	Maxwell	Toshi	Saduj
status	\$100	\$110	\$120	\$130	\$140	\$150	\$160	\$170
sex	\$101	\$111	\$121	\$131	\$141	\$151	\$161	\$171
class	\$102	\$112	\$122	\$132	\$142	\$152	\$162	\$172
health	\$103	\$113	\$123	\$133	\$143	\$153	\$163	\$173
strength	\$104	\$114	\$124	\$134	\$144	\$154	\$164	\$174
intelligence	\$105	\$115	\$125	\$135	\$145	\$155	\$165	\$175
dexterity	\$106	\$116	\$126	\$136	\$146	\$156	\$166	\$176
magic points	\$107	\$117	\$127	\$137	\$147	\$157	\$167	\$177
current hit points	\$108-\$109	\$118-\$119	\$128-\$129	\$138-\$139	\$148-\$149	\$158-\$159	\$168-\$169	\$178-\$179
maximum hit points	\$10A-\$10B	\$11A-\$11B	\$12A-\$12B	\$13A-\$13B	\$14A-\$14B	\$15A-\$15B	\$16A-\$16B	\$17A-\$17B
experience points	\$10C-\$10D	\$11C-\$11D	\$12C-\$12D	\$13C-\$13D	\$14C-\$14D	\$15C-\$15D	\$16C-\$16D	\$17C-\$17D
experience level	\$10E	\$9E	\$12E	\$13E	\$14E	\$15E	\$16E	\$17E

• The name of a Shadowlord gives you power over him assuming you can figure out how to use it. Two of them are named Nofentor and Astaroth. I leave you to discover the third one.

• If you've lost your Ultima IV notes, the mantras are as follows:

Sacrifice: Cah Spirituality: Om  
Honor: Summ Humility: Lum  
Justice: Beh Valor: Ra  
Honesty: Lum Compassion: Mu

Shadowlords Earthly Fortress.

• The runes for scrolls represent the spell they can cast.

• Need a grappling hook? Seek out Lord Michael and simply ask him for it!

• The sextant only works at night and it can be gotten from David.

• Words of power are very useful. Three of these are (no particular order): Uvilis, Malum, Inopia.

• Remember where you found the skull in

Ultima IV? Look there again for Blackthorn's fortress.

• So you want a magic carpet, eh? Perhaps if you tell Bandii where you found Smith the Talking horse he'll give you one.

• If you find the Resistance, it is most useful to remember "dawn".

• Looking for the Earthy focus of the shadowlords? Try asking Sir Sean of "stonegate".

• Wishing for a horse works in only two places.



# Readers Data Exchange

The weapons, armour, reagents, readied spells, potions, and scrolls are stored on block \$001F.

\$00-\$2F	armour and weapons	\$A0	sulphur ash	\$A3	spider silk	\$A6	nightshade
\$40-\$6F	readied spells	\$A1	ginseng	\$A4	blood moss	\$A7	mandrake
\$70-\$7F	potions and scrolls	\$A2	garlic	\$A5	black pearl		

## Specific item locations

Armour		Weapons		Magic Items		Spells		Scrolls		Potions	
leather helm	\$00	club	\$12	magic axe	\$26	Rel Hur	\$48	In Zu	\$5C	VL	\$70
chain coif	\$01	flaming oil	\$13	glass sword	\$27	In Wis	\$49	Rel Tym	\$5D	RH	\$71
iron helm	\$02	main gauch	\$14	jewel sword	\$28	Kal Xen	\$4A	In Vas Por Ylem	\$5E	IS	\$72
spiked helm	\$03	spear	\$15	mystic sword	\$29	Vas Lor	\$4B	Quas An Wis	\$5F	IA	\$73
small shield	\$04	throwing axe	\$16	invisibility ring	\$2A	Vas Flam	\$4C	In An	\$60	IOW	\$74
spiked shield	\$05	short sword	\$17	protection ring	\$2B	In Xen Man	\$4D	Wis An Ylem	\$61	KXC	\$75
large shield	\$06	mace	\$18	regeneration ring	\$2C	In Flam Grav	\$4E	An Xen Ex	\$62	IMC	\$76
shield magic	\$07	morning star	\$19	amulet of turning	\$2D	In Nox Grav	\$4F	Rel Xen Bet	\$63	AT	\$77
shield jewel	\$08	bow	\$1A	spirit collar	\$2E	In Zu Grav	\$50	Sanct Lor	\$64		
cloth	\$09	arrows	\$1B	ankh	\$2F	In Por	\$51	Xen Corp	\$65	blue	\$78
leather armour	\$0A	crossbow	\$1C			An Grav	\$52	In Quas Xen	\$66	yellow	\$79
ring mail	\$0B	quarrels	\$1D			In Sanct	\$53	In Quas Wis	\$67	red	\$78
scale armour	\$0C	long sword	\$1E			In Sanct Grav	\$54	In Nox Hur	\$68	green	\$7B
chain mail	\$0D	2H hammer	\$1F			Uus Por	\$55	In Quas Corp	\$69	orange	\$7C
plate mail	\$0E	2H axe	\$20			Des Por	\$56	In Mani Corp	\$6A	purple	\$7D
mystic armour	\$0F	2H sword	\$21			Wis Quas	\$57	Kal Xen Corp	\$6B	black	\$7E
dagger	\$10	halberd	\$22			In Bet Xen	\$58	In Vas Grav Corp	\$6C	white	\$7F
slings	\$11	chaos sword	\$23			An Ex Por	\$59	In Flam Hur	\$6D		
		magic bow	\$24			In Ex Por	\$5A	Vas Rel Por	\$6E		
		silver sword	\$25			Vas Mani	\$5B	An Tym	\$6F		

• You can move moongates by searching directly below a waning gate. You should find a stone that you can then rebury any place you like.

• A skull key will open any door. They can be bought from a lady in Serpent's Hold or found in a tree in Minoc.

• Search a tree stump in Paws for an item of interest.

• If you're both broke and wounded journey VERY quickly to Minoc where, in the Healer's Mission, you can receive free medical aid.

• There are plenty o' items on the first level of Moonglow.

Ok, that should be more than enough to get you well on your way to saving Lord British. Good luck and kill an Orc or two for me.

Jerry Mulder

## Convert PrintMaster Graphics into Print Shop Graphics

### ■ Requirements

- Apple PrintMaster DOS 3.3 Program Disk, from Unison World/Berkeley Softworks
- Broderbund's Print Shop Companion program disk (or other compatible Print

Shop graphics "capture" program)

- Two initialized floppy disks (or one floppy disk) for storage

The following information is not a softkey, but will allow one to convert Apple PrintMaster graphics so they'll work with Broderbund's Print Shop and Print Shop Companion programs.

Unison World's Apple PrintMaster is a Print Shop lookalike, and has some rather nice graphics, which are not directly usable with Print Shop, nor with Print Shop Companion. When one is using PrintMaster, saving the graphics to a separate data disk results in binary files which are 3 SECTORS long, rather than Print Shop's 4, and as mentioned previously, they seem to be incompatible for use with the Print Shop. Upon closer examination of the PrintMaster program disk, one will soon discover that all graphics are stored in several rather large binary files, and are accessed in "bunches" of 12 at a time.

As such, I came up with a somewhat inelegant, but very effective, procedure for converting the graphics one at a time so that they will be compatible with Print Shop. The resultant graphics are in very nice proportion, and usable immediately "as is" after conversion. In case you have lots of spare time, staying up until the wee hours of the morning will be required to convert the entire collection

of approximately 122 graphics.

I chose to convert about 25 graphics at a sitting, since the task is rather tedious. PrintMaster is a slow booting (though not copy-protected) program; enhancing it with a fast DOS causes it to crash early on into the boot.

### Step By Step

- 1** Boot Apple PrintMaster in drive 1.
- 2** From the Main Menu, select Editor.
- 3** From Graphic Editor Menu, choose Graphic: By Picture.
- 4** With your graphic selection highlighted, press P to preview graphic.
- 5** With the desired graphic visible at the right side of the screen, remove the PrintMaster program disk from drive 1.
- 6** Insert the Print Shop Companion program disk in drive 1, and warm boot by the most convenient method.
- 7** From Print Shop Companion Main Menu, select Graphic Editor+.
- 8** Press **[CG]** to "GET graphic".
- 9** At the next screen, select From Screen Memory.
- 10** If everything went well, your monitor should at this time display the entire last Apple

PrintMaster HI-RES screen intact, including the representation of the graphic you selected.

NOTE: If the **ⓐRESET** (Apple IIe, IIc) method of warm-booting produced a snowy or garbled HI-RES screen, try the following changes in step 6:

A. Insert Print Shop Companion program disk into drive 1, and press **ⓐRESET**.

B. If BASIC prompt (>) appears, enter:

**PR#6**

C. If monitor prompt (\*) appears, enter:

**6 ⓐP**

**11** The Print Shop Companion Graphic Editor+'s capture box is just large enough to enclose the entire PrintMaster graphic within its confines, generally with little or no room to spare. If there is anyone out there who has a faster way to convert these graphics, please submit your ideas, since this method is rather S L O W !

*Softkey for...*

## Better Working

Better Working Software (Spinnaker)

### Requirements

- Better Working word processor disk
- Apple II (48K Minimum)
- Two blank disks
- Demuffin Plus

Better Working is a medium to high powered word processor, with window-like features, as well as having a comprehensive spelling checker on the backside of the disk.

Once accustomed to this word processor, it may well be one of the better processors for the Apple II, with effective functions for: SEARCH, REPLACE, MOVE or COPY blocks of text, COUNT the words in your document, CUSTOMIZING your print format, MAIL MERGE, DISPLAY of text on screen in 40 or 80 columns, as well as the ability to use INSERT or OVER-WRITE mode (a very nice option to have). Furthermore, the program produces standard ASCII Text files.

Unfortunately, the program is copy-protected. With that in mind, since my son likes using this word processor, I needed back-up copies, and as far as I could determine from the packaging or any of the enclosed documentation, Spinnaker does not make a back-up available.

My attempts to copy the disk with several utilities were futile (copy would not boot after several tries), so it fit the criteria for total de-encryption. Both the program disk, as well as the flipside with the spelling checker, may be de-encrypted using the following procedures:

**1** Boot your DOS 3.3 master disk:

**PR#6**

**2** Initialize two blank disks:

**INIT ALLO**

**3** Change the instruction at \$B942 from SEC (\$38) to CLC (\$18) so that any read errors are ignored:

**POKE 47426,24**

**4** Place a copy of Demuffin Plus in Drive 1:

**BRUN DEMUFFIN PLUS**

**5** Place the original Better Working program disk (notch covered with write-protect tab for safety) in Drive 1, and one of the previously initialized disks in Drive 2. Using the 'wildcard' option (=), copy all files from Drive 1 to Drive 2. Answer 'N' when asked if you want prompting.

**6** Repeat this same procedure with the SPELLING CHECKER on the flipside of the program disk.

That's it! When all files are transferred, you have a completely COPYA-able version of Better Working.

My attempt to install a speed-up DOS (Diversi-DOS) on the COPYA-able version was unsuccessful, do to the fact that the speed-up DOS interfered with some of the printing functions of this program. Other speed-up DOS's may work. One last item of interest—this program shows true underlining (underscoring) on screen on 40 or 80 columns, and accounts for some of the slowness.

The following has not been tried, but there is a reasonable possibility, that other programs from Spinnaker, such as File & Report and Spreadsheet may be unlocked, using this same procedure.

If anyone would like to talk to me, I can be reached at (206)764-2036 between 7:00 a.m. and 3:30 p.m.

Mike Egnotovich

*Softkey for...*

## Patchworks

Random House

*Softkey for...*

## Negotiation Edge Management Edge

Human Edge Software

### Requirements

- COPYA
- Blank Disk
- Super IOB v1.5
- Fast DOS (e.g. DiversaDOS)

First of all, many thanks for the contributions in your previous issues of COMPUTIST. Particular thanks to Jim Hart (COMPUTIST #46, page 12), and Ed Teach (COMPUTIST #50, page 38). Without their softkeys I would not have been able to provide the following:

What to look for: Can the disk be cataloged? Does COPYA copy the disk?

If neither of these are successful, this usually means that there are format alterations to the RWTS (Read Write Track Sector) sections of the DOS on the disk (IE: an altered DOS - a very common protection scheme).

The easiest way to deprotect these disks is to use the Swap or New Swap Controller and Super IOB (contained on the COMPUTIST Starter Kit). To make this scheme work, however, we have to have the perverted RWTS captured and in our possession somehow.

Here's how its done:

**1** Boot up with a normal DOS and enter the monitor.

**CALL-151**

**2** Move the disk controller card ROM (also known as Boot0) into RAM so that it can be modified:

**9600<C600.C6FFM**

**3** Fix the code so that it stops after loading Boot1.

**96FA:98 N**

**9801:AD E8 C0 4C 59 FF**

**4** Put the original disk (write-protected) into Drive 1 and boot it with the following command:

**9600G**

**5** The drive will turn for a while, rattle, beep and then stop and you will be in the monitor (\* instead of !).

Note: if the drive fails to stop and won't take you into the monitor after any "xxxxG" command, then the disk cannot be deprotected by this method.

We first have to move the BOOT1 code (which loads in the RWTS) to a safe spot. Next we have to modify BOOT1 so it will load in the RWTS and then go into the monitor again:

**9800<800.8FFM**

**980E:90**

**984A:4C 00 93**

**9300:AD E8 C0 4C 59 FF**

**6** Execute the modified boot one more time:

**9600G**

**7** When the computer beeps you will have the RWTS in memory at \$B800-BFFF. All that has to be done now is to move it to a safe place so that a subsequent boot won't erase it:

**1900<B800.BFFF**

**8** Boot a normal DOS 3.3 disk and save the RWTS that you just captured:

**C600G**

**BSAVE RWTS.PROG,A\$1900,L\$800**

**9** Install the New Swap Controller into Super IOB. (For Negotiation Edge you must use the Swap Controller, the New Swap won't work - timing problems or something). Follow the Super IOB instructions here - contained on the COMPUTIST Starter Kit disk. Add these two lines to the merged program:

**1015 TK = 3**

**10010 PRINT CHR\$(4); "BLOAD RWTS.PROG,A\$1900"**

**10** Place the DOS-formatted disk containing RWTS.PROG into Drive 1.

**11** Start Super IOB.

**RUN**

**12** When prompted, place the COMPUTIST (Super IOB) disk in Drive 1.

**13** Select the appropriate slot and drive numbers, place the original disk to be copied into the appropriate drive, and follow the Super IOB prompts.

When you're done, it's a good idea to use Copy II Plus' option to Copy DOS. Use a fast DOS like DiversaDOS. This places DOS on tracks \$00-02. Now all you have to do is boot and go.

That should do it. You should now have a deprotected copy that can be cataloged and packed (if you followed Super IOB's prompts correctly).

Sometimes there are deleted files on the disk that you deprotected that contain info on the protection scheme or even contain the scheme itself. You can catalog with Copy II Plus to see what these files are. Sometimes these files will prevent you from booting the protected disk and will cause you to crash into the monitor. What you should do in any event, if your deprotected disk won't boot, is to use Copy II Plus to copy all files to another DOS-formatted disk (using File Copy). The deleted files won't transfer and the resulting disk should boot OK.

*Softkey for...*

## Everybody's Planner

Abracadata

### ■ Requirements

- COPYA
- Blank disk
- Protected disks for the above

Thanks to COMPUTIST #51, page 34 for this one. It was listed for Intrigue by Spectrum Holobyte, but also deprotects the Everybody's Planner four-disk series, Flowcharts, Schedules and Reports (the fourth, Data Disk is COPYA-able as it is).

**1** Boot your DOS 3.3 system disk.

**2** Change DOS and run COPYA.

**CALL-151**

**B954:4A C9 6A D0 EF**

**B98B:18 60**

**RUN COPYA**

That's all there is. The copies are deprotected.

I have also used this technique with Spectrum Holobyte's GATO v1.3, with limited success. I was able to capture the PASCAL version 1.3 files in readable format but the disk won't boot. It seems that there is a nibble count in addition to the initial protection. This count is different than that listed in earlier COMPUTISTS (e.g., #30, page 6, where the sequence AD E9 C0 A9 is supposed to be changed to A9 01 D0 67). That sequence doesn't exist on my version of GATO. If any readers have suggestions, I'd be interested to hear.

*Softkey for...*

## APBA Major League

### Players Baseball

Random House

### ■ Requirements

- Blank disk
- Copy II Plus or Locksmith
- Block editor that can read PASCAL (e.g. Block Work 3.9)
- UCSD PASCAL version 1.1 or higher (optional)
- Protected disks for the above

This is a five disk series of the famous statistical game that is implemented in PASCAL 1.3. The files can be read but when copied will not boot. This indicates some kind of nibble count. It is proven, indeed, to be the case. Make a copy of the protected disks using your favorite bit copy program.

Scan for the string 10 FB C9 D5 F0 F4 D0 F0.

On my version of the master disk these were found on block \$0108. Replace the string with EA EA EA EA EA EA EA EA and write the block back out to disk. That's all there is to it. The other four sides can be disk-copied using PASCAL (#4 to #5, etc.) or your bit copier.

*† Softkey for...*

## GATO Version 1.3

Spectrum Holobyte

### ■ Requirements

- COPYA
- Blank disk
- Protected GATO v1.3 Disk
- Locksmith v6.0 or 7.0, with ABT
- A sector or block editor (Copy II Plus or Blockworks)

My version of this program is apparently not the same as that discussed in COMPUTIST #38, nor do the softkeys listed for other GATO versions (COMPUTISTS #23, #30, #36, and #42) work. This version is a UCSD Pascal v1.3-based implementation. Numerous attempts to bit copy this program all failed (EDD 4, Copy II Plus (versions 6 thru 8), Locksmith v6.0 or v7.0). None was able to read the disk. Rummaging through back issues of COMPUTIST, I was able to find a softkey for other Spectrum Holobyte software that allowed me to copy and even catalog the disk, using PASCAL's Filer program. The resulting copy would not boot, however, and the drive would continue to whirr without ever finding anything to display. The softkey rendering this listable but not bootable copy is contained on page 34 of COMPUTIST #51 and is as follows:

**1** Boot your DOS 3.3 system disk.

**2** Change DOS and run COPYA.

**CALL-151**

**B954:4A C9 6A D0 EF**

**B98B:18 60**

**RUN COPYA**

The resulting copy was subjected to the Automatic Boot Trace (ABT) function of Locksmith. I found the trace to enter a continuous loop with the following disassembly. (+ signifies that the branch was executed in Locksmith ABT; - signifies that it was not).

```
0A0A LSR A
0A0B CMP #6A
0A0D BNE 09FE +
09FE INY
09FF BNE 0A05 +
0A05 LDA C08C, X
```

(C08C,X = the infamous clue to the existence of a Nibble Count)

```
0A08 BPL 0A05 -
0A0A LSR A
```



```
0A0B CMP #6A
0A0D BNE 09FE +
09FE INY
09FF BNE 0A05 +
```

and the loop continues.

Interestingly, as we will see later, when I cataloged the disk with PASCAL Filer's DIR command, the copied disk indicated 261 blocks used, 19 unused and 13 in the largest.

Having no luck trying to RTS or NOP around the 8C C0 code, I then formatted a new disk with PASCAL and then copied (using the PASCAL Filer's Transfer function) each file one at a time to the new disk. Transferring the entire directory (i.e., T(rans) #4: -> #5:) would be no different than using a copy program and would provide me with an exact duplicate of the first copy that wouldn't boot. When I cataloged this new disk copy, interestingly it showed that 261 blocks were used and 19 unused. However this time it showed that 19 blocs were in the largest! Where did the 6 phantom blocks come from and why did both copies show 19 unused?

Even more interesting, when I booted the second disk, I progressed further into the boot process than I did with the first copy. The screen full of "@" symbols appeared, the drive made a grinding noise once trying to continue the load, and then the following message was displayed:

```
"Insert boot disk with SYSTEM.PASCAL
on it, then press RETURN".
```

Nevertheless to say that the asked for file was on the Directory, indicating that the protection code resides either in that file or in the SYSTEM.STARTUP file.

I then tried Locksmith's ABT on the second copy and that did progress much farther into the boot before I again found myself in a never-ending 8C C0-related loop.

```
0A25 STA 27
0A27 LDA C0 8C, X
0A2A BPL 0A27 -
0A2C ROL A
0A2D STA 26
0A2F LDA C0 8C, X
0A32 BPL 0A2F -
0A34 AND 26
0A36 STA 002C, Y
0A39 EOR 27
0A3B DEY
0A3C BPL 0A25 +
```

That is as far as I was able to progress in deprotecting the PASCAL 1.3 version of GATO. I feel that I am on the right track but am unable to make further headway. I would appreciate it if any other readers can see something in what I have done so far to provide a hint as to where I should go next. Perhaps, take their own versions of this program and come up with a deprotection scheme of their own, based on clues that I have provided.

Paul A. Johnson

I would like to say that I like the new format for the magazine. I think it is beneficial to have repeated softkeys, just in case one version doesn't work on a particular system or version of the software. I also like the bold boxes around the software titles. It makes them easier to pick out when scanning for a particular softkey.

Ⓟ Does anybody out there have the time, expertise, and writing skills to put together a good tutorial on boot code tracing? I think that there are a good many readers who would like to learn more about this aspect of disk cracking, and I am one of them. I have tried to figure it out on my own using articles on particular softkeys, but the article just tells what is needed for that crack and I need something more general in order to learn.

Ⓟ I recently purchased The Newsroom by Springboard Software, Inc. and I wanted to deprotect it. I dug out my back issues and found a softkey in issue 23 on page 18. I tried this softkey and it didn't work. The problem was because track 3 is unreadable on my disk. The disk does have modified address epilog bytes like in the article, but that is where the article stopped giving me useful information. I tried copying the files over to another disk with COPYA with it ignoring the epilogs, then inserting a fast DOS, but that failed, too. By searching the disk, I found what appears to be the protection code on track 2, sector 6. The code was as follows:

```
1028- B0 0B BCS $1135
102A- A9 1D LDA #$1D
102C- 48 PHA
102D- A9 FF LDA #$FF
102F- 48 PHA
1030- A9 11 LDA #$11
1032- 4C D9 9D JMP $9DD9
1035- 4C A8 BF JMP $BFA8
```

The JuMP to \$9DD9 is to the area of DOS that continues with the booting process by either coldstarting or warmstarting BASIC, depending on the contents of \$9DD1. I thought that maybe this jump was encountered after a successful nibble count, so I changed it so that the program would jump to \$9DD9 even after an unsuccessful nibble count. This seemed to get me past the protection, because the greeting program (B.NEWS START) was loaded into memory at \$800. After this, the program beeped, checked to see if I had a second drive, and then died a loud death. It rang the bell continuously until I hit reset.

Also, according to the article in issue 23, the clip art disk is supposed to have normal epilogs, but my clip art disk has modified epilogs like the program disk.

This is as far as I've gotten, and I am lost. If anybody has cracked The Newsroom, or would just like to take on the challenge of cracking it, I would certainly appreciate your help. I hope that the information I have provided will help. I would also like to see The Newsroom added to the Most Wanted list until somebody does come up with a softkey. Thanks. As long as you keep printing, I'll keep reading.

Thomas V. Rapheld

## The Invincible Bard

Bard's Tale III (BT3) is out and it is not copy protected. As with Wizardry IV, the protection scheme is based upon comparing numbers provided in the game with numbers found on a 'wheel-of-fortune' type Code Wheel provided with the game. Because I do not 'pirate' software, but instead I copy software that I have bought, I believe these new external protection schemes are great.

Now that we can all backup Bard's Tale III, let's get down to the problem at hand, creating a super character or better yet an INVINCIBLE BARD. First, create six characters with the games 'create a member' option. Next, get out your best sector editor and look at track \$22 of your Character Disk. (View ASCII, not Hex.) You should be able to find the name of each of your characters starting at either byte \$00 or byte \$80 on one of the sectors of track \$22. All future discussion regarding changes to the disk will be listed with two bytes. The first byte listed will be for changes to the character on the top part of the sector (starting at byte \$00), while the second byte listed will be for changes to the character on the bottom part of the sector (starting at byte \$80). All changes should be made in hex numbers. The game will convert the hex numbers to decimal (\$00-FF = 0-255).

Be careful when assigning a maximum number as an attribute. First, the attribute number that shows up on the monitor during the game will probably be significantly smaller because the game screen limits the number of digits available for each attribute. Second, if you've chosen an attribute that grows with game play, you could push the attribute back to zero (00). However, you can always re-enter with a sector editor.

Starting at byte \$30 for the character on the top of the sector editor screen and \$C0 for the character on the bottom of this screen are the weapons, armor, and miscellaneous items carried by each character. Each item carried uses three bytes. The first byte indicates whether the item is equipped (01), not usable

# Readers Data Exchange

(02), unknown (03), or unequipped (04). The second byte indicates which item (00-FF) is being carried. The third byte (I believe) indicates how many times the item can be used. If it is an item that does not have a limited use then the third byte should be FF. For example, if you change bytes \$30-32 to 01 05 FF, your character's first item carried will be an equipped dagger that does not have a limited life span. Bytes \$33-35 will be the next item carried, and so on... There are 256 possible items (less a few items that are left blank) that can be used. Some of the items are supposed to be found during the game play. It is advisable that you do not add an item that is not familiar to you.

- 5E Pipes of Pan
- 5F Power Ring
- 60 Song Axe
- 61 Trick Brick
- 62 Dragon Fgn
- 63 Mage Fgn #0
- 64 Troll Ring
- 65 Aram's Knife
- 66 Angra's Eye
- 67 herb Fgn
- 68 Master Wand
- 69 Brothers Fgn
- 6A Dynamite
- 6B Thor's Hammer
- 6C Stoneblade
- 6D Holy Handgrenade
- 6E Masterkey
- 6F Haspin Ring
- 70 Crystal Lens
- 71 Smokey Lens
- 72 Black Lens
- 73 Sphere of Lanati
- 74 Wand of Power
- 75 Acorn
- 76 Wineskin
- 77 Nightspear #0
- 78 Tsotha's Head
- 79 Tsotha's Heart
- 7A Arefolia
- 7B Valarian's Bow
- 7C Arws of Life
- 7D Canteen
- 7E Titan Plate
- 7F Titan Shield
- 80 Titan Helm
- 81 Fire Spear #0
- 82 Willow Flute
- 83 Firebrand
- 84 Holy Sword
- 85 Wand of Fury
- 86 Lightstar
- 87 Crown of Truth
- 88 Belt of Alliria
- 89 Crystal Key
- 8A Tao Ring
- 8B Stealth Arrows #0
- 8C Yellow Staff
- 8D Steady Eye
- 8E Divine Halbard
- 8F Incense
- 90 I-ching
- 91 White Rose
- 92 Blue Rose
- 93 Red Rose
- 94 Yellow Rose
- 95 Rainbow Rose #0
- 96 Magic Triangle
- 97 x
- 98 Hammer of Wrath
- 99 Ferofist's Helm
- 9A x
- 9B x
- 9C Helm of Justice
- 9D Sceaclu's Cloak

- 9E Shadelance
- 9F Black's Arrows #0
- A0 Werra's Shield
- A1 Strifespear
- A2 Sheetmusic
- A3 Right Key
- A4 Left Key
- A5 Lever
- A6 Nut
- A7 Bolt #0
- A8 Spanner
- A9 Shadowhook
- AA Shadow Door
- AB Misericorde
- AC Holy Avenger
- AD Shadowshiv
- AE Kali's Garrote
- AF Flame Knife
- B0 Red Stiletto
- B1 Heartseeker
- B2 x #0
- B3 x
- B4 x
- B5 Dmnd Scale
- B6 Holy TNT
- B7 Eternal Torch
- B8 Oscon's Staff
- B9 Angel's Ring
- BA Deathhorn
- BB Staff of Mangor
- BC Tesla Ring
- BD Dmnd Bracers #0
- BE Death Fgn
- BF Thunder Sword
- C0 Poison Dagger
- C1 Spark Blade
- C2 Galvanic Oboe
- C3 Hamic Gem
- C4 Tung Shield
- C5 Tung Plate
- C6 Minstrels Gloves
- C7 Hunters Cloak
- C8 Death Hammer #0
- C9 Blood Mesh Robe
- CA Soothing Balm
- CB Mages Cloak
- CC Familiar Fgn
- CD Hourglass
- CE Thieves Hood
- CF Surehand Amulet
- D0 Thieves Dart
- D1 Shrill Flute
- D2 Angel's Harp
- D3 The Boole #0
- D4 Troth Lance
- D5 Dmnd Suit
- D6 Dmnd Flail
- D7 Purple Heart
- D8 Titan Bracers
- D9 Eelskin Tunic
- DA Sorcerer's Hood
- DB Dmnd Staff
- DC Crystall Gem
- DD Wand of Force

- DE Cli Lyre #0
- DF Youth Potion
- E0 x
- E1 x
- E2 x
- E3 x
- E4 x
- E5 x
- E6 x
- E7 x
- E8 x
- E9 x #0
- EA x
- EB x
- EC x
- ED x
- EE x
- EF x
- F0 Mthr Suit
- F1 Titan Suit
- F2 Mages Gloves
- F3 Flare Crystal
- F4 Holy Missile #0
- F5 God's Blade
- F6 Hunter Blade
- F7 Staff of Gods
- F8 Horn of Gods
- F9 x
- FA x
- FB x
- FC x
- FD x
- FE x
- FF x #0

## Weapons, Armor, And Misc Items

- 00 Empty Pockets
- 01 Torch
- 02 Lamp
- 03 Broadsword
- 04 Shortsword
- 05 Dagger
- 06 War Axe
- 07 Halbard
- 08 Long Bow
- 09 Staff
- 0A Buckler
- 0B Tower Shield
- 0C Leather Armor
- 0D Chain Mail
- 0E Scale Armor
- 0F Plate Armor
- 10 Robes
- 11 Helm
- 12 Leather Gloves
- 13 Gauntlets
- 14 Mandolin
- 15 Spear
- 16 Arrows
- 17 Mthr Sword
- 18 Mthr Shield
- 19 Mthr Chain
- 1A Mthr Scale
- 1B Giant Fgn
- 1C Mthr Bracers
- 1D Bardsword
- 1E Fire Horn
- 1F Litewand
- 20 Mthr Dagger
- 21 Mthr Helm
- 22 Mthr Gloves
- 23 Mthr Axe
- 24 Shuriken
- 25 Mthr Plate
- 26 Molten Fgn
- 27 Spell Spear
- 28 Shield Ring
- 29 Fin's Flute
- 2A Kael's Axe
- 2B Mthr Arrows
- 2C Dayblade
- 2D Shield Staff
- 2E Elf Cloak
- 2F Hawkblade
- 30 Admt Sword
- 31 Admt Shield
- 32 Admt Helm
- 33 Admt Gloves
- 34 Pureblade
- 35 Boomerang
- 36 Ali's Carpet
- 37 Luckshield
- 38 Dozer Fgn
- 39 Admt Chain
- 3A Death Stars
- 3B Admt Plate #0
- 3C Admt Bracers
- 3D Slayer Fgn
- 3E Pure Shield
- 3F Mage Staff
- 40 War Staff
- 41 Thief Dagger
- 42 Soul Mace
- 43 OGREWAND
- 44 Kato's Bracer
- 45 Sorcer Staff #0
- 46 Galt's Flute
- 47 Frost Horn
- 48 Ag's Arrows
- 49 Dmnd Shield
- 4A Bard Bow
- 4B Dmnd Helm
- 4C Elf Boots
- 4D Vanquisher Fgn
- 4E Conjurstaff
- 4F Staff of Lor #0
- 50 Flame Sword
- 51 Powerstaff
- 52 Breath Ring
- 53 Dragonshield
- 54 Dmnd Plate
- 55 Wargloves
- 56 Wizhelm
- 57 Dragonwand
- 58 Deathring
- 59 Crystal Sword #0
- 5A Speedboots
- 5B Flame Horn
- 5C Zen Arows
- 5D Deathdrum

**I** This list agrees with another list by Brian Symonds in all but a few items. We decided to combine the lists to save space. The following items are in question; \$A9 may be "shadow lock", \$C2 may be "galvanic blade" and \$D3 may be "the Book". Write and let us know which is correct. Also, the attributes list on page 20 is the combined work of three authors. Again, we combined the lists to save space.

..... RDEXed

Those items shown with a '#0' have a limited useful life where the 0 is the number of uses left. As of this writing, I have not completely investigated all the sector locations. As stated previously, I believe that the third byte location for each of the items carried is the byte that indicates how many uses are left of these limited life items. In addition, for the THIEF, bytes \$64-66/\$E4-E6 (depending on if Thief is on the top of the sector editor's screen or the bottom of the screen) determine the special thieving attributes. If you change these bytes your Thief can have attributes at 100%.

I did not investigate the locations for the different type of spells nor the number of songs available to the Bard. To increase the spell casting capabilities of your magic caster increase their Experience Points and Gold and then go visit the Review Board. Increase spells known until at a maximum for a particular class then change class. Class change will reduce Experience Points to a minimum so you will have to go back to camp, save your characters, and then, once again, increase their Experience Points. Continue this procedure until all spells are known. Remember to have at least two spell casters because one will have to become a Chronomancer and that character will forget all other spells.

Now that you have an INVINCIBLE BARD you can go kick some #@%\*&. However, be careful you don't over develop your character or he/she will turn into the BIGGEST BORE in Skara Brae.

May your adventures always be profitable.

**Brian Symonds**

*A.P.T. for...*

## Thief of Fate (Bard's Tale III)

I haven't played the first two games in the "Bard" series, but when I read the cover of Thief of Fate and noted that the graphics were so "real you'll want to tickle the dragon's chin" and that the game was unprotected, I couldn't resist buying it. I have finished the Phantasie series, and Might and Magic, and didn't lose interest in these games as a lot of time wasn't taken up dealing with random monster attacks but when my patience had run out with Thief of Fate, I decided to see if I could speed the game up.

Previous articles in COMPUTIST (#36, #47, #51, and #55) dealt with the first Bard's Tale program. Thief of Fate comes on ProDOS disks with ProDOS version 1.4 (I'm not sure if companies are allowed to provide disks with a patched (as suggested in Open-Apple magazine) version of ProDOS). The program is encrypted (or perhaps compiled?) however so that you can not read the disks. The character disk can be changed to modify your characters so that you can deal with monster attacks quickly. Joe Montano's article in COMPUTIST #36, page 16 (The Bard's Dressing Room) does not strictly apply because of the different operating system used for this version, but there are many similarities.

All of the characters you create are stored on track \$22 of the character disk you make by copying the character disk supplied (the original disks had these on track \$00). They are stored two per sector starting at sector \$0E and going down to sector \$00. When you save a game, the characters are stored on track \$21. In each character sector, bytes \$00 and \$80 begin the name of the character or party, and as far as I can tell, you can modify each character directly without having to worry about the checksum routine mentioned in Joe Montano's article.

While the game instructions state that there is a "starter dungeon" to "bring you up to speed", I believe that this information coupled with the use of a sector editor will take you over the speed limit!

**T** The following attribute list is the combined work of Thomas Raphael, Brian Symonds and Harold Day. Since their letters were close to identical, we decided not to print separate lists. Any errors are probably my typos.

..... RDEXed

### Combined list - Attribute Locations

00-0F	80-8F	Name of Character
10	90	Strength
11	91	Intelligence (IQ)
12	92	Dexterity
13	93	Constitution
14	94	Luck
15-18	95-98	Experience
19-1C	99-9C	Gold
1D-1E	9D-9E	Current Level
1F-20	9F-A0	Max Level Attained
21-22	A1-A2	Hit Points
23-24	A3-A4	Condition
25-26	A5-A6	Current Spell Points
27-28	A7-A8	Max Spell Points
29	A9	Class: 00 = Warrior, 01 = Wizard, 02 = Sorcerer, 03 = Conjurer, 04 = Magician, 05 = Rogue, 06 = Bard, 07 = Paladin, 08 = Hunter, 09 = Monk, 0A = Archmage, 0B = Chronomancer, 0C = Geomancer, 0D = Monster, 0E = Illusion
2A	AA	Race: 00 = Human, 01 = Elf, 02 = Dwarf, 03 = Hobbit, 04 = \-Elf, 05 = \-Orc, 06 = Gnome
2B	AB	Sex: 00 = Male, 01 = Female
2C	AC	Character's Picture: 21 = Male Fighter, 30 = Female fighter, 36 = Male Wizard, 37 = Female Wizard. (There are many pictures to pick from. Enter Hex #'s from 00-FF to experiment. This byte will not affect the playability. Have fun by randomly changing the Byte.)
2D	AD	Health: 00 = Good, 01 = Poisoned, 02 = Old, 03 = poisoned, 04 = dead, 05 = dead and go to Adventurer's Heaven
2E	AE	???????
2F	AF	Armor Class (lowers the initial armor class of the character before normal armor is worn).
30-53	B0-D3	Items carried_the 12 items that each character can carry are stored in groups of three bytes with the first byte meaning unequipped (\$00), equipped (\$01), can't use (\$02), or special characteristics (for example \$08 means the enchanted water of life), the second byte giving the item itself, and the third byte giving the number of times the item can be used.
54-5D	D4-DD	Known Spells (Archmage)
5E-60	DE-E0	Known Spells (Chronomancer)
61-63	E1-E3	Known Spells (Geomancer)
64	E4	Critical Hits (Hunter)
64-66	E4-E6	Rouge Abilities
67-68	E7-E8	?
\$69	\$E9	Multiple Attacks

**Harold Day**

Ⓞ I have a question for John Wiegley, in his A.P.T. for Wizardry III. I couldn't get my party to load in the tavern after I made the edits. Do you have any suggestions?

*A.P.T. for...*

## Bard's Tale III

Electronic Arts

### ■ Requirements

- Bard's Tale III, and Character Disk
- Sector Editor (I used Copy II Plus)

I've been visiting the "back side" of my character disk for Bard's Tale III, Thief of Fate, and have determined the location of the attributes and other good to know things. The Bard's Tale III is an entertaining game and hopefully this will help you enjoy it.

If you have filled all character positions on the disk your character names begin on track \$21. Search with your sector editor until you find your character's name. (See combined list of attribute locations.)

Experience points are written backwards and I'm not sure of the formula used to get the needed results.

**Gerald E. Myers**

I have subscribed to COMPUTIST for six months, and vowed not to write until I had my first crack to contribute. As it turned out, my first crack was the IIC Utilities Disk to work on my Laser 128, and I considered it too trivial to send in (although it was a good learning exercise), because almost any other Utility is far superior to this one. Then, lo and behold, Larry Hough requested this very information in COMPUTIST #54 (Page 29), so I have run out of excuses!

But first, a few words regarding other miscellaneous items.

### Miscellany #1

COMPUTIST #54 arrived the same day as another magazine I subscribe to called R/C Soaring (Radio Controlled Model Gliders), and the Editorial was about the same thing as COMPUTIST's - lousy mail service and customers not receiving issues that had been sent. Maybe the raise in Postal rates will improve service. (Just kidding!) At any rate, I was really struck by the identical editorials in two very different publications (except both are bulk-mailed monthly), and just wanted you

to know you are not alone - not that it helps when an irate customer is on your case about magazines "not mailed"!

**R** Isn't that the truth. We had a First Class subscription that kept being returned as undeliverable. It took a trip to the local Post Office along with some already delivered mail for that subscriber to convince the postal service that he was real and so was his address.

..... RDEXed

## Miscellany #2

Your little note on ProDOS to DOS 3.3 for sending material to you (COMPUTIST #54, pg. 26) should be put in the "When Writing a Letter to Apple RDEXed" in each issue - I have also been holding off writing because I don't have a DOS 3.3 word processor - dumb! Of course I can convert a ProDOS text file to DOS 3.3 with good old Copy II Plus. I am happy to be one of your volunteers!

Twenty years ago, I was a systems analyst on a mainframe, left the city to return to the country and only got back to computers a year and a half ago with a Laser 128 at home and a IIc at the community center office. (Interesting sidelight - the Laser, IIc and any other 128K machine has as much 'core' storage as the IBM 360-65 that I worked with as part of a large staff.) The first year with a home computer, I read A+ and Nibble and those types of magazines. Then, I discovered Scarlett, Open-Apple, and COMPUTIST, and can let the subscriptions to the others go by-by.

## Last Miscellany

I frequently see letters or bits of articles in COMPUTIST where someone is complaining or requesting a different 'mix' of articles - i.e. more beginner's stuff or less beginner's stuff; more stuff on hardware or stop taking up space with hardware articles; etc. ad nauseum. I think you have a pretty good mix - I would prefer more stuff on application software and less on games (though I play games, too) and more Reviews, but I have finally got the drift that COMPUTIST is very much reader-written. So if I want more of 'my' kind of stuff, I can probably start by writing and sending some in to sort of get the ball rolling.

One thing I hope very much works out is the IBM RDEX. To those "8-bit forever" Apple freaks who have expressed displeasure at this development I would say, "Lighten up". Granted, the IBM world of poor mis-guided souls is stuck with the most vicious 'user-fiendly' interface (MS-DOS) ever invented by the mind of man (and the man who invented it is America's youngest self-made billionaire - proving how many masochists there really are in the IBM world), and granted it is a different world than the one in which we, Apple and Apple clone people, dwell. However, we have

everything to gain and nothing to lose with an IBM RDEX, because if it takes off, COMPUTIST will be a much healthier magazine for it, and WE will benefit. The Apple hacker crowd is of limited size - adding the IBM hacker crowd will provide enough subscriber base to keep COMPUTIST economically healthy and in business (hopefully), and our favorite magazine will continue to survive. (Besides, my oldest son in grad school is stuck with an IBM Clone!)

## Non Miscellany

Right up front now, COMPUTIST is the single best 'textbook' I have come across for helping me understand this neat tool called a home computer. If you can spare the space, I would like to thank some of my favorite and most helpful teachers. Thank you Greg Poulos and Clay Harrell for many clear articles, Joseph Weeks for his explanation of boot code tracing in COMPUTIST #32, Ray Darrah for Super IOB and explanation of same, Peter Rongays for his really excellent explanation of his crack of the ProDOS version of Sensible Speller in COMPUTIST #16, and last but certainly not least, Jim Hart for his many articles AND his **☐M RESET** "absolute reset" for the Laser 128. The **☐M RESET** tip is, for me, worth the price of a year's subscription all by its little ol' self - the rest of the stuff is gravy! It doesn't work every time, but it works often enough to be one of the best learning tools I have on my Laser. Thanks Jim, and the rest, for being my teachers.

And thanks, too, to James Mahr and his crack for Award Maker Plus, which is the one that finally worked to produce a back-up copy for me (COMPUTIST #52). No need to apologize for the lack of 'de-protection' sir - most of us are looking to protect our software investment with a working copy, while the original is stored in a safe place. What a running epic Baudville's Award Maker Plus has had in COMPUTIST. Jim Hart's offering in COMPUTIST #48 (copy your ProDOS to new disk and copy off files on side A); followed by Jon Bernhardt's sector edit crack in COMPUTIST # 50; followed by Edward Teach's "Those cracks didn't work but this sector-edit will" in COMPUTIST #52. None of those cracks worked for me, either, and I was really able to sympathize with Bud Myers (no relation that I know of) and his "cranky letter" - with reprise in COMPUTIST #54. Meanwhile, Baudville announces that as of January of this year, they are no longer going to copy-protect their application programs, including Award Maker Plus! Much sound and fury ending in a whimper, or something like that, except Bud Myers did make a valid point - some people have a real need for back-up disks, but are not assembly language jockeys and techo-freaks, and need a bit clearer, more

explicit, instructions.

I have two contributions to this on-going debate/problem, one shortish and one long.

## Code Moves

Software companies, good ones anyway, are always working to 'improve' their product, be it actual improvement, bug squashing, or changing copy protection because of a COMPUTIST article. Change one line of code, or the order files are on the disk, or upgrade to a newer version of ProDOS or ... and *CODE MOVES*. This means that softkeys that say "Go to Trk X, Sct Y, and change Byte # such and so" or "Bload File X, enter monitor and enter Address X and Code Y" *ARE VERY OFTEN GOING TO FAIL* (often by not much), because the code has moved - sometimes only two or three bytes. So, to add my plea to many others who have mentioned this problem before, please gang - even if you don't have time to write a description of the process you went through to figure out the softkey, at **LEAST** list the code one line ahead and several lines after the code that needs to be changed so we can be sure we are changing the right code.

Case in point: Sensible Speller. After spending six hours trying to deprotect this one, and failing (but learning a lot), I ordered COMPUTIST #16 for Peter Rongays crack. Both Track/Sector location and code had changed for the nibble count routine and checksum, but because Peter had listed the code around them, I was able to successfully track down and deprotect my copy. (Interestingly enough, Sensible Speller is no longer copy protected, either. Good thing - this program is a slug on disk, but works O.K. on a ram disk.)

## The Deprotection Game

Several good articles for beginners in deprotection have appeared in COMPUTIST over the last several years, but they have all been written by non-beginners. At the risk of sticking my foot in mouth, I would like to offer some suggestions to beginners from a beginner because it's hard for a 'pro' to remember just how dumb we are! One example - many COMPUTIST writers mention COPYA. For a person that has entered the Apple world in the past two years, and does not have access to a user's group or local Apple guru, it takes a while to 'read between the lines' and pick up that COPYA is an 'old' DOS 3.3 whole-disk copy program. Face it, much of what is written in COMPUTIST is based on the DOS 3.3 world, and newcomers to COMPUTIST are often also newcomers to the Apple world in general - and know from nothing DOS 3.3. The DOS 3.3 Systems Master Disk is no longer for

sale through normal outlets - so no wonder beginners are confused! The DOS 3.3 and 48K Apple world are great, but the majority of Apple (and Apple Clone - increasingly Laser 128) folks are in a ProDOS and 128K world, and COMPUTIST probably has a disproportionate amount of the 'older' Apple world represented in its articles, although that's changing.

When a first time reader first opens COMPUTIST, there is a lot of 'stuff' that is unintelligible, and it's hard to know how to approach this confusing art and science world of deprotection. Here's my personal, biased, opinionated "How To" based on the last six months of intensive learning and midnight oil.

## Get Ready

1. There is No Free Lunch. It does take some effort and work on your part to learn this stuff, but you have probably already figured that out. There is not now, and probably never will be, a 'Cookbook' approach to deprotection that lists the exact ingredients and steps you need to take to deprotect any and all Apple disks. What is possible is an approach to deprotection that will allow you to get started, and will provide you with a framework to place COMPUTIST articles and 'bits and pieces' of information. My present approach is based on certain minimum skills and a logical sequence of operations that will give you a place to start. Remember, perseverance furthers.

2. Start With Unprotected Disks. Make a copy of an application program and a data disk that never had copy protection. Learn what a 'normal' disk is like with the steps listed below before you try to tackle a protected disk, and save yourself much grief and midnight oil.

3. Pick a DOS and learn it if you are interested more in current application programs and use 64K or 128K + machinery. I recommend you start with ProDOS (which is what I did.) If you're into games and/or older educational software and/or 48K machines, then go with DOS 3.3. The point here is to pick one or the other and learn it well. Once you know one, it is relatively easy to learn the other, because of the many similarities. How to learn the DOS you have chosen? Get a copy of Quality Software's Beneath Apple DOS or Beneath Apple ProDOS and read it through - once quickly. Pay attention to disk formatting, address and data headers, and how the catalog or volume directory is formed. Keep the book at your side as you work through the next steps.

4. Learn the features of your favorite utility. You will probably start with Apple's DOS 3.3 System Utilities Disk (O.K.) or the ProDOS Utility (wretched) or Iic System Utilities (also wretched), but you will also need a utility with more power. My favorite is Copy II Plus, but I also use EDD 4, Super IOB, and Bag of Trix, and have Locksmith 5.0 and

ProSel. If I could only have one, Copy II Plus would be it. Start with a COPY of one of your data disks, and learn how to print a catalog, use the disk map facility to find all the files and gaps in the disk, check drive speed, copy DOS and files until you don't have to think about it - in short, learn how to get around in the 'easy' parts of your utility.

5. Move into the advanced features of your utility. Start with the Sector Editor. At this point, you have to make a big jump - or two. One big jump is into the world of Hexadecimal, because that's what you are looking at when you jump into the Sector Editor. Most (all?) Sector Editors also have an 'English' translation to one side, but you do need to make that shift in your head to 'funny numbers' - and it takes a few hours of effort before it starts to make a certain amount of sense. Pretend you have sixteen fingers, and remember zero is a number. Learn the features within your sector editor. Copy II Plus, for example, can (L)ist (disassemble into assembly language), (S)can (search for a specific byte or string of bytes in Hex or Text), (D)ump a screen to the printer, and a bunch of other useful stuff. Learn what your sector editor can do for you, and how to change specific bytes in a specific sector (Sector Edit - the basis of many softkeys).

The other big mental jump is that most Sector Editor utilities (except ProSel) still deal with DOS 3.3 sectors, and ProDOS stores stuff as two-sector blocks. The addressing is different, and it takes a while to know when you need to worry about this (not often) and when you can ignore it.

The Sector Editor is also the place to learn about disk formatting and the Catalog (DOS 3.3)/Volume directory (ProDOS). Learn how to read a normal Catalog/Volume Directory (your Beneath Apple DOS/ProDOS book is invaluable here), and how to track a file through various sectors/blocks. Start with a short letter you have written - find it in the Catalog/Volume Directory, then track it out to the disk and follow it through sector by sector (text is a lot easier to learn to follow than assembly language!).

6. Learn the Boot. Every time you boot a 'normal' disk, LISTEN to the boot and WATCH the screen. Pay attention. Real attention. By the time you are comfortable in the Sector Editor of your utility program, you will also know what a 'regular' boot sounds and looks like - and much deprotection starts with noticing an irregularity in the rhythm of the boot. If you pay attention as you go along, you will be able to pick up a non-standard boot the instant you see/hear it, and will have a valuable clue as to the copy protection used.

7. Learn how to enter the monitor and move around. The main feature that distinguishes the Apple world from everybody else is the System Monitor - the built in goodie

in every Apple and Laser that allows you to snoop around to your heart's content to see what is stored in your little beasties' electronic brains. This is also the feature that makes copy protection a losing proposition for the software sellers - they can run, but ultimately, they quite literally can't hide. Slow us down and make it tough - you bet. But eventually, somebody can track it down, because of the monitor. Type an address at the asterisk prompt (\*), type L and hit return - Apple brains! With unprotected programs, a **RESET** will drop you into the monitor, and you can run around and find your pre-loaded letter you tracked in the Sector Editor to read again - looks a lot like it did in the Sector Editor, only vertical. Check out one of your own short BASIC programs too - I will leave it to you as an exercise to figure out where to look - but the location is well documented. The monitor is Woz's great gift to anyone that wants to learn about the internals of computers, and it lies right under your hands on the keyboard. Learn how to use this great teacher. (You can dump what you see out to the printer, too!)

8. Learn how to use the nibble editor. Jump back to your utilities program and take a look at your normal disk with the nibble editor. You have just jumped into the weird world of Apple '4 and 4' and '6 and 2' encoding. And you thought hexadecimal was bad! Lucky for us, we don't have to learn very much of this - relax!

What you do need to be able to do with the nibble editor is find the address and data field headers and 'footers' (prologs and epilogs - also called 'marks'), and recognize normal address and data fields and their related volume/track/sector/checksum components. Again, your Beneath Apple DOS/ProDOS has more than all the details you need. The 'marks' are the D5 AA 96, DE AA EB, D5 AA AD bytes so dearly beloved by COMPUTIST crack technicians - for good reason. Altered marks are one of the most common protection schemes, so get a good feel for how to find and recognize regular marks AND the 'look and feel' of the sync fields around them, all with your handy-dandy nibble editor.

Once you have a reasonable handle on the above eight steps, you will understand a lot more of what is being written in COMPUTIST, and will be able to 'follow along' and implement most softkeys. You will also be ready to start some modest deprotection work of your own following the procedures below. There is, however, one more little thing you will eventually have to face - Assembly Language.

9. Learn to read and follow assembly language. Don't run off on me now - I have a great secret to share with you if this step makes you turn white and/or develop nausea. It is a LOT easier to learn to Read and Follow an assembly language program written by someone else than it is to learn to Write and



Debug one of the things. Start with a reasonable book on Apple 6502 Assembly Language, paying attention to 'Addressing Modes'. Remember, Assembly, like most programming languages, has many commands, but only a third or so do 90%+ of the work. Focus on the Load (LDA, LDY, LDX) and Store (STA, STY, STX) commands to and from the registers, CMP (Compare), the Branching Instructions, JMP (jump) and JSR (Jump SubRoutine), and RTS (Return) — and 'afore you know it' you can sort of start to follow an assembly language program around. Read and follow every piece of annotated source code you can find — the Beneath Apple DOS/ProDOS manuals have a bunch, and COMPUTIST often provides listings, as well as softkeys with pieces of listings. Remember, you don't have to become an Assembly Language Wizard, you are just after the ability to follow code around and follow explanations in COMPUTIST. (If you DO become a Wizard, remember to thank COMPUTIST!)

## Deprotect!

OK, so you're a beginner to COMPUTIST and deprotection, and you already know all or most of the preliminary stuff listed above, but still want to know how to deprotect this original disk you have in your drive. There is no cookbook, but here's an approach that may be specific enough to get you started, while being general enough to work:

### 1 Develop a Methodical Approach.

The key to deprotection, especially if you are just starting, is to develop an step-by-step approach and use it on every disk, no shortcuts. With experience will come the shortcuts, but when you are starting, follow a reasonably organized plan of attack. Remember, the programmers that put the protection on the disk probably have more experience than you. A lot more. As a minimum, any approach should result in you learning whether the disk is DOS 3.3, ProDOS, weird DOS (Pascal) or a customized DOS; and a general idea of what method(s) of protection is/are being used. (Thanks to Bill Wilson for this logical insight). I'll describe my approach below, which will do you for starters if you don't have any better ideas. Eventually, the approach you take will depend on your own skills and attitudes, and the utility program(s) you have available to you.

**2 Take Notes.** To back up your approach, take notes, lots of notes, as you go along, especially for your first few attempts. I use a 3-ring binder, with the first section consisting of pages and pages of specific techniques, a page for how to find a nibble count, a page for specific pokes to COPYA and what they do, a page for specific IOB controllers that do neat stuff, a page for different techniques to break into the monitor, a page for

boot code tracing, etc. There is also a page for "Tips", little one and two-line suggestions, tips, and hints that appear with frequency in COMPUTIST. Often there is only a note as to where to find a more in-depth article.

The point of this is to save hours of rummaging through back issues of COMPUTIST and tech manuals looking for a specific item when you are 'hot on the trail' of cracking a disk. Eventually, you will wind up with your own 'cracking manual' that is specific to your needs and skill level, a "personal cookbook".

The rest of the binder is individual sections, each dealing with a specific disk I have cracked or am 'working on'. Each section starts with the generalities of the disk, name, manufacturer, DOS used, probable or known protection scheme(s), and specific COMPUTIST references (if any), and COMPUTIST articles on different disks from the same manufacturer. Next is a page with a dumped disk map and catalog (if possible), followed by: the specific steps taken, hex dumps from the sector editor and monitor (with notes on exactly where the dump addresses start and end), stuff tried and results, etc.

This may sound like too much work, but it can save a lot of back-tracking, especially if you get a good start, then have to lay off for a while. It also provides a history of where you took wrong turns and missed stuff, and finally provides the data you need when you write in your softkey to COMPUTIST for fame, glory, and braggin' rights (who needs money?). Over time, your 'cracking book' will become your most valuable resource. Remember, some software houses use identical or nearly identical protection on all their releases! Along with and part of your 'Notes' are your back issues of COMPUTIST. There are lots of reasons to keep your back issues (and to be very careful about who you loan them to!), but for now, trust me. Hang on to every issue you have!

**3 Protection Schemes.** Any rational method or approach to disk de-protection has got to start with the following fact. There are only three ways a software producer can protect a disk. So stick these three ways between your ears and keep them there.

1.) Put a 'Signature' on the original that is difficult or impossible to copy with normal copiers. This involves either a nibble count, a checksum routine, or both, often pretty well hidden. These are the most logical disks for beginners to start their deprotection work on, and most current protected ProDOS disks are using some sort of signature check(s).

2.) Customize the DOS used to read from and write to the disk, and change the normal disk format. This can involve half and quarter tracking, phantom tracking, funny sync bytes, altered address and/or data field marks — all kinds of mean, nasty, ugly stuff. Many DOS

3.3 disks have highly evolved customized RWTS (Read/Write Track/Sector) to handle wonderous strange combinations of altered marks and weird track usage. Familiarity with Super IOB and RWTS swapping techniques, plus being comfortable with your nibble editor, are reasonable minimum requirements to enter this zoo. If you, as a beginner, come up against such a disk and don't have a reasonably specific softkey to assist you, you may be better off trying something a bit easier. Of course, if your motivation is high, determination is fierce, and perseverance is great, one such disk can provide you with a college AA degree equivalency. Many a hacker has become a hacker through sheer stubborn determination to break one specific disk. Not my style, but if it's your's, have at it. (Remember to take notes!)

3.) Some combination of both (1) and (2) above. (My thanks to Jim Hart for first stating this in a way that sunk home.)

**4 Investigate.** NOW we are ready to start our specific approach. ("About time", you mutter.) There is a definite ProDOS bias in what follows, but much of it will apply to a DOS 3.3 disk as well. This is an approach, not a cookbook, so use what you can.

1.) Boot the original disk. Pay attention to the sounds, the screen, and the rhythm. If a recalibration takes place in the middle of the boot (sounds like a re-boot), say to yourself, "Aha! A nibble count!", because that's what's happening, and is one step you will need to get around, over, or through. Basically, you need to pay attention to the boot and determine where, if anywhere, 'non-standard' stuff is happening, which is easy if you really know what a 'standard' boot looks and sounds like. If the good old Basic prompt (J) shows up during the boot, you probably are dealing with a reasonably standard DOS.

2.) Next, boot your favorite copy utility. CATALOG the disk. If you can Catalog it, you are dealing with a "Signature" disk - no custom DOS or nasty stuff. (Rare exceptions — let's ignore them for now.) Remember, the hallmarks of a "signature" protection scheme usually are: (A) The disk can be cataloged, and (B) the disk can be copied with a normal whole disk copier, and will usually boot, then die late in the boot, at the main menu, or when you try to print (a la Award Maker Plus and Certificate Maker). If you CAN'T Catalog the disk, you are dealing with a format altered (and maybe also signature protected) disk, and de-protection will not be for the faint of heart. A disk that can be Cataloged is a good candidate for beginner deprotection, and you may proceed.

3.) Print out the Disk Map of the disk, then print out the catalog with file lengths right below the Disk Map (this is a Copy II Plus feature). Mark on the Disk Map where each of the files are located. Note, especially, places that show

as used on the Disk Map, but don't show up as you scroll through finding each file. These 'hidden' files deserve high priority when you move on to the sector editor. The Track \$00 blank space on a ProDOS disk may get you curious, but if you have disk-mapped normal ProDOS disks (of course you have - per the introductory course above) YOU know the ProDOS Boot Loader and disk Volume Directory and other neat stuff is in there, don't you? Also note if there is a solidly filled disk from Track \$00 to some point, a gap of unused tracks, and a solid Track \$22 (decimal Track 34). This just yells at you "nibble count track" (or less frequently that the track has weird marks and/or sync fields as part of the disk signature check). Even if you can't find and disable the nibble count or weird mark check routine on the disk, a "Manual Bit Copy" of this 'nibble count track' with EDD 4, complete with screwdriver to tweak your copy drive speed, will often produce a working backup - still with copy protection aboard.

4.) If you are reasonably certain by now you are dealing with a 'signature' disk, and bit copiers are not getting you a working back-up, make a bit copy of the original, put the original in a safe place, and get ready to dive into the copy with your sector editor. If the disk you are trying to deprotect is a ProDOS based disk with a BASIC.SYSTEM file, and the BASIC prompt comes up during the boot between the ProDOS copyright screen and the title screen or main menu of the program, you can try cheap trick #1 before the dive into hexadecimal.

A ProDOS version of the DOS 3.3 RWTS swap: Format a blank disk ProDOS, give it a temporary volume name, and put a 'clean' version of ProDOS and BASIC.SYSTEM on the temporary. Boot the original (not the nibble copy) disk, and when the ProDOS screen clears to the BASIC prompt, bust into that sucker with **RESET** or your favorite technique. What you want is a working BASIC prompt. Pull your original and insert your Copy II Plus disk and enter **COPYIIPLUS/UTIL.SYSTEM**. If you have got your ProDOS pathname trip down, what you will get is the familiar main menu of Copy II Plus, and you can then use the "Copy Files" option to copy the files (except for ProDOS and BASIC.SYSTEM) from the original disk to your temporary disk. Use the "Rename/Volume" option to rename the temporary disk to the same volume name as the original, and give it a try. (Trevor Drover in **COMPUTIST #52** used a similar technique for a Kyocera Unicon disk.)

An even simpler variation, for ProDOS disks that don't use the BASIC.SYSTEM file, but go directly to their own System file, is to make a clean temporary disk with your own ProDOS as above, boot your copy files utility and copy all the files except ProDOS over, then rename the temporary with the original's

volume name. DOS 3.3 users faced with a signature disk, or often with a format change disk, can use Super IOB and the RWTS swap to accomplish the same thing. This cheap trick is always worth a try on "Signature" disks, but it usually won't work, or won't work completely, because some or all of the signature check code is most probably in the System file (ProDOS), or a program file in DOS 3.3.

5.) So put your original disk away and get out your nibble copy of the original, enter the sector editor of your copy utility, and prepare to press the investigation further by diving in for a look at some code.

Where to dive? How to dive? Cheap thrills shortcut numero 2 is to bypass the disk DOS 3.3 or ProDOS, and search the rest of the tracks (consult disk map) for good old hexadecimal 8C C0 (and/or 89 C0) usually found in the form LDA \$C08C or LDY \$C08C when disassembled. (Note: The \$ means hexadecimal number.) This disassembled LDA \$C08C code is saying "Do a direct read of the disk, read a byte and load it into register A (LDA - more correctly the accumulator) or register Y (LDY) or register X (LDX)." When you find one of these 8C C0's, look at the code following to see what the byte is being compared with - if it is a D5, AA, 96, or D5 AA AD or other 'normal' mark, or a series of reads for FF, keep going. These reads are looking for address and/or data fields or sync fields. (See your Beneath DOS manual for examples of this code in annotated form.)

There may also be some BPL's and BCC's thrown in here and there - just try to follow the main track of what is being looked for. Follow the logic of what you are doing here - to do a signature check (nibble count or checksum), some part of the program has to do a specific read of a specific track or tracks and compare it to a specific byte sequence or special sync byte(s). When you find a read (8C C0) or a turn on drive (89 C0) that is looking for non-standard stuff, you are usually getting pretty warm. On ProDOS disks, follow the logic in a mental boot code trace: ProDOS boots itself in, loads the BASIC Interpreter, then looks for the first System file on the disk; 'normally' BASIC.SYSTEM. BASIC.SYSTEM is loaded and looks for a BASIC program called STARTUP, which, if found, is loaded and run. The 'Startup' program loads the title screen, main menu, and maybe a binary file containing assembly language, and you are ready to go. (Beagle Brothers programs are good examples of this - and generally good, unprotected programs as well.) If there is no Startup program, the boot stops with the Apple copyright notice for the version of BASIC loaded, and the BASIC prompt. If there is no BASIC System, the first System file found is loaded - and here is where the signature check usually resides. This System file is usually called some shorthand name XXX of the

program, as in XXX.SYSTEM (HW.SYSTEM for Homeworker, CM.SYSTEM for Certificate Maker, and so on). A quick scan of your printed Catalog down the File Type column for SYS files will find the one you want - usually. (My version of Sensible Speller had an essentially fraudulent BASIC.SYSTEM and STARTUP program which looked very normal on the printed catalog - took me hours to finally get to a SYS file called SPELL, which is where the 'checking' code was. It took Peter Rongays' article to show me where to break the code that I had found and dumped, but couldn't quite get to the last step on.)

You should know two things about this System file before you proceed. Where it is on the disk by Track and Sector, and where it will be in the monitor right after the boot finishes - address \$2000, because that's where ProDOS loads the first Type System file after ProDOS is aboard. Ain't that handy? If it is not at \$2000 after the boot is completed, break into the boot earlier.

6.) So you have found some potentially suspicious code, but maybe your knowledge of assembly language is still a little weak, or you're not quite sure what is going on, because of a bunch of weird code you can't track (remember, some one or more high powered programmer wizard types worked hard to try and make this hard for you). Now what?

7.) Get a print out of the disassembled code, starting a few lines before the area of interest - say at a Return command (RTS - hex \$60). You can do this from your utility and dump to the printer from the disk, or work from the monitor (if you have found where the code resides in memory after loading). Note on the print out where the dump is from, and note key addresses on the listing - you want to be able to get back here easily!

**5 Start Hacking.** At this point, the going gets tough, because there are so many possible paths or branches 'the approach' can take. Here is where your experience, or lack of it; knowledge of assembly language, or lack of it; and ability and experience of cracking other programs begins to come into play. As a beginner, you just have to steal ideas from every **COMPUTIST** article you can lay your hands on! The most important aspects of 'the approach' at this point are:

A. Write down or note on your printout the code you are changing and what you are changing it to.

B. Make only one change at a time.

C. If the change doesn't work, change it back to the original code before you change something else, and note (as in write it down) what (if anything) happened.

1.) First, determine if you can 'soft hack', or have to 'hard hack'. If you know where the code is located in memory after the program loads, and IF you know where the program

starts execution (two big IF's), the 'soft hack' is quicker and probably safer. Boot the program, enter the monitor, find the code you want to change, enter the address of the code, a colon, and type in the new code. Then type the starting address, a 'G' (for Go), and hit return. The program will begin executing, and you can see the results of your change. If you can't satisfy these two ifs, you will need to 'hard hack' - use your sector editor to write the changed code to the (nibble copied) disk. In either case, note the results. If nothing seems to have changed, change the code back to the original and try, try again.

2.) "But, but...", you sputter, "I'm a beginner. Change what code to what?". I don't know, I'm a beginner too! Basically, 'It Depends' on the specifics of the protection with which you are dealing. The basic task is to disable the routine in question, boot the disk, and see if it runs - success! This disablement can be in many forms. Here is a slew of techniques that may be more brute force than sophistication for we beginners, but will provide you with tools to learn with:

(a.) A sequence to Load the accumulator with a disk byte would be BD 8C C0. Change these bytes to NOP's (No operation) by writing over them with EA EA EA.

(b.) Or change your suspicious code by writing over it with 00 00 00 - the BRK (break) command. If you then boot the disk, and as it gets to the nibble count routine it beeps and drops you into the monitor, you can examine the registers (if you know how), and go back and do some more creative things with the code you have changed.

(c.) Or change the code to a jump to the start of the program (for ProDOS a 4C 00 20), which may very well get you into an endless loop. For DOS 3.3, the address can be in a number of different places: check \$07FD, \$0800, \$1000, \$2000, \$4000, and \$6000.

(d.) If you know where the suspicious code or routine in question starts in memory (let's use address \$3F90 as an example), drop into the monitor after the boot finishes and start looking from where the program starts (see above) for a JSR to that address, or an address near it. This would look like: 4C 90 3F (or 4C XX 3F more likely). Look, I'm sorry the dummy 6502 Apple CPU chip reads hex addresses backwards - it makes things more interesting for us, that's all. If you find such a JSR early in the program, NOP it and try to boot the disk. (This is an actual address and example for Certificate Maker, the JSR was found at address \$2000 and was the jump to the nibble count routine. A EA EA EA here bypassed the routine nicely - now all I have to do is find the checksum routine and I'll have a real softkey for you!)

(e.) If the protection is rebooting your

nibble copied disk, or the disk reboots whenever you try to reset into the monitor, use your sector editor and scan for the byte sequence 8D F2 03. When you find it, you should also find near it an 8D F3 03, and F3 04. (The 8D could be an 8E or 8C, or some combination.) Addresses \$03F2 to \$03F4 in your machine's silicon-based brain contain the address of the reset vector. If your protected program is storing \$C6 and \$00 there, you now know why it reboots when you try to reset. NOP (EA) these suckers, or better yet, change the address bytes 00 and C0 to 69 and FF so the reset vector points to your machine's memory location \$FF69 - which drops you into the monitor where you want to be. (Thanks to Dave Templin in COMPUTIST #37 - all beginners order this back issue and put it in your arsenal.)

(f.) If the start of the suspected routine is at (let's say), address 3B00, overwrite the first byte with a 60 (RTS = Return). That way, whatever code jumps to the routine with a JMP or JSR will jump right back, without executing the suspect routine.

(g.) Anytime you overwrite a byte, check the last byte on the "page" (address \$3BFF in our example above) to see if it contains a checksum number. If the last byte is part of an instruction, you're home free. If it's a checksum, it's time to do some hexadecimal math. (Now you know why I went to the nearest K-Mart and picked up the cheapest calculator I could find that handles hexadecimal numbers!) You have to even the checksum up, hexadecimal-wise. Let's say the byte you replaced with the 60 (decimal 96) was a 8D (decimal 141). You are 2D (decimal 45) low, checksum wise, and have to add the 45 to the checksum to keep your program happy.

(h.) etc. There are many, many paths from here - the above is enough to get you started and get you exploring the 'easier' copy protection signature schemes. The 'Cookbook' starts getting real thick here - but the point is to have a standard approach, follow it, take notes, try stuff, and learn. The above approach will give you the framework to get started.

Paul D. Dillon

Softkey for...

**Spell It!**

Davidson & Associates

### ■ Requirements

- Apple II series
- Computist #39
- Sector Editor
- Super IOB
- DOS system master
- 1 blank disk

Spell It! is an excellent educational spelling program from Davidson & Associates. The difficulty level can be set from child level to adult and personalized word lists may also be used. The only softkey I have seen in COMPUTIST for this program involved the use of the Senior Prom in COMPUTIST #43. A copy can also be made using Copy II Plus (v 8.1) by selecting the parameters for Math Blaster.

I was able to deprotect my copy of Spell It! through a modification of Fred S. Long's softkey for Math Blaster in COMPUTIST #53. I also made use of Tim Beckmann's softkey for Speed Reader II in COMPUTIST #39.

**1** Boot the DOS System Master & initialize a blank disk.

### INIT HELLO

**2** Run the Super IOB Controller for Speed Reader II from Tim Beckmann's softkey in COMPUTIST #39. Do not format the backup disk, we did that in step 1.

**3** Remove the hidden control character in Hello. All of the files have a control Z after the first letter of the file name. This can be seen with Copy II Plus using the Catalog with hidden codes option. Only the HELLO file character needs to be removed.

RENAME H  Z ELLO, HELLO

**4** Catalog the copy, then load and search the BASIC programs for "IF PEEK (40324) = 173 OR PEEK (47094) <> 0 THEN". Change these statements to "IF PEEK (40324) <> 173 OR PEEK (47094) = 0 THEN".

These were the files on my disk:

1. SPELL IT! HELLO
2. SPELL IT!
3. SPELL IT! DEMONSTRATION
4. SPELL IT! EDITOR
5. SPELL 1.OBJ
6. HELLO

Individually, load the files, #2, #3, #4, and #6 and check for the offending code. #5 is a text file and #1 contains only "10 POKE 104,32:RUN". When loading the files, don't forget to press  Z after the first letter on all files except HELLO. If you receive a "Program too large" error when loading #2, reboot your copy, and wait a few seconds into the "Loading Program" screen. Then press  RESET to get the BASIC prompt. Next, enter "LOAD S  Z PELL IT!".

I used Beagle Brothers GPLE and searched for "PEEK (40324)". My copy only had the offending code in the SPELL IT! file on program line 284. Lines 12 and 336 had part of the code, but I used the following method to handle them.

On my copy, each of the 3 lines (12, 284, & 336) referred to line 16. This line contained a "PR#6" which is a reboot. Here are the

# Readers Data Exchange

changes that I made:

Line 12 from `IF PEEK (2162) <> 66 OR PEEK (40324) = 173 THEN 16` to `IF PEEK (2162) <> 66 OR PEEK (40324) = 173 THEN GOSUB 16`.

Line 284 from `IF PEEK (40324) = 173 OR PEEK (47094) <> 0 THEN 16` to `IF PEEK (40324) <> 173 OR PEEK (47094) = 0 THEN GOSUB 16`.

Line 336 required no changes.

Line 16 from `PRINT CHR$ (4):"PR#6"` to `RETURN`.

Save the changes to the copy.

## SAVE SPELL IT!

By making all of the THENs refer to a GOSUB and line 16 a RETURN, any error detected that sends the program counter to line 16 will be returned to the line below the one that sent it. This nullifies the error checking and allows the program to continue.

5 There is still some of the offensive code on the disk not shown in the BASIC programs, as at this point the program will still reboot after the "Loading Program" screen. So next, use Copy II Plus or your favorite sector editor and make the following sector edits.

Trk	Sct	Byte(s)	From	To
\$0E	\$06	\$34	D0 31 37 33 CE E2 28 34 37 30 39 34 29 D1 CF 30 39 34 29 D0	D1 CF 31 37 33 CE E2 28 34 37 30 39 34 29 D0
\$13	\$06	\$34	D0 31 37 33 CE E2 28 34 37 30 39 34 29 D1 CF 30 39 34 29 D0	D1 CF 31 37 33 CE E2 28 34 37 30 39 34 29 D0

6 Write the sector back to the disk.

These are additional "Peek" changes referred to in step 4. I found them by using the Copy II Plus sector editor. I searched for TEXT: `-b(40324)P173Nb(47094)Q0`. The "P" or hex D0 is the equal sign and the "Q0" or hex D1 CF is the <> sign. The sector edits reverse these signs as was done in the BASIC programs in step 4. It would be a good idea to search your disk for the above mentioned text or hex D0 31 37 33 CE E2 to make sure that your copy doesn't contain this code in any other areas.

After deprotecting SPELL IT! you can also change the title screen that appears after the "program loading" screen. The names and copyright data are on the disk in several locations, but the location on my copy that pertained to this screen was on track \$15, sector \$01, starting at byte \$3D. You can use a sector editor and search for text "RICHARD" to locate the data if your copy has a different location. I used a Beagle Bros. ASCII chart as a reference in changing the letters to reflect family names instead of Davidson & Associate names.

Spell It! should now be deprotected and COPYA-able. The data disk on the back side of the Spell It! disk is not copy protected. After deprotecting this disk, I checked all of the

functions and they worked properly. Although having subscribed to COMPUTIST since issue #35 I still consider myself a green novice regarding deprotection techniques. Again, my thanks to Mr. Tim Beckmann and Mr. Fred S. Long for their softkeys that guided me in this deprotection. Happy spelling!

Jack R. Nissel

Softkey for...

## Nightmare Gallery

Synergistic Software

### Requirements

- The original Nightmare Gallery disk
- A blank disk
- A blank slave disk with the HELLO program deleted
- Super IOB v1.5

The softkey in COMPUTIST #23 for Synergistic Software worked for this title. If you don't have that issue, type in the controller below, install it in Super IOB and use it to deprotect your disk after doing the following

1 Boot your slave disk and at the | prompt type:

**CALL-151**  
**9600<C600.C700M**  
**96F8:A9 00 8D 4A 08 4C 01 08**

2 Put in your original disk and type:

**9600G**

3 The disk will boot and drop back into the monitor. When it does type:

**1900<B800.BFFFM**

4 Put in your slave disk and type:

**C600G**

5 After the disk boots and the | prompt appears type:

**BSAVE RWTS.NIGHTMARE GALLERY, A\$1900, L\$800**

6 Install the controller into Super IOB, run it and copy your original disk to your blank disk. Answer YES when asked if you want to INITIALize the blank disk.

### Controller

```
1000 REM NIGHTMARE GALLERY
1010 TK = 0:LT = 35:ST = 15:LS = 15:CD = WR:FAST = 1
1020 POKE 775.96
1030 GOSUB 360:GOSUB 490:GOSUB 610
1040 T1 = TK:TK = PEEK (TRK) - 1:RESTORE :GOSUB 310:TK = T1
```

```
1050 GOSUB 360:GOSUB 490:GOSUB 610:IF PEEK (TRK) = LT THEN 1070
1060 TK = PEEK (TRK):ST = PEEK (SCT):GOTO 1020
1070 TK = 0:LT = 1:ST = 1:POKE 47426.24
1080 GOSUB 490:GOSUB 610
1090 GOSUB 490:GOSUB 610
1100 HOME : PRINT "COPYDONE" : END
1110 DATA 10*CHANGES
1120 DATA 0.2.158.222
1130 DATA 0.2.163.170
1140 DATA 0.2.168.235
1150 DATA 0.3.53.222
1160 DATA 0.3.63.170
1170 DATA 0.3.145.222
1180 DATA 0.3.155.170
1190 DATA 0.4.41.150
1200 DATA 0.4.170.170
1210 DATA 0.5.38.0
10010 PRINT CHR$ (4) "BLOAD RWTS.NIGHTMARE GALLERY"
```

### Checksums

1000 - \$356B	1120 - \$0AB3
1010 - \$2544	1130 - \$8927
1020 - \$6AF1	1140 - \$90B3
1030 - \$FBBD	1150 - \$DD6F
1040 - \$F863	1160 - \$6955
1050 - \$C1F5	1170 - \$3BF9
1060 - \$501D	1180 - \$1359
1070 - \$7AAF	1190 - \$30BC
1080 - \$0A55	1200 - \$B341
1090 - \$D048	1210 - \$EBED
1100 - \$65FD	10010 - \$F625
1110 - \$B5CA	

Softkey for...

## Jumpman

Epyx

### Requirements

- The original Jumpman disk
- 2 blank disks
- DOS 3.3 system disk
- COPYA
- Sector editor

1 Boot your DOS 3.3 system disk and at the | prompt type:

**POKE 47426.24**  
**RUN COPYA**

2 Copy both sides of your Jumpman disk

3 Boot your sector editor and make the following change to each side of the disk

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

4 Write the sector back to the disk.

Softkey for...

## Clip Art Collection Vol 1

Springboard Publishers

### ■ Requirements

- The original Clip Art Disk
- 2 blank disks
- COPYA
- DOS 3.3 system master disk

**1** Boot your DOS 3.3 disk and at the ] prompt type:

**POKE 47426,24**  
**RUN COPYA**

**2** Copy both sides of your disk.

That's it. This softkey should work on the other Clip Art Collection disks for The Newsroom by Springboard Publishers.

Softkey for...

## Stickybear Reading Comprehension

Optimum Resource

### ■ Requirements

- The original Stickybear Reading Comprehension Disk
- A blank disk
- COPYA
- DOS 3.3 system master disk

**1** Boot your DOS 3.3 disk and at the ] prompt type:

**POKE 47426,24**  
**RUN COPYA**

**2** Copy your disk.  
That's it.

Softkey for...

## Championship Baseball

Activision

### ■ Requirements

- The original Championship Baseball disk
- 2 blank disks
- Any fast copy program
- Sector editor

**1** Copy both sides of your original disk.

**2** Search side 1 for the byte string A9 56 85.

**3** Look ahead until you find the byte string 38 2A 25 FC.

**4** Starting with the byte with the value A9 that you found in step 2, change all of the bytes to EA, up to but not including the byte with the value 25 FC that you found in step 3.

**5** Change the 25 FC to A9 FF.

**6** Write the sector back to the disk.

Softkey for...

## Simulation Construction Kit

Hartley Courseware

### ■ Requirements

- The original Simulation Construction Kit disk
- 2 blank disks
- DOS 3.3 system disk
- COPYA
- Sector editor

**1** Boot your DOS 3.3 system disk and at the ] prompt type:

**POKE 47426,24**  
**RUN COPYA**

**2** Copy both sides of your original disk.

**3** Boot your sector editor and make the following change to each side of the disk.

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

Softkey for...

## Snoopy's Skywriter Scrambler

### Snoopy's Reading Machine

### Snoopy To The Rescue

### Shifty Sam

Random House

### ■ Requirements

- The original disks
- 2 blank sides for each title (Shifty Sam needs 1 side)
- FID from the DOS 3.3 system disk

**1** INITIALize each side with the boot name "HELLO" and delete the "HELLO" program.

**NEW**  
**INIT HELLO**  
**DELETE HELLO**

**2** Boot your DOS 3.3 system disk and at the ] prompt type:

**POKE 47426,24**  
**BRUN FID**

**3** Use this to copy the files from both sides of the original disk. When asked for the file name use "=" and when asked if you want prompting answer "No".

Please note that if, when you boot your original disk, a screen comes up saying "THIS DISK BELONGS TO"; you must do the following to your blank disks instead of step 1.

**1** Boot your DOS 3.3 system disk, insert your blank disk and INITIALize it with the boot name "STEX".

**NEW**  
**CALL-151**  
**9E42:34**  
**3D0G**  
**INIT STEX**  
**DELETE STEX**

*allows binary boot*

Use FID as shown above to copy the files to this disk.

On some of the newer releases of these titles there is no screen saying "THIS DISK BELONGS TO". If you have these disks and you want to put this screen on your copy, just copy the file STEX from one of the deprotected disks that does have the screen to your deprotected title that does not and then change your boot program to BRUN STEX instead of RUNning HELLO. Make sure you have enough space on the disk for this additional file. If you don't know how to change the boot program just INITIALize a blank disk STEX as shown above and copy all of the files from the original disk to it and then copy the file STEX from a deprotected disk to the disk also.

\*IIGs Softkey for...

## Calendar Crafter

MECC

### ■ Requirements

- The original Calendar Crafter disk
- A blank disk
- Any fast copy program that will ignore errors
- A sector editor

I want to thank my good friend Don McClelland for this softkey.

**1** Fast copy your original disk and ignore a read error on block 8.

**2** Make the following change to your copy.

Block	Byte(s)	From	To
\$567	\$1D	B0	90

**3** Write the sector back to the disk.

If you have a IIGs and find that some of your older II software will not boot, try changing the speed in your control panel to



normal. I found this to be the problem on two titles from Penguin/Polarware, a protected copy of Crime Wave and a deprotected copy of Bouncing Kamungas. What would happen is that it would read the first track and then freeze. Turning on the alternate display mode did no good; but when I changed the speed to normal, both of the programs then booted fine.

*Softkey for...*

**Beyond Pinball**  
Prime-Ware Creations

**■ Requirements**

- The original Beyond Pinball Disk
- A blank disk
- DOS 3.3 system disk
- COPYA

**1** Boot your DOS 3.3 system disk and at the ] prompt type:

**CALL-151**  
**B942:18**  
**B988:18 60**  
**B954:29 00**  
**RUN COPYA**

**2** Copy your original disk.

That's it, your copy should work with no further changes to it.

**Edward Teach**

*Softkey for...*

**Printographer**  
Southwestern Data Systems

O.K. so this is rather ancient. It's still a fun disk to work with. The disk was "COPYA" except for sectors \$08,\$09 and \$0A on track \$02. Here the data prologue was not the normal D5 AA AD but instead was D5 AA E9. I scanned around in DOS and could not find any changes to the CMP #SAD (located at \$B8FC). Then I searched the disk for references to this memory location. The code listed as:

```
A9 E9   LDA #E9
8D FC B8 STA $B8FC
```

Later

```
A9 AD   LDA #SAD
8D FC B8 STA $B8FC
```

I changed the LDA #E9 to LDA #SAD and booted the disk, it worked fine. However, when I try to run it with a different DOS, it dies a horrible death—leave the DOS alone!

**1** Run COPYA and when prompted for the drive number press **[C]**.

**2** Then type:

```
70
POKE 47357,234
POKE 47358,234
RUN
```

**3** Make the following sector edits to the copy

Trk	Sct	Byte(s)	From	To
\$02	\$02	\$BC	E9	AD
\$04	\$01	\$E4	E9	AD

Enjoy!

**Gerald E. Myers**

Here's a semi-softkey for Micrograms Publishing.

*Softkey for...*

**Real Math**  
**Picture Phonics**  
**Reader's Treasure Chest**  
**Calendar**  
Micrograms Publishing

**■ Requirements**

- Any whole disk copier that can ignore read errors.
- A bit copier that can copy a single track.

Micrograms Publishing produces educational software for the pre-school and grade school set. Similar to most educational software, Micrograms programs come on 5 1/4" floppy disks which are write-protected and encased in a reasonably sturdy jacket - and are copy protected. The programs are well done, but the lack of a stated replacement policy, coupled with the \$65.85 cost of the three-disk Real Math set and \$59.85 three-disk Picture Phonics set led a local school teacher to request my assistance in producing back-ups. (The other two single disks are \$19.95 each.) The teacher was generally pleased with the features of the programs, but was less than thrilled with the thought of original disks in use by 4 to 10 year old children. The short story is that the Calendar disk was unprotected, and all the other disks were protected with an identical change to the Address Prolog on Track \$01 only - from the normal D5 AA 96 to D5 AA B5.

The above information is enough for most COMPUTIST readers to produce normalized back-up copies of these disks with standard 'Ignore' Pokes to COPYA; combined with a RWTS swap. (Changing address \$B969 from

C9 96 to 29 00 in the monitor, or a POKE 47465,41 and POKE 47466,0 at the BASIC prompt after loading COPYA from the DOS 3.3 System Master Disk should allow COPYA to ignore the third byte [96] of the Address Field Prolog. However, I was really pressed for time, and all my neat hacking tools were at home, so I cheated. The 'Cookbook' method that follows produces a back-up disk that retains the copy protection of the original, but boots and runs fine. This met the goal of the teacher, who just wanted working back-ups in order to keep the originals safely stashed away. For those ready to proceed, jump to the 'Cookbook', or use your own technique and normalize the disk. As an aid to beginners, of whom I am one, here is the process I used to 'figure this one out'.

I was told that all the discs were copy-protected, and so I started with the Calendar program that teaches children days, weeks, and etc. Unlike the other disks, this one was less sturdy; and was not write-protected. First step was to boot the disk, listen to the boot (noting a BASIC prompt), and work through some of the program. Next, Copy II Plus was booted, and the Calendar disk was cataloged. It cataloged fine, leading me to suspect normal DOS 3.3 and 'Signature' protection. I then spent 10 minutes dumping a Disk Map and Catalog to the printer and tracking down the location of all the files. Finding no 'hidden' files, I decided to try the Copy - Disk option of the Utilities menu of Copy II Plus to see what kind of errors would be generated, if any. Lo and behold, the disk copied without errors, booted and ran fine. I felt rather dumb - it had taken me 10 minutes to figure out this particular disk was not copy-protected. Some hacker! The moral of the tale is: If in doubt, try the fastest, easiest way first, before spending a lot of time investigating.

A bit red about the ears, I began the investigation of the Real Math disks with a cold boot of the first in the series. A very short boot lead to a "Sound on (Y/N)?" which after response led to another short boot to the Main menu. A much longer load then takes place before delivering a Title Screen, two screens of instruction, a request for the student's initials, and finally - the first set of problems chosen. All the Real Math and Picture Phonics disks followed this general pattern. During this process, I noted that a **[RESET]** always dumped me back to the first "Sound On" menu, and an **[C] [RESET]** rebooted the whole works. This indicated the need to find and modify the reset trap if the going got tough. (Fortunately, it didn't.) In addition, the lack of a BASIC prompt, coupled with the fast boot, indicated a modified DOS. Time to move the study to the next step:

Copy II Plus was rebooted and an attempt made to Catalog the disk. The "Select Device" menu gave me a volume name of DOS 3.3 for

the disk, but the attempt to Catalog 'rewarded' me the famous "Not a ProDOS or DOS 3.3 Disk" message. At least I could spend my time working on some sort of real protection scheme! Back to the Utilities Menu of Copy II Plus to try the Copy - Disk option. Even though I knew by now I was dealing with some format alteration as a minimum protection, this whole-disk copy option will reveal if every track is altered or not, and can save a lot of time searching through the nibble editor. Usually, you get a series of Read Errors for every track, and after 5 or 6 tracks can give up this shortcut. This time, however, I was in luck. The disk copied fine, with only one Read Error on Track \$01. A quick jump into the Nibble Editor option for a look at Track \$01 revealed the altered Address Prolog byte. Short of time now, and remembering the extra work spent trying to de-protect the unprotected disk, I tried another quick and dirty shortcut: using the Manual Bit Copy option, I re-copied only Track \$01. It worked! The rest of the disks were similarly backed up, and while the copy protection remains on them (at least until I get back to them some day), they boot and run fine, and can be released into the classroom.

**1** Copy the original disk with any whole-disk copier that will ignore read errors on Track \$01.

**2** Use a bit/nibble copier to recopy Track \$01.

**3** Write protect your back-up and turn it loose in the classroom.

## Patchin' ProDOS 1.1.1

The following is written long, for the beginner, with a minimum necessity to 'read between the lines'. It is not meant to be patronizing to the many readers who already know this stuff - but 'this stuff' is sure not obvious the first few times around.

When Apple Computer introduced the DISK II in 1978, they also introduced an operating system to make use of the disk: DOS 3 introduced June, 1978. This was soon replaced with 'bug fix' version DOS 3.1 in July, 1978. Then the Apple II Plus and Autostart ROM required a new version of DOS: DOS 3.2, introduced in February, 1979, followed by minor upgrade DOS 3.2.1 in July of 1979. In August, 1980, DOS 3.3 was released, with a minor upgrade release in January, 1983 to coincide with the introduction of the IIe. DOS 3.2 had a 13 sector per track format, which was changed by DOS 3.3 to a 16 sector per track format; increasing floppy disk storage capacity by some 20%. DOS 3.3 has had a long and honorable run as the Apple Operating System, and is still used in many 'stand-alone' programs

- especially copy-protected ones (i.e. games and educational programs). It is well documented, well understood, and is preferred by many programming wizards for several reasons. It is a good operating system that will be around the Apple world for a long time.

However, DOS 3.3 is tied to the 5¼" floppy drive, and the use of hard disks and the introduction of the 3½" drives began to push the DOS 3.3 limits on the number of files allowed and on file size. In addition, 'stock' DOS 3.3 is a bit slow in getting bytes read from disk into memory. To address the need for speeded up disk access and a device-independent operating system that would work with 'volumes' of data, (however those volumes were stored,) Apple introduced ProDOS: the Professional Disk Operating System, in January, 1984.

Apple ordained ProDOS the 'replacement' for DOS 3.3 as the standard Apple II operating system. Like Apple's many apparent attempts to 'replace' the II system with Mac's, DOS 3.3 remains alive and well, thank you, for many good reasons. However, DOS 3.3 is no longer officially supported by Apple, and Apple DOS manuals and the Apple DOS 3.3 Systems Master Disk are becoming harder to find. In addition, most new application programs for the II series are being released with ProDOS, so even the most hardcore 'DOS 3.3 forever' folks need some familiarity with this operating system. Unlike the relatively stable DOS 3.3, ProDOS has had many incarnations in it's four and a half year life. My archive files contain the following versions:

ProDOS	1.0.1	1 Jan 84	30 blocks
ProDOS	1.0.2	15 Feb 84	30 blocks
ProDOS	1.1	17 Aug 84	30 blocks
ProDOS	1.1.1	18 Sep 84	30 blocks
ProDOS	1.1.1	16 Jun 86	30 blocks
ProDOS 8	1.2	6 Sep 86	32 blocks
ProDOS 8	1.4	17 Apr 87	32 blocks

The dates shown are the ones on the ProDOS copyright screen when the disk is first booted and the ProDOS kernal loads itself and goes looking for a system file to load. If you CATALOG a disk, the 'Modification Date' may be different than the 'screen date'. For example, both my ProDOS 8, version 1.2 disks - each from a different software house - show a September 6 screen date, and a November 6, 1987 modification date; indicating a minor change made by Apple that did not result in a revision number change. There are probably other versions of ProDOS out there with other dates on them, but by now you get the idea - Apple has fiddled with this operating system a great deal more than they did with DOS 3.3.

Writing program code for operating systems is one of the blacker of the black arts, because a 'fiddle' can result in some weird side effects that are not always easy to track down.

So it was with the introduction of ProDOS 1.1.1 in the fall of 1984. In 1985, Apple users began crashing data disks. Examination of the disks always showed the same problem - Track \$00 was trashed. As Track \$00 contains the Volume Directory (Catalog) of the files on the disk, results were in the 'catastrophic' category. If Track \$00 and the volume directory files could be salvaged or reconstructed, the files on the disk could be accessed just fine. This reconstruction was not a task for the faint-hearted: my ProDOS education started with rebuilding several 'must have' disks for friends with this particular problem. Throughout most of 1986, this problem was tracked in Open Apple, with most suspicion being placed on the power supply. Finally, a hero named Stephen Thomas in Australia tracked the problem down to ProDOS 1.1.1 and figured out the patch required. 'Tis a good thing Apple, like most software producers, basically doesn't warrant its' software to perform as stated: a lot of programmer/hacker time was spent, and more than one perfectly good power supply was swapped out, in an attempt to crush this bug. Even more time was spent repairing the damage to trashed data disks in order to retrieve valuable or irreplaceable data. Imagine if Apple would have had to pay up because its' "official" disk operating system had a fatal flaw that trashed data while attempting to read or write a file! But I digress...

The moral to the tale is: if you have ANY disk that writes to or reads from disk AND has ProDOS 1.1.1 aboard, patch it or dump it. If you don't, sooner or later you will get the dreaded 'I/O Error', or 'Unable to read files' message. The best solution is probably to dump it - obtain a disk with a version of ProDOS 8, and use any 'copy files' utility to copy the newer version over the top of the older version. The only problem might be on a 'stuffed' disk: ProDOS 1.1.1 is 30 Blocks long, and ProDOS 8 is 32 Blocks. If space is a problem, try to find a ProDOS 1.0.1 or 1.0.2 to replace the fatally flawed 1.1.1. *Under certain circumstances, copying a licensed version of ProDOS from one system licensee to another may be 'illegal' - even if it is to fix a fatal flaw - i.e. the usual fine print in the software that goes "Apple Software shall not be copied onto another disk (except for archival purposes) or into memory unless as part of the execution of XX program. When XX has completed execution, Apple Software shall not be used by any other program."* So much for the ProDOS quit code and pathnames. If you are not into a commercial operation, this is probably not as great a concern as the integrity of your data being stored and fetched by a DOS that won't trash the works while doing it's thing.

The patch option involves adding a command to put the drive in read mode before turning on the drive motor (a safety check

always done by 'old fashioned' DOS 3.3), and changing some 'Store A' commands to 'Load A'. All you oldtime hackers can skip this next part - this is for the folks who are new to 'patchin and hackin' and don't have a local guru to answer all their questions.

One basic process to patch or fiddle with any system file is to: (1) Unlock the file if locked, (2) BLOAD the file to a specified address - usually \$2000, by specifying the address and file type, (3) Enter the monitor and check the bytes to be changed to insure they are where they are 'supposed' to be, (4) Enter the new data - the patch proper, (5) BSAVE the file with its name, address, length and system type, and (6) re-lock the altered and saved file. In effect, you are performing a 'sector edit' of the file, but are changing the bytes in the monitor instead of directly on the disk.

## Patching ProDOS 1.1.1

**1** Get ready. Use the 'copy files' option of any ProDOS utility to copy your PRODOS 1.1.1 system file, and the BASIC.SYSTEM system file (if available) to a blank disk. Work with this copy.

**2** Boot this disk, set your caps lock key on, and from the BASIC Prompt:

### UNLOCK PRODOS

**3** Load ProDOS into memory starting at address \$2000: (without starting it running - you just want it to lay there, waiting for your surgery.)

### BLOAD PRODOS, A\$2000, TSYS

**4** Enter the monitor:

### CALL-151

**5** Check for a "hole" to enter the first patch. (In this case, we are checking for the presence of three or more EA (No operation) commands):

### 5004L

The hexadecimal address \$5004 and capital L will cause your Apple to disassemble and list the contents of memory starting with \$5004. At \$5004, \$5005, and \$5006 you should find a 'run' of EA's. If you don't find this 'hole' between \$5000 and \$5010, you may have an already patched version, or you have loaded something other than ProDOS 1.1.1., or you have loaded it starting at the wrong address. Try again.

**6** Enter patch to put drive in read mode:

### 5004:BD 8E C0

**7** Check what you have entered.

### 5000L

You should see a line at \$5004 - BD 8E C0 LDA \$C08E,X. Ain't that fun?

**8** Enter patch to change STA's to LDA's. First, check the current listing:

### 56C0L

You should see four lines of 9D xx C0 starting at \$56C3 or so. (The xx's are various values.) We need to change the 9D's to BD's.

### 56C3:BD

### 56C6:BD

### 56C9:BD

### 56CC:BD

**9** Check your patch.

### 56C0L

The four changed lines should be BD's, and you should be reading LDA \$C08x,X.

**10** (Optional Step) I have found it a good practice to note on the ProDOS startup screen that the version being loaded is patched. This is also a way to 'personalize' your version of ProDOS.

### 24E2L

You should see "AppleIIPRODOS 1.1.1" etc listed vertically. A good place for the patch is over the date at \$24F9 to \$2501.

### 24F9:A0 D0 C1 D4 C3 C8 C5 C4 A0

This will result in "PATCHED" appearing where the date used to be on the ProDOS copyright screen each time you boot the patched version. Consult your "Display Character" chart for more creative and/or personalized messages.

**11** Save your patched version. First get back to the BASIC prompt.

### 3D0G

"Three Dog" or hit the F4 function key on the Laser 128.

### BSAVE /YOUR.DISK.NAME/PRODOS, A\$2000, L\$3C00, TSYS

**12** Finish the job:

### LOCK PRODOS

You now have a 'safe' version of ProDOS 1.1.1.

Stephen George

I would like to make a suggestion. I like to photocopy the Contents page which I then store in a binder for convenience. COMPUTIST #56 uses a red/orange color which effectively "copy protects" the contents page—even using a color original at my local print shop's machine gave me an unreadable page.

Please consider either just using light colors, or removing the background colors from the Contents page. Thanks.

Jeff Hurlburt

The

# PRODUCT MONITOR

Ratings

☆☆☆☆☆	.....	SUPERB
☆☆☆☆	.....	EXCELLENT
☆☆☆	.....	VERY GOOD
☆☆	.....	GOOD
☆	.....	FAIR
☹	.....	POOR
☹☹	.....	BAD
☹☹☹	.....	DEFECTIVE

## Quest for Clues

by S. Adams  
from Origin Systems

192 pg. Softcover: \$24.99



No gaming experience is more frustrating than coming to within a gnat's eyelash of polishing-off some adventure epic only to find yourself rock-solid stuck. Despair not! Origin Systems has come to the rescue with "Quest for Clues", a compendium of solutions to fifty toughies drawn chiefly from the '85-'87 era. Grouped in sections with titles like "Fantasy Lands" and "Science Fiction" are 'cooks' for text and picture-text favorites (e.g. "Breakers", "Lurking Horror", "Oo-Topos", and "Tass Times"), map/maze adventures (e.g. "Wrath of Denethenor", "Ultima IV", and "Rings of Zilfin"), plus others, like "Universe II" and "Roadwar 2000".

Each entry begins with an overview covering scenario, objectives, and general play guidelines. For text and picture-text adventures the remainder of an entry consists of maps plus a step-by-step "walkthrough". In map/maze adventures the walkthroughs emphasize strategy, important items, and 'what to look for' (or lookout for) in key locations. Format is nicely suited to deliver the most punch per page; so you will find bushels of clues for games like "Might and Magic" and "Bard's Tale I" but

only a few of the more critical maps. Since the really meaty parts of each clue are in letter-substituted code, you can peruse a walkthrough and zero-in on a problem area without fear of stumbling upon solutions you would rather discover yourself.

Experienced adventure gamers will already be somewhat familiar (via reviews, friends' comments, tryouts, etc.) with many of the products covered. For them the information supplied can help turn up good prospects for future play. The book, however, is not intended as a selection guide— not when every game, including several grade A turkeys, is presented in the most favorable light possible. (Well, one could hardly expect the editor to say something like "This game is really a lemon" and then devote three or four pages to a solution. "Quest for Clues" is upbeat stuff.) If, as claimed, the goal is to present solutions for fifty of the toughest adventures, then many weakies (with their crude parsing, glitchy design, and cumbersome player interfaces) surely qualify. Some games actually become playable thanks to the hints furnished.

With a few notable exceptions (e.g. "Elite" and "Realms of Darkness"), if you are looking for help in a quest, there's a good chance you will find it here. Including an entertaining early-days-of-adventure-gaming history, loaded with illustrations, and 'finished' with a beautiful cover, this large format (8.5" x 11") reference is not only useful, but a legitimate adventure gamer's collectors item as well.

## Blackjack Academy

by D. Saunders and Westwood Assoc.

\$39.95

Microillusions



### ■ Requires:

512K IIGS  
one 3 1/2" drive

There is widespread agreement that blackjack probably gives casino gamers the best break, possibly even a slight advantage, vis-a-vis the house. So, are the casinos in Las Vegas and Atlantic City using their blackjack tables for tax write-offs? Don't bet on it! Turning a small edge into tangible winnings takes skill and discipline, assets most players lack, but which YOU can develop at Micro Illusion's "Blackjack Academy".

Combining entertainment and instruction, the Academy supplies a full range of professional-class gaming features. You can start by seating up to five players, each marked

by a hex in a semi-circle across the middle of the screen; or you may load a previously saved game situation from disk. Either way, 'Player Setup' lets you modify names and bankroll amounts and decide whether or not the 'show-hand-value' option is selected for a player. Speed is settable from a leisurely "Slow" through "Very Fast" (it is!); while 'Rules' choices affect number of decks used, min/max bets allowed, dealer must-stand 'soft' counts, 'surrenders', splits, etc.. You may adopt 'standard' rules for Las Vegas, Reno, or Atlantic City; or select "Custom Rules" to accommodate special setups.

During play, the program displays name, cards dealt, and current bankroll at each player's position, and opens a special window near the bottom of the screen to handle split hands. All decisions— betting, stand, hit, doubling down, surrender, splits, and insurance— are made via clickable buttons just below the main menu bar. Since the Academy encourages learning a simple "card counting" system, you may opt for a continuous "count" display or obtain the current count via a menu toggle. This way, any player can quickly check the accuracy of his or her count. Additional "Strategy" aids include pull-down text refreshers on "Betting" and "Play", plus individual(!) "Optimal Play" advice for the current hand.

While the eight-page manual does a good job of outlining blackjack rules, defining terms, and describing program functions, most real 'book instruction' comes from a series of ten on-screen text units. Accessed under "Help", the discussions cover such topics as "Hard/Soft Totals", "Card Counting", "Splitting", "Doubling Down", and "Money Management". Finally, the package includes a color-coded "Optimal Play Quick Reference" card. It's about the right size for purse or wallet and a great help for honing play in sessions away from the computer.

Presented in 640 x 200 super-res, "Blackjack Academy" delivers exquisitely detailed, nicely scaled displays (cards measure approximately 2 cm. x 3 cm. on the standard IIGS screen) and realistic sound. A weakness is file handling, you must remember the name of any loaded game file and reenter it upon a save. However, saves are quick, do not disrupt play, and so compact that there is enough space right on the Academy diskette to maintain the game records for an entire users group!

Your friendly Academy dealer handles the cards, 'announces' results, and takes care of bookkeeping; so, all you have to do is play, learn, and, in fact, have a good time. If you've been looking for first-rate tutoring, a 'sure thing' in entertainment, and absolutely the best in casino cardgame simulations, "Blackjack Academy" has a chair with YOUR name on it.

## Ultima V: Warriors of Destiny

\$59.95

Origin Systems



### ■ Requires:

64K Apple II series  
one 5 1/4" drive  
second drive optional  
128K plus "Mockingboard", "Phasor", or  
MIDI required for music

This latest of the Ultima's sends you off to rescue dear old Lord British, King of Britannia, who has managed to get himself snatched by the forces of evil while on a sight-seeing tour of the pitch black, monster-drenched Underworld. Whereas your main concerns in "Ultima IV" were to recruit allies and gain avatarhood, in this sequel you must work against an ambitious usurper, collect certain key items (a scepter, crown, etc.) and get to the king somewhere in a dungeon at Underworld's center. Your character (i.e. the YOU in the party of six) begins as an avatar and may be a transfer or newly created.

Retaining essentially the same locale, weapons, magic, combat scheme, and monsters, "Warriors of Destiny" could just as well be "Ultima IV.2: Revenge of the Avatar" (or "Avatar: First Blood, Part II"! ). The new game does offer MORE (towns, castles, dungeons, etc.) and BIGGER. The Underworld is a collection of regions (accessed via dungeons) equal in size to Britannia. Sound effects and animation are improved; and you do encounter a generally more realistic world. Townspeople, for instance, are more conversant, merchants keep schedules, and interiors are more elaborate, including such embellishments as a rotating beacon on the top floor of a lighthouse.

Anyone who recalls the "Ultima II" debacle can at least empathize with an occasional decision to 'play it safe' and stay with a successful format. In so doing, however, the Ultima people relinquish any claim to being at the cutting edge of map adventure design. Failure to implement IIGS graphics and sound is only the most obvious indicator. Of more real concern are the systems for handling weapons and magic— these now rank among the least well defined, least entertaining of any major new adventure— and pacing. Somehow, your characters achieve their ultimate powers with about a third of the game remaining, mostly combat in one dungeon room after another. "Ultima V" s tactical combat scheme is a good

one; but not that good. (Nobody's TC scheme is THAT good.) With the challenge gone, and lacking an option for quick "computer resolution", too much of the game is anti-climatic, even tiresome. Once play starts to become work, it's time to 'wrap it up', let the fat lady sing, and celebrate victory.

So, to paraphrase an old Beatle's hit, "will you still love me when I'm Ultima V?" Probably, though I suspect that this is the last remake of "Ultima IV" adventure gamers will tolerate. The bugs, evident in some early releases, seem to be fixed; and you will find the expected classy manual, reference card, and other support goodies (including yet another cloth map). Spread across eight diskette sides, "Ultima V: Warriors of Destiny" is slightly less difficult than its predecessor, but still good for 75-100 hours of play.

## FAST FRAMES, UPDATES, ETC.

### Another Stick

When I asked the major joystick vendors for samples of their wares for the May reviews, each sent a right-angle pot model. This led me to conclude that other technologies were out of the running. Not so! In a reply to the reviews, Scott Fink of Suncom notes that their pressure sensor technology "Starfighter" models for Apple and IBM continue to be widely marketed.

### Golden Double-Hires

When a teacher wrote to me requesting help in locating a double-hires picture packer, I figured "No problem, I'll just dig up a few good ones and send off a list." Such, alas, are the pitfalls of moving directly from II+ hires to IIGS super-res. True, the best DHR painters will pack and unpack pictures; the DHR utility in Baudville's "816 Paint" system is a good example. Evidently, however, only Beagle Bros. offers a well-documented DHR packer/unpacker designed to be 'lifted' and implemented in user programs. From the Golden Age of double-hires, the utility is named "DOUBLE.SCRUNCH", and it's just one of several DHR and DLR (double-lore) goodies included in "Beagle Graphics" (\$59.95, 128K Apple II required). DOUBLE.SCRUNCH BLOADs at \$7000, takes up only two pages of memory, and can easily double the number of DHR pictures you can squeeze onto a diskette.

Other juicy BG utilities include a DHR drawer (with cut-and-paste), font editor, color-changer, and slide shower, plus hires-to-double-hires converters. Two BASIC extenders, "DGHR" and "DGR", let you add a total of 25 new DHR and 8 new DLR '& commands'

(e.g. "& BOX", "& FILL", etc.) to your programs. Mouse, joystick, and keyboard inputs are supported; and everything comes (unprotected) in both DOS 3.3 and ProDOS. Supplied with detailed documentation and colorful 'commands card', "Beagle Graphics" is THE gateway to implementing double-hires.

### Wombala's Wonderful Walk

Okay, so you've made it into the dungeon at the center of "Ultima V's Underworld only to encounter THE insoluble room. (i.e. You know there is an exit; but it's sealed or there's 'no way' to reach it). Not to worry. If you are on a IIGS with "Diversi Hack" or "Visit Monitor" installed, then Wombala's Wonderful Walk is at your disposal. Named for a sorcerer of the ancient Zulu empire, this realtime map-diddling spell replaces rocks, water, etc. with nice firm ground. When in the room, just do a **[CMD]ESC**, select Visit or Hack, go to the monitor and enter 800.878 **[RETURN]** to display the 121 bytes of the current 11x11 room map. \$FF's are blanks, \$4D's are rocks, etc.. Now type-in \$05's wherever you want open ground; return to the game; and, ZAVOOMBAL!, your Wonderful Walk is ready.

### Vendors

**Beagle Bros.:** 6215 Serris Square, Suite 100, San Diego, CA 92121 (800-345-1750, in California call 800-992-4022)

**Microillusions:** P.O. Box 3475, Granada Hills, CA 91344 (800-522-2041)

**Origin Systems:** 136 Harvey Road, Building B, Londonderry, NH 03053 (603-644-3360)

**Suncom:** 290 Palatine Road, Wheeling, IL 60090 (312-459-8000)

Dr Frank Lowney

## Improving Your Control of the ImageWriter II (and many other printers) From Within AppleWorks

The ImageWriter II is a very capable printer. To confirm that fact, just inspect the fold-out Quick Reference Card in the back of your ImageWriter II Owner's Manual. There you will see that there are some 85 different functions available to those who know how to get the appropriate messages to this printer. The same can be also said for many other printers, including the popular Epson series—check your user's manual.

All you need to do to get access to the vast majority of these features of the ImageWriter

II, and many other printers as well, is to learn how to send escape sequences to the printer. An escape sequence, from the printer's point of view, is ASCII character 27 (generated when the escape key is pressed) followed immediately by one or more other ASCII characters that specify to the printer what is to be done. The escape character says, "There's a command coming", and the following character(s) say(s), "Do this."

Some of the more exciting ImageWriter II printer options that are normally unavailable to AppleWorks users are such goodies as printing in color, printing with alternate (downloaded) character sets, printing MouseText characters, mixing different character sizes within a line, boldfacing an entire document, and printing bit-image graphics.

The reason that these features are not available to AppleWorks users has to do with the fact that AppleWorks offers only the most commonly available printer options, things like underlining, boldfacing, changing characters per inch, and the like. Moreover, even these selected features are available only under some rather stringent limitations. For example, boldfacing stops whenever a carriage return is encountered and characters per inch cannot be changed within a line.

The reason for these limits may have had something to do with the desire to present the user with one set of options for all printers supported. This way, the manual could avoid a complex discussion of variations between printers. Engaging in such an activity would not be in keeping with Apple's current commitment to ease of use.

On the other hand, there's AppleWriter. Users of AppleWriter, a powerful stand-alone wordprocessor from Apple, are able to embed into a document most of the control characters or escape sequences that commonly control just about every kind of printing device available today. This is done with the AppleWriter Virtual **[OV]** command. Pressing **[OV]** in AppleWriter causes the characters following this command to be interpreted literally, that is, as printer commands, and not as letters to be printed. Pressing **[OV]** a second time restores the situation to one in which all subsequent characters sent to the printer are interpreted as letters to be printed.

The AppleWriter user simply communicates with the printer in a more direct fashion. For example, to get an ImageWriter II to begin printing 17 characters per inch, one must send to it the command, **[ESC] Q** (**[OV]**, **[ESC] Q**, **[OV]**). This is somewhat less intuitive than in AppleWorks where one simply enters the printer options menu with an **[GO]**, types the "CI" mnemonic for characters per inch, and then types "17" to indicate how many characters per inch.



ProDOS AppleWriter (Version 1.2) is the latest version of a program that began its evolution when Apple's marketing strategy was aimed at the hobbyist, a.k.a. the "hacker" types, who were both willing and able to forgo intuitiveness and deal with greater complexity in order to obtain a high level of control over their Apple computers and peripherals.

Here's an example of how AppleWorks and AppleWriter differ with respect to printer control. If you were using AppleWriter and had an ImageWriter II printer and wanted to put a MouseText Open Apple in the middle of a sentence, you would simply imbed the command **ESC** **Ⓜ** into the text (**Ⓜ** **ESC** **Ⓜ** **Ⓜ**) to enable the MouseText characters and then follow it with an "A". The "A" would be printed as a cute little Open Apple. Then you would imbed the command **ESC** **Ⓢ** (**Ⓜ** **ESC** **Ⓢ** **Ⓜ**) to return to the use of the regular ASCII characters. In short, with AppleWriter you can exercise full control over your printer. Sad to say, however, there's no way to do anything like this using AppleWorks as it comes out of the box.

Is AppleWorks some sort of "poor relation" to AppleWriter? Certainly not. AppleWorks is quite a bit more versatile than AppleWriter in many respects even without considering the data base and spreadsheet modules of this integrated program. For example, the AppleWorks word processor enables the writer to have up to 12 documents in memory at once and, further, permits the user to cut and paste document segments between and among them. With AppleWriter, you work with one document at a time.

The inability of AppleWorks to exercise more control over such capable printers as the ImageWriter II, however, is indeed distressing. But power users, take heart, this is not a situation with which we are helpless to deal. Yes, those of you who join with me when I say "I Want It All!", gather 'round. There are at least three different ways to realize all or a significant part of this goal. I shall present them all to you here in order of power and sophistication.

## The Objective

What we want to be able to do is to embed an escape sequence into an AppleWorks document, just like AppleWriter does. In fact, this is exactly what AppleWorks does when, for example, we press **Ⓜ** (Boldface Begin) from within a document or go to the Printer Options menu and select Superscript Begin. In the first case, an **ESC** **Ⓜ** is embedded into the document and in the second case an **ESC** **Ⓢ** is embedded. The only problem with this is that AppleWorks doesn't provide you with enough of these special keystrokes like **Ⓜ** **Ⓜ** or menu accessed options like Superscript Begin to allow you to enjoy full access to the

capabilities of the ImageWriter II printer.

Next, we need to understand that once we are able to embed an escape character into an AppleWorks wordprocessor document, all succeeding characters in the wordprocessor document will be treated as commands—if valid; if invalid, they will be printed as text. This means that we will also need to have a way to tell the printer that it should interpret all subsequent characters as text to be printed, not as printer commands. It is quite conceivable that, unless we do this, some "innocent bystander" characters might be interpreted as printer commands.

In short, we want to come up with an AppleWorks analog to the AppleWriter virtual command.

## The Custom Printer Solution

Perhaps the easiest way to obtain more control over your ImageWriter II printer is to use the Custom Printer option available from within the Print Menu. This approach takes advantage of the fact that one may configure AppleWorks for a printer not found on the list of supported printers. To configure a custom printer one must know what this otherwise unsupported printer expects in the way of commands for a limited list of printer functions: boldface, underlining, and super/sub-scripts. In setting-up a custom printer, you are allowed to permanently incorporate the appropriate printer commands into the AppleWorks custom printer code in the same way that AppleWorks allows you to incorporate initialization codes for printer interface cards, by prompting the user to supply the keystrokes which correspond to the appropriate printer commands. This feature provides us with a way to use one of these commands to achieve the objective of simulating an AppleWriter-like Virtual command from within AppleWorks simply by defining one command as a solitary **ESC** and another one with an **ESC** **f**. This is the simplest way to achieve a significant part of our objective. The price tag for simplicity in this case, however, is a reduction of features. We should take a look at those limitations.

Because you are allowed only one custom printer, this move entails sacrificing the option of having another easily accessible printer that is not on the AppleWorks list of supported printers. This may or may not be a big deal for you. Perhaps a more serious problem for most people is the loss of proportional print, control over characters per inch for blocks of text longer than one line, and control over lines per inch. The Open-apple-O, CI, 17 sequence, for example, will be ignored in favor of the number of characters per inch selected in the custom printer setup, usually 10. Attempting to use embedded escape sequences to control characters per inch will effect the intended change in characters per inch printed but the

margins of your document will be erratic. This is because AppleWorks is calculating word-wrap and, thus, when to send linefeeds to the printer, on the basis of 10 CPI at a time when the printer is operating at, say, 17 CPI. Thus, you must restrict your manipulations of characters per inch to spaces that are within a single line. Similarly, lines per inch will cause problems with page length because these are related in much the same way as CPI and word-wrap calculation.

However, everything else that your printer can do is yours. Here's how to add the kind of custom printer you need to your printer menu. Following the directions in your AppleWorks manual, go to the Printer Information menu, and get ready to set-up a Custom Printer. What we are going to do is to set up another ImageWriter II printer for the Print Menu, one that is almost like the original except in one important respect.

Although we will not duplicate all of the standard settings for the ImageWriter II in our set-up procedure, those standard settings are as follows:

1. Characters Per Inch (10)
2. Lines Per Inch (6)
3. Boldface, Subscript & Superscript
  - Boldface Begin (Escape-!) )
  - Boldface End (Escape-') )
  - Subscript Begin (Escape-y)
  - Subscript End (Escape-z)
  - Superscript Begin (Escape-x)
  - Superscript End (Escape-z)
4. Underlining
  - Underline Begin (Escape-X)
  - Underline End (Escape-Y)

If you are using another kind of printer, consult the respective manual and substitute commands as appropriate. Use all the above settings except for the Boldface Begin and Boldface End commands. The Boldface Begin/Boldface End commands will be our primary tools for getting more from the ImageWriter II printer and thus the codes for these functions are the ones we will change.

Why pick on the Boldface command? One could just as easily use some other command but the Boldface command is so much more convenient in that it may be invoked directly from the document that you are working on with a **Ⓜ** keystroke sequence. Not having to go back and forth to the printer options menu, as you probably already appreciate quite well, is a definite advantage. Using this command doesn't even require sacrificing the ability to boldface text as you will see later on.

Instead of the usual **ESC** **Ⓜ** enter a solitary **ESC** for Boldface Begin and an **ESC** **f** for Boldface End.

With these modifications, the first **Ⓜ** (Boldface Begin) will always send just an escape, and the second **Ⓜ** (Boldface End)

will always send and Escape-f. You already know why we want to embed a solitary Escape into our AppleWorks documents, but the change we propose to make to the Boldface End command bears further explanation. The Escape-f causes a forward linefeed which has no effect on your document because the direction for linefeeds is already forward. This command effectively prevents the possibility of strange and unpredictable printer behaviors, here's why. By placing the second **⌘**, Boldface Off (in reality an Escape-f), immediately after the character(s) you want the printer to treat as commands, the printer can "know" that it doesn't need to look for any more commands. Otherwise the printer will continue looking for further valid characters to treat as commands and it may very well find some. This strategy causes you to use a few more keystrokes than would changing both Boldface On and Boldface Off to a solitary Escape, but, by avoiding this temptation, you'll spend less head-scratching time trying to figure out why certain characters appear to have been "eaten" and why the printer appears to have a mind of its own—and a demented mind at that.

Therefore, the protocol to use is: **⌘** (Boldface On), Command Character(s), **⌘** (Boldface Off). This will effectively satisfy our need to have a way to turn this command mode on and off, just as the Virtual command functions in AppleWriter.

The familiar carat will appear right at the place where we pressed **⌘** except that now it indicates the presence of a solitary Escape character at that spot even though moving the cursor to it will cause the Boldface Begin message to appear in the usual place. Any letters and numbers after that carat will, if they are valid printer commands, be acted upon as printer commands and will not be printed. A second **⌘** ends the discussion with the printer and everything else will be printed as usual.

After details of the next two approaches to this end are revealed we will get into a thorough discussion of how to use this new power effectively, including several examples. If using the Custom Printer solution is as sophisticated as you want to get right now, you may want to skip to that section immediately.

## The Modified SEG PR File Solution

On the other hand, you may not want to give up your custom printer at this time either because you need it now or because you fear that you may need it sometime in the future. Then too, you may be as reluctant as I am to forgo the ability to change characters per inch for blocks of text larger than one line. If any of these dispositions seem to fit you, read on. There is a way to achieve our objective to an even greater degree.

When you catalog the AppleWorks program disk, you will notice a small file called SEG.PR. This is the file that contains the printer information that AppleWorks uses when you select a printer to appear on the print menu. Instead of using the generic custom printer code with all of the compromises that entails, we can modify the ImageWriter code in this file to obtain greater control over the ImageWriter II printer without giving up a single feature.

By the way, AppleWorks uses the same code for the ImageWriter I, ImageWriter II and the Apple DMP printer, so we'll be getting the same ability to direct these printers too. However, please realize that the Apple DMP and the ImageWriter I do not have as many features as does the ImageWriter II. Nonetheless, what escape sequence features your printer does have will be under your control.

For those of you with other kinds of printers, you'll have to adapt this strategy to your special case. The escape sequences may be somewhat different but the principle will be the same. The tough part will be searching the SEG.PR file for the part that relates to your printer and then finding the code that must be modified. To help you out in this search, you'll need a good block editor or ZAP program as they call it. There are many fine ones on the market. There's one in Copy II Plus; there's one in Bag of Tricks; there's one in Beagle Bros.' ProByter and there's one in Glen Bredon's ProSel desktop manager package called Block Warden. I use Block Warden because I think it's the best one around. Take whatever time is required to understand what a block editor is and how to use the one you have. The documentation should do all of this for you if you'll read it. Don't be like me and read the directions only when all else fails.

First, a warning. NEVER, NEVER, NEVER modify an original disk. In fact, I will go so far as to suggest here that you make a backup copy of AppleWorks specifically for this project. That way if you mess something up, there'll be little lost.

Use your block editor to search the side of the disk that has the file, SEG.PR, on it. Search for the hexadecimal string: 02 1B 21 02 1B 22 then change it to: 01 1B 21 02 1B 66.

This will accomplish the same result achieved in the custom printer solution (change **⌘**) but without the limitations cited above. With this approach, we do not have to give up our one and only custom printer, proportional printing, the power to change characters per inch for two or more lines at a time and the power to change lines per inch. In fact, all of the regular printer options except Boldface Begin are available in the usual way. To boldface a document, a simple, **⌘** **⌘** (looks like ^!^), will turn boldfacing on. The bonus here is that, unless we turn boldfacing

off with a **⌘** **⌘** (looks like ^!^), the entire document will be boldfaced!

Unfortunately, there is one drawback to this approach that the custom printer solution doesn't share. With the custom printer strategy, you have two ImageWriter II printers on your Print Menu, one stock and the other modified. With this approach, you've modified the only ImageWriter code available in the SEG.PR file. Why is that a problem?

Now that you've modified the one and only piece of code in the SEG.PR file capable of commanding the ImageWriter II printer, what will happen if you try to print a word processor file created by a "normal" version of AppleWorks by a "normal" AppleWorks user? The answer is "weird stuff" if the Boldface command appears anywhere in the document. Whatever characters appear immediately after the Boldface (a.k.a. Escape) command will be sent to the printer as printer commands. First, that character will not be printed. That's aggravation enough but there's more. If the character that happens to occur immediately after the Boldface carat also happens to be a valid printer command, then the printer will attempt to carry out that command. Try it. It can be funny if you're not urgently needing the document to forestall being flunked, fired or filleted.

Thus, if you elect this strategy, be careful with files of unknown or uncertain origin. You may search out and eliminate all of the Boldface Begin commands. If you get them all, this will prevent the "weird stuff" alluded to above. Alternatively, you may edit the document to make sure that wherever boldfacing was intended the following form is followed:

Type this:  
**⌘** **⌘** **⌘** The Part Intended for Boldfacing **⌘** **⌘**

It should look like this:

^!^ The Part Intended for Boldfacing ^!^

If you get them all, this will insure that the original intent, boldfacing, is, in fact, carried out.

However, you may be unwilling to compromise on even this esoteric point. Fear not, we have an even more sophisticated approach for your consideration.

## The Imagewriter III Solution

The solution to the problem with modifying the code in the SEG.PR file cited above is to have at least two copies of the code available to you in the SEG.PR file, one modified and one not. Since you get to name your printer(s) when selecting printers for the Print Menu, these two ImageWriter printer code segments can be differentiated from one another quite easily. I call my unmodified printer, ImageWriter II and my modified printer, ImageWriter III. Not very original, but it captures the general idea rather well.



With your MouseText chart and Escape sequence tables in hand, you can experiment the better part of a day away. By the time you're finished playing around with this new toy, you'll be able to amaze your friends and associates with what you can get out of your ImageWriter II using nothing more than AppleWorks.

## Special Considerations for Using MouseText

Note that **ESC T 1 6** is used to make each line print directly on top of the next without any space in-between, a necessity in printing graphics. You may return to the normal 6 lines per inch with an **ESC A**.

Also note that each command that is "turned-on" is "turned-off" at some point. This is in keeping with an important principle in programming which applies equally well here. That principle is called "transparency" and means that you should leave everything in the state in which you found it so that the next activity can correctly assume default states. If you turn boldfacing on (**ESC !**), you should, before exiting, turn it off (**ESC " "**). Otherwise the next printing job, even if in connection with another program, will continue to boldface if the printer remains powered-up and the next application doesn't reset the printer.

In a complex construction such as the MouseText box, you might be tempted to use an **ESC c** as an all-purpose reset. Beware, however, because this will zap any downloaded characters and defaults to draft quality printing. It resets everything to the default state, and you may want to be more selective.

Finally, I should point out that, in MouseText, there is no blank space. This means that to provide space between MouseText characters you must return to normal ASCII characters. To get spaces, insert them as ASCII characters, and then return to MouseText.

## Using Downloaded Characters

I use Beagle Bros. PowerPrint and recommend it highly. PowerPrint has a feature that creates what they call Quickload Fonts. This feature creates executable binary files that download given fonts automatically. With Quickload Fonts available, you can write a simple startup program in Applesoft BASIC that first downloads your favorite font and then starts AppleWorks. There's plenty of room on the startup side of your AppleWorks disk for programs of this sort. Alternatively, this startup program might present you with a menu from which to choose a font, to download the selected font, and then to start AppleWorks.

Tell the printer to Switch to the downloaded font with ^/c^! and use ^\$^/c^ to switch back to the regular font.

Note how all of these examples are just variations on a theme:

**Boldface Begin. Command Character(s), Boldface End**

Since the ImageWriter II's near letter quality print option does not affect downloaded fonts, you may want to turn boldfacing on just before printing a downloaded font and turn it off immediately afterwards if you are printing the main body of text with the near letter quality print option activated. That way the text composed by the downloaded font will appear nearly as sharp as the rest of the document.

## It's Your Turn Now

Yes, it's your turn to create a masterpiece with your ImageWriter II. Many of these features can be used in conjunction with one another and with all of the regular AppleWorks printer options as well.

For example, you may use half-height characters in conjunction with the **ESC T** "nn" function that controls the space between lines in increments of 1/144th of an inch to see just how much text can be crammed onto a single piece of paper. MouseText and downloaded fonts may be printed at 4, 5, 7, 9, 10, 12, 15 and 17 CPI just like regular ASCII characters.

The combinations and permutations are extensive. With so many options at hand, there is bound to be a great upsurge of creativity evident in the printed correspondence of AppleWorks users. Enjoy.

Here are the locations of the various printer code segments within the AppleWorks SEG.PR file.

Printer	Start	Length
Apple ImageWriter	\$03BE	\$00FC
Apple Scribe	\$04BA	\$00AF
Apple Daisy/Qume Sp.11	\$0569	\$013C
Silentype	\$06A5	\$0088
Qume Sprint 5	\$072D	\$0118
Epson FX Series	\$0845	\$00DD
Epson MX Series	\$0922	\$00A0
Epson MX/Graftrax plus	\$09C2	\$00B8
Epson RX Series	\$0A7A	\$00C8
Custom Printer	\$0CBE	\$014C

With thanks to Garth Shultz, Kalamazoo, MI.

**Don Westcott**

I recently tried Brian Trohu's softkey for SpaceQuest and Stephen Lau's softkey for Leisure Suit Larry, both in COMPUTIST #53. The SQ copy was "\*\*\* unable to load ProDOS \*\*\*" and the LSL copy wasn't able to find the WORDS.TOK file and hung. This was in the

catalog so I tried to verify it and discovered block \$57C was bad. This prompted me to check the entire LSL copy for bad blocks and I found these blocks were bad: \$4F6, \$507, \$56C, \$57C, \$58C, \$5C8 and \$634. These blocks are all good on the original LSL, except \$634, of course, so I read in each of them from the original and wrote back to the copy. Eureka! It worked! Then I found the SQ copy's bad blocks: \$5C1, \$5CF and \$634. Eureka again!

Also, Top Fuel Eliminator wouldn't run on my IIGs but it would run on my old II plus. However, after Jack Moravetz's softkey in COMPUTIST #49, it runs on both!

☐ Greiner Wolfgang's softkey for Crypt of Medea in COMPUTIST #55 yielded a running copy but it won't Save or Load games. Does anyone have a solution for this?

☐ *It's what we've been saying all along, don't give up on a softkey if it doesn't work the first time. Check for other problems.*

..... RDEXed

**Bob Igo**

*A.P.T. for...*

## Bard's Tale III

### ■ Requirements

- Sector-editor (I recommend Copy II Plus)
- Bard's Tale III character disk
- A desire to fry Brillhasti ap Tarj and free the world of Evil

Here is some editor information for Bard's Tale III. The information is incomplete, but there is still enough to create very powerful (godlike) characters.

On one sector there is room for two characters. As far as I know, a full party (on a saved game) starts at track \$21, sector \$06 with character #7. Sector \$07 has characters 5 & 6 in that order. Sector \$08 has 3 & 4. Sector \$09 has 1 & 2.

☐ *Much of Bob's letter duplicated material already contained in previous letters so we combined the information in the interests of saving space. (Please see the combined list of attribute locations on page 20, and the combined list of items on page 19..... RDEXed*

Numbers shown with x's in the combined items list could possibly be something if the correct numbers for possession and uses were found. In the meantime, they're useful space fillers on your list of possessions; if you have a gods' blade, you don't want the annoying message: "Konan found a Dagger"! So, fill the list and you won't have room to find a dagger.

It is conceivable that you could create your own items to your own specifications, such as a machinegun which does 1000-5000 damage and can cast YMCA, REST, PHDO, etc. I encourage someone out there to come up with a Bard's Tale III item maker. If Bard's Tale can assign certain properties to all the above items, I'm sure one of the Computist bunch can, too. Also, does anyone know how to get rid of that "alignment value" stuff?

① Does anyone know what the file, YUMMY, on the boot side is for?

As near as I can tell, the condition code is using bit positions to define the status of your adventurer. The bits that I could puzzle out from the letters I receive are:

Bit	Condition	Bit	Condition
0	Poisoned	4	unk
1	Old	5	Possessed
2	Dead	6	Crazy
3	Stoned	7	unk

..... RDEXed

**Brian Hatch**

After using the list that Jeff Wicker wrote for Where in the World is Carmen Sandiego. (COMPUTIST #39) I compiled my own. This list shows what characteristics each person has, so you should only need to visit Interpol once.

**Ihor Ihorovitch** Croquet, Blond hair, Tattoo, Limo

**Fast Eddie** Croquet, Black hair, Jewelry, Convertible

**Scar Graynolt** Croquet, Red hair, Ring, Limo  
**Nick Brunch** Mt. Climbing, Black hair, Ring, Motorcycle

**Len Bulk** Mt. Climbing, Red hair, Tattoo, Convertible

**Katherine Drib** Mt. Climbing, Brown hair, Tattoo, Motorcycle

**Mery LaRoc** Mt. Climbing, Brown hair, Jewelry, Limo

**Lady Agatha** Tennis, Red hair, Tattoo, Convertible

**Dazzle Annie** Tennis, Blond hair, Tattoo, Limo

**Carmen Sandiego** Tennis, Brown hair, Jewelry, Convertible

**Richard (Gramps) Pirong**

You may remove GOLDFINGER from the list because the Scorpion actually provided the solution on page 4 of issue #43. On this Mindscape disk, I found the nasty "jump to C600" at bytes 94-96 on track \$00, sector \$00. Thank heavens for editors with search

functions. This code is the tag end of many protection schemes and can help you locate the code on disk.

Softkey for...

## Goldfinger

Mindscape

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	\$00	\$94-96	4C 00 C6	EA EA EA

4 Write the sector back to disk, protect it, boot it, hop into your Aston Martin and GO!

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- Agent U.S.A. Scholastic
- Airheart Broderbund
- Algeblaster Davidson & Associates
- Algebra I Intelligent Tutor
- 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 ?
- 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.
- Crossword Magic Mindscape
- David's Midnight Magic ?
- DB Master V4.0 Stoneware
- Deathlord Electronic Arts
- Dome Bookkeeping Systems Dome Accounting
- F-15 Strike Eagle Microprose
- Fay: The Masked Woman Didatech Software

- Fay's Word Rally Didatech Software
- Fun Bunch Unicorn
- Galaxian Atarisoft
- Game Show Advanced Ideas
- Garfield Deluxe Edition DLM
- Gemstone Healer SSI
- GradeBusters 1-2-3 Gradebusters
- Gutenberg Jr. Micromation LTD
- Handicapping System Sports Judge
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- Jigsaw Microfun
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- Little Computer Peoples House on a Disk Activision
- Lollipop Dragon: Cursor Control Adventures
- Plotting & Programming Adventures
- Letter & Number Key Adventures
- Function Key Adventures Society for Visual Ed
- 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
- Peeping Tom Microlab
- Pensate Penguin
- Personal Finance Manager (PFM) Apple Computer
- PFS File & Report Hgs Software Publishing Corp.
- Pirates Microprose Software
- Prime Plotter Primesoft Corp.
- Principals Assistant Library Mindscape
- Print Master Unision World
- Pro-Football Sports Judge
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- Snoggle Broderbund
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- Stellar 7 Penguin Software
- Success with Typing v1.2 Scholastic Software
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- Think Tank Living Video
- Tower of Myraglen II (Hgs) ?
- Toy Shop Broderbund
- Ultima V Origin Systems
- Universe Omnitrend
- Universe II Omnitrend
- Visiblend Microlab
- Wheel of Fortune ?
- Where in the USA is Carmen San Diego Broderbund
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**41** March 1987 *Softkeys*: •The Periodic Table •Gemstone Warrior •Inferno •Frogger •Story Maker •Adventure Writer •Mummy's Curse •Zaxxon •The Quest •Pitfall II •H.E.R.O. *Features* •A Two-Drive Patch for Winter Games •Customizing the Speed of a Duodisk •Roll the Presses Part Two: Printshop Printer Drivers •The Games of 1986

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**36** October 1986 *Softkeys*: •Flight Simulator II v 1.05 •AutoDuel •Critical Reading •Troll's Tale •Robot War •General Manager •Plasmania •Telarium Software •Kidwriter v1.0 •Color Me *Features* •ScreenWriter meets Flashcard •The Bus Monitor •Mousepaint for non-Apples *Core*: •The Bard's Dressing Room *APT* •Championship Lode Runner

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David Kaszuba

**I** These softkeys were sent in by David Kaszuba. They are mostly from BBS's. If included, the softkeys are attributed to the proper "handles". Thanks David, for taking the time to send this information to us.

..... RDEXed

These softkeys are from the A.S.P; (Against Software Protection).

Softkey for...

## Signmaster v5.04

**1** Format one system disk under DOS 2.0, 2.1 or 3.0.

**2** Label it according to the original Signmaster system diskette.

**3** Copy the (unhidden) files from the original diskette to the corresponding 2.x or 3.x formatted diskette.

**4** Rename the SIGN.EXE file.

**RENAME SIGN.EXE SIGN**  
**DEBUG SIGN**  
**D CS:99C**

You should see: 75 03 E9 09

**E CS:99C 90 90 EB 1F**  
**D CS:D407**

You should see: 5F

**E CS:D407 CB**  
**W**  
**Q**

**RENAME SIGN SIGN.EXE**

Note: Checks for specially formatted tracks are completely removed. You may load all the files on the newly formatted and unprotected diskette directly to hard or ram disk, in any sub-directory.

Softkey for...

## Chartmaster ver 6.04

**1** Format one system disk under DOS 2.0, 2.1 or 3.0.

**2** Label it according to the original Chartmaster system diskette.

**3** Copy the (unhidden) files from the original diskette to the corresponding 2.x or 3.x formatted diskette.

**4** Rename the CM1.EXE file.

**RENAME CM1.EXE CM1**

**5** Get DEBUG online. I won't tell you how to use DEBUG or any patcher programs. I assume you have a basic understanding.

**DEBUG CM1**  
**D CS:A67**

You should see: 75 03 E9 09 00

**E CS:A67 90 90 E9 F7 01**  
**D CS:D139**

You should see: 5F

**E CS:D139 CB**  
**W**  
**Q**  
**RENAME CM1 CM1.EXE**

Notes: Checks for specially formatted tracks completely removed. You may load all the files on the newly formatted and unprotected diskette directly to hard or ram disk, in any sub-directory you set up. In some cases the program still tries to go to the A: and B: drives, so I used an assign to assign them to the C:. This probably can be overcome with the correct configuration parameters.

Softkey for...

## Clout v1.0 256K

**1** Format one system disk under DOS 2.0 or 2.1.

**2** Label it according to the original R:Base Clout 256K version diskette.

**3** Copy the files from the original diskette to the corresponding 2.x formatted diskette.

**4** Place the original R:Base Clout diskette back in the manual.

**5** First we will need to change a program called CLOUT.EXE.

**RENAME CLOUT.EXE CLOUT.OLD**  
**DEBUG**

**N CLOUT.OLD**  
**L 1000:0** *assumes more than 128K*

**S 2000:0 L EFFF 72 10 E8 54 01 72 0B**  
**E 2000:4CFB 90 90 E8 54 01 90 90**  
**S 2000:0 L EFFF 74 01 F9 1F C3**  
**E 2000:4E5E 74 01 F8**  
**S 2000:0 L EFFF B4 02 CD 13**  
**E 2000:4D3B B4 04 90 F9**  
**S 2000:0 L EFFF 8E C0 BE 78 00**  
**E 2000:4D5C 90 90 90 90 90 90 90 90 90**  
**90 90** *eleven 90's*  
**S 2000:0 L EFFF 52 B4 42 E8 C1 00**

**E 2000:4D6D 26 C7 06 00 09 FA 02 26 C7**  
**06 02 09 F7 12 26 C7 06 04 09 00 01**  
**26 C7 06 06 09 88 21 C3**

**W 1000:0**

**Q**

**RENAME CLOUT.OLD CLOUT.EXE**

Softkey for...

## Clout 384K

**1** Do steps 1 thru 4 from the Clout 256K softkey.

**2** Now do the following:

**RENAME CLOUT.EXE CLOUT.OLD**  
**DEBUG**  
**N CLOUT.OLD**

**L 1000:0** *assumes more than 384K*

**S 5000:0 L EFFF 72 10 E8 54 01 72 0B**  
**E 5000:95BB 90 90 E8 54 01 90 90**  
**S 5000:0 L EFFF 74 01 F9 1F C3**  
**E 5000:971E 74 01 F8**  
**S 5000:0 L EFFF B4 02 CD 13**  
**E 5000:95FB B4 04 90 F9**  
**S 5000:0 L EFFF 8E C0 BE 78 00**  
**E 5000:961C 90 90 90 90 90 90 90 90 90**  
**90 90** *eleven 90's*  
**S 5000:0 L EFFF 52 B4 42 E8 C1 00**  
**E 5000:962D 26 C7 06 00 09 29 00 26 C7**  
**06 02 09 B2 3C 26 C7 06 04 09 00 01**  
**26 C7 06 06 09 49 40 C3**

**W 1000:0**

**Q**

**RENAME CLOUT.OLD CLOUT.EXE**

Note: Now all of R:BASE CLOUT copy protection is removed, and you may diskcopy the unprotected disks as required. Checks for specially formatted tracks completely removed. You may load all the files on the newly formatted and unprotected diskette directly to hard or ram disk, in any sub-directory you set up. Disk no longer required to be in drive A: at start up.

Softkey for...

## Graphwriter

**1** Format one system disk under DOS 2.0, 2.1 or 3.0.

**2** Label it according to the original Graphwriter gwbatch diskette.

**3** Copy the files from the original diskette to the corresponding 2.x or 3.x formatted diskette.



4 Now use DEBUG.

**DEBUG GW10.OLY**  
**D CS:1A7D**

You should see E8 D5.

**E CS:1A7D E9 CB**  
**W**  
**Q**

Notes: Checks for specially formatted tracks completely removed. You may load all the files on the newly formatted and unprotected diskette directly to hard or ram disk, in any sub-directory you set up.

Softkey for...

*Copywrit*

This softkey assumes that you are familiar with DEBUG. You don't really need to format any extra disks since the copy protection is done using a check on track \$00 sector \$01, looking for the literal "CopyWrite". So all we have to do is disable this check in the original COPYWRIT.EXE program. COPYWRIT appears to copy most copy

protected diskettes, but the program won't let you copy the original COPYWRIT diskette, even though the programs can be moved off the original diskette and will still work.

**DEBUG COPYWRIT.COM**  
**D CS:F36 L 9**

You should see the literal "CopyWrite", if so continue, else stop.

**E CS:F36 70 70 70 70 70 70 70 70 70**

Fills CS:F36 with 9 lower case P's.

**W**  
**Q**

You may copy COPYWRIT.COM to COPYWRIT.BAK if you want to insure complete compatibility with the modified version.

IBM RDEX END

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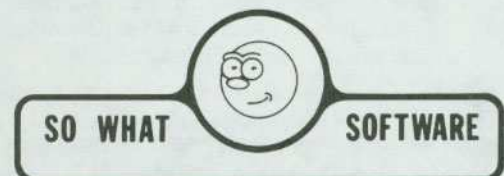
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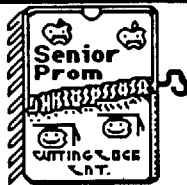
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

Alice in Wonderland, Alphabetic Keyboarding, Alternate Reality, Autoduel, Checkers, Chipwits, Color Me, Conan.data, Conan.prog, CopyDOS, Crisis Mountain, Disk Director, Dragonworld, Early Games, Easy as ABC, F-15 Strike Eagle, Fantavision, Fast controller, Fishies, Flight Simulator, Halley Project, Hartley Software (a), Hartley Software (b), Jenny of the Prairie, Jingle Disk, Kidwriter, Kracking Vol II, Lode Runner, LOGO II (a), LOGO II (b), Masquerade, Mastering the SAT, Microtype: The Wonderful World of Paws, Microzines 1, Microzines 2-5, Miner 2049er, Mist & View to a Kill, Murder on the Zinderneuf, Music Construction Set, Newspaper controller, Olympic Decathlon, Other Side, Phi Beta Filer, Pitstop II, Print Shop Companion, RDOS, Robot War, Spy vs Spy, Standard controller, Sundog V2, Swap controller, Sword of Kadesh, Synergistic Software, Tawala's last Redoubt, Terripin Logo, Threshold, Time is Money, Time Zone, Tink! Tonk!, Troll's Tale, Ultima IV, Wilderness, Word Attack & Classmate, World's Greatest Baseball, World's Greatest Football

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\*Requires at least 64K of memory.

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