

For The Serious User Of Personal Computers

# COMPUTIST

Issue 64

February 1989

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## RDEX Features:

**Apple DuoDISK Modification** — By Zorro

**The Bard's Dressing Room III** — By Joe Montano

**EOADIS Adapter** — By Bill Jetzer

**Merging Controllers into Super IOB** — By Bill Jetzer

**The Product Monitor** — By Jeff Hurlburt

## RDEX Softkeys:

4th & Inches • Ace Reporter • Alphabet Express v2.1.5 • Balance of Power • Bard's Tale II GS • California Games • Crossbow  
• Crossword Magic 4.0 • Dataquest: Presidents Data Base • Dinosaurs • Dive Bomber • Elementary Social Studies Vol 3  
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Gremlins • Kings Quest III • The Last Ninja • Math Shop • Microtype • Mini-Putt • New Oregon Trail • Notes 'N' Files • Number  
Bowling • Paperboy • Path Tactics • PFS Write • Principles of Economics • Reader Rabbit • Shadowgate • Shape Starship  
v2.1.5 1986 • Skate or Die • Starglider • Star Maze • Story Writer • Super Sign Maker • Troll's Shop Right • Ultima V • Zany Golf

**IBM RDEX:** *Softkey:* ■ Balance of Power ■ Enable v1.10 ■ Mean 18 Golf & Arch ■ Memory Shift v2.1  
■ PC Draw v1.4 ■ Personal Communications Manager v1.0 ■ Trivia Fever

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

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# Notes 'n things.....

## ■ OOPS!

Many of you have already noticed the "1988" on your January COMPUTIST. After a lot of finger pointing, it was decided that I was the one who was supposed to keep track of the year. Boy are we in a lot of trouble. I'm one of those people who are still writing "1988" on their 1989 checks well into March. And besides, I have a whole 'nother year to forget to change the next January issue.

For those of you who wondered what the question mark meant on the January cover next to Jeff Hurburt's Product Monitor title, it means I'm a rotten typist and nobody checks the cover. The question mark is a "typo".

## ■ Hardware (Software) Hackers

I've only gotten one response from a hardware hacker, so far. I'll be calling him back next week. If there are any of you out there who can hear me, I'd really like to get in touch with you. I think we can do some neat things together. Also, when we get the hardware together, we're going to need someone to work on the firmware. So if you're interested, get your name to me ASAP (As Soon As Possible). I will keep you posted on our progress so you can get a prototype as soon as they are ready.

## BUGS:

- COMPUTIST #59, pg 32. Appleworks and ImageWriter II, see page 8.
- COMPUTIST #60, pg 21. Ultima V, see page 21.
- COMPUTIST #60, pg 35. Appleworks Cursor, see page 7.
- COMPUTIST #61, pg 22. PFS Series, see page 8.

♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣

William W. Beard	.....	27
Dr Lester S. Cohen	.....	8
Michael Crawford	.....	7
Edward Croft Jr.	.....	17
Sunnie Dinnel	.....	8
Square Eyes	.....	8
Gintana	.....	8
Tom Glover	.....	34
Diane Grodecki	.....	7
Dan Halfwit	.....	10,35
James J. Harvey	.....	37
David R. Hopkins	.....	18
Jeff Hurburt	.....	26
Jayne W. Irwin	.....	13
Ishimoto	.....	27
Bill Jetzer	.....	15
Joseph Karwoski	.....	9
Keith	.....	25
Joe Montano	.....	28
Jack Moravetz	.....	19
Ronald Mundell	.....	21
Gerald E. Myers	.....	9,22
Donald McClelland	.....	12
Leonard Nadel	.....	8
Jack R. Nissel	.....	14
Steven Paulson	.....	7
Allan Pearl	.....	10
E. L. Roberts	.....	7
Phillip G. Romine	.....	21
George Sabeh	.....	8
The Silky!	.....	9
Michael R. Smith	.....	18
Brent Spectrum	.....	12
Edward Teach	.....	9
Frank Thompson	.....	10
Jon Peter Tirard	.....	7
M. Todd	.....	8
Peter Wilding	.....	19
John J. Willems	.....	25
Zorro	.....	11

IBM IBM

A.S.P.	.....	44
Jackle	.....	44
RRS	.....	45
Unknown	.....	44,45

### 🍏 Softkeys:

<i>4th &amp; Inches</i> .....	10
<i>Ace Reporter</i> .....	19
<i>Alphabet Express v2.1.5</i> .....	24
<i>Balance of Power</i> .....	9
<i>Bard's Tale II GS</i> .....	7
<i>California Games</i> .....	37
<i>Crossbow</i> .....	9
<i>Crossword Magic 4.0</i> .....	34
<i>Dataquest:</i>	
<i>Presidents Data Base</i> .....	14
<i>Dinosaurs</i> .....	23
<i>Dive Bomber</i> .....	27
<i>Elementary Social Studies</i>	
<i>Vol 3</i> .....	14
<i>Elementary Social Studies</i>	
<i>Vol 6</i> .....	15
<i>Facemaker</i> .....	19
<i>Flight Simulator II v2.0</i> .....	27
<i>Galaxian</i> .....	25
<i>The Games -</i>	
<i>Summer Edition</i> .....	8
<i>Grammar Gremlins</i> .....	19
<i>Kings Quest III</i> .....	12
<i>The Last Ninja</i> .....	36
<i>Math Shop</i> .....	14
<i>Microtype</i> .....	15
<i>Mini-Putt</i> .....	10
<i>New Oregon Trail</i> .....	17
<i>Notes 'N' Files</i> .....	13
<i>Number Bowling</i> .....	19
<i>Paperboy</i> .....	10
<i>Path Tactics</i> .....	15
<i>PFS Write</i> .....	8
<i>Principles of Economics</i> .....	13
<i>Reader Rabbit</i> .....	37
<i>Shadowgate</i> .....	35
<i>Shape Starship v2.1.5 1986</i> .....	24
<i>Skate or Die</i> .....	37
<i>Starglider</i> .....	17
<i>Star Maze</i> .....	19
<i>Story Writer</i> .....	19
<i>Super Sign Maker</i> .....	12
<i>Troll's Shop Right</i> .....	17
<i>Ultima V</i> .....	18
<i>Zany Golf</i> .....	36

### 🍏 A.P.T.s:

<i>Gauntlet</i> .....	10
<i>Into the Eagles Nest</i> .....	9
<i>Moebius</i> .....	13
<i>Wings of Fury</i> .....	10

### 🍏 Playing Tips:

<i>Alien Mind</i> .....	20
<i>Bard's Tale II</i> .....	7
<i>The Last Ninja</i> .....	36

### 🍏 Notes:

A bit copy for Algeblaster.....	22
A bit copy for Alien Mind.....	9
A bit copy for Homeworker.....	23
A bit copy for Where in the USA is Carmen SanDiego?.....	25
A look at Alien Mind (IIgs) .....	20
A look at GS/OS .....	19
A look at Tomahawk (IIgs) .....	20
An alternate to COPYA? .....	24
More on Appleworks and printer codes .....	21
Playing Notes on Thexder .....	8
Super Index "Bugs"? .....	18
The meaning of "M" .....	9
Saving Strip Poker II pictures .....	27

### IBM Softkeys:

<i>Balance of Power</i> .....	45
<i>Enable v1.10</i> .....	45
<i>Mean 18 Golf &amp; Arch</i> .....	44
<i>Memory Shift v2.1</i> .....	44
<i>PC Draw v1.4</i> .....	44
<i>Personal Communications</i>	
<i>Manager v1.0</i> .....	45
<i>Trivia Fever</i> .....	44

**Editorial** ..... 4

**Bugs** ..... 4

**Most Wanted Softkeys**.....37

### 🍏 Features:

**Apple DuoDISK Modification** ..... 11  
Zorro describes a step-by-step procedure to install a write protect override switch.

**The Bard's Dressing Room III** ..... 28  
Joe Montano to the rescue with his character editor for Bard's Tale III.

**EOADIS Adapter** ..... 15  
Bill Jetzer finds another version of the EOA programming language and shows you how to get this one too.

**Merging Controllers into Super IOB** .. 16  
Bill Jetzer's step-by-step guide to reduce frustration.

**The Product Monitor**.....26  
Jeff Hurlburt looks at the Apple IIgs Toolbox Reference : volumes I and II and mouse pads.

# Readers Data Exchange

For serious users of Apple computers: II, II+, IIc, IIe, IIGs, Macintosh

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

## What is a softkey, anyway?

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

## Commands and control keys

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

6 **Ⓟ**

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

Other special combination keypresses include **ⓇⓈⓔⓈⓔ** or **ⓇⓈⓔⓈⓔ**. In the former, press and hold down **CTRL** then press **RESET**. In the latter, press and hold down both **CTRL** and **G** then press **RESET**.

## Software recommendations

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

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

## Super IOB and Controllers

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

## Reset into the Monitor

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

**Apple II+, IIe, 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 IIc, IIe:** 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 IIc warranty.

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

## Recommended literature:

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

## Keying in Applesoft programs:

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

**10HOME:REMCLEAR SCREEN**

The LIST will look like:

10 HOME : REM CLEAR SCREEN

...because Applesoft inserts spaces into a program listing before and after every command word or mathematical operator. These spaces don't pose a problem except when they are inside of quotes or after a DATA command. There are two types of spaces: those that have to be keyed and those that don't. Spaces that must be typed appear in COMPUTIST as delta characters ( $\Delta$ ). All other spaces are there for easier reading. NOTE: If you want your

checksums (See **Computing checksums**) to match up, only type spaces within quotes or after DATA statements if they are shown as delta ( $\Delta$ ) characters.

## Keying In Hexdumps

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

### CALL -151

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

### 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 enter it, you need an "Assembler". Most of the source code is in *S-C Assembler* format. If you use a different assembler, you will have to translate pieces of the source code into something your assembler will understand.

## Computing checksums

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

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

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

**CHECKBIN** instructions: Enter the monitor (CALL -151), install Checkbin at some out of the way place (BRUN CHECKBIN, A\$60000), and then LOAD your program. Get the checksums by typing the Starting address, a period and the Ending address of the file followed by a **ⓈⓈⓈⓈ**.

**SSSS.EEEE** **ⓈⓈⓈⓈ**

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

Jon Peter Tirad

*Playing Tips for...*

## Bard's Tale II

Electronic Arts

- The code for DREAMSPELL is 'ZZGO'.
- KATO's BRACER if given to a monster, won't turn against you (in some situations).
- SPEEDBOATS aids in running from fights.
- MAGE STAFF regenerates spell points and boost AC by 2.
- PIPES of PAN creates LIGHT.
- SONG AXE does 64-256 damage and has a range of 80'.
- AG'S ARROWS do 24-194 damage and have a range of 90'.
- ELF BOOTS avoids Bad Spells, Thrown Weapons, Dragon Breath.
- NOSPIN RING deactivates all SPINNERS.
- THIEF DAGGER gives a thief an increased chance of hiding in shadows.
- WIZARD HELM casts WIZARD WAR.
- LUCK SHIELD helps avoid Bad Spells, Thrown Weapons and Dragon Breath.
- ARAM'S KNIFE can be thrown at any range and does 128-512.

Ⓚ Does anyone know how to edit "Dino Eggs" and get more men?

Ⓚ Where can I find character editors for:

- Deathlord (Electronic Arts)
- 2400 A.D. (Origin)
- Wasteland (Electronic Arts)
- Questron II (SSI)
- Times of Lore (Origin)
- Bard's Tale I, II, III

Ⓚ I have some problems with Bard's Tale II: The Destiny Knight. Is there a way to prevent the loop which occurs when one of your characters or monsters turns against your party and keeps attacking even when everyone is dead? (ie. I had a dragon which became insane and began to breathe on the party, all my characters died. He began to attack itself but couldn't kill himself because it's armor class was too low. I turned off the computer, losing all gained experience, gold, and magic items. It just wouldn't stop!

Does anyone have a character/item editor for Bard's Tale II?

Is there a way to modify the dungeons and monsters, by creating your own?

Is there a way to list magic items and their powers/effects for Bards Tale I, II, and III?

Is there a way to print the layout of the cities or dungeons in Bards Tale I, II & III?

Is there a way to print the character lists with their possessions and attributes from the character disks?

Is there a way to print the monsters with their maximum hit points and powers? (Bards Tale I or III)

How do you get the NIGHTSPEAR out of the TOWER in ARBORIA in Bards Tale III?

Ⓚ Questions for Bard's Tale II.

What does Fins Flute do?

What does a SORCERSTAFF or POWERSTAFF do?

What does a TROLLRING do?

What does a RING of POWER do?

What does a HAWKBLADE do?

What does a SOUL MACE do?

What does a CONJURSTAFF do?

How can you prevent energy drain from effecting your characters?

Thank you! I hope you can help solve my problems and that you find my tips useful in your publication.

Ⓚ *Too much for me. How about a Bard's Tale fan answering this one? .....RDEXed*

Michael Crawford

*Softkey for...*

## Bards Tale II GS

Electronic Arts

It is nice to know that some things stay consistent in our ever changing world. One of those things is the location of the copy protection on the Bards Tale series. It is once again in the file Burger, this time on the version for the Bards Tales II for the IIGs. The protection is similar to the earlier versions in that it checks the disk for a bad block. Of course, a few other things go on with the check, but the actual code which causes the disk to hang up is very simple. Below is the only snippet of code you need to worry about.

```

0EC5: B0 08      BCS 0ECF
0EC7: A9 01      LDA #01
0EC9: 8F 55 A2 00 STA 00A255
0ECD: 18          CLC
0ECE: 6B          RTL
0ECF: A9 00      LDA #00
0ED1: 8F 55 A2 00 STA 00A255
0ED5: 38          SEC
0ED6: 6B          RTL
    
```

A comparison is done just before the branch on carry set (BCS). If this comparison fails, (not the original) the jump to \$0ECF stores a zero, sets the carry and returns. If the comparison is true, a one is stored, the carry is cleared and it returns. The easiest way to circumvent this appears to be to change the A9 00 to A9 01 and change the 38 to 18. This is only true because no other instructions were carried out when the comparison was good. Therefore we can simply make the outcome of either a good or bad

comparison the same and defeat the check.

For a cookbook: Search the disk for A9 00 8F 55 A2 00 38 and change the first 00 to 01 and the 38 to 18. This is in the file BURGER, so if you wish, you can copy that file to a 5 1/4" disk and do the correction there.

I have not encountered any problems with this method so far. However, I had already completed the first half of the game before I cracked the protection, so there may be a problem I don't know about. If you encounter any difficulties, please let me know. Happy computing!

Diane Grodecki

The Appleworks cursor change by Jack R. Nissel (COMPUTIST #60) was incorrect for the Enhanced Apple computer. The Patch should be as follows:

**BLOAD APLWORKS.SYSTEM, TSYS, A\$2000  
POKE 11681,64  
BSAVE APLWORKS.SYSTEM, TSYS, A\$2000**

The 64 in the poke line will give you the solid-apple cursor. A change to 65 will give you a open-apple, and 85 will give you a right-arrow. I hope you continue to put small patches in your magazine. I find them very interesting.

E.L. Roberts

I'm in complete agreement with the praise that I see in the letters to COMPUTIST. The article "The Deprotection Game" by Gerald E. Myers in COMPUTIST #59 was worth an entire year's subscription. I hope your readers will continue to send in articles of this type as beginners find some of the RDEXs quite formidable.

Steven Paulson

Ⓚ I need some help removing the copy protection from a program called Information Master by High Technology. I bought this program about five years ago and would like to put it on a hard disk. They do not make a version for the IIGs, and my 5 1/4" disks are getting worn out. I have spent years putting my entire home inventory on disks and do not want to risk losing this data. Any information you have on this would be appreciated.

Ⓚ *There is a softkey for Information Master in COMPUTIST #43. Try that first and if it doesn't work we'll ask our readers for help*

.....RDEXed

## Square Eyes

### Notes on Thexder

To beat the game, you have to go throughout all 17 levels 2 or 3 Times before you beat the master computer!

With Paint Works Plus, 816 Paint (or with any other paint programs) you can change Credit.Pic, Title.Pic, and Thexder.Pic (which is from Fantavision GS) to whatever you want. On 816, do it in 320 mode and save it as a binary 320x200. On Paintworks, save as SCREEN format (I think). If you do otherwise you will get a black screen and if you are lucky there will be a few red dots.

A good idea is to have 2 files: Thexder and Thexder 1, one of these having unlimited men. Then copy the normal file THEXDER from the original, first renaming the cheat version. However, this omits putting ProDOS on the disk due to space.

Help! I have MegaBots by UXB (Spinnaker) and I was filling out the softkey when I found an error. Before this, I knew there was an error, but all I had to do was rename the Hello file and get another DOS from another disk. I then completed the deprotection and it worked. I wish I could say the same for the file DROIDS. There is an I/O error in DROIDS and it cannot be fixed. I would deeply appreciate someone who has Megabots to send me a printout or the file on the disk. Square Eyes, 221 W. Sola St., Santa Barbara, CA 93101

Dr. Lester S. Cohen

### Softkey for...

## PFS.Write

Software Publishing Corp

COMPUTIST #61 gives de-protections for the PFS series of File, Report, and Graph. I tried it on PFS.Write and it works there too. Add to your instructions, that it is necessary to UNLOCK the .SYSTEM file before you can run the program. This I did with Copy II Plus. I checked, and now all four of my disks can be copied. Thanks!

Leonard Nadel

I would appreciate someone sending me a way to unlock Apple Writer II for the Apple II+. Since I'm not technically oriented, a cookbook approach would be a big help. In addition, I wonder if there is a way to combine the 80 column pre-boot disk and the Apple Writer II program disk on one disk.

I have been a charter subscriber to

COMPUTIST and have enjoyed every issue.

M Todd

I have two things for you today. First, I tried the APT for Thexder in COMPUTIST #60, pg.18. The read of block \$586 was not the same on my copy of Thexder, which is another reason for giving the old hex bytes to be changed. I used COPY II+ to search for the six bytes listed and found them in exactly the same position in block \$05FF. I changed the value, wrote it back to the disk and it worked perfectly. Now you can see what is happening.

Secondly, I would like to add my vote for Gauntlet by Mindscape as the worst piece of software I have. The best one is COPY II+ by Central Point Software.

I haven't tried the Pirates softkey yet, but I have been waiting to play it until I can make a copy. I'm also waiting on a softkey for Alien Mind. It appears to be heavily protected and I'm going to look at it before reading the answers in your magazine. I really like your articles and hope to be a contributor one day. Keep up the good work and keep the magazines coming. I try to spread the word at our computer club meetings.

I would still like to see some hardware projects.

Gintana

What's the point of going to ProDOS when Apple keep updating it? I mean, I get everything I want out of my II+ clone and DOS 3.3 that was available in 1984-5. The only reason to update is for programs written for the IIe.

The disk patch to ProDOS 1.0.1 that allows it to run on clones doesn't work with newer versions. Please provide the new patches for other versions of ProDOS.

Has anyone heard of "Maestro Videotex Software" v2.0 Modem Card? I can't back it up.

George Sabeh

### Softkey for...

## The Games - Summer Edition

EPYX

This softkey is based on information provided by Scott Simon in COMPUTIST #60. Epyx, as well as several other software companies, have been using a new protection described earlier in COMPUTIST called PROLOK. I used this information and was able to produce an unprotected COPYA version.

### Requirements

- COPYA
- Sector Editor
- 4 Blank Disks

1 Boot your DOS 3.3 system disk.

2 Tell DOS to ignore checksum and epilog errors and use COPYA to copy side A of disk one. Side B and disk two are not protected.

### POKE 47426,24 RUN COPYA

3 Sector edit the copy you just made.

Trk	Sct	Byte(s)	From	To
\$00	\$08	\$4E-4F	D0 F4	EA EA
		\$57-58	D0 4C	EA EA
		\$60-61	D0 43	EA EA
		\$73-74	D0 F4	EA EA
		\$77-	A0 07 BD 8C C0	EA EA A9 FC 85
			10 FB 99 F0 00	F0 85 F3 A9 EE
			EA 88 10 F4	85 F1 85 F2

4 Make sure you write the changes back to your copy.

For those of your readers who use E.D.D. I have found parameter preanalyze 00=90 will copy most of Epyx new releases and some of the other releases that use PROLOK protection.

Sunnie Dinnel

In COMPUTIST #59, Dr. Frank Lowney wrote about fixing the Appleworks SEG.PR file to accumulate a few neat ideas. Since I don't have my Imagewriter2 with me, I tried to fix the SEG.PR file for my Epson MX-80FT w/GRAFTRSX+, but it didn't want to work.

The Dr. says to change **ESC I** to **ESC "** to **ESC I**. Wouldn't **ESC F** be the equivalent of the "Solitary Escape" he refers to on pg. 33 in the "custom printer" column?

A few other changes (errors) could be made:

1. Change BSAVE RAM TEMP, A\$2000, E\$2568 to BSAVE RAM TEMP, A\$2000, E\$24B9, else you will pick up the Scribe code too.

2. Change BSAVE SEG.PR, TSYS, A\$2000, E\$4E56 to BSAVE SEG.PR, TSYS, A\$2000, E\$2E56, else you will get a disk full error.

Thanks to all who write such interesting articles to benefit the rest of us.

Gerald E Myers

In COMPUTIST #60, pgs. 10-11, Bill Jetzer and RDEXed asked if anyone knew what the M stands for when you press **[RETURN]** in the monitor to get the present contents of the A,X, and Y registers and the stack contents. (Ic enhanced.) Most (all?) Apple monitors offer the control-E (for Examine) command to check the contents of the registers, the Laser 128 does not, but the Laser 128 technical manual *does* tell you where to look for these values, and in the process tells all about the mystical "M".

For Laser 128 folks without the technical manual, and Apple people who always wondered where the Control E fetched the information from, it's on the zero page, Memory locations \$44 thru \$49, and goes like this:

\$44 = M (memory configuration). Now you know what 'M' means. Each bit is a boolean value (1=True, 0=False).

- Bit 7 = Aux zero page, stack, & upper 16K switched in.
- Bit 6 = Both 80-col store and page 2 access switched in.
- Bit 5 = Aux 48K RAM is switched in for reading.
- Bit 4 = Aux 48K RAM is switched in for writing.
- Bit 3 = Upper 16K is switched in for reading.
- Bit 2 = Bank 1 of the upper 16K is switched in.
- Bit 1 = Bank 2 of the upper 16K is switched in.
- Bit 0 = Internal \$Cxxx ROM is switched in.
- \$45 = Accumulator value.
- \$46 = X-Register value.
- \$47 = Y-Register value.
- \$48 = Processor status Register value.
- \$49 = Stack pointer value.

Hope this helps Bill Jetzer and perhaps others onward to bigger and better cracks.

The Silky!

Softkey for...

## Balance of Power

Mindscape

### ■ Requirements

- Copy II Plus
- RAM Card (not the 80 Column RAM)
- A ProDOS block editor

- 1** Make a bit copy of the original.

- 2** Copy UTIL.SYSTEM (from Copy II Plus) and your block editor to the RAMX.

- 3** Boot the original. When the drive stop press **[RESET]**. You'll be in the monitor.

**300:AD 8B C0 4C 03 BF N300G**

- 4** Enter the prefix "/RAMX", then the path name (the name of your block editor).

- 5** Read block \$E5. Search for BD 89 C0 A0 80 20 91 FF 88 and change BD to 60. Write the block back to the copy.

- 6** Boot the copy. When the drive stops, press **[RESET]**.

**300:AD 8B C0 4C 03 BF N 300G**

- 7** Enter the prefix /RAMX and "UTIL.SYSTEM".

- 8** Copy all the files from Balance of Power to the RAM card.

- 9** Boot Copy II Plus and format a ProDOS disk with volume name /BOP.

- 10** Copy the files from the RAM card to the disk. Copy a normal PRODOS instead /BOP PRODOS. The protection is in the PRODOS file.

Note: Don't try to search for the string with Copy II Plus sector editor and modify it. The disk will not boot. You must use the ProDOS M.L.I, using /BOP:PRODOS.

Thanks to Gerald E.Myers for the article the deprotection game on COMPUTIST #59, which help me to deprotect /BOP.

Joseph Karwoski

Softkey for...

## Crossbow

Absolute Entertainment

I just bought Crossbow, and when I get a new piece of software, my first task is to make a back-up of it, I refuse to use any software without having a back-up. I first checked my issues of COMPUTIST to see if this program has been "cracked". Why re-invent the wheel? To my surprise, I could not find it, I was on my own.

I first copied the disk with sector copy from Copy II Plus. It copied with "No Problem" but when I booted the disk, it "Bombed". I decided to catalog the disk to see if they were using ProDOS or DOS. When I saw that they were using DOS, I decided to check out the "HELLO" program ( it's a binary file called "XMGPRTTI").

I decided to by-pass this program by changing the "HELLO" name to "G.MAIN". My program works fine now.

- 1** Copy both sides of Crossbow. I used Copy II+ sector copy.

- 2** Rename the boot program to "G.MAIN". I used Copy II+.  
Enjoy the game.

Bit Copy for...

## Alien Mind

PBI

### ■ Requirements

- Copy II Plus (3 1/2" version)

In COMPUTIST #61 Dan Halfwit asked if anyone had any hints on how to crack or even copy Alien Mind. I have no idea how to crack this disk, however I have made a back-up of it.

The disk is very well protected, and I'm glad to see that they also spent a lot of time on the game as well. The only hints that I have changed the address header to D5AAAA, along with all the others. I hope some of the "Wiz Kids" out there can soon crack this program, my method takes a lot of time.

On to the important material, how did I get a back-up!

Here is the cookbook method that I used:

- 1** Get out your Copy II+ 3 1/2" bit copier.

- 2** Copy T0 to T1 - Keeping the track length (don't worry about error #6 on side 2).

- 3** Copy T2 to T4F using the following parameter changes.

01=09

0A=03

10=AA

55=02

Note: I got "5" errors on tracks 30 to 3F

- 4** Reset all the parameters to normal.

- 5** Copy T30 to T3F using normal bit copy.

- 6** Use the same method for disk #2.

Enjoy the game, I don't know how good this copy is because I have not solved the game yet.

Edward Teach

A.P.T. for...

## Into The Eagles Nest

?

The high scores are stored in track \$13, sector \$0D. If you look at the last half of this sector you will find the credits for the programmers. (What is "DINKY" DOS

anyway?). The last byte in this sector (\$FF) is the flag to show if you have completed the first castle. To be able to access either castle change this byte from a period "." (\$AE) to an exclamation point "!" (\$A1). Now when you boot the game it will ask which castle do you want?

Allan Pearl

Ever since I "discovered" the Visit Monitor option on the new IIGs control panel, I've found it to be quite useful. Some games like Broderbund's Wings of Fury were extremely hard to read the sectors off of, in order to edit for bombs, rockets, etc.

A.P.T. for...

## Wings of Fury

Broderbund

**1** Activate the hidden CDA's (see IIGs/page 6).

**2** Boot the disk and start the game at any rank you wish.

**3** Press **ESC**. Be very careful when you do this or the program may reboot. Select "Visit Monitor" in the CDA.

**4** Once in the monitor, you can start editing. Bombs are located at \$01/A9AA, rockets are at \$01/A9CE and torpedoes are at \$01/A9BD. For maximum of all three weapons type:

**01/A9BD:FF**  
**A9CE:FF**  
**A9AA:FF**

This only needs to be done once after the game has been booted.

You can use this on just about any game. All you have to know is what to look for and what to change it to, when you find it.

A.P.T. for...

## Gauntlet

Mindscape

Boot the disk on the back side and start the game. When the game starts enter the monitor. (Use the CDA.) To stop the one hit point countdown, change \$681F from E9 01 to EA EA. And as for Ghosts and other monsters, I found a few of their damage points located near \$8360-\$83AF. I typed in 8360:00 N 8361< 8360.83AFM. This will not make you completely immortal, but it will eliminate many menaces.

Ⓚ What's the deal with Electronic Art's Deathlord and Chuck Yeager's? Is this new protection impossible? I remember when

I thought Dino Eggs was impossible to even copy, not to mention deprotecting it. So I urge you all to take notice of this new protection. I'm sure someone out there is capable of deprotecting or even finding a parameter for copying this. I anxiously await the day when I see "Deathlord" on the front of my next COMPUTIST magazine and off the Most Wanted list forever.

Frank Thompson

Softkey for...

## Paperboy

Mindscape

### Requirements

- COPYA
- Copy II Plus
- Blank disk
- Paperboy (ProDOS IIe version)

Many people may not need to copy their game programs, but when my son, Mike, and his friends get together to play Paperboy, I have visions of them pretending they are paperboys and using the original disk as a pretend paper.

Unfortunately, Mindscape switched to ProDOS for this program and the DOS 3.3 cracks, which have appeared many times in COMPUTIST, do not work.

I'll go through a description of how the disk was deprotected as an aid to deprotecting similar ProDOS protection approaches.

Copy II Plus would copy the disk, but it would stop running shortly after loading a HiRes screen with garbage. It looked like a nibble count at work. When I tried to read the disk with Copy II Plus Sector Editor, the sector editor wouldn't read it. It obviously had a non-standard format.

I then copied the original with COPYA after poking DOS to ignore the read errors. This copy also hung up at the garbage HiRes screen. I had to disable the nibble count next. The nibble counts in most of the ProDOS programs seem to be in the .SYSTEM files. I first had to find the location of the .SYSTEM file, which in Paperboy, is called PLOAD.SYSTEM. Using Copy II Plus "View Files" Utility, I printed a hardcopy of this file. Using the Copy II Plus Sector Editor "Search" Utility, I searched for the hex bytes at the beginning of the PLOAD.SYSTEM hardcopy. This gave me the track and sector numbers for the first portion of the file. Marking the end of the file on the hardcopy, I then searched for the hex bytes at the top of the next portion of the program. In this way, I identified track \$14, sectors \$01, \$04, \$05 and \$0F as the location of the file. The ProSel Block Warden program can find the track/sectors more easily.

Because the nibble count would access the disk drive, I used the Copy II Plus Sector Editor to search for 8C 00 (\$C08C). I then marked each of these occurrences on the hardcopy printout. I looked at the code for a JMP (4C) or a JSR (20) after each occurrence on the hardcopy, as one of these often is associated with a nibble count. Only one JMP followed a LDA \$C08C. I NOP'd the JMP. The unprotected copy of Paperboy, with normal formatting, now boots and runs with no problems.

**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
\$14	\$01	\$2F-31	4C 47 22	EA EA EA

Dan Halfwit

Softkey for...

## 4th & Inches

Accolade

### Requirements

- Block editor

Make a fast copy of the master disk using your favorite copier. There are no errors. Then, using the block editor, read in block \$C5. Make the following changes:

Block	Byte(s)	From	To
\$C5	\$D2	20 ?? ??	EA EA EA
	\$DF	20 ?? ??	EA EA EA
	\$F3	??	00
	\$FF	??	00

Write the block back out, and enjoy.

Softkey for...

## Mini-Putt

Accolade

### Requirements

- Block editor
- Any 3 1/2" fast copier

This was a little trickier than 4th & Inches, but a little more fun. Try this: make the edits shown below, but skip the ones at \$1D6 and \$1E3. Play with it. The results are unpredictable, and what you will see didn't work for me. But if you NOP the JuMP and

patch the branch, all will work nicely. First, make a fast copy of the disk. No errors will show because it uses a sync signature that is a !Q%#@#% to copy. Then, make these edits:

Block	Byte(s)	From	To
\$3A	\$1AD	22	AF
	\$1B2	??	00
	\$1BD	22	AF
	\$1C2	??	00
	\$1D6	?? ?? ??	EA EA EA
	\$1E3	??	00
	\$1E5	??	00

That's all, folks. Sorry for the lack of explanation, I was just in a hurry to get these edits out. Later on, I am sure someone will send an explanation. If not, I'll write one up.

Zorro

## Apple DuoDISK Modification

### Requirements

- 1/4" diameter phillips-type screwdriver
- 1/8" standard screwdriver
- Surgical gloves
- About 3 feet of 18-gauge insulated wire
- Radio Shack 'soft feel' SPST push on/off switch (CAT NO. 275-1565)
- Soldering Pencil w/Solder
- Hand-Powered Drill with 1/4" bit
- Wire cutters
- Needlenose pliers
- Small sardine can
- Heat shrink tubing, 3/8" dia. and about 3/4-1 inch long
- A 1/4" to 1/2" reamer
- A large, clean workspace

**Warning:** many Apple dealers refuse to perform maintenance on modified equipment. This project will invalidate any warranties you may have. Perform this modification at your own risk.

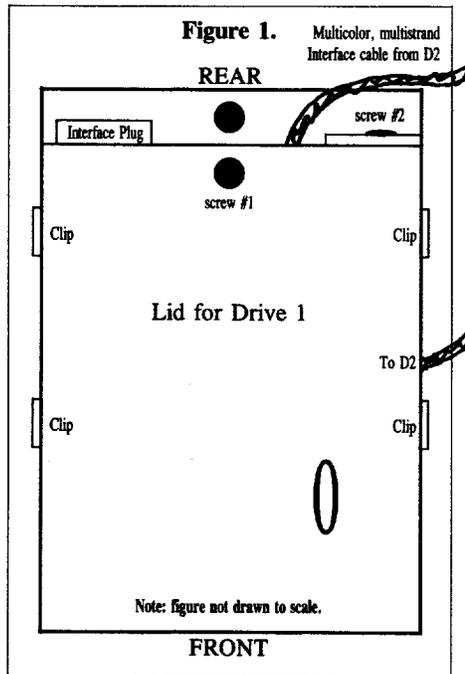
This project involves disabling the write protect sensor in drive 1 and replacing it with a switch so that the user can have control of write protection at all times. If you positively HATE using disk notchers, you will want to perform this modification. With the switch installed, you will be able to write your data to notchless disks, while your friends stare in awe at the process.

Before beginning the major surgery, we have to get inside our DuoDISK unit. If you have your monitor atop the drives (which is usually the case), then lift the monitor carefully and put it aside, disconnecting the cables if

necessary. Now, use your standard screwdriver to unscrew the retaining screws which are holding the interface cable to the plug; then remove your interface cable and put it aside. Your unit is now disconnected, so you may move it to a clear worktable.

Let's start by removing the outer cover. There are two screws holding the cover in place at the rear of the unit at the bottom-left and bottom-right corners; remove them and then remove the cover and put it aside. Put these screws into your can.

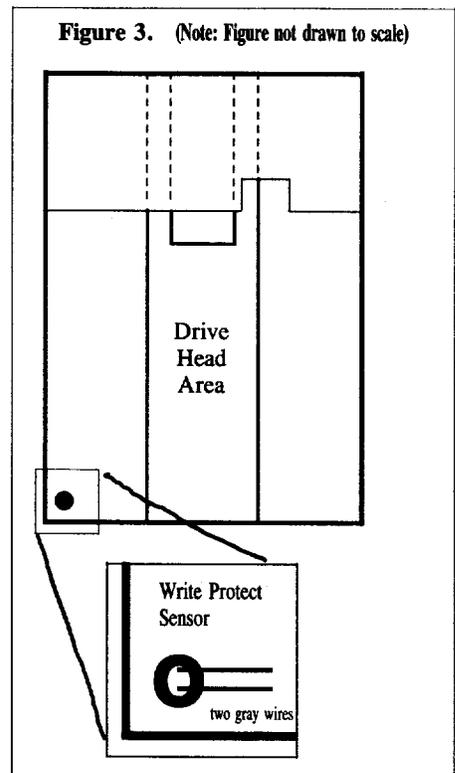
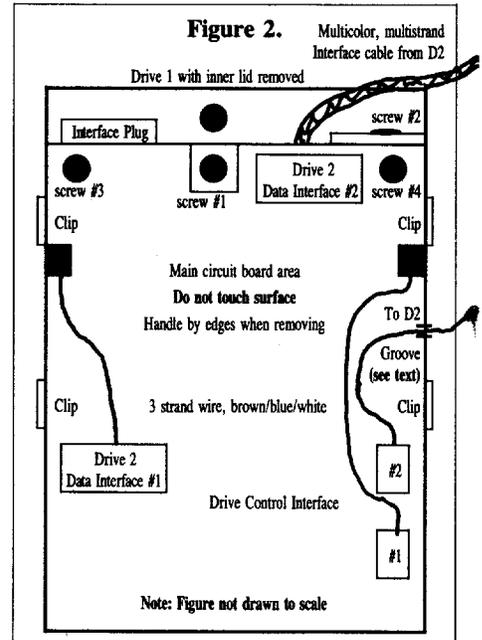
What we'll do now is open up drive 1 and disable its sensor. In Figure 1, remove screw #1 and #2 with your phillips screwdriver, and put them in the can also. Now, use your standard screwdriver to carefully pry the metal lid off. With the lid removed, you should be seeing the main circuit board. **DO NOT TOUCH ITS SURFACE!**



In Figure 2, only the various jacks are shown in their approximate locations. Ignore the rest of the circuitboard. Now, VERY CAREFULLY jiggle the designated jacks, DI#1, DI#2, DCI#1, DCI#2, until they are disconnected. Then remove screw #3 and #4 and put them in the can. Carefully pick up the board by its edges and turn it upside-down towards the right, so that the component side (side with the parts and integrated circuits) is face down atop DRIVE 2. Do not strain the other wires.

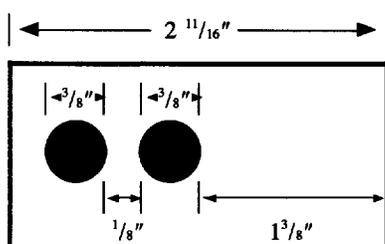
If you do not wish to continue, you had better back out now, because the following steps will involve irrevocable changes to parts of the drive. Take your wire cutters (gasp) and cut the gray wires going to the sensor so they are as

long as possible (see figure 3). Now, carefully strip the insulation to the wires, being careful not to pull them too hard. Now, take 2 lengths about 1 1/2' long of your wire and strip its insulation at both ends. Solder one wire to each of the W.P. sensor's gray wires, and insulate these connections with the heat shrink tubing.



Now we'll drill the holes for the switches. Follow the measurements in Figure 4. First drill a small pilot hole with the 1/4" bit, and then ream it out until the switch fits nicely within the hole. Then, to connect the switch, put the wires through the hole, and solder them to the switch. **MAKE SURE THE WIRES ARE GOING THROUGH THE HOLE WHEN SOLDERING THEM TO THE SWITCH!!** Otherwise, you'll have to disconnect the wires and resolder. Now you can put the switch into the hole so it's longer side is horizontal (Figure 4a). Tighten the nut with your pliers.

Figure 4. (Note: Figure not drawn to scale)



Drill 1/4" pilot holes and carefully ream until large enough.

Figure 4a.



Switch

That's it! Now go backwards and replace all parts, screws, and jacks which were removed. Now, push the switch in (ON-position) to write enable, and push the switch out (OFF-position) to write protect.

You may be wondering why there are two switch holes in Figure 4. On my DuoDISK, I installed switches on BOTH drives. If you wish to perform this modification on Drive 2, omit the steps concerning the circuitboard (since drive 2 doesn't have one), and use the measurements in Figure 4 to accurately place the switches so that their nuts don't jam each other up. The remainder of the instructions are the same.

If you have any questions, PLEASE ask; address them to me and send them to the RDEX!

Donald McClelland

Softkey for...

## Kings Quest III

Sierra Online

Some software companies continue to use the same protection scheme title after title. This was true with Kings Quest, & Kings Quest II. This is almost true with Kings Quest III. It is protected with two levels of protection, both from previously released titles. (Its good to keep your old issues of COMPUTIST!)

**1** Search the disk for C9 C9 D0 00 and change the D0 00 to 29 00. On my disk this was found on track \$0A, sector 01, bytes \$2D-2E.

**2** Search the disk for 20 00 FF and change to EA EA EA. This sequence was found in more than one place on the disk. On my copy it was on track \$0B, sector \$0C, byte \$0D and on track \$02, sector \$08, byte \$12.

Softkey for...

## Super Sign Maker

Sunburst Communication

This is a banner and sign creation program similar to Printshop that allows you to print your letters in colors and patterns. It is easily copied with Copy II Plus using the TRY HEADER option in the bit copier. Closer examination of the disk reveals that the track header information has a checksum byte in the address trailers. The program is CATALOG-able and uses ProDOS 8.

Copy the files to your own work disk with Copy II Plus, be sure to include ProDOS from your system disk. The disk must be named SSM! Now we can start the deprotection.

Upon booting the copied disk, enter the monitor via your favorite way after you get the error message "UNABLE TO LOAD SUPER SIGN MAKER". Ifgs owners can use the Control Panel Entry. From the monitor, you'll notice that at \$2000 is the SSM.SYSTEM file. If you follow this code it sends you way up into the \$BDC3 area of memory which will jump around for a bit then send you to \$801. The Die Hards can follow that, but we'll cut it to the quick and start at \$801. The code we're interested in is at \$80D and looks like this:

```
080D- A2 1E LDX #51E
080F- BD 1A 08 LDA $081A,X
0812- 9D AC 05 STA $05AC,X
0815- CA DEX
0816- 10 F7 BPL $080F
0818- 30 FE BMI $0818
081A-
```

Start of ERROR Message

What this code does is to move from \$81A to \$5AC, the Message "UNABLE TO LOAD SUPER SIGN MAKER." So we're real close. You should notice that the code at \$818 is an endless loop. So EA the two bytes at \$818. We list the code further on and we find a some strange looking stuff at \$086A that looks like this:

```
086A- 28 PLP
086B- 38 SEC
086C- 60 RTS
086D- 28 PLP
086E- 18 CLC
086F- 60 RTS
```

This is pretty standard for checking routines where if there is an error you will jump to \$86A and set the Carry Flag (SEC) and handle the error in another routine. Or if no error has occurred, you'll enter this routine at \$086D and clear the Carry Flag (CLC). So if we change the \$38 at \$086B to an \$18, we'll tell the code that it will never have an error. Once you change the code, start the program with an 801G and you'll be up and running.

So far, we've found the routines in memory but haven't done anything with the disk. So we need to search the disk for the bytes we want to change plus a few extra on either side to ensure that we get the right code sequence. For the first sequence we'll search for 10 F7 30 FE D5 CE and change the 30 FE to EA EA. Write the sector back to the disk. Then search for 28 38 60 28 18 60, change the 38 to 18 and again write the sector to the disk. That makes a deprotected copy of Super Sign Maker.

**1** Copy the files with Copy II Plus or if you want copy the entire disk.

**2** Search the disk for 10 F7 30 FE D5 CE and change the 30 FE to EA EA.

**3** Search the disk for 28 38 60 28 18 60 and change the 38 to 18.

Put your original away and use your deprotected copy.

Brent Spectrum

I love the new open format and feel that it was a good decision to open the RDEX to other computers. By doing so, you increase my knowledge of other computers. Though my knowledge consists of odds and ends about the Mac and Apple II series, I find it quite intriguing to see what copy protection is being used on other computers. Hopefully the end result of our battle will be the death of that intrepid monster called copy protection. Many thanks for a wonderful magazine. May it forever prosper.

Ⓜ I have been unable to get the ALTERNATE REALITY character editor to

work properly. What does the '#' in lines 760 and 1150 mean? It certainly is not a BASIC command, that is, if I remember correctly. Is this a bug? I think it would be really helpful if people wrote in and reported bugs as soon as they found them.

**I** The number sign "#" should be a exponent sign "^^". . . . . RDEXed

Softkey for...

## Principles of Economics

McGraw-Hill

### ■ Requirements

- Sector Editor
- 10 Blank disks (or sides)
- 64K (Required by Program)

"Principles of Economics" is a ten disk series in Pascal that teaches its user the basic principles of economics. The only problem is that Mc-Graw Hill does not provide back-up copies. This is crazy considering the amount of disk access and the fact that students will be using it.

### The Protection

The disk is standard DOS 3.3 format and can be easily copied with COPYA or any other copier for that matter. The only problem is that when the copied disk is booted it crashes and says "copy protected". My next step was to search the disk for \$C0EC (direct disk in Pascal). I found it two times on each disk. I Then examined the tracks where I had found the reference to \$C0EC and found the start of the nibble count on track \$05, sector \$00, byte \$6E for disks 1, 4, 5, 6 and on track \$04, sector \$07, byte \$6E on the others. By forcing the "protection check" to ignore the results I was able to produce working copies. For those of you who are interested, here is what the check looked like.

```
AD CE C0 LDA $C0EC
10 FB BPL $2EAC
C9 EF CMP #$EF
D0 CE BNE 2E83
48 PHA
68 PLA
AD EC C0 LDA $C0EC
C9 08 CMP #08
B0 C5 BCS $2E83
```

### The Softkey

- 1** Copy all the disks with any fastcopier (Preferably Locksmith 6.0 Fastcopy).
- 2** Get out your sector editor and read in the correct track with the corresponding disk and perform these edits.

for disks 1, 4, 5 & 6

Trk	Sct	Byte(s)	From	To
\$05	\$00	\$B3-B4	D0 CE	EA EA
		\$BC-BD	B0 C5	EA EA

for all others

Trk	Sct	Byte(s)	From	To
\$04	\$07	\$B3-B4	D0 CE	EA EA
		\$BC-BD	B0 C5	EA EA

There, now you have "Principles of Economics" deprotected. Hopefully this or a method similar to this will work on other McGraw-Hill software written in Pascal.

A.P.T. for...

## Moebius

Origin Systems

### ■ Requirements

- Sector Editor
- Disk search utility

A. Evans had some interesting things in his APT for Moebius (COMPUTIST #57, pg 20), but he didn't have the whole picture. Here is a somewhat more lengthy and verbose table of most of the possible effects in Moebius. As with A. Evans article there are a few steps to perform before one can procede with the APT.

- 1** Boot Moebius and write down your character(s) infomation i.e. Name(s) and Realm(s) of the character(s) "on adventure".
- 2** Now search the appropriate disk(s), side C (earth/water) or side D (air/fire) for the name of your character(s).
- 3** Use the following information to develop the ultimate character to defeat the Warlord.

*Numbers are in hex. Experience is a two byte hex number in lo byte, hi byte order. Maximum values are \$FF except for "\*" items which are \$01 if you have it and \$00 if you don't. For "Equiped item" a \$01 = sword while \$00 = bare hands.*

Effect	Byte(s): Notes:
Name	00-0F
Experience	12-13 <i>High Byte Last</i>
Level	14
Maximum Body	15
Body	16
Maximum Mind	19
Mind	1A
Location	1D-1E <i>X,Y Cordinates</i>

On the next consecutive sector:

Equiped Item	42*
Food	44
Water	45

Torches	46
Whetstones	47
Body Elixers	48
Mind Elixers	49
Shovel	4A*
Amulet	4B*
Gauntlet	4C*
Orb	4D*
Shurikens	4F
Hammer	50*
Sword	51*
Map: Cisterns	58*
Map: Shrines	59*
Map: Buildings	5A*
Map: All Sites	5B*
Population Lens	5C*
Terrain Lens	5D*
Artifact: Ventriloquism	5E*
Artifact: Teleport	5F*
Artifact: Paralysis	60*
Artifact: Invisibility	61*
Artifact: Were-Spell	62*
Artifact: Spirit	63*
Tiger Teeth	64
Beetle Pincer	65
Soil Sample	66
Fish Scales	67
Condor Feathers	68
Panda Hair	69

Note: Many of the "effects" have a maximum value of \$FF, but are displayed as a number from 0-100, water is a good example of this. When a value greater than 100 is used, strange characters appear in place of the numbers. Don't worry, this has no ill effect on the game. Some of the "effects" will flip over. (ie. You have \$FF of an item and you find one more, you will now have \$00. Not good.) To solve this, just don't get too greedy. I have not in any way found all the "effects", so if someone happens to find something interesting please write in and tell us about it.

Jayne W. Irwin

Softkey for...

## Notes 'N' Files

Notes 'N' Files is a graphics-oriented fixed data base for the Apple IIGs. Using it is a snap. It's great for keeping track of names and addresses and printing form letters and labels.

The first thing I do when I get a new disk is to make a backup using Copy II+ copy disk, then I try out the copy. If it's not copy protected, it'll usually work, if it is it'll either ask you to insert the master disk, hang, or crash. Notes 'N' Files crashed.

Entering **⌘** **RETURN**, gives you the location of the crash and the register values. My version crashed at \$03/4B8B.

Figuring the beginning of bank 3 was as good a place as any to start looking. I found a JSL (jump subroutine long) at \$0000 which sets up the program. The next possibility was a JMP (jump) at \$000B. This sent me to \$6525. This is what I found there.

```
6525 20 91 6C JSR 6C91
6528 20 D5 AA JSR AAD5
652B 22 06 08 01 JSL 010806
652F 8D 7E 65 STA 657E
.....
657D 4C 8B 4B JMP 488B
```

The jump at \$657D sent the program to the crash location; therefore, the "STA 657E" at \$652F was the culprit. The "JSL 010806" at \$652B looked very suspicious. I knew I was on the right track, but when I checked out \$01/0806 there was nothing there but zeros. The protection code was erased before the program crashed.

Sometimes, it's not a bad thing to have a program crash, if it crashes where you want it to. I used Copy II+ to search for 20 91 6C 20 D5 AA 22, the code right before the JSL, then I replaced the 8D immediately following the JSL code with 00. This time the program crashed at \$03/652F and the protection code was still at \$01/0806. I won't include all of it but here's the more important parts:

```
0821 22 00 00 E1 JSL E10000
0825 22 77 0D 03 JSL 000D77
0829 8D 00 08 STA 0800
082C C0 00 00 CPY #0000
082F F0 03 BEQ 0834
```

Change these bytes form F0 03 to 80 52 (BRA 0883) to bypass the protection.

```
0831 4C AC 08 JMP 08AC Addr. changes when relocated
0834 E0 43 06 CPX #0643 Protection begins here
.....
087E C9 00 00 CMP #0000 Last compare
0881 D0 05 BNE 0888
0883 A9 EB 65 LDA #65EB Branching here avoids
0886 80 06 BRA 088E the protection checks
0888 A9 7D 65 LDA #657D Program hangs if $0888 and
088B 8D 06 08 STA 0806 $088B are executed
088E 48 PHA
.....
08A7 6B JSL
```

Finally, to remove the copy protection, I used the sector editor on Copy II+ v8 and searched the disk for F0 03 4C AC 08 E0 43 06 90 03, but no luck. I decided to search just for E0 43 06 90 03 and found them in block \$0374, beginning at byte \$07A. The code preceding it was F0 03 4C AC 00. The 00 had changed to 08 when the program was relocated.

**1** Use a copy program that ignores errors and copy the disk.

**2** Search for F0 03 4C AC 00 E0 43 06 90 03 and replace the F0 03 with 80 52. On my version it was in block \$0374, byte \$075.

That's it.

Jack R. Nissel

Softkey for...

## Math Shop

Scholastic Software

### Requirements

- A blank disk with a notch on both sides or two blank disks
- DOS 3.3 system master
- A slave disk
- Copy II Plus

**1** Boot your DOS 3.3 system master and at the "J" prompt enter:

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

**2** Copy side 1 of your original disk to your slave disk.

**3** Copy side 2 of your original disk to side 2 of your blank disk.

**4** Use Copy II Plus to format side 1 of your blank disk as a ProDOS disk and give it any short volume name.

**5** Use the copy files option from Copy II Plus to copy all of the files from your slave disk to your ProDOS formatted disk and then change the volume name of the disk to the same name as your slave disk.

Softkey for...

## Dataquest:

### Presidents Data Base

MECC Software

### Requirements

- A blank disk that has a notch on both sides or two blank disks
- DEMUFFIN PLUS
- DOS 3.3 system master
- A way to reset into the monitor

**1** INITIALize each side of your blank disk HELLO and delete the HELLO program.

**2** Boot side 1 of your original disk and when the "J" prompt comes on the screen reset into the monitor.

**3** Move the RWTS to a safe place and boot your initialized disk.

**6800<B800.BFFFM**  
**C600G**

**4** Put in your Demuffin Plus disk and enter:

CALL-151

**BLOAD DEMUFFIN PLUS, A\$803**

**FF50G**

(if you hear a beep ignore it)

**B800<6800.6FFFM**

**A851G**

**803G**

**5** Put in side 1 of your original disk and copy all of the files to side 1 of your blank initialized disk.

**6** Repeat steps 2-5 for side 2.

Softkey for...

## Elementary Social Studies

### Volume 3

MECC Software

### Requirements

- A blank initialized disk
- A blank initialized slave disk
- Super IOB v1.5
- A way to reset into the monitor

**1** Initialize your blank disk.

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

**2** Boot your original disk and at the Applesoft prompt reset into the monitor.

**3** Move the RWTS to a safe place by entering:

**1900<B800.BFFFM**

**4** Put in your slave disk and enter:

**C600G**

**5** After the disk boots and the Applesoft prompt appears, insert your Super IOB disk and save the RWTS to it by entering:

**BSAVE RWTS.ELEM VOL 3 SOCIAL STUDIES,**  
**A\$1900, L\$800**

**6** Install the controller into Super IOB, run it and copy your original disk to your blank disk. Answer NO when asked if you want to initialize the blank disk.

### Controller

1000 REM ELEMENTARY - VOLUME 3 SOCIAL STUDIES

1010 TK = 3:ST = 0:LT = 35:CD = WR

1020 T1 = TK:GOSUB 490:GOSUB 360:ONERR GOTO 550

1030 GOSUB 430:GOSUB 100:ST = ST + 1:IF ST < DOS THEN 1030

1040 IF BF THEN 1060

1050 ST = 0:TK = TK + 1:IF TK < LT THEN 1030

1060 GOSUB 490:TK = T1:ST = 0:GOSUB 360

1070 GOSUB 430:GOSUB 100:ST = ST + 1:IF ST < DOS THEN 1070

```
1080 ST = 0: TK = TK + 1: IF BF = 0 AND TK < LT THEN
1070
1090 IF TK < LT THEN 1020
1100 HOME : PRINT "COPY^DONE" : END
10010 PRINT CHR$ (4) "BLOAD^RWTS.ELEM^VOL^3^
SOCIAL^STUDIES,^A$1900"
```

### Checksums

1000	- \$356B	1060	- \$20C0
1010	- \$3565	1070	- \$28C5
1020	- \$6170	1080	- \$6CA2
1030	- \$7771	1090	- \$9DCA
1040	- \$6342	1100	- \$9A4D
1050	- \$ABA3	10010	- \$42FE

Softkey for...

## Elementary Social Studies

### Volume 6

MECC Software

#### ■ Requirements

- A blank disk
- A empty initialized slave disk
- Super IOB v1.5
- A way to reset into the monitor

**1** Initialize your blank disk.

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

**2** Boot your original disk and at the Applesoft prompt reset into the monitor.

**3** Move the RWTS to a safe place by entering:

```
1900<B800.BFFFM
```

**4** Put in your slave disk and enter:  
**C800G**

**5** After the disk boots and the Applesoft prompt appears, insert your Super IOB disk and save the RWTS to it by entering:

```
B$AVE RWTS.ELEM VOL 6 SOCIAL STUDIES,
A$1900, I$800
```

**6** Install the controller into Super IOB, run it and copy your original disk to your blank disk. Answer NO when asked if you want to initialize the blank disk.

### Controller

```
1000 REM ELEMENTARY - VOLUME 6 SOCIAL STUDIES
1010 TK = 3: ST = 0: LT = 35: CD = WR
1020 T1 = TK: GOSUB 490: GOSUB 360: ONERR GOTO
550
1030 GOSUB 430: GOSUB 100: ST = ST + 1: IF ST < DOS
THEN 1030
```

```
1040 IF BF THEN 1060
1050 ST = 0: TK = TK + 1: IF TK < LT THEN 1030
1060 GOSUB 490: TK = T1: ST = 0: GOSUB 360
1070 GOSUB 430: GOSUB 100: ST = ST + 1: IF ST < DOS
THEN 1070
1080 ST = 0: TK = TK + 1: IF BF = 0 AND TK < LT THEN
1070
1090 IF TK < LT THEN 1020
1100 HOME : PRINT "COPY^DONE" : END
10010 PRINT CHR$ (4) "BLOAD^RWTS.ELEM^VOL^6^
SOCIAL^STUDIES,^A$1900"
```

### Checksums

1000	- \$356B	1060	- \$20C0
1010	- \$3565	1070	- \$28C5
1020	- \$6170	1080	- \$6CA2
1030	- \$7771	1090	- \$9DCA
1040	- \$6342	1100	- \$9A4D
1050	- \$ABA3	10010	- \$57DC

Softkey for...

## Path Tactics

MECC Software

#### ■ Requirements

- A blank initialized disk
- Super IOB v1.5

**1** Initialize your blank disk.

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

**2** Install the controller listed below into Super IOB, run it and copy your original disk to your blank disk. Answer NO when asked if you want to initialize the blank disk.

### Controller

```
1000 REM PATH TACTICS
1010 TK = 3: LT = 35: ST = 15: LS = 15: CD = WR: FAST
= 1
1020 RESTORE : GOSUB 190: GOSUB 210
1025 GOSUB 490: GOSUB 610
1030 GOSUB 230: GOSUB 490: GOSUB 610
1035 IF PEEK (TRK) = LT THEN 1050
1040 TK = PEEK (TRK): ST = PEEK (SCT): GOTO 1020
1050 HOME : PRINT "COPY^DONE" : END
5000 DATA ^170, 213, 173, 213, 150, 170
```

### Checksums

1000	- \$356B	1035	- \$FDDB
1010	- \$2445	1040	- \$F69F
1020	- \$288C	1050	- \$7098
1025	- \$F0C7	5000	- \$246D
1030	- \$6686		

Bill Jetzer

Softkey for...

## Microtype

?

#### ■ Requirements

- 2 blank disk sides
- Sector editor
- Demuffin+

Microtype uses a form of protection that I've never seen before. The address markers have been changed from D5 AA 96 to D5 AA 97. What follows next is a series of 8 "1" bits (\$FF) followed by several more bits written to the disk, but not enough to make a byte. The read routine on the disk reads the 97 and then delays a while before it starts reading the track, sector, and checksum values.

Here are the cookbook instructions to completely deprotect Microtype:

**1** Initialize two blank disks.

**2** Patch the second disk so that all the files will fit onto it by making the following sector edit:

Trk	Sct	Byte(s)	From	To
\$11	\$00	\$40	00 00	FF E0

**3** Load Demuffin+ into memory:

**BLOAD DEMUFFIN +**

**4** Make some changes to DOS so that it will look for only the AA 97, and then delay for a while until the track values pass under the R/W head.

```
B6F8:20 58 FF 4C 58 FF
B964:20 F8 B6 EA
B968:EA 26 06 66 06
B955:AA
B95F:97
```

**5** Start Demuffin+.

**803G**

**6** Copy all the files.

## EODIS Adapter

#### ■ Requirements

- EODIS (COMPUTIST #57)
- CAPTURE (Starter Kit)

While snooping around Marble Madness, I found two versions of EOAPL, each different

from the version Phil Goetz described in his EOAPL article (COMPUTIST #57, pg 10). Since there was quite a bit of it, I decided write a program to modify EOADIS instead of disassembling it by hand. But first, some of the code had to be moved around so that extra commands would fit. Here are the instructions:

**1** Load EOADIS into memory.

**CALL -151  
BLOAD EOADIS**

**2** If you have a IIC, fix it so that it prints the proper characters (#,\$,etc.).

**858:B9** was B3  
**85E:B3** was B9

**3** Move the "INSDS1" code up in memory.

**89C<8F0.911M**

**4** Inform EOADIS of the new locations of INSDS1 and the tables.

**820:9C** was F0  
**83F:DA** was B8  
**8B2:BE** was 9C  
**8B7:CC** was AA

**5** Replace the tables (can be skipped if your version doesn't have the original commands).

**8BE:02 02**  
**8C0:02 01 02 02 02 01 00 00 02**  
**8C8:02 00 02 00 80 80 80 20**  
**8D0:80 80 80 20 00 80 80 00**  
**8D8:80 00 C7 CF D4 CF CA D3**  
**8E0:D2 D6 C7 CF CE C5 CC C4**  
**8E8:B5 B6 CC C4 B5 B6 C7 D3**  
**8F0:D5 C2 D3 D4 B5 B6 D3 B5**  
**8F8:B6 AD D2 D4 D2 CE CA D3**  
**900:D2 A0 C9 CE C3 A0 D2 D4**  
**908:D3 A0 D3 B5 B6 AB BF BF**  
**910:BF BF**

**6** Save the file.

**BSAVE EOADIS, A\$800, L\$112**

**7** Type in the listing at the end of the article and save it.

**SAVE EOADIS.ADAPTER**

**8** Now you need to make an exec file with your command data in it. The advanced version of EOAPL on Marble Madness has the following commands:

**GOTO** addr  
**JSRV** addr 6502 JSR. On entry, A ← Pseudo Acc (PA). On exit, PA ← A.  
**GOEQ** addr Go to addr if PA = 0  
**LDPA** num  
**LDPA** addr  
**GSUB** addr  
**STPA** addr  
**SUBT** num PA ← PA - num

**JMP** addr 6502 JMP; exits EOAPL  
**RTRN** Return from subroutine  
**LD,A** addr PA ← addr, PA  
**DUBL** PA ← PA + PA  
**INCR** addr INC addr: PA ← addr  
**ADD** addr PA ← addr + PA  
**EXOR** (\$4C) ← (\$4C) XOR PA: INC (\$4C):  
INC (\$4C): PA ← \$4D XOR #568  
**GONE** addr Go to addr if PA > 0  
**SUBT** addr PA ← PA - addr  
**MOVE** (\$4E) ← (\$4C)

To put these commands into EOADIS, type this program in and use CAPTURE from the starter disk to save it as a text file with the name PL.MARBLE MADNESS1. Line 20 contains the length in bytes, minus one, of each command. Line 30 contains the text of the commands. Each command must be 4 characters long:

10 PRINT CHR\$(4)"BLOAD EOADIS, A\$800"  
20 L\$ = "22122212020220220"  
30 T\$ = "GOTOJSRVGOEQLDPALDPAGSUBSTPJSRV"  
RTRNLD, ADUBL INCRADD\* EXORGONESUBTMOVE"

**SAVE PL.MARBLE MADNESS1**

**9** Run the adapter program. It will rerun itself at a higher memory location so that it doesn't interfere with EOADIS:

**RUN EOADIS.ADAPTER**

**10** You will be prompted for the file to execute. Trace over the letters and then type PL.MARBLE MADNESS1. Then run the resulting program. After a few seconds, you will be shown the length, in decimal, of the new EOADIS file in case you want to save it.

## Finding the Commands

Finding out what the commands are is tricky. First, search search memory for the following series of bytes: C8 D0 02 E6. You may find them in several places. They should disassemble something like this:

AA45 B1 46 LDA (\$46),Y  
AA47 C8 INY  
AA48 D0 02 BNE \$AA4C  
AA4A E6 47 INC \$47  
AA4C AA TAX  
AA4D BD 60 AA LDA \$AA60,X  
AA50 18 CLC  
AA51 69 72 ADC #\$72  
AA53 8D 5E AA STA \$AA5E  
AA56 A9 AA LDA #\$AA  
AA58 69 00 ADC #\$00  
AA5A 8D 5F AA STA \$AA5F  
AA5D 4C xx xx JMP \$xxxx

Find the table of 10 bytes (LDA \$AA60,X) and write them all down. Calculate the addresses of the commands and start disassembling. It may take a while to figure out what all the commands are, but this is the only way to do it. Once you have all the commands

written down, go back up to step 8 to modify EOADIS.

## EOADIS.ADAPTER

```
10 IF PEEK (104) <> 32 THEN POKE 104, 32: POKE
8192,0: PRINT CHR$(4) "RUNEOADIS.
ADAPTER"
20 NORMAL : TEXT : HOME : PRINT CHR$(21) : VTAB
12: PRINT "]EXEC" : VTAB 11: END
50 L$ = L$ + "0" : T$ = T$ + "???" : L = LEN (L$) : T
= LEN (T$) : F(0) = 0 : F(1) = 32 : F(2) = 128 : TA
= 2111 : C1 = 2217 : C2 = 2221 : FA = 2231 : LS =
2238 : FS = LS + L : TS = FS + L
60 POKE FA, FS - INT (FS / 256) * 256: POKE FA +
1, FS / 256
70 POKE TA, TS - INT (TS / 256) * 256: POKE TA +
1, TS / 256
80 POKE C1, L - 1: POKE C2, L - 1
90 FOR X = 0 TO L - 1
100 POKE LS + X, VAL ( MID$ (L$, X + 1, 1)) : POKE
FS + X, F ( VAL ( MID$ (L$, X + 1, 1)))
110 NEXT
120 FOR X = 0 TO T - 1
130 POKE TS + X, ASC ( MID$ (T$, X + 1, 1)) + 128
140 NEXT
150 PRINT "]BSAVE"EOADIS, A$800, L" TS + T: VTAB
PEEK (37) - 1
```

## Checksums

10	- \$A04C	100	- \$5F9C
20	- \$7774	110	- \$2EB1
50	- \$AEF9	120	- \$DF46
60	- \$BC96	130	- \$E657
70	- \$44F9	140	- \$89CF
80	- \$FB11	150	- \$FF1C
90	- \$6BD2		

## Merging Controllers (into Super IOB)

### ■ Requirements

COMPUTIST Starter Kit

There seems to be some confusion among some of the newer COMPUTIST readers about how to merge controllers with Super IOB. Paul Dillon described one method using CSAVER in the October issue, but not everyone has that program. Here is the procedure for using CAPTURE, which every subscriber has:

**1** Type in the controller as it appears in the magazine. To make sure you typed it in correctly, use CHECKSOFT to compute the checksums (the instructions appear on one of the first pages of every issue).

**2** Now you must save it as a text file. Insert the disk with the capture program on it and type:

**EKEX CAPTURE**

**3** Insert the disk where you keep all of your Super IOB data. CAPTURE will ask you for the name of the file you wish to save. Type the name of the program that this controller is for then add ".CON". (Remember, Applesoft controllers have the prefix "CON." and text file controllers have the suffix ".CON".) The disk will whirl as the file is saved, and you will be left in BASIC.

**4** To use this controller, load Super IOB into memory, execute (merge) the controller and run the result.

**LOAD SUPER IOB  
EKEX program.CON  
RUN**

If you are using a swap controller, be sure that the proper RWTS is present on the disk or you will get a "FILE NOT FOUND" error:

**5** Follow the prompts and copy the disk.

Some of the confusion probably arose when beginners came across controllers from the COMPUTIST library disks. These are stored as Applesoft files. To use one of them, just LOAD it and go to step 2.

*Softkey for...*

**Troll's Shop Right**

?

**Requirements**

- Super IOB 1.5

I recently deprotected Troll's Shop Right for a school and thought I'd pass on the softkey to you. The protection is simple: altered epilogues and address markers that are changed to D4 AA 96 on the odd tracks. Type in the controller and save it. Merge it with Super IOB 1.5 and run it. If you want to get the disk into a completely normal format, you can put a normal DOS onto the copy. This controller also works for Garde's Blue Powder Grey Smoke and SSI's Colonial Conquest.

**Controller**

```
1000 REM TROLL SHOP RIGHT
1010 TK=0:LT=35:ST=15:LS=15:CD=WR:FAST=1
1020 POKE 47426,24:POKE 47447,0:GOSUB 490:
GOSUB 610
1030 POKE 47426,56:POKE 47447,240:GOSUB 490:
GOSUB 610:IF PEEK (TRK)=LT THEN 1050
1040 TK=PEEK (TRK):ST=PEEK (SCT):GOTO 1020
1050 HOME:PRINT "COPY DONE":END
```

**Checksums**

1000 - \$356B	1030 - \$F043
1010 - \$2544	1040 - \$0686
1020 - \$CAB6	1050 - \$7261

*Softkey for...*

**New Oregon Trail**

MECC

**Requirements**

- Super IOB 1.5
- Sector Editor

The address markers have been changed to AA D5 AD and the data markers have been changed to D5 96 AA. Type in the controller and save it. Merge it with Super IOB 1.5 and copy both sides of the disk. Make the following sector edits to the front side:

Trk	Sct	Byte(s)	From	To
\$00	\$07	\$86	96	AA
		\$8B	AA	AD
	\$08	\$1F	96	AA
		\$2A	AA	AD
		\$83	AA	D5
		\$8D	D5	AA
		\$98	AD	96
	\$0B	\$A8	AA	D5
		\$AD	D5	AA
		\$B2	AD	96

**Controller**

```
1000 REM NEW OREGON TRAIL
1010 ST=15:LS=15:CD=WR:FAST=1
1011 TK=0:LT=1:GOSUB 490:GOSUB 610:GOSUB
490:GOSUB 610
1012 TK=1:LT=35
1020 POKE 47445,170:POKE 47455,213:POKE
47466,173:POKE 47345,150:POKE
47356,170:GOSUB 490:GOSUB 610
1030 GOSUB 230:GOSUB 490:GOSUB 610:IF PEEK
(TRK)=LT THEN 1050
1040 TK=PEEK (TRK):ST=PEEK (SCT):GOTO 1020
1050 HOME:PRINT "COPY DONE":END
```

**Checksums**

1000 - \$356B	1020 - \$0A0E
1010 - \$88AA	1030 - \$3F97
1011 - \$52E4	1040 - \$BAAD
1012 - \$3C2D	1050 - \$6832

Edward Croft Jr.

*Softkey for...*

**Starglider**

Rainbird/Firebird Software

**Requirements**

- Any fast copier
- One disk
- A sector editor

This softkey was prompted by the softkey for Star Fleet I in COMPUTIST #60. Starglider by Rainbird/Firebird software is also copyable, but to use the program you must look up in the manual a certain word in a specified paragraph, line, etc.

This is really a pain to do. Not to mention what happens if the manual is lost. (Have you ever seen a hacker/gamers computer nest?) So not to be out done by Mr Dan Halfwit (I hope that isn't your real name.), I set out to get rid of this pestilent protection.

As in the case of Star Fleet I, Starglider also had a lot of encrypted pieces of code on the disk. (Was I suprised?) I tried to use Mr Halfwit's article as a reference, but, alas, I ended up on my own.

So after dumping a few K to the printer and carefully looking over the code (for hours) to see just what was happening, I decided my best course of action was a educated guess. And as you see, plain dumb luck won out.

**1** Use your fast copier to Copy Starglider onto the blank disk.

**2** Sector edit the copy.

Trk	Sct	Byte(s)	From	To
\$10	\$0F	\$2A-2B	90 0D	18 60

That's it. The program will now accept any word when you are prompted to enter it.

**H** Perhaps someone can make it so it doesn't even ask? ..... RDEXed

I just bought Pirates GS from Microprose (which is a GREAT game), guess what!! Not only do you have to enter a code from the manual, but the darn disk is protected as well (So that you can't get it on a hard-disk or back it up). And to top it off my disk crashed two days after I got it!! Also, just to prove someone has a sense of humor, Pirates happens to be one of those games that is virtually worthless without the documentation! So here I sit, out my money while I wait for a new disk to show, that really didn't need to have ANY protection on it at all!

I don't know about you people, but I sure would be interested in a response from Microprose (and a few others) about their type of thinking. Many other software companies have reduced (and in a lot of cases have eliminated) protection on their newest software.

I have read letters in the past in COMPUTIST about pirating and I really didn't intend to get into the subject, but since this came up I may as well. (If the editor has room.) So here is how I came to get "into" pirating.

After using a "cassette" drive for a year I finally acquired my first disk drive. Naturally as soon as I could afford it I started buying the latest disks. One of which would boot one out of twelve times on my Apple II. Another of the disks died a horrible death and left many mourners behind. And still a third was not worth the disk the bytes were embedded on. All of this was at the height of the pirate controversy.

A certain well known head of a software company (that used a penguin) was quoted as saying that nobody's business was going to fold if a piece of game software, that couldn't be backed up, had to be sent back to be replaced. Well to be honest he was *almost* right, it didn't affect *my* business, on the other hand Sirius and a couple of others may have had second thoughts on this.

Anyway, here I was paying good money for disks that quite frankly weren't doing the job. Then I discovered the pirate software world, disks that would boot with no problem (and usually faster), that sometimes had multiple files on a single disk, disks that could be inspected, copied and modified with no problem. Hey, this is great, so I got my hands on anything that would teach me about de-protection. Because you see, in the pirate community, you have to have pirated disks to trade if you wish to get pirated disks. The only other option was to try to break every disk I bought, and I just don't have enough time for this (even if the protection wasn't beyond my ability). So its sort of a vicious circle. (I did try to break out by buying a couple of disks later on, but one disk had to be sent back because it crashed and couldn't be backed up.)

Then came the Woz machine, the IIGs. At first everything seemed like it was going to be protected too, then for some reason software companies seemed to be removing a lot or all of their protection, even on some of the GAMES! I went back to buying my IIGs software, for now, because on the negative side of pirating there are long hours cracking disks, big phone bills (if your up/downloading), lack of documentation and its just plain illegal. (In other words, I would rather buy my software.) But this latest incident with Microprose has given me second thoughts. I hope most companies give some thought to removing protection from their products because it comes

down to your hand in my pocket or my hand in yours. 'nuff said.

David R. Hopkins

## Super Index Bugs?

For those readers who ordered my Super Index (COMPUTIST #57), the following are some points that need clarification:

- Computist's first issue, **HARDCORE COMPUTING**, volume 1, number 1, was printed in 1981 (not 1983). The Computist Super Index includes every issue.
- Each monthly "UPDATE" consists of the **entire data base**, including the current month's issue, corrections, and additions.
- Prices listed include the item ordered and the **shipping**. There are **no additional charges** for shipping & handling.
- "Shipping Desired" is only required for deliveries out of the U.S. Shipping in the U.S. is always first class.
- Disk format can be in DOS 3.3, if desired.
- PFS File can not access this data base.

**HELP WANTED!** My intention, in creating the Computist Super Index, is to make this the most comprehensive index-data base offered for COMPUTIST subscribers. The best way I know to accomplish this is to find out what is wanted from the people this data base is created for. I would welcome recommendations from COMPUTIST subscribers, the staff of COMPUTIST, and the people that have purchased the Computist Super Index. Let me know what YOU would like to see in this data base by making an "input" to COMPUTIST or sending a postcard or letter to: David R. Hopkins, 3495 W. Hoye Place, Denver CO 80219.

Michael R. Smith

Softkey for...

## Ultima V

Origin Systems Inc.

### ■ Requirements

- Super IOB v1.5
- Blank Disk
- COMPUTIST #60 (Recommended Reading)

The Ultima V softkey by Ron Dippold in COMPUTIST #60 (page #21) was very helpful, but did not quite do the job with my original. So, using a similar controller and the same modified RWTS, I was able to make a backup of my original Ultima V diskette.

Examination of my original disk reveals that tracks \$00 thru \$02 have been protected

with the address field epilogues being altered from the normal DE AA to AB FF and by modified checksums. As for tracks \$03 onward, the same altered address field epilogues and altered checksums as well as sectors strangely numbered from \$11 (17) to \$20 (32) instead of \$00 (0) to \$0F (15).

1 Boot DOS 3.3.

2 Copy and modify the RWTS.

**CALL -151**

**1900<B800.BFFFM**

**1A2D:18 60**

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

3 Save modified RWTS for use with Super IOB.

**BSAVE ULTIMA V.RWTS, A\$1900, L\$800**

4 Use this controller with the Super IOB to copy the "Program" disk side. Use Copy II Plus or another fast copy program to copy all the other sides.

## Controller

```
1000 REM ULTIMA V CONTROLLER
1010 TK=0:LT=3:ST=15:LS=15:CD=WR:FAST=1
1020 RESTORE : GOSUB 170: GOSUB 270: GOSUB 490:
    GOSUB 610
1030 GOSUB 230: GOSUB 490: GOSUB 610: IF PEEK
    (TRK) = LT THEN 1050
1040 TK=PEEK (TRK):ST=PEEK (SCT):GOTO 1020
1050 TK=3:LT=35:ST=15:CD=WR
1060 GOSUB 360: GOSUB 490: GOSUB 610
1070 GOSUB 360: GOSUB 490: GOSUB 610
1075 IF PEEK (TRK) = LT THEN 1100
1080 TK=PEEK (TRK):ST=PEEK (SCT):GOTO 1060
1100 HOME : PRINT "COPY'DONE" : END
5000 DATA 171,255,222,170
10010 PRINT CHR$(4) "BLOAD ULTIMA
    V.RWTS,A$1900"
```

## Checksums

1000 - \$356B	1070 - \$024E
1010 - \$FF63	1075 - \$C8C4
1020 - \$9D8F	1080 - \$8730
1030 - \$A816	1100 - \$1C83
1040 - \$9734	5000 - \$1173
1050 - \$074E	10010 - \$2EA9
1060 - \$8702	

PS. Here is some code to read/write Track \$03 Sectors \$05 down to \$01 of Ultima V's "Britannia" disk, for anyone writing a character editor.

\* Ultima V Reader Source  
 \* by Michael Smith  
 \* 8/27/88  
 \*  
 \* ORG \$9000  
 \*

```
LDA #03 Track 3
STA $B7EC
LDA #05 Starting sector 5
STA $B7ED
LDA #00
STA $B7EB 0 = Match all volumes
STA $B7F0 Pointer to user data buffer
LDA #60
STA $B7F1 Hi-byte of data buffer
LDA #01
STA $B7F4 01 = Read, 02 = Write
LOOP LDY #E8 RWTS Parm list
LDA #B7
JSR $B7B5 Disable interrupts and call RWTS
DEC $B7ED Dec current sector number
INC $B7F1 Inc data buffer address
LDA $B7ED Load current sector number
CMP #00
BNE LOOP
RTS
```

## ULTIMA V.READER

9000:	A9 03 8D EC B7 A9 05 8D	\$42B0
9008:	ED B7 A9 00 8D EB B7 8D	\$B02F
9010:	F0 B7 A9 60 8D F1 B7 A9	\$2097
9018:	01 8D F4 B7 A0 E8 A9 B7	\$E91F
9020:	20 B5 B7 CE ED B7 EE F1	\$9EA9
9028:	B7 AD ED B7 C9 00 D0 EC	\$6B09
9030:	60	\$BFDB

Jack Moravetz

Softkey for...

### Grammar Gremlins

Davidson & Associates, Inc.

Grammar Gremlins is a comprehensive grammar program for third, fourth, fifth, and sixth grade students. The software includes a program disk and a data disk.

Most attempts at copying the program disk with standard copy programs failed. It seemed that track \$22, sector \$00 was unreadable. I made a copy using COPYA with the DOS error checksum disabled. The program disk is in Pascal, so I searched in vain for the \$C08C nibble count routine that was keeping my copy from booting. Then I got lucky when I renamed the SYSTEM.STARTUP file.

**1** Use the Apple System Utilities v 2.1.1 or similar program and format a disk in Pascal with the name GREMLIN.

**2** Copy all the files except SYSTEM.STARTUP from the original Grammar Gremlin disk to the newly formatted disk.

**3** Rename GG.CODE to SYSTEM.STARTUP on the copy.

It appears to be important that the disk name on the copy be the same as the original (GREMLIN).

Softkey for...

### Facemaker

Spinnaker

I couldn't use Edward Teach's method in COMPUTIST #50 or Michael Paterno's in COMPUTIST #58 to deprotect this one. There were no catalogable files on my original and the Kids on Keys method didn't work.

I used the Story Machine softkey from COMPUTIST #22 on page 4. It was erroneously titled Deprotecting Storymaker.

**1** Copy the original with any fast copier or COPYA.

**2** Using a sector editor on the copy, make these changes.

Trk	Sct	Byte(s)	From	To
\$00	\$03	\$64-65	A5 1E	A9 F0

Softkey for...

### Ace Reporter

Mindplay

Thanks to Jack Nissel's softkey for Cat'n Mouse in COMPUTIST #56, I was able to softkey Ace Reporter.

**1** Copy the disk with a copy program that will ignore errors. I used Locksmith 6.0.

**2** Make this sector edit.

Trk	Sct	Byte(s)	From	To
\$01	\$01	\$00	A2	60

Softkey for...

### Star Maze

### Number Bowling

Scott Foresman (Mindscape)

Even though these two math programs were published by Scott Foresman, they were distributed by Mindscape and have a protection scheme similar to the Perfect Score.

**1** Boot a DOS 3.3 disk.

**2** Tell DOS to ignore checksum and pilog 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	\$05	\$68-6A	D0 F1 A0	18 60 EA

Softkey for...

### Story Writer

Learning Well/Mindscape

**1** INIT a blank with a fast DOS

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

**2** Tell DOS to ignore checksum and pilog errors and use FID from the DOS 3.3 System Master to copy all files from the original to the INITED disk.

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

Side two of this program is already in COPYA format.

Peter Wilding

## A look at GS/OS

ProDOS 16 is the current DOS for use with the Iigs. Among other things it is slow and is written in 65C02 machine language. It uses almost none of the Iigs's expanded 16 bit instructions, and is really just a 16 bit shell wrapped around an 8 bit program. Well, all that has just changed. Apple released version 4.0 of its Iigs System Disk at AppleFest, and with that came a brand new, fully functional DOS called GS/OS.

GS/OS is ProDOS 16 rewritten. It is faster (check out the chart below), can handle more files, and is a pleasure to use. The System Disk also came with a brand new Finder, rewritten for faster operation and expanded in its functions. Along with this is a second disk called System Tools. These include an advanced disk utility (at this stage, it's nothing more than a file copy program), and an Installer, which allows a user to install all the system files necessary for operation on a particular disk with no hassle. The Installer has a whole list of things it can install, such as printer drivers, system files, etc. It conveniently eliminates the problems of remembering which files do what, and enables you to create a working disk without touching a subdirectory. But back to GS/OS.

This DOS is fast! It won't set any records, but GS/OS manages to load a system disk which is full of new tool code, a Finder which is 15.5K bigger than it's predecessor, and the GS/OS program plus startup file which, combined, is 17K bigger than P16, all in 15 seconds less than

ProDOS 16 can get itself up and running. That may not sound like much, but it now makes using the Finder for disk maintenance a real possibility. GS/OS gets Finder up and running in 50 seconds flat. Compare that to a minute and five seconds for ProDOS 16. That's almost respectable.

The Finder has been expanded and polished extensively. A thermometer displays how much of an operation has been completed, and fills up when it's done. Several formatting options have been included, two of which format a disk so that it cannot be read by the IIGs itself. I think that these are MacIntosh formats. File copying is the Finder's biggest strength. Unlike Copy II Plus, the Finder reads in about 20 files at once and then writes them out all at once. The more memory you've got, the more files it can read. I noticed that the windows seemed a bit slower, but it's possible I'm just impatient.

The IIGs now has a very slick DOS all to itself. Never again will you have to look at that ProDOS 16 v1.3 display in the beginning and wait for years for something to load. Now you see a more appealing message on bootup and only have to wait a few months for something to load.

	ProDOS 16	GS/OS	Diff
MultiScribe 3.0	2:10	1:25	45 sec
DeluxePaint II	2:08	1:33	35 sec
TML Pascal	1:40	1:14	26 sec
Launcher	:56	:38	18 sec
Finder	1:05	:50	15 sec

*Note: Times will be significantly shorter if you don't count the time it takes for GS/OS to load. Subtract 32 seconds if you only want to count application load times.*

MultiScribe, DeluxePaint, and TML Pascal were all made self-booting under ProDOS 16 by deleting Start from the System folder, and renaming their main program with a suffix of 'SYS.16'.

They were made self-booting under GS/OS by deleting Start from the System folder, moving the main program to the System folder, and renaming it as Start.

## A look at Alien Mind (IIGs)

Alien Mind is the most recent game introduced by PBI Software. PBI designs only IIGs software, and they seem to put a lot of work into their programs. Alien Mind is an outstanding example of both PBI's work ethic and the capabilities of the IIGs. This game is a blend of so many different things that it is hard to classify it as an arcade game, a shoot 'em up or a thinking game.

Well, whatever the authors did, they sure did it well. Alien Mind has got outstanding sound (it utilizes the MDIdeas SuperSonic stereo card if you've got it, and sounds terrific even without one), superb animation, a beautiful, crisp display, which smoothly scrolls in any direction, and game play which is VERY addicting.

The premise of the game is that in a future time, man has expanded his frontiers and discovered many planets with other life forms on them. On one particular planet, Herzgod IV, two unhatched alien eggs are discovered and brought aboard the newly completed Zekford Space Station for examination. One of the eggs hatches into a super-intelligent alien which, bent on the destruction of everything alive, has reprogrammed all the robots of the station to kill people, and mind-controlled all other creatures to do the same.

You, unsuspecting biologist Timothy Hunter, have boarded the station just after the annihilation of the whole station's staff and crew, and you soon discover that your fellow biologist and long-time friend Aaron Avery is the only remaining person alive in the Zekford Space Station.

Communicating through computer terminals, you and Aaron must devise a weapon which will kill the Alien. Aaron provides clues to the passwords for certain terminals which you and he will communicate through, and let me tell you, some of these passwords are really TOUGH TO GET!

Oh, that's not all though, because you are constantly being attacked by the mutant robots and hypnotized monsters which are bent on your destruction, you always find yourself fighting, moving, fighting, logging on, fighting, moving, fighting, getting lost, fighting, etc. The action never stops! In addition to all that, you must pick up key cards, energy tablets, clips of bullets, shields, floating disks, and conductors. Although many games claim to be action packed, Alien Mind is THE definition of the ultimate action-packed game.

### Playing Tips for...

#### Alien Mind

PBI

This game is not easy. There are two disks, and I haven't gotten to the second one yet. However, I have discovered quite a few passwords. The clues are always the same (unless PBI changes them from package to package, which I doubt).

Here they are (remember to log on to the terminals in the correct sequence):

**WARNING!** The first bunch are easy - you shouldn't have to look at them here. Try all your guesses, and then if you really give up, look at the list. Half the challenge is trying to get

the passwords and it's also the most frustrating part, that's why I listed them here.

### Level I

Telegram

Aqua

Hammock (Be sure you're on the right terminal - if you're on the Zekford Community Workstation then you are not where you want to be)

Radiation

### Level II

Elevator

Judy

Siren (Thanks to my grandmother (!) for getting this password)

### Level III

Biologist Ho! (Log onto Aaron's Terminal - he's not on this level - really!)

Ⓜ And now I'm stuck. What's "A scale"? When you get it, send it in!

### The Protection (this is not a crack)

With Alien Mind, IIGs protection finally approaches the insaneness of 5 1/4" protection. Instead of looking for a bad block or bad track, or nibble counting, or looking for disk signatures, PBI went about 6 steps further, the whole disk is unreadable. It is possible that it is unreadable as a consequence of the fast-load format it uses, and is not a direct attempt at protecting the disk. A sectorless format would indeed make it very difficult to read by normal means. Copy II Plus can almost make a working bit copy of it while synchronizing and keeping track length, but it's not too reliable.

Alien Mind doesn't use ProDOS at all. Without looking at the screen, you can tell that it doesn't use ProDOS because the title screen loads faster than ProDOS itself! This program really hustles disk access along. You can be up and playing in about 30 seconds. Character disk creation takes two seconds because it only seems to format about one track - only what it needs to store a few attributes.

PBI advertises this game for \$54.95. Even if you actually pay this much, it is still definitely worth it. However, I've seen it around \$30 from mail order places. If you possibly can, get this game! This is the one which you've been saving and waiting for. Don't Miss It!

## A look at Tomahawk (IIGs)

Tomahawk is one of Datasoft's most recent releases, and it's a doozy. In this game you are the pilot of the AH-64 Apache Attack

Helicopter, affectionately known as the Tomahawk. With laser-locking Hellfire missiles, autostabilization, and the TADS target acquisition and tracking system, you are in control of the skies for as long as you can stay in the air.

Select flying conditions such as cloud base, turbulence and crosswinds, day and night flying, and pilot rating, and take to the skies. Hear the boom of the engines as they fire up, then watch the RPM's increase as you try to lift off. Listen to the rotors as they sweep the air above you and haul you off the ground. Then the tough part comes in. Flying this beast is no piece of cake! Unlike an airplane, which is pushed forward by engine thrust, helicopters are pulled up by the thrust of the rotors. To go forward, the whole helicopter must be tilted forward. But, forward tilt equals downward plunge. So, it takes a very smooth touch and a lot of practice to fly the Tomahawk.

This game has a very interesting feature which has to do with a map. You can choose to be on the allied side of an imaginary war, in which case you try to capture squares on the map by destroying all the enemies in a sector. No easy task is this, either.

The game instantly grabs your attention at boot-up with some neat army-band music and a digitized picture of the Apache. Then, you're hit by somewhat of a let down. The graphics are just a bit on the hurting side. Like F-15 and so many other flight simulators, wire-frame graphics are the best that you get outside the cockpit. Mountains are triangles, and helicopters are a bunch of lines glued together at bad angles. Below 5000 feet you can see the "terrain" - a few randomly placed dots which supposedly give a realistic view of the ground. Truthfully, the game is much more enjoyable when you're cruising around at 40000 feet and obliterating enemies with your Hellfire missiles before they can get close enough to spoil the effect.

Despite the complexity of Tomahawk, it really needs improvement to become a complete game. This is not the game that you show off to friends who are thinking about buying a IIGs. The title sequence, yes, but then you turn it off before the actual game begins. As many Apple IIe games are, Tomahawk is a great "concept" game, but doesn't have the graphic elements necessary to make it a standout.

## Protection

Oh no! I booted this game up and immediately turned green. If you read the review of Alien Mind, then you can reread the protection section of that review again for this article. The two protections are THE SAME. Someone is making a lot of money off this scheme. Both are characterized by a 15 to 30 block file which is the only entry on the disk. What is going to make Tomahawk even tougher

to crack than Alien Mind is that it performs disk access while it is playing the title music. The timing cannot be disturbed at all. Trickier and trickier. The person who solves this protection scheme will indeed be one of the elite hackers in the galaxy.

Philip G. Romine

## Appleworks and printer codes

Dr. Frank Lowney's article in COMPUTIST #59 was very helpful to me. I have Version 2.1 of Appleworks, however, and his memory listings for the locations in the SEG.PR file no longer apply. Also, in my case, modifying the Imagewriter II file would not work on my Epson as it sent other codes in addition to the control-D codes, and that caused my Epson LX to use condensed print. The following comments should help others to modify their files, so they may use some of the other printers listed in the Appleworks printer selection and/or other versions of Appleworks.

My printer has a dump mode which allows the codes and letters to be printed out on the printer; this characteristic is necessary for the procedure to be carried out.

Now to the specifics: Use the Appleworks word processor to write a short sentence. Place a control-D before the sentence and another after it; then print it, with the printer in the dump mode. Check the printout and determine what code the printer (selected from the menu) sends to your printer for control-D and the hex number after.

In the case of the Epson-LX the numbers sent were 1B followed by 47 (escape "'") for the first control-D and escape "O" for the next one.) The entire sequence was in Hex: 02 1B 47 02 1B 48. The 02 apparently represents, in the program, the number of numbers to follow (ie. 1B and 47); the next 02 in the series is the same for the next set of numbers (ie. 1B and 48).

My Apple IIGs has a search function in memory. One goes into BASIC and loads SEG.PR at \$2000. "BLOAD SEG.PR, A\$2000, TBIN" or whatever type it is (maybe type system, TSYS) and search for the string (listed above in my case), or whatever string applies for the printer one is using in Appleworks. I found four such strings located at \$28FF, \$29DC, \$2A7C and \$2B34. I assumed that all four Epsoms listed in the Appleworks printer selection menu used the same codes for control-D.

By trial and error, I found that the first set of numbers was the one for the Epson FX, which was the last listed printer in the Epson series in Appleworks. In the series of Hex numbers the first (02 in my case) would be

changed to the number of numbers one would follow with, and the next numbers to whatever one wanted them to be. Thus, if one wanted the first contrl-D to send an escape only, the first number would be changed to "1" and the next number to 1B. Then if one wanted the second contrl-D to send a "2", one would leave the next 02 the same and change the next two numbers to 1B and 02. After the changes BSAVE the file back to disk or Ram-disk. CAUTION: Use only disk copies - never an original - for this exercise.

Original String 02 1B 47 02 1B 48

Modified String 01 1B 47 02 1B 32

The only numbers one need change are the first and last in the string. The first change, 02 to 01, apparently tells the computer to send one number to the printer, the 1B or escape; the 47 is not used; the following 02 tells the computer to send the following two numbers, 1B and 32, to the printer.

If your computer does not have a search function in the monitor as the IIGs does, search your disk with one of the programs listed in the original article and make the necessary changes.

If you have an Epson printer, then use the memory locations I have listed for the 2.1 Version of Appleworks.

Ronald Mundell

I have tried the Ultima V softkey (COMPUTIST #60, pg 21) over and over, every way I can think of; no results except Drive Error. I cannot read the disk past track \$02 with any version of Copy II plus from 5.2 to 8.3. I would like to know how Ron Dippold managed that. Also the line 1040 in the controller refers to GOTO 1015. If I am not mistaken there is no line 1015. So, if anyone knows how to fix this softkey, there are a lot of us who would be extremely happy about it. Thank you.

☛ The "GOTO 1015" should be "GOTO 1020". . . . . RDEXed

## Good customer relations?

RE: Ultima V music, the IIGs and Mockingboard. The patch from Origin is as follows:

```
10 REM ULTIMA V MUSIC PATCH FOR THE APPLE IIGS
20 FOR I = 768 TO 802: READ A: POKE I, A: NEXT
   CALL 768
30 DATA 24, 251, 194, 48, 244, 11, 0, 162, 3, 35, 34,
   0, 0, 225, 244, 4, 0
40 DATA 244, 0, 0, 244, 0, 3, 162, 3, 16, 34, 0, 0, 225,
   56, 251, 226, 48, 96
```

## Checksums

10	- \$BADD	30	- \$3BF1
20	- \$9AE2	40	- \$835F

The newer issues of the disk have this built in. This, of course, means that those of us stuck with the Mockingboard after upgrading to the IIgs, will have at least one use for the board. So far, only Origin Systems has responded to my requests for information that will allow the Mockingboard to be used in the IIgs.

## Poor customer relations?

Sweet Micro Systems failed to respond to my inquiry about upgrading their program that comes with the Mockingboard so the thing will work with the IIgs.

## Nothin' personal, Just business?

Also, I have written to Origin Systems regarding a rumored upgrade of Ultima V for the IIgs. The response from "Lord British" is that the conversion has not been put into the works yet; no suitable company to do the conversion?; anyway, the IIgs version I was told, will be available for \$59.95, and not as an upgrade from the 5 1/4" version.

If anyone has heard anything more recent, maybe you could write in. This information is a few months old.

Gerald E. Myers

Bit Copy for...

## Algeblaster

Davidson & Associates

### ■ Requirements

- Any whole disk copier that will ignore read errors
- Bit copier
- Blank disk formatted DOS 3.3

Davidson and Associates publishes a number (10 in the last catalog I received from them) of educational software titles for grade and high school level work in language, math, and "productivity". This southern California software firm, run by a Ph.D. in education, specializes in slick packaging, slick advertising and non-aggressive pricing (newspaper for overpriced), with a big emphasis on student "success". They are dealing in a unusual market - the person that reads the ads and buys the software is usually not the same person that uses the software.

Gratuitous editorial aside, one of the first pieces of software ordered, when I ordered the Laser 128 for my son Thane and I two years ago, was Alge-Blaster, as Thane was about to face the algebra beast in his 8th grade class. Alge-Blaster is pretty good on covering the basics and on review, but the more complex problems required mostly pencil and paper

work before the answer could be entered in the computer; and Thane thought the "reward" system was childish (I agree) - he soon went back to his textbook and I went to work to de-protect the disk.

This was one of my first deprotection attempts, and I did not take very good notes - nor did I keep the ones I did take: A BIG MISTAKE, as I ruefully learned later.

The short story is that the only protection on this disk is on the Program disk. Track \$22, sector \$00 has an altered data epilog checksum (unsynchronized FF) that causes a read error and un-bootable copy if copied with COPYA or other whole disk copiers. The code to check for this "signature" is in the file "Rabbit". All you good old boy hackers can skip the following and have at it, but to help along other beginners, like myself, here is the basic process I used to find this out and make a working copy.

Boot the original disk. The BASIC prompt quickly appears, followed by sounds indicating your disk drive is about to puke its innards out - a sure sign of a "signature check" (nibble count or other).

Boot Copy II Plus. Try to catalog the disk. It catalogs as Volume 254, indicating a pretty normal DOS 3.3 directory track.

Arm printer. Go to Disk Map, print out; then return to Catalog and print out the catalog below the Disk Map. Return to Disk Map and mark, on print-out of Disk Map, location of all the files in the catalog.

At this point, all looked straight-forward enough, with every appearance of an unprotected DOS 3.3 disk.

Using Copy II Plus, copy the Program side of the Alge-Blaster disk to a formatted DOS 3.3 disk. All is well until track \$22, where you get a "Read Error".

Jump to Sector Editor and start reading track \$22. You soon discover that every sector except sector \$00 reads fine.

Jump to Nibble Editor and check the "bad" sector. All looks well, with normal address field and data prolog marks. The data epilog (DE AA EB) also looked normal, and it took longer than I care to admit (much longer), before I realized that the data epilog checksum on this sector was an unsynchronized FF byte, and was the only sector on the disk with such a byte in the data epilog checksum slot.

To check this out, jump back to the Sector Editor of Copy II Plus, (R)ead track \$22, sector \$01, then hit (P)atch. This pops you into the "Patch DOS" menu of Copy II Plus; a powerful tool that I have not seen discussed in COMPUTIST. This menu is the equivalent of the many pokes possible to COPYA that alter what DOS will look for when it attempts to read a disk. The possibilities offered by the Copy II Plus menu are: DOS 3.3, DOS 3.3 Patched (Copy II Plus's alterations that allow many protection schemes to be bypassed), DOS 3.2,

DOS 3.2 patched, and Custom. By choosing "Custom", you can diddle with the RWTS loaded in RAM to your heart's content, then use this customized RWTS to copy the disk under study by exiting from the custom patch directly to Manual Bit Copy.

I first tried the pre-set DOS 3.3 Custom option, which still failed to read sector \$00 of track \$22. I then went to "Custom" and changed "Check Checksum" for Data to "NO". Success! Sector \$00 was readable (and all \$00's, as was the rest of track \$22).

With the Custom patch still in place, I exited the Sector Editor, entered Manual Bit Copy and copied track \$22 only. This produced a working, but still copy-protected copy. The "Data" side of the Alge-Blaster disk is unprotected, and can be copied with any whole disk copier.

You can now stash your original Alge-Blaster disk in a safe place and work with your (still protected) working copy.

The Hello program BLOADS the Rabbit File and the screen. Rabbit is the file where the disk reads and compares take place, and somewhere in that file is the code that checks for the non-sync FF data epilog checksum "signature" on track \$22, sector \$00, but I sure can't find it, much less wipe it to produce a de-protected copy. How about it, COMPUTISTS, who will finish off the de-protection on this disk, now that I've done the easy part?

Meanwhile, here's how to produce a working (but still protected) copy of Alge-Blaster for the kid or the classroom that will allow you to store the original in a safe place.

**1** Copy the Program side of the original Alge-Blaster Disk onto a blank disk with any copier that will ignore read errors.

**2** Using Copy II Plus, enter "Manual Bit Copy". Start Track \$22, End Track \$22, "No" to sync tracks (default setting), "No" to Keep Track Length Setting (also default setting), then hit "/" key to enter the "To Modify" menu.

**3** At "Change What Parameter" prompt, enter 65 and **RETURN**.

**4** At "To What Value" prompt, change default FF to 00. (Steps 3 and 4 change the "Check for data field checksum error" from default "Yes" to "No".)

**5** Press **ESC RETURN**. Track \$22 is copied.

**6** Copy the Data side of the original disk onto a blank disc.

Put away original. Copied disk is still copy-protected, but will boot and run normally.

## Bit Copy for...

### Homeworker

Davidson and Associates

About 10 months after my adventures with Alge-Blaster, I purchased Davidson and Associates Homeworker for Thane for Christmas. Homeworker is a ProDOS based disk billed as a "Student Productivity Package" - sort of an AppleWorks for kids, that uses an AppleWorks-like menu and interface to link a Word Processor, Outliner, Calendar, FlashCard Maker, Grade Keeper and pop-up Calculator into one package. Homeworker wins the "Most Over-Packaged Software Award" hands down. The big box included: one large velour 3-ring binder, a "How to Study for Success" book, a notepad with Homeworker logo on each sheet, a set of dividers, a ruler, and a pen and pencil. There was also a pretty good manual on using the program, a quick reference card for the Open-Apple commands (reasonably similar to AppleWorks), and (finally) one each 5 1/4" disk with the program on one side and sample files on the other. This whole package had a retail of \$89.95 (since lowered), and presently has a street price of \$45 to \$50. The program disk is copy protected, but Davidson will send you a back-up copy for only \$10 - what a deal!

Thane extracted the disk, manual, and quick reference card and put away the rest for "later". (It's still there - I suspect he wouldn't be caught dead with that velour notebook at school - I don't blame him.) The program disk had three serious problems:

1. It was on a non-write protected disk that is written to each time the program is booted when the date is entered.
2. It was copy-protected.
3. It was using ProDOS version 1.1.1: the infamous "Trash the volume directory" version of ProDOS that has caused many a scream in the middle of the night.

First off, ANY productivity package that reads and writes files to disks shouldn't be using version 1.1.1 of ProDOS, unless the fatal flaw is patched (See COMPUTIST #59). Secondly, the ProDOS used needed a patch for the clock in my system to automate the enter date step. Finally, any disk that is written to each time it is used should definitely have a back up. So before Homeworker could be put in service, I needed to replace the ProDOS with a newer version and produce a workable back-up.

The short story is that it took a shameful and embarrassingly long time for me to figure out the protection is exactly identical to Alge-Blaster: sector \$00, track \$22 has a non-sync FF checksum before the data epilogs, with the protection checked in File "Z.1" on the program disk. Again, I was unable to find the exact code and de-protect this disk, but a working copy with a newer ProDOS was

produced for daily use. (COMPUTIST folks, how about a hand here?) Without going through the step-by-step process, I will just emphasize what others have said before:

1. Keep notes on your cracks.
2. A company often doesn't change its protection schemes from one disk to another, or changes them only slightly.

Had I remembered the above two points BEFORE I started on Homeworker, I would have saved myself about four hours of investigation - and I would have felt a lot smarter, too!

So, to produce a working (but still-copy protected) version of Homeworker for use:

**1** Format a disk for ProDOS. Give it a temporary volume name of /H.

**2** Copy a "safe" version of ProDOS other than 1.1.1 (or use a patched version of 1.1.1 - See COMPUTIST #59) to the new Volume /H using any "Copy Files" copy utility.

**3** Copy the files, except for ProDOS, from the original /HOMEWORKER disk to your /H disk.

**4** Using Copy II Plus, Bit Copier, Manual Bit Copy: Start Track \$22, End Track \$22, No Sync (default), No keep track length (default), hit / for "To Modify" menu. Change parameter 65 to 00 as per Alge-Blaster; press escape; press return to copy Track \$22.

**5** Rename Volume /H to /HOMEWORKER. (Your copy will not work without this step, which I forgot the first time through!)

**6** The sample files on the back side of the original can be copied to any ProDOS formatted data disk, and you are done.

Put the original disk in a safe storage area, and work with your back-up copy. If you can spare the disk, the working copy can be recopied using the Alge-Blaster technique and a copy of it stored away also, saving you a small hassle of copying the newer ProDOS and individual files, etc. if the working copy crashes. Meanwhile, perhaps some good Assembly Language wizard will come up with the sector edits necessary to totally deprotect Alge-Blaster and Homeworker (and probably other Davidson and Associates releases).

## Softkey for...

### Dinosaurs

Advanced Ideas, Inc.

#### ■ Requirements

- 48K Apple II and up
- Disk copier that can ignore read errors
- Sector Editor

#### Blank 5 1/4" disk

Dinosaurs is a pre-school/early primary educational game with reasonable sound and graphics that offers several levels, from simple match-the-shapes to matching the shapes with the spelled out name of one of the six dinosaurs. A local pre-school teacher approached me with a rather tattered original that three to six year olds had been using for some time. He had tried to make a back-up when the copy was first received, but was unable to, and the original no longer loaded one of its levels, and was beginning to get flaky during bootup. With a minuscule budget for software for the pre-school, he asked if I could make a back-up for him before the original completely died. Little did I realize when I accepted the task that Dinosaurs was to be my most difficult crack to date, with at least THREE levels of protection. Without the aid of COMPUTIST, especially Stephen Lau's excellent explanation of Prolok in COMPUTIST #60 under the heading "Some Notes on Epyx", I would have never succeeded - Thankee sir, I definitely owe you one!

The short story is that Dinosaurs is protected by a modified DOS 3.3 (altered address and data epilogs), a catalog moved to track #21, and Prolok. The first two I can handle now, but Prolok would have eaten me alive without Stephen's explanation. The investigation proceeded like so:

I booted the original and watched and listened. A BASIC prompt appeared, followed by nine "clicks", a brief recalibration, a copyright screen, title screen and music. The recalibration part was of interest. I was to arrive there several times with a copy to be greeted with a screenfull of garbage and a reboot!

I booted my tool of choice, Copy II Plus, and attempted to Catalog from the main menu. Was greeted with the "I/O Error Track #11, Sector #0" message, indicating a modified DOS.

I entered the Bit Copy menu and tried the Sector Editor. Again got Read Errors across a variety of tracks, indicating that all the sectors were altered.

I moved to the Nibble Editor, loaded track \$00, and hit A for (A)nalyze. Good old Copy II Plus found the track start, and I was looking at a normal address header of D5 AA 96, normal volume number, normal AA AA track and sector marks for track \$00, sector \$00, and a normal looking checksum. The normal DE AA address epilogs was missing, however. After checking a number of sectors on track \$00, I found the common denominator in the mess where the address epilogs belonged. It was a non-sync FF and EB. The data header was the normal D5 AA AD, but the normal DE AA epilogs had also been altered to FF EB.

This doesn't look too bad, except while I was poking about track \$00 I noticed that

sector \$03 was full of a bunch of 96's followed by a bunch of E7's, and a nagging suspicion arose that I had recently read something about that combination of bytes.

Oh well - back to the Sector Editor, hit P for (P)atch, enter the Patch menu and select "Custom", scroll through the address and data menu and turn the "Check Epilog" Yes into a No for both the address and data fields. Re-enter the Sector Editor, hit (R)ead, enter Track \$00, Sector \$00 and viola, I can now read the data on the disk!

Feeling pretty smug, 'cause this whole process, which had once taken me hours to figure out, had been completed in less than 20 minutes, I entered the Manual Sector Copy with my Custom patches still in place and copied the disk without any read errors. Ha!

Ha, indeed. The laugh belonged to Advanced Ideas, Inc. - I booted, got to the recalibration, got a screen of garbage and a re-boot; around and around. A **RESET** (Laser 128 trick) into the monitor didn't yield much. Back to the Sector Editor and the original.

I checked for a JSR to reboot (20 00 C6) with no luck, then checked around for any fiddling with the reset vector at \$03F2 with no luck. Wandered back to track \$00, sector \$03 and contemplated a whole sector of data composed only of 96's and E7's. Then the light dawned - sort of glimmered, actually, and I grabbed COMPUTIST #60 and scanned through till I found Stephen Lau's excellent explanation of Prolok (ProLok?), a commercial copy protection scheme used by (according to Stephen) Epyx, Broderbund, and (according to me) Advanced Ideas, Inc. This scheme uses bit insertion to foil nibble/bit copiers, and I gladly refer you to COMPUTIST #60 for all the information you need to defeat it. *You should definitely know this scheme and know how to recognize and defeat it.* So buy the back issue if you don't have it. Subscribe if you don't already!

Using Stephen's numbering system, I would like to list some of the code immediately before the start of his listing that was part of the Prolok read on the Dinosaur disk, because I found it helpful later to fully deprotect:

```
19F7 A9 0A LDA # $0A Sets up second part of bomb
19F9 85 2A STA $2A count
19FB AE E9 B7 LDX $B7E9
19FE BD 89 C0 LDA $C089, X
2001 BD 8E C0 LDA $C08E, X
2004 A9 AE LDA # $AE Put address ($8BAE) of
2006 85 48 STA $48 location of bytes to
2008 A9 8B LDA # $8B match on stack.
2010 85 49 STA $49
2012 A9 80 LDA # $80 Start of Stephen's listing
```

From 2012 to 2072 we're almost identical, then:

```
2072 10 F4 BPL $2068 (Same as Stephen's listing)
```

```
2074 4C B6 8B JMP $8BB6 Pass?
2077 C6 2A DEC $2A Bomb count
2079 D0 97 BNE $0E15 (2012 above - Repeat)
207B A2 22 LDX # $22 Fail, drop through to re-boot
```

At this point, I had the protection literally in my hand, and thought a Jump to the pass routine at \$8BB6 would get me home free (20 B6 8B). When I tried this at the front end (\$19F7), I was rewarded with a drop into the BASIC prompt instead of a garbage screen and reboot - no cigar. When I tried it at the drop-through point at \$207B, I was dropped into the monitor at \$0016 or so. As long as I was in the monitor after part of the program had loaded, I decided to take a look at what the comparison bytes were that were stored at \$8BAE. Just like Stephen said: a possibly gratuitous FC, followed by EE EE FC E7 EE FC E7.

Frustration city. I knew I was very close, but my lack of assembly language skills was beating me. Time for brute force. I searched for the EE EE FC E7 etc. bit-string and found it at the end of the sector bearing the above listed code (track \$00, sector \$0F). Time to try to re-write this sector so the E7's present on the copy are read and passed, instead of the bit-inserted E7's that show up as the EE EE etc. bit string after the clear latch trickery in the Prolok read routine.

Starting at \$2055, the clear latch, error number and a BIT command were NOP'ed, the compare EE at \$2062 was changed to an E7, and the bit string at the end of the sector was changed to all E7's. The hopeful result was that the Prolok read routine would read the E7's on the copied disk, compare them with the E7's conveniently stored for comparison, and pass the whole thing. IT WORKED! Another example of "It's better to be lucky than good" school of brute force hacking.

Now - how about one of you **HARDCORE** assembly language types letting me (and the rest of the beginners) know how to circumvent this read routine in an elegant way? Ah well, we are now ready to produce a nearly normalized version of Dinosaur that can be bit copied - a RWTS swap would produce a completely unprotected copy, but this version serves the needs of the teacher, who can make additional back-ups now if needed, and keep the frail and failing original locked up in the office.

## No more COPYA?

A number of recent softkeys use a two-step process that involves loading COPYA from the DOS 3.3 disk, poking about to eliminate certain read checks depending on the alterations used on the original disk to be copied; copying the disk with COPYA, then booting Copy II Plus to make the sector edits. This is doing it both, the hard way, and, at the risk of ticking off some of the "oldtimers", the old-fashioned way, AND it makes for a harder row to hoe for the

beginner to COMPUTIST. Would you believe a lot of beginners today don't have a DOS 3.3 system master disk? Apple hasn't been furnishing it with each computer sold for a long time, guys. Besides, the whole mess is easier to do by just booting one disk: Copy II Plus, like so -

**1** Boot Copy II Plus and format a blank disk for DOS 3.3.

**2** Enter Bit Copy Menu of Copy II Plus, select "Manual Sector Copy". Accept all defaults til you get to the "Insert Diskettes" prompt.

**3** Hit /. (Slash key - to enter Change Parameters mini-menu at bottom of screen.)

**4** At "Change What" prompt, enter 60. Change default FF to 00. (This ignores address epilog.) **RETURN**

**5** At "Change What", enter 6B. Change to 00. (Ignores data epilog.) **RETURN**

**6** **RETURN** again to Sector Copy the original to your blank disk.

**7** Put away the original in a safe place - we're done with it. Now we need to sector edit the copy we have just made: Enter the Sector Editor and hit P to enter Copy II Plus's (P)atch Menu. Select "Custom", **RETURN**, and use arrow keys to scroll and change "Check Epilog - Yes" to "No" (hit N key) for both the address and data fields. **ESC** to sector editor. Our patched read routine will now read and allow editing of the appropriate stuff.

**8** (R)ead, (S)can for (H)ex BD 8D C0 A0. I found this, and the rest of the code that needs changing on track \$00, sector \$0F.

Trk	Sct	Byte(s)	From	To
\$00	\$0F	\$56-5A	BD 8D C0 A0 10	EA EA EA EA
		\$5B-5C	24 06	EA EA
		\$65-66	C9 EE	C9 E7
		\$AE-B5	FC EE EE FC E7	E7 E7 E7 E7 E7
			EE FC E7	E7 E7 E7

**9** Write protect your new copy of Dinosaur, boot it up and enjoy! This copy can be bit copied with any normal bit copier, or be sector copied or COPYA'd with appropriate alterations to handle (ignore) non-standard address and data epilogs.

Softkey for...

**Alphabet Express v 2.1.5 1985**

**Shape Starship v 2.1.5 1986**

Gameco Industries, Inc.

### Requirements

- A blank disk for each title.

Copy II Plus or any whole disk copier that can ignore read errors.

These two offerings from Gameco (there may be others) are pre-school educational games with similar loads, menus, "command systems" (space bar and return) and overall game design. The kids at the local pre-school like them, which seems good enough recommendation, but the head teacher was concerned with the original, non-write protected disks (student must enter name at start of game) starting to get a bit ragged around the edges. Fortunately, both disks used identical, pretty mild protection consisting only of altered address epilog marks from the normal DE AA EB to AE AA EB.

Tracking this down was a fairly short process with Copy II Plus - booted Copy II Plus, tried to catalog and failed indicating DOS alteration, jumped to nibble editor and looked at the address and data header and epilogs to find only the one change that prevents "straight" copy programs from working. These disks can probably be bit copied successfully, but a faster way is to use Copy II Plus Manual Sector Copy with a "poke" to ignore the altered address epilog bytes. (COPYA can be loaded and poked to do the same thing, of course - see many, many past COMPUTIST articles.)

**1** Boot Copy II Plus, enter the Bit Copy Menu and select "Manual Sector Copy".

**2** **RETURN** a bunch to accept all the defaults until the "Insert Diskettes" prompt. Hit the slash (/) key for the "Alter Parameter" mini-menu at the bottom of the screen.

**3** At the "Change What?" prompt, enter 60. Change the default FF which appears to 00. (This tells Copy II Plus to ignore the address epilog when reading the disk.)

**4** **RETURN** to Sector Copy, insert the original and blank disk in the appropriate places for your setup, **RETURN** to initiate the Sector Copy.

Stash the original in a safe place and turn the copy loose on the little people to enjoy!

Keith

Bit Copy for...

## Where in the USA is Carmen SanDiego?

Broderbund

### Requirements

- 64K Apple II
- Copy II Plus

The current version of Copy II Plus contains parameters for copying Carmen USA,

however, it does not reliably run because the copy protection remains on it. The following bypasses the signature check, but still requires Copy II Plus to copy.

**1** Make a copy of side A (boot side), and side B using the auto copy of Copy II Plus, version 8.3. If you don't have this version, then see below.

**2** On side A, use the sector editor and scan for the following bytes: C8 D0 6C FC FF. On my copy, they were at the end of track \$00, sector \$02. Change 6C FC FF to 4C 58 B0 using the sector editor. Be sure to write back to disk. The signature is now deprotected.

In case your copy is different, the bytes at \$B058 (which is where you jumped to) are A9 FF 9D 8F C0 1D 8C C0 26 EB EA 20 AF B1. This should give you enough bytes to find them on your disk.

On my disk the only part that my Copy II Plus editor could read was track \$00, sectors \$00 through \$07. Sector \$00 loaded into \$0800, sector \$01 into \$1000, sector 2 into \$1F00, and sectors \$03-07 into \$B000-B400.

To give a short explanation of how I figured all this out, I started with boot code tracing, but got tired of having the program jump back and forth from one sector to another on track \$00, so I modified my methods. I used my sector editor to screen dump and list the first 8 sectors. I then started inserting 4C 59 FF (jump to monitor) whenever I found an RTS, or at any other spot that I wanted to stop the program and explore the code. This allowed me to figure out what portions of the code did what, and saved me a lot of time over the usual methods of boot code tracing, since I would just boot the modified disk and see where it got to. All of these changes were done on the copied disk, not the original.

If you do not have version 8.3, then you can enter the following parameters using Create New Parm Entry on Copy II Plus.

### Back side

T0-T22, B3=01, 0E=9A, 0F=D5, 10=9D, 0A=03, B4=D4, BD=01, 45=00, 46=03

### Boot side

T0, B3=01, 45=01, 46=5F  
T1-T22, 0E=9A, 0F=D5, 10=9D, 0A=03, B4=D4, BD=01, 45=00, 46=03

John J. Willems

Softkey for...

## Galaxian

Thunder Mountain

When I first got this game, I tried to make

a backup, but was unable to do so. I noticed that the game was a single-load and decided that the Swap Controller would be a reasonable bet.

**1** Start by initing a disk with the fast DOS of your choice.

### INIT HELLO DELETE HELLO

**2** Remove this disk and boot Galaxian.

**3** Stop the program with **RESET**.

**4** Move the protected RWTS to a safe place.

### CALL -151 1900<B800.BFFFM

**5** Remove the Galaxian disk and insert the disk with your Swap Controller.

### BSAVE RWTS.GALAXIAN, A\$1900, L\$800

**6** Alter your swap controller so that it calls for RWTS.GALAXIAN. Use the Swap Controller to copy Galaxian onto the INITed disk you made in step one.

Enjoy your deprotected disk!

? Does anyone have information regarding David-DOS or how one can acquire the most recent version? I tried an old Los Angeles address, which I had for the company, but got no reply.

? Does anyone have a version of Disk Muncher after 1.1 or that recognizes Ramworks for one pass copying?

? My copy of Gruds in Space by Sirius Software died and the company no longer exists as far as I know. Does anyone have a copy they can spare? I know I should have deprotected it and made a copy but I didn't have that back issues of COMPUTIST and just didn't get around to it. Any help would be greatly appreciated. You can contact me through COMPUTIST.

? Now, my suggestion. If you enjoy action gaming as much as I do, you are especially devoted to the APTs in COMPUTIST. Just getting an extra life, or more bullets, or a little invulnerability can make all the difference when you are learning a game. In a number of games there are levels I never would have seen without the right APT. Therefore, I would like to see an article on how you develop APT's. For example, how to avoid decrement, save your ships, get extra ammo, etc. The ABC's of what code to look for would be very useful to me and, I suspect, many others.

Could someone write such an article?

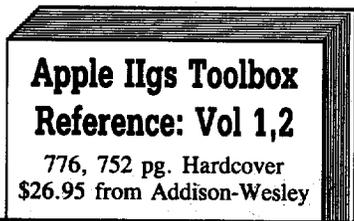
Congratulations again on having the best (and most user-friendly) computer magazine in print.

Jeff Hurlburt

## The PRODUCT MONITOR

### Ratings

★★★★★	SUPERB
★★★★	EXCELLENT
★★★	VERY GOOD
★★	GOOD
★	FAIR
☹	POOR
☹☹	BAD
☹☹☹	DEFECTIVE



One of the hazards in producing a series of manuals is that, sometimes, information which should be presented in a single unit gets parceled out among two or more texts. An example is the 'IIgs Firmware Reference, which omits much relevant, potentially helpful hardware data. I mention the problem here to underline the value of the 'Toolbox Reference volumes. Not only will you find extensive, well-organized toolbox facts, but a wealth of related information as well. The result is Apple's most comprehensive, in-depth, and ACCESSIBLE coverage of IIgs functioning to date.

Basically, the 'Toolbox Reference approach is to 1. Outline general toolbox concepts and explain how tools are used; and 2. Supply successively more detailed descriptions of each tool set. Chapter 1, for instance, defines "tool set" and briefly explains, set-by-set, what each does. If you want to survey tool set capabilities, this is the place to start. If you need to zero-in on the right set or sets to accomplish some task, Chapter 1 is a good 'jumping off' point. Completing the introduction, Chapter 2 tells you, in detail, how to startup and employ tool sets (e.g. how to call

the Tool Locator, calling toolbox routines from assembly language, etc.).

Individual, in depth, tool set coverage begins with Chapter 3 ("Apple Desktop Bus Tool Set"). Now there is a longer discussion of what the set does and a brief listing of each tool and its function, followed by tool set-relevant information. For instance, to help you make sense of ADB tools, there is a discussion of ADB commands, devices, and polling methods. In the "Dialog Manager Tool Set" chapter, there are illustrations and discussions relating to dialog boxes, item descriptors, alerts, and more. Other tool sets receive similar treatment.

Eventually, each chapter gets into a 'how to use the \_\_\_\_\_ routines' discussion, followed by routine details. The set's tool descriptions appear next, in alphabetical order. Typically, each includes a discussion of the tool's function, diagrams of stack contents before and after a call, example of C language calling code, and error indicators. "Special Notes", parameter details, and other toll-related information may also appear here. A tool set chapter concludes with a summary of constant definitions and error codes.

In the tradition of earlier Addison-Wesley series releases, you can expect excellent charts, diagrams, and tables, and an ultra easy-on-the-eye format. Ample 'white space' avoids clutter, with boldface and red highlighting to facilitate scanning. As in the 'IIgs ProDOS 16 Reference, the discussions are packed with information, yet 'readable', even by users possessing just elementary machine/assembly language skills. The authors, one feels, want to communicate their knowledge. If you plan to become an effective IIgs programmer, add these volumes to your literature "Must Get" list, at the top!

### Moustrak — Mouse Pads



*Small size: \$2.75 each, Large size: \$3.75 - \$7.20 each depending upon surface and other features*

Sooner or later, every mouse user discovers that running Herman around on the bare computer table (desk, console, etc.) just won't do. Mice require nice high-traction surfaces so their little feet won't slip. Also, they don't appreciate the furniture polish, coffee spills, and other grunge encountered on the typical console. What they DO appreciate is a good pad.

Moustrak, as the name implies, specializes in supplying mouse pads. Their standard models feature a long-wearing synthetic fiber cloth surface available in colors from brilliant reds

and blues through grey and black. Other models offer a new, finely gridded low friction plastic surface, which, in "Designer" series pads, covers a portrait or scene. (Currently, you can choose from among six pictures.) All models bond the surface to a pad of desk-hugging foam rubber.

Cloth-surface models do, of course, wear out. After nearly three years of fairly heavy use, our cloth-surfaced pad had begun to show 'fuzzing' of the fibers, a condition which would soon lead to poor traction. These surfaces also absorb hand oil and grime, and are more difficult to clean than plastic. (Soaking in a gentle detergent solution seems to be OK; but wiping with a cloth isn't.) Plastic-surface models appear to be virtually immortal; but the sample sent did tend toward a slight bottom-edge curl-up (about 1/16 inch).

Whether you find yourself attracted to the glowing good looks of Moustrak's cloth tops, go for the ruggedness of plastic, or especially like the idea of "Designer" scenery, it's well to keep in mind that the major determinant of long-term user satisfaction is 'feel'. As with joysticks, some noticeable resistance to mouse movement is usually counted a 'plus', because the user has something to work against, something to 'tell' arm and wrist muscles how far Herman has moved and to make it easier to stop. These considerations favor cloth, which produces a good deal more mouse body drag than plastic. Plastic, on the other hand, does facilitate rapid positioning; and the lower 'body bias' gives it an edge in graphics applications. Either way, slippage is not a problem. Both surfaces supply plenty of mouseball traction.

Since pad size and height preferences vary, Moustrak offers "thin" 1/4-inch and "thick" 7/16-inch heights and two sizes. (Small pads measure about 8 x 9.5 inches. Large pads measure roughly 9.25 x 11 inches.)

### Fast Frames, Updates, Etc.

#### For The Last Ninja

Discovered beneath an alter stone in an obscure temple (the name of which seldom achieves mention) was a scroll on which appears the following:

*Though never more than eight  
Show the apples of your lives,  
In DATAW the count doth wait  
And from the fourth byte it derives!*

Yet another clue was discovered on a rune stone buried near a tomb:

*For dragons made of flesh and blood,  
The bomb of smoke suffices;  
But a second guardian made of stone,  
Tests magic, not devices.*

## Flying Fun

I freely admit to being something less than a flight-sim fanatic. (What, after all, is the point in flying around if you can't blow-up stuff?) Well, "Chuck Yeager's Advanced Flight Trainer" (\$39.95, for 64K Apple II) has turned out to be an exception. Rendered in standard hires, the simulator offers cockpit, chase plane, and other views, with a choice of Instruction, Test Flight, and assorted racing setups. Other options include selection of starting point (e.g. in the hangar, airborne lined-up for landing, etc.), AND a choice of fourteen aircraft. The latter range from the flapless Sopwith Camel through jet fighters, rocket planes, and high altitude reconnaissance models, each with instrumentation and handling characteristics to match.

Simulated 3-D graphics let you zoom down to fly around pyramids, between buildings, and beneath arches. Though sound effects are minimal and the program is far too slow for 1 MHz machines, on a IIs, this Electronic Arts release is an addictive, entertaining challenge.

## Poker Pictures Puzzle

As some "Strip Poker II" fans have discovered, adding the game's pictures to a super-res art collection involves more than just transferring a few files. When copied from the Artworx diskette and displayed, the normal-appearing \$C1 type files produce, mainly, a screen full of hash!

For those who enjoy a good code-breaking challenge, here are the 'puzzle' parameters: 1. At 65 blocks each, the pictures do not appear to be packed; 2. Each picture is vaguely recognizable through the 'hash'-- like looking through a screen of colored glass beads; 3. The pictures must be quickly accessible to the program in order to avoid game-ruining delays. So, how is the picture encoded?

If you guessed that the key is some form of XOR operation, then give yourself a pat on the nose. XOR preserves all byte data; it is a speedy operation; and, unlike line jumbling, will tend to leave some visible trace of the original picture. To discover how XOR is employed, you can use RENAME to substitute an all-zero picture for one of the encoded game pictures. Then, when the zero-pic is displayed during play, switch out the game diskette for some ProDOS diskette that will get you into BASIC without bombing display memory; and do a boot. Now, enter the monitor and look at the start of display memory (e.g. E1/2000. E1/20FF RETURN).

Viola! What you see is the output of a 2-byte counter (initial value is \$1F2B) which is XORed with picture bytes to encode and decode the picture. (Note that only the upper 3/4 or so of the display is encoded.) The short routine presented below can be tacked onto your

favorite super-res display program (or BLOADED separately) and CALLED to decode SP II game pics prior to SAVEing them in your collection.

ORCA/M ASM65816 1.1 11 Dec 1988 18:23:42

\*  
\* ROUTINE TO DECODE S. POKER PICS (JH/88)  
\*

```

                                ORG $0300
PICDEC  START
                                OBJ $0300
DECODER EQU $04
DISPLAY EQU $E12000

0300 18          CLC
0301 FB          XCE
0302 C2 30      REP #30
0304 A9 2B 1F   LDA #1F2B
0307 85 04      STA DECODER
0309 A2 00 00   LDX #0000
030C BF 00 20 E1 GETWORD LDA DISPLAY,X
0310 45 04      EOR DECODER
0312 9F 00 20 E1 STA DISPLAY,X
0316 E6 04      INC DECODER
0318 E8         INX
0319 E8         INX
031A E0 E0 7B  CPX #7BE0
031D D0 ED      BNE GETWORD
031F 38         SEC
0320 FB          XCE
0321 60         RTS
0322           END
    
```

## VENDORS

**ADDISON-WESLEY PUBLISHING:** Route 128, Reading, MA 01867 (617-944-3700)  
**ELECTRONIC ARTS:** 1820 Gateway Drive, San Mateo, CA 94404 (415-571-7171)  
**MOUSTRAK:** 3047 St. Helena Hwy., St. Helena, CA 94574 (800-221-MOUS, in CA call 707-963-8179)

Ishimoto

Softkey Addendum for...

## Flight Simulator II v2.0

SubLOGIC Corp.

After completing Christopher Dean's softkey in COMPUTIST #51, I had a disk which would work just fine if the DOS 3.3 system disk had been booted first and A2-FS2 copy was started with a PR#6. The copy would not, however, boot from a cold start (placed in drive #1 and the power turned on). The following change (addition) corrected this and the copy booted properly on my 64K Apple II+, a 128K Apple IIe, a Laser 128, and (a different) 48K Apple II+.

\$8E8:A6 2B 20 5C C6 A5 2B AD  
 \$8F0:81 C0 4C 00 1D

Softkey for...

## Dive Bomber

U.S. Gold/Epyx

### Requirements

- 64K Apple II series
- DIVE BOMBER
- Blank disk
- COPYA
- Sector editor

Dive Bomber is a combination of flight simulator and war game. The simulation and graphics are excellent. The disk can be copied with a modified COPYA but will not work.

Performing a boot code trace, I noticed a JMP to \$5F00. Disassembling this code produced a vaguely familiar listing. In COMPUTIST #57 (page 17) is a softkey by Jim Hart for Boulderdash Construction Set also by Epyx. The protection used on Dive Bomber is similar but not identical to Boulderdash. It is necessary to spoon-feed Dive Bomber all sixteen values from \$F0 to \$FF. The main protection code at \$5F00 was located on track \$00, sector \$09 of my disk.

- 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:

Trk	Sct	Byte(s)	From	To
\$00	\$09	\$00-32	A9 00 8D DF FF	85 FA 85 FF A9
			A9 44 A6 2B 20	EE 85 FC 85 FC
			A3 FB A9 0A 85	85 F9 85 F3 A9
			FC A6 2B BD 89	F0 85 F2 A9 00
			C0 BD 8E C0 A9	85 4C 81 5F 83
			80 85 FD C6 FD	85 F7 85 F6 A9
			F0 71 20 AF 5F	F1 A9 30 A9 FB
			B0 6C A5 F9 C9	85 F8 85 FB A9
			0F D0 F1 A0 00	E7 85 F4 85 F5
			BD 8C C0 10 FB	A9 5A 85 FD 85
			88	FE

That's it. The copy should now work and is COPYA-able. If your version is not the same, follow Jim Hart's method in COMPUTIST #57.

William W. Beard

Just received my first issue of COMPUTIST a few weeks ago and I am having a blast with it. I had already received the three volume Book of Softkeys set and discovered that I just had to have COMPUTIST too. Thanks to the contributors who still hold to the tradition of being user friendly, I have had very

few problems understanding their directions despite the fact that I am woefully ignorant of machine code, assembly language, and monitor manipulation!

With their help and a lot of trips to the library, my user group, and Apple friends, I am beginning to acquire some insights into my Apple. Thanks

② I recently found an Alaska Card at, of all places, a garage sale and picked it up for \$20. Since it came with a disk and docs, would allow me to enter the monitor, etc., I figured it might be OK for doing some of the tricks in the Computist. However, once home I discovered that it advised not installing in the IIe without reading the enclosed flyer. You guessed it, no flyer! Now what do I do? Does anyone even remember this card and what need I do to install it without blowing something up?

② I have ordered the latest version of Fingerprint and understand that it will also allow me to enter the monitor, also dump screens, etc. I really bought this for use on my Apple IIe at home (yes, I have two setups, one at work and one at home) since I have always wanted to capture some menus where I lacked docs for some programs. Will this also do what I need to do when your contributors direct me to enter the monitor?

② Lucky me, I have another alternative, but it scares the bejesus out of me. A club member has a Senior Prom setup for sale for \$20 with all the docs. Looking through them the other night, they appear tremendously complicated for a beginner. Seems it includes its own sector editor and other goodies I have no idea what they do! Should I get it anyway and learn (Ha!) how to use it or should I stick with the Alaska Card for now?

I am sorry to see publications leaving the scene that I have enjoyed over the past few years. In order to help you stay around forever, may I send another year's subscription fee even though I have 11 months to go before I run out?

Stick around fellas, I have a feeling we are in for a lot of fun.

**I** *I don't know anything about the Alaska card or the Fingerprint card but the Senior Prom will do everything that you need. So, if you can still get it, I'd say grab it! It will work just fine in an Apple IIe. . . . . RDEXed*

Joe Montano

## The Bard's Dressing Room III

### ■ Requirements

- 64K Apple II w/80 column display

- PRODOS operating system
- Bard's Tale III Character disk

**Acknowledgements:** *Grateful thanks to Thomas Rapheld, Brian Symonds and Harold Day for their input in COMPUTIST #59 without which this project would have been much more difficult.*

### Background

Unlike the original Bard's Tale, Bard's Tale III (BT3) allows 32 characters/parties to be stored on disk. The Bard's Tale characters were stored on track \$00, sectors \$01 thru \$0F. In BT3, however, ProDOS is used and characters are stored in Block \$110 thru \$117, which is track \$22. Each block is 512 bytes long and can hold 4 characters. Any characters that you may find on track \$21 are characters currently in a saved game and will not be affected by this editor. What's more, if you restore a saved game, return your characters to camp and resave them to disk, any changes you made to the characters in the meantime with this editor will be written over and lost.

To make a self-booting disk with the The Dressing Room III (TDR3), use your system utilities to format a disk, copy the files PRODOS and BASIC.SYSTEM to it, rename TDR3 to STARTUP and move it to the same disk. That's all there is to it. If you are using an Apple IIgs, do not use the file PRODOS in the root directory. Use the file P8 in the SYSTEM directory and rename it PRODOS.

Remember, TDR3 will not run in DOS 3.3. If you type it in with DOS 3.3 or receive it on a DOS 3.3 disk you can move it to a ProDOS disk with the conversion program in the PRODOS FILER on your system disk. Copy II Plus will also convert it for you.

TDR3 is pretty much self-explanatory although there are a couple of things you should know. Characters cannot be created or deleted with TDR3. You must edit a character that has already been created in the game. The same applies to party rosters. All the characters are read from and written to the disk at the same time, so make all the changes you want to each character before writing them back to the disk.

If you have problems with the editor or make some interesting changes or additions I would appreciate it if you write and tell me about them.

### Making it go

Just type in the Applesoft listing and SAVE it as "THE DRESSING ROOM III" or just "TDR3" (it's pretty long, but hang in there). As soon as you run it, you will get the Introduction screen and will be advised to place your character disk in the drive of your choice. Just press the number of the drive your disk is in and it will then read your characters into the buffer and present you with a Master Roster of

all your characters. From there on, just follow directions. The command keys for each screen will be listed at the bottom of the screen and (hopefully) will be the only keys that work at that time.

TDR3 uses the ProDOS Machine Language Interface (MLI) and should work with any version of ProDOS 8. Even with the older 1.0.1 and 1.1.1.

### What makes it go

Here is a basic overview of the main routines and what they do:

100-120 Set-up: Call routines for initialization, compiling and displaying the master roster.

130-240 Main menu: This routine calls "display character" and lists your command keys. From here you can return to the master roster or press forward to the modify menu.

250-350 Working subroutines: These do the little things that need to be done often, like centering titles, drawing borders, etc.

360-400 Name Check: Checks to see if you want to edit a character or party roster and routes you accordingly.

410-430 Get Experience and Gold: These are stored in eight digit Hexadecimal values. Simply put, more than 4 billion points can be amassed although the game will probably not display that many.

440-590 Display Character: Shows you the character you have so you can change him/her to the character you want.

600-910 Team Edit: You can add to or change names on your party rosters here. Seven names are allowed on each roster.

920-1080 Compile Master Roster: Called by the Set-up routine, this reads all character blocks into memory and places the names in a variable array for use by the rest of the program.

1090-1220 Display Master Roster: Uses the aforementioned variable array to present you with a menu of all your characters. From here, you may select a character to edit, write your characters to disk, reread your characters from the disk, or quit the editor.

1230-1390 Main Modify Menu: Twelve Items to choose from. What you can't change are armor class, gender, multiple strikes, rogue abilities, and other minor flags and bytes. Also, you can only make a character healthy. To cure a character is your only option.

1400-2610 Changes!: Modifies the first 10 Items listed in the main modify menu. To see a chart of locations please refer to COMPUTIST #59 for equipment and attribute tables.

2620-3240 Edit Equipment: Garth's Equipment Warehouse has every conceivable item in unlimited quantity that can be used in The Bard's Tale III. Although some items that you pick up in the maze have a limited useful

life, all items acquired here have an unlimited lifespan.

**3250-3470 Dissassemble Spells:** All spells are bit mapped into 16 bytes which must be disassembled to modify individual levels and spells.

**3480-3700 Assemble Spells:** Reverses the above procedure.

**3710-4280 Get Spell Levels:** Determines the spell level of each type of magic user.

**4290-4570 Edit Spell Levels:** Allows you to adjust the spell level of each type of spell. Also allows you to get the three special spells hidden in the game.

**4580-4650 Disk I/O:** Routine that reads from or writes to the disk.

**4660-4870 Initialization & Introduction:** Pokes a short routine into memory for disk access, sets HIMEM, reads data into arrays, displays introduction screen.

**4880-5240 Data:** Enough said.

## Making it go farther

Several things can be done to improve TDR3. A character printout function, for example. Copying and renaming characters is another possibility. I imagine correcting my mistakes wouldn't hurt, either. I would be interested in seeing any corrections or modifications so I can fix/change my copy. I'll continue to work on it and send in any changes or updates I come up with.

So, until then, have fun.

## THE DRESSING ROOM III

```

70 REM * THE BARD'S DRESSING ROOM III
80 REM * BY JOE MONTANO
90 REM
100 GOSUB 4670: REM INIALIZATION
110 GOSUB 930: REM COMPIL MASTER ROSTER
120 GOSUB 1090: REM DISPLAY MASTER ROSTER
130 REM MAIN MENU
140 REM IF TEAM NAME GOTO TEAM EDIT
150 GOSUB 370
160 X = FRE (0)
170 GOSUB 290
180 VTAB 22: HTAB 3: PRINT "M)odify"; TAB(21);
  "R)oster"; GET AN$
190 AN = ASC (AN$)
200 IF AN = 77 THEN 1250
210 IF AN = 82 THEN FOR X = 0 TO 31: N$(X) = "": NEXT
  : GOSUB 980: GOTO 120
220 GOTO 180
230 REM END IT ALL
240 POKE 34,0: A$ = "DON'T FORGET TO LOCK THE
  DOOR": HOME: VTAB 12: GOSUB 350: VTAB 22:
  END
250 REM WRITE BUFFER TO DISK
260 POKE 771,129: GOSUB 4590: POKE 771,128
270 RETURN
280 REM SINGLE LINE BORDER

```

```

290 VTAB 21: INVERSE: PRINT AA$: PRINT AB$;:
  HTAB 79: PRINT AB$: PRINT AA$: NORMAL:
  RETURN
300 REM DOUBLE LINE BORDER
310 VTAB 20: INVERSE: PRINT AA$: PRINT AB$;:
  HTAB 79: PRINT AB$: PRINT AB$;: HTAB 79:
  PRINT AB$: PRINT AA$: NORMAL: RETURN
320 REM TRIPLE LINE BORDER
330 VTAB 19: INVERSE: PRINT AA$: PRINT AB$;:
  HTAB 79: PRINT AB$: PRINT AB$;: HTAB 79:
  PRINT AB$: PRINT AB$;: HTAB 79: PRINT AB$:
  PRINT AA$: NORMAL: RETURN
340 REM CENTER HEADINGS AND OTHER MESSAGES
350 HTAB 41 - LEN (A$) / 2: PRINT A$: RETURN
360 REM CHECK BUFFER FOR NAME OR TEAM
370 HOME
380 NX$ = N$(CH)
390 IF ASC ( LEFT$ ( N$(CH), 1)) = 170 THEN POP:
  GOTO 610
400 IF N$(CH) = "-----" THEN POP: GOTO 120
410 REM READ EXPERIENCE AND GOLD INTO VARIABLES
  EP AND GL
420 EP = PEEK (BUF + 21) + PEEK (BUF + 22) * 256
  + PEEK (BUF + 23) * 65536 + PEEK (BUF + 24)
  * 16777216
430 GL = PEEK (BUF + 25) + PEEK (BUF + 26) * 256
  + PEEK (BUF + 27) * 65536 + PEEK (BUF + 28)
  * 16777216
440 REM DISPLAY CHARACTER
450 A$ = NX$: GOSUB 350: PRINT
460 INVERSE: PRINT "RACE:" GNS( PEEK (BUF +
  43)) "R$ ( PEEK (BUF + 42)) "": NORMAL
470 PRINT TAB(41);
480 INVERSE: PRINT "OCCUPATION:" PEEK
  (BUF + 30) * 256 + PEEK (BUF + 29) "": C$(
  PEEK (BUF + 41)) "": NORMAL
490 PRINT: GOSUB 3260: GOSUB 3720
500 ST$ = "Sick or Dead": IF PEEK (BUF + 45) =
  0 THEN ST$ = "Healthy"
510 PRINT "ST IQ DX CN LK": TAB(41); "Hit Pts:"
  PEEK (BUF + 34) * 256 + PEEK (BUF + 33)
  "/" PEEK (BUF + 36) * 256 + PEEK (BUF + 35)
520 PRINT PEEK (BUF + 16); TAB(4); PEEK (BUF +
  17); TAB(7); PEEK (BUF + 18); TAB(10);
  PEEK (BUF + 19); TAB(13); PEEK (BUF + 20);
530 PRINT TAB(41); "Spl Pts:" PEEK (BUF + 38)
  * 256 + PEEK (BUF + 37) "/" PEEK (BUF + 40)
  * 256 + PEEK (BUF + 39)
540 PRINT TAB(41) "Exp:" EP
550 PRINT "Spell Levels: CON:" ; CO; TAB(41)
  "Gold:" GL
560 PRINT "MAG:" MG "SOR:" SC "WIZ:" WZ; TAB(
  41) "Status:" ST$
570 PRINT "ARC:" AR "CHR:" CR "GEO:" GE; TAB(
  41); "AC w/o Armor:" 10 - PEEK (BUF + 47)
580 PRINT: FL = 1: GOSUB 2670: FL = 0
590 RETURN
600 REM TEAM EDIT
610 HOME: A$ = "TEAM EDITING": GOSUB 350
620 PRINT
630 PRINT "TEAM NAME:" NX$
640 PRINT TAB(28); LEFT$( NY$, 10)
650 FOR NM = 1 TO 7
660 N$(NM) = ""

```

```

670 FOR L = 0 TO 15
680 N1 = PEEK (BUF + NM * 16 + L)
690 IF N1 = 255 THEN 720
700 N1$ = CHR$( N1)
710 N$(NM) = N$(NM) + N1$
720 NEXT L
730 NEXT NM
740 FOR X = 1 TO 7
750 PRINT X " " N$(X)
760 NEXT
770 X = FRE (0): GOSUB 290
780 VTAB 22: HTAB 3: PRINT "Change Which (<RET>
  Exits):" ; GET CC$
790 CC = VAL (CC$)
800 CA = ASC (CC$): IF CA = 69 THEN GOSUB 310: GOTO
  150
810 IF CA = 87 THEN GOSUB 260
820 IF CC = 0 OR CC > 7 THEN 120
830 PRINT: VTAB 19: CALL - 958
840 GOSUB 310
850 VTAB 21
860 HTAB 3: PRINT "Change:" ; N$(CC)
870 HTAB 3: INPUT "To:" ; N2$
880 IF N2$ = "" THEN VTAB 19: CALL - 958: GOTO 770
890 FF = 255: FOR X = 0 TO 15: POKE BUF + CC * 16
  + X, FF: NEXT
900 FOR X = 1 TO LEN (N2$): POKE BUF + CC * 16 +
  X - 1, ASC ( MID$( N2$, X, 1)) + 128: NEXT
910 GOTO 610
920 REM READ ALL NAMES FROM DISK TO VARIABLE N$( )
930 HOME
940 A$ = "COMPILING MASTER ROSTER": VTAB 12:
  INVERSE: GOSUB 350: NORMAL
950 POKE 776, DR: POKE 771, 128
960 GOSUB 4590
970 FOR X = 0 TO 31: N$(X) = "": NEXT X
980 FOR X = 0 TO 31
990 BUF = 29000 + (128 * X)
1000 FOR L = 0 TO 15
1010 N1 = PEEK (BUF + L)
1020 IF N1 = 255 THEN 1060
1030 IF N1 = 0 THEN N$(X) = "-----": L = 15: GOTO
  1070
1040 N1$ = CHR$( N1)
1050 N$(X) = N$(X) + N1$
1060 NEXT L
1070 NEXT X
1080 RETURN
1090 HOME: A$ = "MASTER ROSTER": GOSUB 350
1100 PRINT: PRINT: PRINT
1110 FOR X = 0 TO 7
1120 PRINT X + 1 " " N$(X); TAB(20); SPC(X <
  1); X + 9 " " N$(X + 8); TAB(40); X + 17 " "
  N$(X + 16); TAB(60); X + 25 " " N$(X +
  24)
1130 NEXT X
1140 GOSUB 310: VTAB 21: HTAB 3: PRINT "#) of
  Character to Edit"; TAB(41); "Write to
  Disk"
1150 HTAB 3: PRINT "R)ead from Disk"; TAB(
  41); "Q)uit"; TAB(60); INPUT " "; CH$
1160 IF CH$ = "Q" OR CH$ = "q" THEN 230
1170 IF CH$ = "R" THEN POP: GOTO 110
1180 IF CH$ = "W" THEN GOSUB 260

```

```

1190 CH = VAL (CH$) - 1
1200 IF CH < 0 OR CH > 31 THEN VTAB 20: CALL - 958:
      GOTO 1140
1210 BUF = 29000 + (128 * CH)
1220 RETURN
1230 REM BEGIN MODIFY ROUTINES
1240 REM MODIFY MENU
1250 HOME : A$ = "MODIFY" : GOSUB 350
1260 A$ = NX$: GOSUB 350
1270 PRINT : PRINT : PRINT TAB ( 20 ) ^"1)"^Name"
      ; TAB ( 45 ) ^"7)"^Hit^Points"
1280 PRINT TAB ( 20 ) ^"2)"^Race" ; TAB ( 45 ) ^"8)"^
      Spell^Points"
1290 PRINT TAB ( 20 ) ^"3)"^Class" ; TAB ( 45 ) ^"9)"^
      Status"
1300 PRINT TAB ( 20 ) ^"4)"^Level" ; TAB ( 45 ) ^"10)"^
      Attributes"
1310 PRINT TAB ( 20 ) ^"5)"^Experience" ; TAB ( 45 )
      ^"11)"^Spell^Level"
1320 PRINT TAB ( 20 ) ^"6)"^Gold" ; TAB ( 45 ) ^"12)"^
      Equipment"
1330 GOSUB 330
1340 VTAB 21: HTAB 3: INPUT "Enter^ Choice^
      (<RET>^Exits):^" ; CC$
1350 IF CC$ = "" THEN 150
1360 CC = VAL (CC$)
1370 IF CC < 1 OR CC > 12 THEN 1250
1380 ON CC GOSUB 1410,1520,1640,1770,1870,1
      970,2070,2180,2290,2360,4300,2640
1390 GOTO 1250
1400 REM EDIT NAME
1410 VTAB 3:A$ = "NAME^CHANGE" : GOSUB 350
1420 VTAB 19: CALL - 958: GOSUB 310
1430 VTAB 21: HTAB 3: PRINT "Current^Name:^" NX$
1440 HTAB 3: INPUT "^^^^New^Name:^" ; NN$
1450 IF NN$ = "" THEN 1500
1460 IF LEN (NN$) > 15 THEN NN$ = LEFT$ (NN$, 15)
1470 FF = 255: FOR X = 0 TO 15: POKE BUF + X, FF:
      NEXT
1480 FOR X = 1 TO LEN (NN$): POKE BUF + X - 1, ASC
      ( MID$ (NN$, X, 1) ) + 128: NEXT
1490 NX$ = NN$
1500 RETURN
1510 REM EDIT RACE
1520 HOME : A$ = "CHANGE^RACE" : GOSUB 350
1530 PRINT : PRINT "Current^Race:^" R$( PEEK
      (BUF + 42))
1540 PRINT
1550 FOR X = 0 TO 6: PRINT X + 1 ")^" ; R$(X): NEXT
1560 GOSUB 330
1570 VTAB 21: HTAB 3: PRINT "Enter^Choice:^" ; :
      GET CC$: PRINT CC$
1580 IF CC$ = CHR$( 13) THEN 1620
1590 CC = VAL (CC$)
1600 IF CC < 1 OR CC > 7 THEN 1570
1610 POKE BUF + 42, CC - 1
1620 RETURN
1630 REM EDIT CLASS
1640 HOME : A$ = "CHANGE^CLASS" : GOSUB 350
1650 PRINT
1660 PRINT "Current^Class:^" C$( PEEK (BUF +
      41))
1670 PRINT : FOR X = 0 TO 6: PRINT X + 1 ")^"
      ; C$(X): TAB ( 20 ) ; SPC( (X + 8) < 10) ; X + 8
      ")^" ; C$(X + 7): NEXT X
1680 PRINT TAB ( 20 ) ^"15)"^ C$(14)
1690 GOSUB 330
1700 VTAB 21: HTAB 3: INPUT "Enter^Choice:^"
      ; CC$
1710 IF CC$ = "" THEN 1750
1720 CC = VAL (CC$)
1730 IF CC < 1 OR CC > 15 THEN 1700
1740 POKE BUF + 41, CC - 1
1750 RETURN
1760 REM EDIT LEVEL
1770 VTAB 3:A$ = "CHANGE^LEVEL" : GOSUB 350
1780 VTAB 19: CALL - 958: GOSUB 310: VTAB 21:
      HTAB 3: PRINT "Current^Level:^" PEEK (BUF
      + 30) * 256 + PEEK (BUF + 29)
1790 HTAB 3: INPUT "^^^^New^Level:^" ; CC$
1800 IF CC$ = "" THEN 1850
1810 CC = VAL (CC$)
1820 T = INT (CC / 256)
1830 POKE BUF + 30, T: POKE BUF + 32, T
1840 POKE BUF + 29, CC - (T * 256): POKE BUF +
      31, CC - (T * 256)
1850 RETURN
1860 REM EDIT EXPERIENCE
1870 VTAB 3:A$ = "CHANGE^EXPERIENCE" : GOSUB 350
1880 VTAB 19: CALL - 958: GOSUB 310
1890 VTAB 21: HTAB 3: PRINT "Current^
      Experience:^" ; EP
1900 HTAB 3: INPUT "^^^^New^Experience:^" ; CC$
1910 IF CC$ = "" THEN 1950
1920 CC = VAL (CC$): POKE BUF + 24, INT (CC /
      16777216): CC = CC - ( INT (CC / 16777216) *
      16777216): POKE BUF + 23, INT (CC / 65536)
1930 CC = CC - ( INT (CC / 65536) * 65536): POKE
      BUF + 22, INT (CC / 256): CC = CC - ( INT (CC
      / 256) * 256): POKE BUF + 21, CC
1940 EP = PEEK (BUF + 24) * 16777216 + PEEK (BUF
      + 23) * 65536 + PEEK (BUF + 22) * 256 +
      PEEK (BUF + 21)
1950 RETURN
1960 REM EDIT GOLD
1970 VTAB 3:A$ = "CHANGE^GOLD" : GOSUB 350
1980 VTAB 19: CALL - 958: GOSUB 310
1990 VTAB 21: HTAB 3: PRINT "Current^Gold:^" GL
2000 HTAB 3: INPUT "^^^^New^Gold:^" ; CC$
2010 IF CC$ = "" THEN 2050
2020 CC = VAL (CC$): POKE BUF + 28, INT (CC /
      16777216): CC = CC - ( INT (CC / 16777216) *
      16777216): POKE BUF + 27, INT (CC / 65536)
2030 CC = CC - ( INT (CC / 65536) * 65536): POKE
      BUF + 26, INT (CC / 256): CC = CC - ( INT (CC
      / 256) * 256): POKE BUF + 25, CC
2040 GL = PEEK (BUF + 28) * 16777216 + PEEK (BUF
      + 27) * 65536 + PEEK (BUF + 26) * 256 +
      PEEK (BUF + 25)
2050 RETURN
2060 REM EDIT HIT POINTS
2070 VTAB 3:A$ = "CHANGE^HIT^POINTS" : GOSUB 350
2080 VTAB 19: CALL - 958: GOSUB 310
2090 VTAB 21: HTAB 3: PRINT "Current^ Hit^
      Points:^" PEEK (BUF + 34) * 256 + PEEK
      (BUF + 33) "/" PEEK (BUF + 36) * 256 + PEEK
      (BUF + 35)
2100 HTAB 3: INPUT "^^^^New^Hit^Points:^" ; CC$
2110 IF CC$ = "" THEN 2160
2120 CC = VAL (CC$)
2130 T = INT (CC / 256)
2140 POKE BUF + 34, T: POKE BUF + 36, T
2150 POKE BUF + 33, CC - (T * 256): POKE BUF +
      35, CC - (T * 256)
2160 RETURN
2170 REM EDIT SPELL POINTS
2180 VTAB 3:A$ = "CHANGE^SPELL^POINTS" : GOSUB
      350
2190 VTAB 19: CALL - 958: GOSUB 310
2200 VTAB 21: HTAB 3: PRINT "Current^ Spell^
      Points:^" PEEK (BUF + 38) * 256 + PEEK
      (BUF + 37) "/" PEEK (BUF + 40) * 256 + PEEK
      (BUF + 39)
2210 HTAB 3: INPUT "^^^^NEW^SPELL^POINTS:^" ; CC$
2220 IF CC$ = "" THEN 2270
2230 CC = VAL (CC$)
2240 T = INT (CC / 256)
2250 POKE BUF + 38, T: POKE BUF + 40, T
2260 POKE BUF + 37, CC - (T * 256): POKE BUF +
      39, CC - (T * 256)
2270 RETURN
2280 REM EDIT STATUS
2290 HOME : A$ = "CHANGE^STATUS" : GOSUB 350
2300 PRINT : PRINT "Current^Status:^" ST$
2310 GOSUB 290: VTAB 22: HTAB 3: PRINT "C)ure"
      ; TAB ( 27 ) ; "<RET>^Exits^^" ; : GET CC$:
      PRINT CC$
2320 IF CC$ = CHR$( 13) THEN RETURN
2330 IF CC$ = "C" THEN POKE BUF + 45, 0: ST$ =
      "Healthy" : GOTO 2290
2340 GOTO 2310
2350 REM EDIT ATTRIBUTES
2360 HOME : A$ = "MODIFY^ATTRIBUTES" : GOSUB 350
2370 PRINT : PRINT "Current^Levels:"
2380 PRINT
2390 V = 7: H = 11: H1 = 16
2400 B3 = 16
2410 X$ = "<---" : BL$ = "^^^^"
2420 VTAB 7
2430 PRINT "^^^^STR:^"
2440 PRINT : PRINT "^^^^INT:^"
2450 PRINT : PRINT "^^^^DEX:^"
2460 PRINT : PRINT "^^^^CON:^"
2470 PRINT : PRINT "^^^^LUC:^"
2480 VTAB V: HTAB H: PRINT PEEK (BUF + B3) ; "^^"
2490 V = V + 2: B3 = B3 + 1
2500 IF B3 < 21 GOTO 2480
2510 B3 = 16: V = 7: VTAB V: HTAB H1: PRINT X$
2520 GOSUB 310
2530 VTAB 21: HTAB 3: PRINT "<RET>^ to^ move^
      pointer^^L)eave"
2540 HTAB 3: PRINT "<---^ and^ --->^ to^ change^
      points^^" ; : GET CC$
2550 CC = ASC (CC$)
2560 IF CC = 13 THEN VTAB V: HTAB H1: PRINT BL$: V
      = V + 2: B3 = B3 + 1: IF V > 15 THEN V = 7: B3 = 16
2570 IF CC = 13 THEN VTAB V: HTAB H1: PRINT X$

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# Readers Data Exchange

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2580 IF CC = 76 THEN RETURN
2590 IF CC = 8 THEN IF PEEK (BUF + B3) > 0 THEN POKE
    BUF + B3, PEEK (BUF + B3) - 1: VTAB V: HTAB
    H: PRINT PEEK (BUF + B3); "AAA"
2600 IF CC = 21 THEN IF PEEK (BUF + B3) < 99 THEN
    POKE BUF + B3, PEEK (BUF + B3) + 1: VTAB V:
    HTAB H: PRINT PEEK (BUF + B3)
2610 PRINT : GOTO 2530
2620 REM EDIT EQUIPMENT
2630 REM EQUIPMENT MENU
2640 HOME : AS$ = "GARTH'S*EQUIPMENT*WAREHOUSE"
    : GOSUB 350
2650 AS$ = NX$: GOSUB 350
2660 PRINT
2670 PRINT "Carried*Items*(=*Equipped):"
2680 PRINT : B3 = 48: N = 1
2690 FOR X = 0 TO 9 STEP 3
2700 E$ = "A" : E1$ = "AA" : E2$ = "AAA"
2710 IF PEEK (BUF + B3 + X) = 1 THEN E$ = "*"
2720 IF PEEK (BUF + B3 + X + 12) = 1 THEN E1$ = "*"
2730 IF PEEK (BUF + B3 + X + 24) = 1 THEN E2$ = "*"
2740 PRINT N " " E$; I$( PEEK (BUF + B3 + X + 1));
    TAB( 27); N + 4; " " E1$; I$( PEEK (BUF + B3
    + X + 13)); TAB( 54); SPC( (N + 8) < 10); N +
    8; " " E2$; I$( PEEK (BUF + B3 + X + 25))
2750 N = N + 1
2760 NEXT
2770 IF FL = 1 THEN RETURN
2780 X = FRE (0): GOSUB 310
2790 VTAB 21: HTAB 3: PRINT "E)quip***A)dd*Item*
    **<RET>*Exits"
2800 HTAB 3: PRINT "U)nequip**D)rop*Item**" :
    POKE - 16368, 0: GET CC$: PRINT CC$
2810 CC = ASC (CC$)
2820 IF CC = 13 THEN RETURN
2830 REM EQUIP ITEM
2840 IF CC = 69 THEN VTAB 19: CALL - 958: GOSUB
    330: VTAB 21: HTAB 3: PRINT "Which*Item:*"
    : INPUT CW$: IF VAL (CW$) > 0 AND VAL (CW$)
    < 13 THEN POKE BUF + B3 + VAL (CW$) * 3 - 3, 1
2850 REM UNEQUIP ITEM
2860 IF CC = 85 THEN VTAB 19: CALL - 958: GOSUB
    330: VTAB 21: HTAB 3: PRINT "Which*Item:*"
    : INPUT CW$: IF VAL (CW$) > 0 AND VAL (CW$)
    < 13 THEN POKE BUF + B3 + VAL (CW$) * 3 - 3, 0
2870 IF CC = 68 THEN GOSUB 2910
2880 IF CC = 65 THEN GOSUB 2980
2890 GOTO 2640
2900 REM DROP ITEM
2910 VTAB 19: CALL - 958: GOSUB 330: VTAB 21:
    HTAB 3
2920 PRINT "Which*Item:*" : INPUT CW$: CW = VAL
    (CW$): IF CW < 0 OR CW > 12 THEN 2950
2930 FOR X = CW TO 11: POKE BUF + B3 + X * 3 - 3,
    PEEK (BUF + B3 + X * 3): POKE BUF + B3 + X
    * 3 - 2, PEEK (BUF + B3 + X * 3 + 1): POKE
    BUF + B3 + X * 3 - 1, PEEK (BUF + B3 + X *
    3 + 2): NEXT
2940 POKE BUF + B3 + 33, 0: POKE BUF + B3 + 34, 0:
    POKE BUF + B3 + 35, 0
2950 RETURN
2960 REM ADD ITEM
2970 REM CHECK # OF ITEMS
2980 NI = 13

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2990 FOR X = 1 TO 12
3000 Y = PEEK (BUF + B3 + X * 3 - 1)
3010 IF Y = 0 THEN NI = X: X = 12
3020 NEXT
3030 REM LIST AVAILABLE ITEMS
3040 FI = 1: LA = 15
3050 IF NI = 13 THEN RETURN
3060 HOME : PRINT
3070 FOR X = FI TO LA
3080 PRINT SPC( X < 100); SPC( X < 10); X ")*"
    I$(X); TAB( 27); SPC( X < 100); X + 15 ")*"
    I$(X + 15); TAB( 54); SPC( X < 100); X + 30
    ")*" I$(X + 30)
3090 NEXT
3100 GOSUB 310
3110 VTAB 21: HTAB 3: PRINT "F)orward" ; TAB(
    21); "A)dd"
3120 HTAB 3: PRINT "B)ackward" ; TAB( 21);
    "<RET>*Exits" : GET CC$: PRINT CC$;
3130 CC = ASC (CC$)
3140 IF CC = 70 AND FI < 230 THEN FI = FI + 45: LA
    = FI + 14: GOTO 3060
3150 IF CC = 66 AND FI > 1 THEN FI = FI - 45: LA =
    FI + 14: GOTO 3060
3160 IF CC = 13 THEN RETURN
3170 IF CC <> 65 THEN PRINT : GOTO 3100
3180 PRINT : VTAB 19: CALL - 958: GOSUB 330: VTAB
    21: HTAB 3
190 IF CC$ = "" THEN 3060
3200 INPUT "Which*Item:*" : CC$
3210 CC = VAL (CC$)
3220 IF CC < 1 OR CC > 255 THEN 3180
3230 POKE BUF + B3 + NI * 3 - 2, CC: POKE BUF +
    B3 + NI * 3 - 1, 255
3240 NI = NI + 1: GOTO 3050
3250 REM DISASSEMBLE SPELLS
3260 FOR X = 1 TO 128: SP(X) = 0: NEXT X
3270 CN = 0
3280 FOR Y = 84 TO 99
3290 BX = PEEK (BUF + Y)
3300 CN = CN + 1
3310 IF BX > 127 THEN SP(CN) = 1: BX = BX - 128
3320 CN = CN + 1
3330 IF BX > 63 THEN SP(CN) = 1: BX = BX - 64
3340 CN = CN + 1
3350 IF BX > 31 THEN SP(CN) = 1: BX = BX - 32
3360 CN = CN + 1
3370 IF BX > 15 THEN SP(CN) = 1: BX = BX - 16
3380 CN = CN + 1
3390 IF BX > 7 THEN SP(CN) = 1: BX = BX - 8
3400 CN = CN + 1
3410 IF BX > 3 THEN SP(CN) = 1: BX = BX - 4
3420 CN = CN + 1
3430 IF BX > 1 THEN SP(CN) = 1: BX = BX - 2
3440 CN = CN + 1
3450 IF BX = 1 THEN SP(CN) = 1: BX = 0
3460 NEXT Y
3470 RETURN
3480 REM ASSEMBLE SPELLS
3490 CN = 0
3500 FOR Y = 84 TO 99
3510 BX = 0
3520 CN = CN + 1
3530 IF SP(CN) = 1 THEN BX = BX + 128

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3540 CN = CN + 1
3550 IF SP(CN) = 1 THEN BX = BX + 64
3560 CN = CN + 1
3570 IF SP(CN) = 1 THEN BX = BX + 32
3580 CN = CN + 1
3590 IF SP(CN) = 1 THEN BX = BX + 16
3600 CN = CN + 1
3610 IF SP(CN) = 1 THEN BX = BX + 8
3620 CN = CN + 1
3630 IF SP(CN) = 1 THEN BX = BX + 4
3640 CN = CN + 1
3650 IF SP(CN) = 1 THEN BX = BX + 2
3660 CN = CN + 1
3670 IF SP(CN) = 1 THEN BX = BX + 1
3680 POKE BUF + Y, BX
3690 NEXT Y
3700 RETURN
3710 REM GET SPELL LEVELS
3720 CO = 0
3730 IF SP(3) THEN CO = CO + 1
3740 IF SP(6) THEN CO = CO + 1
3750 IF SP(9) THEN CO = CO + 1
3760 IF SP(11) THEN CO = CO + 1
3770 IF SP(13) THEN CO = CO + 1
3780 IF SP(15) THEN CO = CO + 1
3790 IF SP(19) THEN CO = CO + 1
3800 MG = 0
3810 IF SP(22) THEN MG = MG + 1
3820 IF SP(25) THEN MG = MG + 1
3830 IF SP(28) THEN MG = MG + 1
3840 IF SP(30) THEN MG = MG + 1
3850 IF SP(32) THEN MG = MG + 1
3860 IF SP(34) THEN MG = MG + 1
3870 IF SP(38) THEN MG = MG + 1
3880 SC = 0
3890 IF SP(41) THEN SC = SC + 1
3900 IF SP(44) THEN SC = SC + 1
3910 IF SP(47) THEN SC = SC + 1
3920 IF SP(49) THEN SC = SC + 1
3930 IF SP(51) THEN SC = SC + 1
3940 IF SP(53) THEN SC = SC + 1
3950 IF SP(57) THEN SC = SC + 1
3960 WZ = 0
3970 IF SP(59) THEN WZ = WZ + 1
3980 IF SP(61) THEN WZ = WZ + 1
3990 IF SP(63) THEN WZ = WZ + 1
4000 IF SP(65) THEN WZ = WZ + 1
4010 IF SP(67) THEN WZ = WZ + 1
4020 IF SP(69) THEN WZ = WZ + 1
4030 IF SP(71) THEN WZ = WZ + 1
4040 AR = 0
4050 IF SP(73) THEN AR = AR + 1
4060 IF SP(74) THEN AR = AR + 1
4070 IF SP(75) THEN AR = AR + 1
4080 IF SP(76) THEN AR = AR + 1
4090 IF SP(77) THEN AR = AR + 1
4100 IF SP(78) THEN AR = AR + 1
4110 IF SP(79) THEN AR = AR + 1
4120 CR = 0
4130 IF SP(82) THEN CR = CR + 1
4140 IF SP(86) THEN CR = CR + 1
4150 IF SP(90) THEN CR = CR + 1
4160 IF SP(94) THEN CR = CR + 1
4170 IF SP(98) THEN CR = CR + 1

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4180 IF SP(102) THEN CR = CR + 1
4190 IF SP(106) THEN CR = CR + 1
4200 GE = 0
4210 IF SP(109) THEN GE = GE + 1
4220 IF SP(112) THEN GE = GE + 1
4230 IF SP(114) THEN GE = GE + 1
4240 IF SP(116) THEN GE = GE + 1
4250 IF SP(118) THEN GE = GE + 1
4260 IF SP(120) THEN GE = GE + 1
4270 IF SP(122) THEN GE = GE + 1
4280 RETURN
4290 REM EDIT SPELLS
4300 HOME : AS$ = "EDIT^SPELL^LEVELS" : GOSUB 350
4310 PRINT : PRINT : PRINT TAB( 20) "Current^
Levels:"
4320 PRINT : PRINT : PRINT TAB( 20) "CO)njurer:^
^^^^ CO; TAB( 40) "G)ill^(" SP(123) ")"
4330 PRINT TAB( 20) "MA)gician:^^^^ MG
4340 PRINT TAB( 20) "SO)rcerer:^^^^ SC; TAB( 40)
"D)iva^(" SP(124) ")
4350 PRINT TAB( 20) "WI)zard:^^^^ WZ
4360 PRINT TAB( 20) "AR)chmage:^^^^ AR; TAB( 40)
"N)uke^(" SP(125) ")
4370 PRINT TAB( 20) "CH)ronomancer:" CR
4380 PRINT TAB( 20) "GE)omancer:^^^ GE
4390 GOSUB 290
4400 VTAB 22: HTAB 3: PRINT "Your^Choice^(^<RET>^
Exits):^" ;: INPUT CC$
4410 IF CC$ = "" THEN RETURN
4420 IF CC$ = "CO" THEN FI = 1:L(1) = 3:L(2) =
6:L(3) = 9:L(4) = 11:L(5) = 13:L(6) =
15:L(7) = 19
4430 IF CC$ = "MA" THEN FI = 20:L(1) = 22:L(2) =
25:L(3) = 28:L(4) = 30:L(5) = 32:L(6) =
34:L(7) = 38
4440 IF CC$ = "SO" THEN FI = 39:L(1) = 41:L(2) =
44:L(3) = 47:L(4) = 49:L(5) = 51:L(6) =
53:L(7) = 57
4450 IF CC$ = "WI" THEN FI = 58:L(1) = 59:L(2) =
61:L(3) = 63:L(4) = 65:L(5) = 67:L(6) =
69:L(7) = 71
4460 IF CC$ = "AR" THEN FI = 72:L(1) = 73:L(2) =
74:L(3) = 75:L(4) = 76:L(5) = 77:L(6) =
78:L(7) = 79
4470 IF CC$ = "CH" THEN FI = 80:L(1) = 82:L(2) =
86:L(3) = 90:L(4) = 94:L(5) = 98:L(6) =
102:L(7) = 106
4480 IF CC$ = "GE" THEN FI = 107:L(1) = 109:L(2)
= 112:L(3) = 114:L(4) = 116:L(5) = 118:L(6)
= 120:L(7) = 122
4490 IF CC$ = "G" THEN SP(123) = NOT SP(123):
GOSUB 3490: GOSUB 3260: GOSUB 3720: GOTO
4300
4500 IF CC$ = "D" THEN SP(124) = NOT SP(124):
GOSUB 3490: GOSUB 3260: GOSUB 3720: GOTO
4300
4510 IF CC$ = "N" THEN SP(125) = NOT SP(125):
GOSUB 3490: GOSUB 3260: GOSUB 3720: GOTO
4300
4520 VTAB 20: CALL - 958: GOSUB 290
4530 VTAB 21: HTAB 3: PRINT "Change^to^Level:^
" ;: INPUT CC$: IF CC$ = "" THEN 4300
4540 CC = VAL (CC$)
4550 FOR X = FI TO L(CC) : SP(X) = 1: NEXT X: IF CC
= 7 THEN 4570
4560 FOR X = L(CC) + 1 TO L(7) : SP(X) = 0: NEXT X
4570 GOSUB 3490: GOSUB 3260: GOSUB 3720: GOTO
4300
4580 REM DISK I/O
4590 FOR X = 0 TO 7
4600 BUF = 29000 + (512 * X)
4610 POKE 777, BUF - INT (BUF / 256) * 256: POKE
778, INT (BUF / 256)
4620 POKE 779, 16 + X
4630 CALL 768
4640 NEXT X
4650 RETURN
4660 REM INITIALIZATION
4670 REM SET HIMEM BELOW BUFFER
4680 HIMEM = 29000: PRINT CHR$( 4); "PR#3"
4690 DIM N$(32), I$(300), C$(16), SP(130):
GN$(0) = "Male": GN$(1) = "Female"
4700 POKE 34, 0: HOME : INVERSE : AS$ = "THE^BARD^S^
DRESSING^ROOM^I^" : GOSUB 350: AS$ = "^^^
^^^by^Joe^Montano^^^^^^" : GOSUB 350:
NORMAL : POKE 34, 2
4710 NORMAL : HOME
4720 AA$ = "" : FOR X = 1 TO 79: AA$ = AA$ + "" :
NEXT X
4730 AB$ = ""
4740 REM LOAD SHORT ROUTINE FOR DISK ACCESS
4750 FOR LOC = 768 TO 780: READ NUM: POKE
LOC, NUM: NEXT LOC
4760 DATA 32, 0, 191, 128, 7, 3, 96, 3, 96, 0, 128,
16, 1
4770 REM READ DATA INTO VARIABLES
4780 FOR X = 0 TO 6: READ R$(X): NEXT : FOR X = 0
TO 14: READ C$(X): NEXT : FOR X = 1 TO 255:
READ I$(X): NEXT
4790 REM INTRODUCTION
4800 PRINT : PRINT "To^start,^place^Character^
Disk^into^the^drive^of^your^choice^and^
press^the^drivenumber^(1^or^2).^"
4810 PRINT : PRINT "Insure^that^your^CAPS^LOCK^
Key^is^DOWN"
4820 PRINT : PRINT "Tips" : PRINT "^^The^best^
method^for^advancement^is^to^increase^
experience^points^and^let^the^^Review^
Board^promote.^"
4830 PRINT "^^^Increasing^attributes^(luck,^
dexterity, etc.)^to^above^30^will^help^
your^^^^character^but^will^be^reduced^
to^ 30^ when^ promoted^ by^ the^ Review^
Board.^"
4840 PRINT : PRINT "">" ;: GET Z$: PRINT Z$
4850 IF Z$ < > "1" AND Z$ < > "2" THEN
HOME : GOTO 4800
4860 Z = VAL (Z$): DR = 96: IF Z = 2 THEN DR = 224
4870 RETURN
4880 REM DATA
4890 DATA Human, Elf, Dwarf, Hobbit, Half-Elf,
Half-Orc, Gnome
4900 DATA Warrior, Wizard, Sorcerer, Conjurer,
Magician, Rogue, Bard, Paladin, Hunter,
Monk, Archmage, Chronomancer, Geomancer,
Monster, Illusion
4910 DATA TORCH, LAMP, BROADSWORD, SHORT^SWORD,
DAGGER, WAR^AXE, HALBARD, LONG^BOW, STAFF,
BUCKLER, TOWER^SHIELD
4920 DATA LEATHER^ ARMOR, CHAIN^ MAIL, SCALE^
ARMOR, PLATE^ ARMOR, ROBES, HELM, LEATHER^
GLOVES
4930 DATA GAUNTLETS, MANDOLIN, SPEAR, ARROWS,
MTHR^SWORD, MTHR^SHIELD, MTHR^CHAIN, MTHR^
SCALE
4940 DATA GIANT^FIGURINE, MTHR^BRACERS, BARDSW
ORD, FIRE^HORN, LITEWAND, MTHR^DAGGER
4950 DATA MTHR^ HELM, MTHR^ GLOVES, MTHR^
AXE, SHURIKEN, MTHR^ PLATE, MOLTEN^ FIGUR
INE, SPELL^SPEAR
4960 DATA SHIELD^RING, FIN^S^FLUTE, KAE^S^AXE
, MTHR^ARROWS, DAYBLADE, SHIELD^STAFF
4970 DATA ELF^ CLOAK, HAWKBLADE, ADMT^ SWORD,
ADMT^SHIELD, ADMT^HELM, ADMT^GLOVES
4980 DATA PUREBLADE, BOOMERANG, ALI^S^CARPET,
LUCKSHIELD, DOZER^FIGURINE
4990 DATA DEATH^STARS, ADMT^PLATE, ADMT^BRACE
RS, ARC^SHIELD, SLAYER^FIGURINE
5000 DATA PURE^SHIELD, MAGE^STAFF, WAR^STAFF,
THIEF^S^ DAGGER, SOUL^ MACE, OGREWAND, KAT
O^S^BRACERS
5010 DATA SORCERSTAFF, GALT^S^FLUTE, FROST^HO
RN, AG^S^ARROWS
5020 DATA DMND^SHIELD, BARD^S^BOW, DMND^HELM,
ELF^BOOTS, VANQUISHER^FGN, CONJURSTAFF
5030 DATA STAFF^OF^LOR, FLAME^SWORD, POWERSTA
FF, BREATH^RING, DRAGON^SHIELD, DMND^PLA
TE, WARGLOVES
5040 DATA WIZHELM, DRAGONWAND, DEATH^RING, CRY
STAL^SWORD, SPEEDBOOTS, FLAME^HORN, ZEN^
ARROWS
5050 DATA DEATHDRUM, PIPES^OF^PAN, POWER^RING,
SONG^AXE, TRICK^BRICK, DRAGON^FIGURINE,
MAGE^FIGURINE
5060 DATA TROLL^RING, ARAM^S^KNIFE, ANGRA^S^
EYE, HERB^FIGURINE, MASTER^WAND, BROTHERS^
FGN
5070 DATA DYNAMITE, THOR^S^HAMMER, STONEBLA
DE, HOLY^HANDGRENADE, MASTER^KEY, HASPIN^
RING, CRYSTAL^LENS
5080 DATA SMOKEY^LENS, BLACK^LENS, SPHERE^OF^
LANAT, WAND^OF^POWER, ACORN, WINESKIN, NI
GHTSPEAR
5090 DATA TSLOTHA^S^HEAD, TSLOTHA^S^HEART, AR
EFOLIA, VALARIAN^S^BOW, ARROWS^OF^LIFE,
CANTEEN
5100 DATA TITAN^PLATE, TITAN^SHIELD, TITAN^
HELM, FIRE^SPEAR, WILLOW^FLUTE, FIREBRAN
D, HOLY^SWORD
5110 DATA WAND^OF^FURY, LIGHTSTAR, CROWN^OF^
TRUTH, BELT^OF^ALLIRIA, CRYSTAL^KEY, TAO^
RING, STEALTH^ARROWS
5120 DATA YELLOW^STAFF, STEADY^EYE, DIVINE^HAL
BARD, INCENSE, I-CHING, WHITE^ROSE, BLUE^RO
SE, RED^ROSE, YELLOW^ROSE, RAINBOW^ROSE
5130 DATA MAGIC^TRIANGLE, (UNK), HAMMER^OF^WR
ATH, FEROFIST^S^HELM, (UNK), (UNK), HELM^OF^
JUSTICE

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# Readers Data Exchange

5140 DATA SCEACLU'S CLOAK, SHADE LANCE, BLACK'S ARROWS, WERRA'S SHIELD, STRIFESPEAR, SHEETMUSIC, RIGHT KEY, LEFT KEY, LEVER	330	-	\$3AA7	2920	-	\$CDF0	970	-	\$7C85	3560	-	\$BCB7
5150 DATA NUT, BOLT, SPANNER, SHADOW LOCK, SHADOW DOOR, MISERICORDE, HOLY AVENGER, SHADOW SHIV, KALI'S GARROTE	340	-	\$0BC6	2930	-	\$5B98	980	-	\$765C	3570	-	\$0E5A
5160 DATA FLAME KNIFE, RED STILETTO, HEARTSEEKER, (UNK), (UNK), (UNK), DMND SCALE, HOLY TINT, ETERNAL TORCH	350	-	\$20CC	2940	-	\$6883	990	-	\$008C	3580	-	\$AA72
5170 DATA OSCON'S STAFF, ANGEL'S RING, DEATHHORN, STAFF OF MANGAR, TESLA RING, DMND BRACERS, DEATH FIGURINE	360	-	\$EC04	2950	-	\$75D2	1000	-	\$004A	3590	-	\$36EC
5180 DATA THUNDER SWORD, POISON DAGGER, SPARK BLADE, GALVANIC OBOE, HARMONIC GEM, TUNG SHIELD, TUNG PLATE	370	-	\$29C3	2960	-	\$D3BF	1010	-	\$56BA	3600	-	\$718D
5190 DATA MINSTREL'S GLOVES, HUNTER'S CLOAK, DEATH HAMMER, BLOOD MESH ROBE, SOOTHING BALM, MAGE'S CLOAK, FAMILIAR FGN, HOURGLASS	380	-	\$80C0	2970	-	\$124A	1020	-	\$1C48	3610	-	\$5595
5200 DATA THIEVES HOOD, SUREHAND AMULET, THIEVES DART, SHRILL FLUTE, ANGEL'S HARP, THE BOOK, TROTH LANCE, DMND SUIT	390	-	\$C284	2980	-	\$06A5	1030	-	\$FEC7	3620	-	\$0AA4
5210 DATA DMND FLAIL, PURPLE HEART, TITAN BRACERS, EELSKIN TUNIC, SORCERER'S HOOD, DMND STAFF, CRYSTAL GEM, WAND OF FORCE	400	-	\$D9CF	2990	-	\$72AD	1040	-	\$13F9	3630	-	\$DC24
5220 DATA CLILYRE, YOUTH POTION, (UNK), (UNK)	410	-	\$E382	3000	-	\$0566	1050	-	\$0360	3640	-	\$0513
5230 DATA MTHR SUIT, TITAN SUIT, MAGE'S GLOVES, FLARE CRYSTAL, HOLY MISSILE, GOD'S BLADE, HUNTER'S BLADE, STAFF OF GODS, HORN OF GODS	420	-	\$65B3	3010	-	\$C6AF	1060	-	\$5CC6	3650	-	\$7994
5240 DATA (UNK), (UNK), (UNK), (UNK), (UNK), (UNK), (UNK), (UNK)	430	-	\$14DB	3020	-	\$8234	1070	-	\$EA22	3660	-	\$6BBC
	440	-	\$4706	3030	-	\$0DF7	1080	-	\$A136	3670	-	\$493F
	450	-	\$6C0F	3040	-	\$958A	1090	-	\$F98A	3680	-	\$5B1E
	460	-	\$1B99	3050	-	\$090A	1100	-	\$1020	3690	-	\$E2A3
	470	-	\$468F	3060	-	\$C370	1110	-	\$AC29	3700	-	\$45A8
	480	-	\$6505	3070	-	\$1FC4	1120	-	\$877D	3710	-	\$7115
	490	-	\$EAC4	3080	-	\$06EB	1130	-	\$BFBD	3720	-	\$B9CC
	500	-	\$FC2A	3090	-	\$A3A8	1140	-	\$1DBA	3730	-	\$DE70
	510	-	\$2D99	3100	-	\$9E9A	1150	-	\$4589	3740	-	\$B6D9
	520	-	\$5571	3110	-	\$0B25	1160	-	\$779E	3750	-	\$8ACF
	530	-	\$9DC2	3120	-	\$E7C1	1170	-	\$D80A	3760	-	\$97D2
	540	-	\$0D77	3130	-	\$D18C	1180	-	\$E447	3770	-	\$AFE8
	550	-	\$B360	3140	-	\$6DBE	1190	-	\$D7F5	3780	-	\$A489
	560	-	\$B591	3150	-	\$460C	1200	-	\$B26D	3790	-	\$A74B
	570	-	\$F770	3160	-	\$B425	1210	-	\$E106	3800	-	\$101A
	580	-	\$11A2	3170	-	\$FBBA	1220	-	\$BDDF	3810	-	\$8136
	590	-	\$2EF0	3180	-	\$9E81	1230	-	\$CBD1	3820	-	\$9C97
	600	-	\$9731	3190	-	\$0CF0	1240	-	\$1544	3830	-	\$411A
	610	-	\$1865	3200	-	\$B328	1250	-	\$D529	3840	-	\$C117
	620	-	\$3E83	3210	-	\$1FB5	1260	-	\$F4DA	3850	-	\$D3B0
	630	-	\$FF32	3220	-	\$73D9	1270	-	\$E33F	3860	-	\$71CB
	640	-	\$71A8	3230	-	\$E0CF	1280	-	\$5FF8	3870	-	\$3AA0
	650	-	\$960E	3240	-	\$2BCB	1290	-	\$4BED	3880	-	\$95FD
	660	-	\$4539	3250	-	\$DBF9	1300	-	\$C79B	3890	-	\$629F
	670	-	\$1985	3260	-	\$352C	1310	-	\$1DE2	3900	-	\$E87A
	680	-	\$2299	3270	-	\$5F30	1320	-	\$65DE	3910	-	\$54BE
	690	-	\$4A90	3280	-	\$F62C	1330	-	\$AB88	3920	-	\$95E7
	700	-	\$479B	3290	-	\$E91F	1340	-	\$EE11	3930	-	\$0589
	710	-	\$10BC	3300	-	\$C938	1350	-	\$F292	3940	-	\$6024
	720	-	\$F92D	3310	-	\$AD9C	1360	-	\$FB04	3950	-	\$2700
	730	-	\$0AC9	3320	-	\$6ED2	1370	-	\$7D35	3960	-	\$BF39
	740	-	\$1A61	3330	-	\$40D1	1380	-	\$2F71	3970	-	\$A246
	750	-	\$29F9	3340	-	\$FD24	1390	-	\$C6C7	3980	-	\$A0E3
	760	-	\$32B0	3350	-	\$25C3	1400	-	\$B140	3990	-	\$0ECE
	770	-	\$9375	3360	-	\$C9A7	1410	-	\$E005	4000	-	\$761D
	780	-	\$B0AC	3370	-	\$65A6	1420	-	\$1C2D	4010	-	\$4A42
	790	-	\$EA2B	3380	-	\$684D	1430	-	\$CED7	4020	-	\$189F
	800	-	\$500B	3390	-	\$4743	1440	-	\$C9CC	4030	-	\$2A62
	810	-	\$118D	3400	-	\$2511	1450	-	\$D420	4040	-	\$C9B5
	820	-	\$F60E	3410	-	\$4A5D	1460	-	\$672B	4050	-	\$A818
	830	-	\$23AB	3420	-	\$B5A6	1470	-	\$BC9F	4060	-	\$D449
	840	-	\$89D2	3430	-	\$635B	1480	-	\$9B65	4070	-	\$6579
	850	-	\$2382	3440	-	\$CDA9	1490	-	\$9411	4080	-	\$16B0
	860	-	\$9483	3450	-	\$576D	1500	-	\$3C6D	4090	-	\$1197
	870	-	\$F7BA	3460	-	\$50C3	1510	-	\$1B75	4100	-	\$8051
	880	-	\$5723	3470	-	\$DA98	1520	-	\$E5A6	4110	-	\$4C94
	890	-	\$C188	3480	-	\$E62A	1530	-	\$A15E	4120	-	\$75E4
	900	-	\$9066	3490	-	\$37A4	1540	-	\$8B48	4130	-	\$E49C
	910	-	\$973E	3500	-	\$6114	1550	-	\$4579	4140	-	\$9A4E
	920	-	\$AB11	3510	-	\$C61A	1560	-	\$1714	4150	-	\$8479
	930	-	\$1578	3520	-	\$8644	1570	-	\$AAEF	4160	-	\$D318
	940	-	\$0B80	3530	-	\$F551	1580	-	\$300C	4170	-	\$6886
	950	-	\$B7F7	3540	-	\$EF2D	1590	-	\$42AE	4180	-	\$AF66
	960	-	\$5D67	3550	-	\$D186	1600	-	\$2CBB	4190	-	\$8F46

### Checksums

70	-	\$8A63	2660	-	\$CDCE
80	-	\$4D35	2670	-	\$B659
90	-	\$5353	2680	-	\$382A
100	-	\$F99C	2690	-	\$F8ED
110	-	\$251E	2700	-	\$DB60
120	-	\$59B2	2710	-	\$5150
130	-	\$08C5	2720	-	\$26E1
140	-	\$1325	2730	-	\$A81B
150	-	\$02C1	2740	-	\$8893
160	-	\$48B9	2750	-	\$ED6B
170	-	\$F1CB	2760	-	\$1C30
180	-	\$6C51	2770	-	\$B72F
190	-	\$5309	2780	-	\$A9F0
200	-	\$C6BC	2790	-	\$A572
210	-	\$98F4	2800	-	\$DD34
220	-	\$BEBF	2810	-	\$4F32
230	-	\$995E	2820	-	\$F4A6
240	-	\$4B83	2830	-	\$07A1
250	-	\$8D31	2840	-	\$20FA
260	-	\$5E18	2850	-	\$3BD3
270	-	\$0354	2860	-	\$B1AF
280	-	\$CC43	2870	-	\$7CD8
290	-	\$E20D	2880	-	\$2352
300	-	\$29E6	2890	-	\$AD77
310	-	\$0D9A	2900	-	\$32A7
320	-	\$2A75	2910	-	\$7597

1610	- \$85E1	4200	- \$6DFD	2250	- \$BEC3	4840	- \$53EA
1620	- \$A38F	4210	- \$5A3E	2260	- \$8413	4850	- \$D83A
1630	- \$6E7D	4220	- \$5A44	2270	- \$A231	4860	- \$44E0
1640	- \$D834	4230	- \$18A2	2280	- \$E33D	4870	- \$C6D0
1650	- \$59D6	4240	- \$ACF4	2290	- \$E925	4880	- \$7D9C
1660	- \$DF42	4250	- \$1E2E	2300	- \$4F7C	4890	- \$3F13
1670	- \$8CA3	4260	- \$FA11	2310	- \$46EC	4900	- \$C31F
1680	- \$DB39	4270	- \$F4CE	2320	- \$2001	4910	- \$8561
1690	- \$780A	4280	- \$2FDC	2330	- \$1485	4920	- \$E077
1700	- \$CF49	4290	- \$4607	2340	- \$8616	4930	- \$8940
1710	- \$A475	4300	- \$7CF1	2350	- \$6229	4940	- \$EFB6
1720	- \$D7D3	4310	- \$FFC1	2360	- \$5420	4950	- \$9E11
1730	- \$FC5D	4320	- \$4EFC	2370	- \$3400	4960	- \$D108
1740	- \$A98E	4330	- \$62C7	2380	- \$3C8E	4970	- \$C45A
1750	- \$1888	4340	- \$AC4F	2390	- \$AE60	4980	- \$0270
1760	- \$5507	4350	- \$928E	2400	- \$8DB9	4990	- \$5FE0
1770	- \$8401	4360	- \$D33F	2410	- \$4967	5000	- \$FD66
1780	- \$BB55	4370	- \$166D	2420	- \$B0CC	5010	- \$018D
1790	- \$5CD2	4380	- \$1CF6	2430	- \$1326	5020	- \$FAB6
1800	- \$6A13	4390	- \$388C	2440	- \$A060	5030	- \$278D
1810	- \$B3C9	4400	- \$DA43	2450	- \$1B86	5040	- \$8334
1820	- \$64D0	4410	- \$A455	2460	- \$4B0A	5050	- \$0154
1830	- \$F6B3	4420	- \$8EE7	2470	- \$5FA1	5060	- \$8D07
1840	- \$7534	4430	- \$6627	2480	- \$78B1	5070	- \$105B
1850	- \$18FF	4440	- \$40AE	2490	- \$DCA2	5080	- \$CB8E
1860	- \$6CF2	4450	- \$2B27	2500	- \$B57A	5090	- \$F1E8
1870	- \$BEEA	4460	- \$9A14	2510	- \$BB13	5100	- \$EB3A
1880	- \$28C3	4470	- \$8CBC	2520	- \$83EB	5110	- \$D75A
1890	- \$761F	4480	- \$BF20	2530	- \$52D6	5120	- \$5226
1900	- \$B5D0	4490	- \$AE69	2540	- \$53E9	5130	- \$CF7B
1910	- \$BDB7	4500	- \$2E90	2550	- \$4173	5140	- \$10AE
1920	- \$4EA6	4510	- \$14E1	2560	- \$69FC	5150	- \$EF3E
1930	- \$7E26	4520	- \$F0F1	2570	- \$DE3C	5160	- \$EB24
1940	- \$231D	4530	- \$DCE8	2580	- \$3E4A	5170	- \$2C2E
1950	- \$B5B9	4540	- \$8B5C	2590	- \$39C7	5180	- \$DC9B
1960	- \$EAC9	4550	- \$BE0E	2600	- \$402F	5190	- \$CB6B
1970	- \$E7BB	4560	- \$F4F0	2610	- \$FD94	5200	- \$9A41
1980	- \$0392	4570	- \$9718	2620	- \$7F94	5210	- \$2944
1990	- \$C10E	4580	- \$C889	2630	- \$87D7	5220	- \$79D2
2000	- \$4442	4590	- \$B958	2640	- \$6A5D	5230	- \$C435
2010	- \$0638	4600	- \$0D4B	2650	- \$8336	5240	- \$4509
2020	- \$93ED	4610	- \$BD84				
2030	- \$279F	4620	- \$F48C				
2040	- \$946F	4630	- \$C9B0				
2050	- \$DE4F	4640	- \$F83B				
2060	- \$15F7	4650	- \$2365				
2070	- \$9646	4660	- \$A6DC				
2080	- \$3D6A	4670	- \$FB2E				
2090	- \$7000	4680	- \$EB8D				
2100	- \$FAC6	4690	- \$F397				
2110	- \$CB26	4700	- \$DF2C				
2120	- \$2BC0	4710	- \$32B1				
2130	- \$24F6	4720	- \$BDA9				
2140	- \$05E7	4730	- \$D6BE				
2150	- \$FEAB	4740	- \$7973				
2160	- \$92D8	4750	- \$1FE9				
2170	- \$6672	4760	- \$F135				
2180	- \$BC77	4770	- \$7E81				
2190	- \$405B	4780	- \$56E4				
2200	- \$E9B7	4790	- \$833A				
2210	- \$6077	4800	- \$F7EB				
2220	- \$75F3	4810	- \$296C				
2230	- \$F21F	4820	- \$4611				
2240	- \$A7DE	4830	- \$224A				

Tom Glover

I have been an avid reader of COMPUTIST ever since a friend of mine introduced it to me. I am just a novice at this Kracking game, but the challenge has taught me more about machine language than any book I own.

Please accept the softkeys I am sending to do with as you wish. I sincerely hope that someone can make use of the information they contain.

One final note. In your last volume you mentioned that if any softkey is published, you would copy the current library disk on the media provided and send it back to the contributor. May I suggest that you consider copying older issues? Issues that a lot of us new comers do not yet own?

I have purchased many older issues and hope to complete my library back to issue one.

This could be one way to achieve that goal a little sooner.

† Softkey for...

## Crossword Magic 4.0

Mindscape/Alert

### ■ Requirements

- Sector Editor
- Super IOB v1.5
- COMPUTIST #60
- Optional:
  - Senior Prom or other Non Maskable Interrupt Device
  - Copy II Plus

Crossword Magic 4.0 is an excellent educational tool. It can be used, with appropriate puzzle disks, to help children to learn spelling, geography, history, etc..

These puzzle disks can be purchased or, with a little patience, be created by the user. It has excellent error trapping (great for the young ones) and screen formatting. It also prints the puzzles, including, clues, answers, and a list of the words used.

I want to thank Edward Teach for his article on Crossword Magic and anyone attempting to de-protect this disk should consider reading it and the article on "Epyx Notes". These articles are in COMPUTIST #60, pages 17 and 20. In Mr. Teach's article you'll find extra program lines that you may add to Super IOB 1.5. These extra program lines, once installed will make ignoring track numbers and read errors as simple as pushing the return key. No more having to write it into a controller. Thanks Ed.

Along with the above articles, I highly recommend the article on Locksmith protection listed in appendix "C" of the Copy II Plus manual. It is listed as parameter 78, and explains the difference between "Prolock" and the original "Locksmith" protection.

The bulk of the program is totally loaded into memory and accesses the disk only to load, save, delete, or print puzzles. Various disk checks are used during the loading of the main program and again at the time of disk access. Any time one of these disks checks fail you are going to be sent into a very nasty memory wipe routine. This routine wipes out everything under the sun. Without the use of a bitcopy of the disk, made by Copy II Plus, and the access to a Non Maskable Interrupt device like the Senior Prom, I might never have been able to crack my version.

Protection techniques I have found on my version are listed as follows:

1. Heavy use of the "Boot ROM" code located at \$C600.
2. Tracks \$00 thru \$0E were marked as track \$00.

# Readers Data Exchange

3. Epilogues of FF FF used on tracks \$00 thru \$0E.
4. 3 different checks for signature bytes.
5. Re-writing the epilogue bytes in memory to allow alternating disk access between the Master disk and storage disks.

Listed below is a step by step method that hopefully will work for you as it did for me. If the signature check routines, or the sector locations differ from my version, you may try the methods listed at the end of this article.

1. Install the lines provided by Mr. Teach (COMPUTIST #60) into your Super IOB program.
2. Install the Standard Controller into Super IOB.
3. List line 1010 and change LT=35 to LT=18
4. Type "RUN" to start Super IOB. Answer "Yes" to formatting the disk in drive 2. Answer "Yes" to ignore tracks. Answer "Yes" to ignore checksums and errors thereby making a standard formatted copy of the Master disk.
5. Use a sector editor to make the following changes. Don't forget to write each sector back to disk.

Trk	Sct	Byte(s)	From	To
\$00	\$00	\$02-	4A 4A 4A 09 C0 85 3F 8D F3 03 49 A5 8D F4 03 A9 00 8D F2 03 A9 5A 48 8D 81 C0 20 2F FB AD 52 C0 20 89 FE 20 93 FE 20 58 FC	A9 5A 48 8D 81 C0 8D 81 C0 A9 F8 85 43 85 3D A9 FF 85 3E 85 3F A9 00 85 3C 85 42 EA EA 20 2C FE 20 E1 08 20 58 FC A9 D6 85 3F
		\$E1	00 00 00 00 00	A2 00 BD 00 C6 9D 00 D6 E8 D0 F7 8D 83 C0 8D 83 C0 A9 EA 8D A2 D6 8D A3 D6 60
\$01	\$0A	\$47-49	BD 8C C0	4C 5A 04
\$01	\$01	\$CD-D2	C9 FF F0 02 38 24	EA EA EA EA EA EA
\$02	\$0B	\$00-	A9 0A 85 29 A6 2B BD 8E C0 20 00 5A B0 FB A5 2D C9 0E D0 F5 A0 00 BD 8C C0 10 FB 88 F0 EB C9 D5 D0 F4 A0 00	A9 E7 85 20 A9 FC 85 21 A9 EE 85 22 A9 E7 85 23 A9 FC 85 24 A9 EE 85 25 8D 81 C0 8D 81 C0 A0 06 A9 00 F0 47
\$0E	\$00	\$03-	85 02 A9 0A 85 00 AE E9 BC BD 89 C0 BD 8E C0 A9 80 85 01 C6 01 F0 66 20 44 B9 B0 61 A5 2D C5 02 D0 F1 A0	A9 E7 85 3A A9 FC 85 3B A9 E7 85 3C A9 EE 85 3D A9 FC 85 3E A9 EE 85 3F A9 EE 85 40 A9 FC 85 41 A0 08 18

```

00 BD 8C C0 10 60 EA EA EA EA
FB 88 F0 51 C9 A9 E7 85 3A A9
D5 D0 F4 A0 00 FC 85 3B A9 EE
BD 8C C0 10 FB 85 3C A9 E7 85
88 F0 43 C9 E7 3D A9 EE 85 3E
D0 F4 BD 8C C0 A9 FC 85 3F A9
10 FB C9 E7 D0 EE 85 40 A9 FC
36 BD 8C C0 10 85 41 A0 08 18
FB C9 E7 D0 2D 60 EA EA EA EA
03 2B
$C7
$09 $00 $87-8B A9 FF A8 30 04 EA EA EA EA
    
```

After making the edits listed above boot up your copy and try all phases of the program, especially the printing options. If you have any problems, they'll let you know with an Applesoft prompt and a RAM memory full of \$00's.

If the step by step method does not work on your version, the following tips may be of some help to you.

1. The edit to track \$00, sector \$00 by-passes the jump to "Boot ROM" at \$C600. The patch loads the "Boot ROM" into the Language Card, and 2 EA's are written at byte's \$A2 and \$A3 to ignore track verification.
2. Edits to track \$01, sectors \$0A and \$01 tell the read routines to ignore epilogues. These routines were found by searching the standard formatted copy with a byte search program like the Core Disk Searcher. The bytes I searched for were C9 FF.
3. The edits to track \$02, sector \$0B and track \$0E, sector \$00 write the signature bytes the program is looking for into the location's they're expected to be found. The latter edit also gives control back to the motherboard (we gave control to the language card in #1). You can find these sectors by searching for the two byte strings C9 EE and C9 FF.

Once the sectors that contain the routines are found (you will be able to recognize them by the accesses to disk for multiple bytes of \$E7 and one byte of \$EE) you will need to make a bit copy backup by using Copy II Plus. Select the Auto Copy function and type in "Crossword Magic 4.0". Copy II Plus will make a copy with the "10 bit" bytes, that we will need, still intact. Before using the bit copy, make sure it is completely functional by booting it up and trying all of its options, including the printing options. If everything doesn't work correctly, make another bit copy and try again.

After you have a functional bit copy, boot up Copy II Plus and go to the Sector Editor function. Type "P" for the patch option. Select CUSTOM patch and type in the following changes:

```

Wanted Address Epilogue - FF FF
Address Checksum - No
Address Epilogue - No
Wanted Data Epilogue - FF FF EB FF FF
Data Epilogue - No
Check Tracks - No
    
```

Read the sector on the bit copy that contains the "Read" routines you were looking for (\$E7 and \$EE) and place a \$00 in the routine where it finishes reading the number of bytes they are looking for. You will also need to change the memory location where the routine writes to, because they are storing the bytes in the zero page and any attempt to "break" will overwrite the bytes we need. I used high memory at \$7000.

Write these changes back to the bit copy and boot the copy up. Here is where you will need your NMI device. Just before the "break" you edited in takes affect, you will have to stop the program with a non-maskable interrupt. You'll probably need to do it many times to get the bytes you need to "Edit" in later. If you wait too long before stopping the program you'll find nothing but \$00's.

You will need to duplicate this procedure for every "Read" routine you found on your standard copy. When you find one set of bytes you will either have to re-edit the sector you previously put the "break" in or use another bit copy. My version only had 2 such "Read" routines, but the second routine read the disk twice. The same method of using breaks apply.

You'll need to write a patch, containing the bytes you found, to the necessary zero page locations. You can use the patches listed above as a guide.

4. The last edit at track \$09, sector \$00 tells the program to write only DE AA into "RAM" at locations \$B935, \$B93F, \$B991 and \$B99B. The original disk used this routine to distinguish the Master disk from a Storage disk. I found this routine by searching the standard copy for the byte sequence 8D B9.

I hope this information is helpful, in some way, to those who are having trouble with this particular disk. Good Luck.

Dan Halfwit

Softkey for...

**Shadowgate**  
Mindscape, Inc.

### Requirements

- Fast copier that will ignore errors
- Two blank disks

This is a neat game. Although I was never one for text/graphic adventures, this one kind of caught my eye. So did the \$45.00 price tag.

Anyway, Mindscape is the type that invests as much time in copy-protection as it does in the game. Sorta like Microprose. It has an error on block \$0007, sync protection, semi-encrypted code, self-modifying code and other nasty tricks.

A fast copy reveals an error on track \$00, and not much else. For reasons unknown, Copy II Plus does not replicate the error like it did on older Activision games & such. A bit copy of the first 3 tracks with sync on only got me a little further. After 20 minutes of failed attempts to copy it, I consulted the Paperboy and Gauntlet cracks. They were of no help.

Looking around for block reads, I stumbled upon many, but the protection was still intact. Then I searched memory for 70 72 6F 67 72 61 (the word "program" from the message that told you to insert the original disk). I found it in bank \$03. At last, a lead. So searching bank \$03 for 22 A8 00 E1, we find a suspicious cluster around \$E700. At \$E755, we see the following:

```

E755 CLC
E756 XCE
E757 REP #30
E759 PHD
E75A PHB
E75B PHX
E75C PHY
E75D JSR $E9D9
E760 PLY
E761 PLX
E762 JSL $03EAE1          Bad block check
E766 BCS E76F (+70)      Did it pass?
E768 JSL $03E890        Yes. Do Sync Check (I think)
E76C JSR $EAD3          Set some flags if Sync passed
E76F PLB                Bad Block failed if flags not set
E770 PLD
E771 RTL                Return
    
```

Fine. NOP the two checks and all is well? No way. We find that the code re-writes itself a bit, so we get garbage (which bombs) where this code is. So let's trace the problem to the source. Search for 22 55 E7 03 (the jump to the above check). We find SEVEN checks! Talk about messy. OK, here is one of the seven checks. They are all similar:

```

601 PEA 0003
604 PEA C9DA
607 JSR $35A7
60A LDX #E2
60C LDA 0003A0,X
610 JSL $03E755          Do all that checking on track 0
614 CMP BEBB
617 BEQ $0621          Did it pass?
619 ???                No.
61C ???
61E DEC
61F BRA $0601 (-20)     Loop until it passes
621                    Passes
    
```

Nasty, eh? Now, modifying the sync check code a bit and changing that BEQ statement to a BRA will fix everything up nicely. So, fast copy both disks, and whip out the sector editor on the PROGRAM disk.

Search for 22 55 E7 00 (not 22 55 E7 03) or you will search in vain. Why? Because there are minor changes it makes in memory to make

cracking difficult. You can even search for CD BB BE which is the CMP statement. (All sector edits listed at the end.) Now, we also find one check that is different from the rest. It looks like:

```

3BA5 JSL $03E755
3BA9 BCS 3C1B (+70)
3BAB CMP BEBB
3BAE BNE 3C1B (+6B)
3BB0
    
```

*continue execution*

I didn't like the code at \$3C1B so I killed those two branches. However, not changing them has no (visible) effect. And the sync check makes a rather distinctive sound that I would have noticed. It probably checks AGAIN sometime in the game. (At the end perhaps?) So, to be safe, kill them.

Lastly, our sync check routine. (See above.) Since the code patches itself, and will change any code we place there, we must work around the patches it makes. Changing the JSL to a LDA followed by a BRA around the rest of the offensive code was my solution. Actually, you can leave the code intact the way it is. The part that checks it has been removed. But I like to remove the block checks if possible. So, here are all the patches that need to be made to the program disk:

#### Patch for Sync Code

Block	Byte(s)	From	To
\$076	\$9A	22 E1 EA 00 B0	AF EA EA EA 80
		07 22 90 E8 00	07
		20 D3 EA	

#### Patch the result checks

Block	Byte(s)	From	To
\$000D	\$05C	F0	80
\$000E	\$15A	F0	80
\$0023	\$149	F0	80
\$0024	\$039	F0	80
\$0024	\$0B4	F0	80
\$0024	\$190	F0	80

#### Odd Check

Block	Byte(s)	From	To
\$0027	\$1EF	70	00
\$0027	\$1F4	6B	00

And things should work out nicely.

#### Softkey for...

### The Last Ninja

Activision

#### ■ Requirements

- Fast copy of original disk
- Sector editor

Just like Activisions OLD protection, with 2 twists. First, the bad block is in a different

spot (Block \$63F instead of \$007), and, as an added bonus, there would appear to be another check, but what it does, I am not sure. Looks like a nibble count or sync signature on the same track. (???) Oh well, searching for 22 A8 00 E1 22, we find it once. We see a Branch if Carry Cleared right after it. Just zap it and have a nice day? Not quite. After 20 minutes of poking, there are two branches in a row, but my disassembler didn't show me that the first few times! Oh well, there is a CMP #0027 and another branch, so killing BOTH branches makes our life easier, and lets us use a disk-cache program as well.

Block	Byte(s)	From	To
\$CD	\$1C0	90 C0 C9 27 00	EA EA EA EA EA
		D0 BB	EA EA

#### Playing Tips for...

### The Last Ninja

Activision

Pay attention to the description of the SMOKE BOMB in the book. Smoke & fire (breathing) go together.

ALL the "hidden" stuff flashes. Always.

#### Softkey for...

### Zany Golf

Electronic Arts

- Fast copy of original disk
- Sector editor

Will Harvey, the maker of Music Construction Set, Marble Madness, and something else I can't remember, gives us another gem: Zany Golf. While I have only gotten to hole #9, this game is a blast. Spectacular graphics & such, awesome soundtracks, name it and it's there. Including copy protection. (Like I said, all there.) This one took me a little longer than most. After coming close to giving up, I referred to a Bard's Tale II's softkey, and searched for part of that. It was a start. After a while, we take a look-see around \$3600. Hmm...Nothing TOO suspicious. After a little poking, we try 3600G and it bombs. Then we try 3610G, and we get DISK ACCESS and it bombs. (Imagine that.) Looking at \$3610, we see a JSR. Tracing the JSR, the only necessary thing it does is SET the Carry. So we put an EA 38 EA in. Boot it, and it still dies. Looking down south a bit, we see a branch we don't like. Almost like an infinite loop. So we replace the B0 98 with EA EA and all is well.

Block	Byte(s)	From	To
\$013	\$010	20 2E 36	EA 38 EA
	\$40	B0 98	EA EA

Softkey for...

## Skate or Die

Electronic Arts

### ■ Requirements

- Fast copier that ignore's errors.
- Sector editor

This is a great game with only a few faults. First, the downhill events are kind of slow. Second, the sound-effects get glitches (especially on the Ramp) and there is a LITTLE flicker every now & then (also on the ramp!) Still, it's jammin'.

Protection: Self-modifying code. Quite nasty. Sierra On-Line uses it. (Time out. Everyone, write Sierra nasty letters about how cheap they are for using the IIC version's double hi-res graphics in the GS version with a few added sound effects. They are WAY below the graphic potential that the GS has, and I am ticked-off at them.) All it is using 22 00 00 00 22 00 00 00 22 00 00 00 on the disk, and replacing the 00's with code. They think that they are sneaky. They are. So, search for those bytes.

Block	Byte(s)	From	To
\$007	\$04F	22	AF
	\$0F0	22	AF

And that will replace whatever code goes there with a LDA command instead of the JSL. Have fun.

Softkey for...

## California Games

Epyx

Just like Street Sport Soccer. Right before the joystick configuration screen, a nibble count on tracks \$20 & \$21. First, it does the JSL to the check. Then it puts some junk in the X & Y registers, stores it & checks to see if the nibble count passed. Then it checks track \$21 the same way. THEN, it looks at the values it got from the X & Y registers, and compares them. So, we could store the correct values in the right spots, OR we could kill the two JSL's and all the branches. I'll take the latter. No problem. Search for A2 20 A0 01. I found it on block \$FC.

Block	Byte(s)	From	To
\$0FC	\$066	22	AF
	\$077	??	80
	\$088	22	AF
	\$09C	??	00
	\$0BA	??	00
	\$0C2	??	00
	\$0D2	??	00

James J. Harvey

I am a recent subscriber to COMPUTIST and find it to be an excellent publication. I am indebted to many of your subscribers for the softkeys that have enabled me to deprotect some of my programs.

I am now able to make a small contribution of my own.

Softkey for...

## Reader Rabbit

The Learning Company

**1** Boot DOS 3.3 System Master. Remove the master, insert a blank disk, initialize it and set it aside.

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

**2** Insert the master disk in drive one.

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

**3** Remove the System Master disk and insert the original of Reader Rabbit into drive one. Insert a blank disk into drive two and start the copy procedure.

**4** When the copy procedure is finished, remove the original from drive one and insert the System Master disk.

**BRUN FID** *or your favorite file copier*

**5** Remove the System Master disk from drive one and insert your copy of Reader Rabbit into the drive. Insert the disk that you previously initialized into drive two, and copy all of the files to the disk in drive two

**6** When you are finished, insert the copy into drive one and load the "HELLO" file. List the "HELLO" and delete lines 0 and 10000. Save the "HELLO" file back to the disk.

**LOAD HELLO**  
**LIST**  
**0**  
**10000**  
**SAVE HELLO**

That's it, you now have a deprotected copy of Reader Rabbit.

Mr. Thompson (COMPUTIST #53, pg 22) states that one must search for the byte sequence 4C 00 C6 and change this to EA EA EA in both locations. My copy of Reader Rabbit did not have this byte sequence any where on the disk, so obviously I had a different copy of the program.

# MOST WANTED

## Softkeys

- Alcon Taito
- Alien Mind PBI Software
- Ancient Art of War at Sea Broderbund
- Arkanoid Taito
- Bad Street Brawler Mindscape
- Beyond Zork Infocom
- Border Zone Infocom
- Bubble Bobble Taito
- California Games (IIGs) Epyx
- Cosmic Relief Datasoft
- Darklord Datasoft
- Design Your Own Train Abracadata
- Disc Commander (IIGs) So What Software
- Dungeon Masters Assistant vol. I:Encounter SSI
- DROL Broderbund
- Eliminator Adventure International
- Explore-Australia Dataflow Computer Service
- Gladiator Taito
- Gutenberg Sr. Micromation LTD.
- Iconix (IIGs) So What Software
- Impossible Mission II Epyx
- Indoor Sports Mindscape
- Into the Eagles Nest Mindscape
- Jigsaw: The Ultimate E. Puzzle (IIGs) Britannica Software
- Joker Poker Mindscape
- King of Chicago Cineware
- L.A. Crackdown EPYX
- Modem MGR MGR software
- National Inspirer Tom Snyder Productions
- Operation Wolf Taito
- Pool of Radiance SSI
- Quadratic Equations II Olympus Educational Software
- Questron II Electronic Arts
- Rastan Taito
- Renegade Taito
- Rocket Ranger (IIGs) Cinemaware
- S.D.I. (IIGs) Cinemaware
- Sea Stalker Broderbund
- Show-Off v1.1 Broderbund
- Sky Shark Taito
- Soko-Ban Spectrum Holobyte
- Sonix (IIGs) So What Software
- Sound Song & Vision Advanced Software
- Spare Change Broderbund
- Speedy Spides Readers Digest
- SickyBear Math: Add & Subtract ?
- Strike Fleet Electronic Arts
- Superstar Indoor Sports Mindscape
- Test Drive Accolade
- The Games: Winter Edition Epyx
- The Three Stooges (IIGs) Cinemaware
- Ticket to Washington D.C. Blue Lion Software
- Times of Lore Origin Systems
- Tomahawk Electronic Arts
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- Wasteland Electronic Arts
- Wizardry:Return of Werda Sir-Tech.
- ZorkQuest Infocom

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Order form on page 42

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Order form on page 42

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**52** February 1988 • **Features:** • The Product Monitor • Unprotecting The Unprotectable: Macintosh Softkeys! • A.P.T. Comucopia • APT: Alternate Reality-Dungeon: Create A Super-human • Softkey for SSI's RDOS disks: 1.ProDOS RDOS, 2.RDOS Transfer Utility • Making Cracked II Plus Disks Work On The IIC • **Softkeys:** • Apple Gradebook v2.6 • Award Maker Plus • Black Cauldron • Black Magic • California Games • Car Builder • Color Print Shop • Computer Ambush • Concepts In Science • Disney's Comic Strip Maker • Elite • Empire I, II • European Nations & Locations • Foolsbitsky • Grid Designer • H.E.R.O. • Ikari Warriors • Infiltrator II • Le Francais par Ordinateur • Little Computer People's House on a Disk • Main Street Filer • Master Diagnostics Iie • MegaFiler • MegaMerge • Microzine 23 • Might & Magic • Millionaire • Mindplay software • Music Construction Set • Nibbler • Operation Market Garden • Phantasia • Planetfall • PrintMaster Plus • Print Shop • Questron • Regatta • Ring Quest • Ringside Seat • Rings Of Zilfin • Shanghai • Silent Service • Snooper Troops • Spy's Adventure in N. America • Super Print • Tass Times In Tonetown • Think Quick • Transylvania • Ultima I re-release • Where in the USA is Carmen Sandiego • World Games • Zork I (\*Macintosh softkey) • **A.P.T.s:** Alternate Reality: The Dungeon • Arctic Fox • Bard's Tale II • Beyond Zork • Black Magic • Cavern Creatures • Drol • Goonies • Ikari Warriors • Zorro • **Playing Tips:** • Beyond Castle Wolfenstein • Championship Lode Runner • Conan • King's Queen II • Lode Runner • Lurking Horror • Station Fall • Ultima IV • Zork **IBM Softkeys:** • Lotus 1-2-3 • Flight Simulator • PFS Report **IBM APTs:** • Bard's Tale

**51** January 1988 • **Features:** • The Crypt-arithmetic Helper • Using EDD IV to Modify Tracks And Sectors • Bard's Tale APT: Dungeon Mapper Revisited • RAMfactor mod for Laser 128 • Ultima IV APT edit-tables • The Product Monitor • Get Better Sound by using the cassette jacks • Making A Fast Boot Disk • Might & Magic APT edit-tables **Softkeys:** • 2400 AD • Aliens • Alphabet Zoo • Amnesia • Bag Of Tricks • Bard's Tale I • Bard's Tale II • Battle Cruiser • Beach-head II • Below The Root • Black Magic • Body Awareness • Bridge 4.0 • Carriers At War • Catalyst 3.0 • Centipede • Championship Boxing • Championship Wrestling • Chessmaster 2000 • Combining The Elements • Commando • Creative Contraptions • Einstein Compiler • Fat City • Fight Night • Flight Simulator v2.0 • Fun with Direction • GBA 2-0n-2 Championship Basketball • GraphicWriter v1.1RA • Growing Up Small • House-on-a-disk • Intrigue • Jet • Jungle Hunt • Kindercomp • Knowing Numbers • Kung-fu Master • Law Of The West • Learning Well series • Letters And Words • Little Computer People • Make Your Own Murder Party • Manic Mansion • Master

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Order form on page 42

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The Bard's Tale *Core*: •Black Box •Unrestricted Ampersand

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**14** ■ *Features*: •Super IOB v1.2 Update •Putting Locksmith 5.0 Fast Copy Into a Normal Binary File •Batman Decoder Ring •A fix for DiskEdit ■ *Softkeys*: •Seadragon •Rocky's Boots •Knoware •PFS Software •Computer Preparation SAT •MatheMagic ■ *Review*: •Boulder Dash

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**12** ■ *Softkeys*: •Zoom Graphix •Flip Out •Lion's Share •Music Construction Set ■ *Reader's Softkeys*: •Hi-Res Computer Golf II •Suicide •Sabatage •Millionaire •Time is Money •Type Attack ■ *Features*: •Pseudo-ROMs on the Franklin Ace ■ *Core*: •Psychedelic Symphony •The CORE Disk Searcher •The Armonitor ■ *Adventure Tips*: •Cranston Manor •Enchanter •Kabul Spy •Colossal Caves •The Witness •Pirate Adventure •Ultima III-Exodus •Adventureland

**11** ■ *Softkeys*: •Sensible Speller •Exodus: Ultima III ■ *Readers' Softkeys*: •SoftPorn Adventure •The Einstein Compiler v5.3 •Mask of The Sun ■ *Features*: •Copy II Plus v4.4C: Update Of An Old Friend •Parameter List For Essential Data Duplicator ■ *Core*: •Ultimaker III •The Mapping of Ultima III •Ultima II...The Rest Of The Picture

**10** ■ *Softkeys*: •Arcade Machine •Bank Street Writer •Minit Man ■ *Reader's Softkeys*: •Sensible Speller IV •EDD IV •Krell LOGO •Canyon Climber ■ *Features*: •The Controller Saver •Examining Protected Applesoft BASIC Programs •Crunchlist II ■ *Core*: •Appear - Voice Synthesis •Introducing the 65SC802 and 65SC816 Chips •Review - Dino Eggs ■ *Adventure Tips*: •Cranston Manor •Zork I •Planetfall •Mission Asteroid •Time Zone •Suspended •Critical Mass •Zork II •Castle Wolfenstein

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32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
★ 28	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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■ 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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# COMPUTIST

back issues and library disks are frequently referenced in current issues.

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**I** There is a bug in the softkey for R:Base 4000 v 1.11 in COMPUTIST #54, pg. 44. Replace the last E 2000:... with:

```
E 2000:231D 26 C7 06 00 09 50 04 26 C7
06 02 09 E8 0F 26 C7 06 04 09 00 01
26 C7 06 06 09 02 15 C3
```

..... RDEXed

Jackle

Softkey for...

## Mean 18 Golf

This is for the EGA Version (IBM PC) and for the Arch program included with Mean 18 Golf. Be sure to backup your Mean 18 Golf disk before starting and use the back up for the unprotect. This way if something goes wrong then you are not out a golf game.

**1** Rename the file GOLF.EXE.

**RENAME GOLF.EXE GOLF**

**2** Load GOLF into DEBUG.

**DEBUG GOLF**

**3** Follow the sample DEBUG session:

```
E D91D Edit contents of addr. D91D
XXXX:D91D 9A ◀ You should see
EB [SPACE]
XXXX:D91D 9A.EB 3B. ◀ You should see
1E [ENTER]
```

If either 9A or 3B does not appear, press **[ENTER]** to exit the edit mode and press **Q** to quit.

**4** Write the new golf game back to the disk.

**W**  
Writing XXXX bytes

**Q** Quit DEBUG

**5** Restore the original name.

**RENAME GOLF GOLF.EXE**

Now try to run the new (hopefully) unprotected version of Mean 18 Golf.

**GOLF**

Softkey for...

## Arch

Here is the softkey for the Arch program on the Mean 18 golf disk.

**1** First you should rename the file.

**RENAME ARCH.EXE ARCH**

**2** Next load ARCH into DEBUG.

**DEBUG ARCH**

**3** Follow the sample DEBUG session.

```
E 610B Edit contents of addr. 610B.
XXXX:610B 9A †--You should see
EB [SPACE]
XXXX:D91D 9A.EB 41. †--You should see
1E [ENTER]
```

If either 9A or 41 does not appear, press **[ENTER]** to exit the edit mode and press **Q** to quit.

**4** Write the new ARCH game back to the disk.

**W**  
Writing XXXX bytes

**Q** Quit DEBUG

**5** Rename ARCH to ARCH.EXE.

**RENAME ARCH ARCH.EXE**

Now try to run the new (hopefully) unprotected version of ARCH.

**ARCH**

A.S.P

Softkey for...

## PC Draw v1.4

**1** Format an equal number of DOS 2.0 or 2.1 disks as system disks. Label each of the 2.x formatted disks the same as each one of the original "PC-Draw" disks.

**2** Copy the files from the original disks to the 2.X formatted disks on a one-for-one basis, using the "COPY" command. Place the original disks in a safe place, we don't need them any more.

**3** Place "disk 1" in the A drive.

**RENAME PC-DRAW.EXE PC-DRAW**  
**DEBUG PC-DRAW**  
**S CS:100 L EFFF CD 13**

If you don't see the following code then you have a different version and should quit.

CS:4D45 CD13 INT 13

**4** Change the "INT 13" code to "NOP" and "STC", and force a jump.

**E 4D45 90 F9 EB 28**

**W**  
**Q**

**5** Change the name back.

**RENAME PC-DRAW PC-DRAW.EXE**

Note: If you want to use PC-DRAW from hard disk or RAM disk, you must use the

correct "ASSIGN=", since PC-DRAW appears to have drives hard coded.

Softkey for...

## Trivia Fever

This procedure also works on the demo disk of Trivia Fever.

**1** Format a blank system disk using DOS 2 or 2.1. Label it the same as the original Trivia system disk.

**2** Copy the files from the original TRIVIA system to the formatted blank disk using "\*.\*".

**3** Place the DOS system disk containing DEBUG in drive A and the new copy of Trivia in drive B.

**4** Rename the file.

**RENAME TF.EXE TF**

**DEBUG B:TF**

**E 257E**

**75.90 03.90**

**W**

**Q**

**RENAME B:TF B:TF.EXE**

All the copy protection has been removed.

Softkey for...

## Memory-Shift v2.1

**1** Prepare a fresh diskette.

**FORMAT B:/S/V**

**2** With Memory Shift Master in drive A: and your fresh diskette in B:

**COPY A:\*.\*,B:**

**3** Replace the Memory Shift Master in drive A: with your DOS diskette.

**RENAME B:MS.EXE,B:MS.XXX**

**DEBUG B:MS.XXX**

**S 0 L 8000 EB 22 00 72** search memory

XXXX:7F68 one occurrence should be found

**E 7F68**

XXXX:7F68 EB.

**EB [SPACE]**

22.

**08**

# IBM Reader's Data EXchange IBM

## E 80EC

xxxx:80EC AD.

## E9 [SPACE]

AB.

## 9E [SPACE]

AD.

## FE

## E 7F8D

xxxx:7F8D 06.

## B8 [SPACE]

1E.

## 00 [SPACE]

B8.

## 01

xxxx:7F90 40.

## AB [SPACE]

00.

## B8 [SPACE]

8E.

## F0 [SPACE]

D8.

## FF [SPACE]

BF.

## 01 [SPACE]

3E.

## D8 [SPACE]

00.

## AB [SPACE]

8A.

## B8

xxxx:7F98 95.

## D0 [SPACE]

04.

## 40 [SPACE]

00.

## 89 [SPACE]

80.

## C1 [SPACE]

E2.

## B8 [SPACE]

03.

## B8 [SPACE]

8E.

## 03 [SPACE]

46.

## E9

xxxx:7FA0 00.

## 54 [SPACE]

33.

## 01

## W

Writing 8000 bytes

## Q

RENAME B:MS.XXX,B:MS.EXE

That's all there is to it!

Softkey for...

## Personal Communications Manager v1.0

RENAME MCEMAIL.EXE X

DEBUG X

DOS 2.xx version

A EB47 JMP EB4F

was JNZ EB4F

A EBEB NOP NOP

was JZ EC0B

A EC06 NOP NOP

was JNZ EC0B

## W

## Q

RENAME X MCEMAIL.EXE

Important: All copies of PCM must have this patch (i.e. the programs on both ends of a connection). This has been tested on a PCjr and PC.

RRS

Softkey for...

## Balance of Power Mindscape

Make a backup of the program disk (the one with BOP.EXE).

**1** Rename the program.

RENAME BOP.EXE BOP.T

**2** Use debug.

DEBUG BOP.T

U 39B3

**3** The first line should be a CALL 3C7E. That is the call to the protection check. We will jump around it.

E CS:39B3

xxxx:39B3 E8.

EB [SPACE]

C8.

## 6E

## W

Writes the file out  
quit debug

## Q

**4** Change the program name back to what it was.

RENAME BOP.T BOP.EXE

You can now use the game without having to put in the key disk.

Softkey for...

## Enable v1.10

If you have a hard disk or want to create a backup copy that is not tied to the original Enable system disk, this will bypass the copy protection.

**1** Copy all the files from the ENABLE system disk to a floppy or subdirectory using \*.\*.\*.

DEBUG SYSTEM.TSG  
S CS:0 L EFFF B8 01 04

You should see:

XXXX:0774

XXXX:XXXX

->this one doesn't matter!

If you see something different then quit.

E 0774

B8.

EB [SPACE]

01.

2E

W

Q

Now all the copy protection has been bypassed, and you may copy the files as required.

IBM RDEX END

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-----	\$7
-----	\$8
-----	\$9
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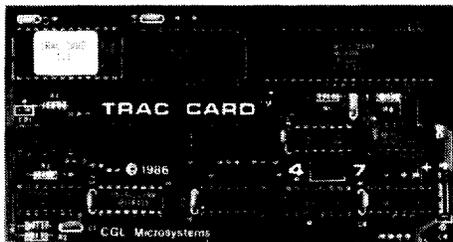
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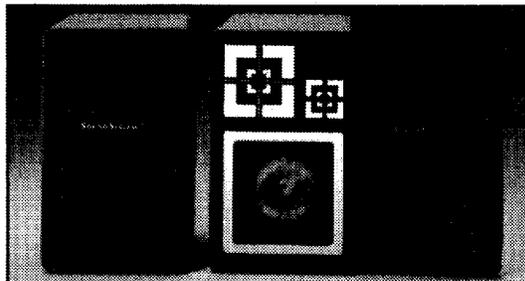
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▶ A reprint of **Disk Inspection and the Use of Super IOB**, from COMPUTIST No. 17. This article explains how to write your own Super IOB controllers.

▶ **COMPUTIST No. 32**, which contains an extensive article detailing the hows and whys of Super IOB v1.5 and at least 5 articles using the new Super IOB program.

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● The issue of COMPUTIST in which each controller appeared is indicated in case further steps are required to deprotect a particular program.\*\*

\*Requires at least 64K of memory.

\*\*Although some controllers will completely deprotect the program they were designed for, some will not, and therefore require their corresponding issue of COMPUTIST to complete the deprotection procedure.

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**Volume 2** of the Super IOB collection covers all the controllers from COMPUTIST No. 27 through No. 38. The following 65 controllers are on volume 2:

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, Newswap 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 Kadash, 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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