

For The Serious User Of Apple][Computers

Hardcore

COMPUTIST

Issue No. 26 \$3.75

Softkeys For:

Cannonball Blitz
More Stickybears
Gessler Software
Instant Recall
Financial Cookbook
128K Zaxxon
Super Zaxxon
Holy Grail and Inca

Core:

**The Games of 1985:
A Review**

Feature:

**ProEdit: A ProDOS
block editor**



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Hardcore COMPUTIST
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Tacoma, WA 98411

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Many of the articles published in Hardcore COMPUTIST detail the removal of copy protection schemes from commercial disks or contain information on copy protection and backup methods in general. We also print bit copy parameters, tips for adventure games, advanced playing techniques (APT's) for arcade game fanatics and any other information which may be of use to the serious Apple user.

Hardcore COMPUTIST also contains a special CORE section which focuses on information not directly related to copy protection. Topics may include, but are not limited to: tutorials, hardware/software product reviews and application and utility programs.

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 disk can usually be copied by the use of Apple's COPYA program (on the DOS 3.3 System Master Disk).

Commands And Controls: In any article appearing in Hardcore COMPUTIST, commands which a reader is required to perform are set apart from normal text by being indented and bold. An example is:

PR#6

Follow this with the RETURN key. The RETURN key must be pressed at the end of every such command unless otherwise specified.

Control characters are indicated by being boxed. An example is:

6 P

To complete this command, you must first type the number 6 and then place one finger on the CTRL key and one finger on the P key.

Requirements: Most of the programs and softkeys which appear in Hardcore COMPUTIST require one of the Apple II series of computers and at least on disk drive with DOS 3.3. Occasionally, some programs and procedures have special requirements. The prerequisites for deprotection techniques or programs will always be listed at the beginning of the article under the "Requirements:" heading.

Software Recommendations: The following programs (or similar ones) are strongly recommended for readers who wish to obtain the most benefit from our articles:

- 1) **Applesoft Program Editor** such as Global Program Line Editor (GPLE).
- 2) **Sector Editor** such as DiskEdit, ZAP from Bag of Tricks or Tricky Dick from The CIA.
- 3) **Disk Search Utility** such as The Inspector, The Tracer from The CIA or The CORE Disk Searcher.
- 4) **Assembler** such as the S-C Assembler or Merlin/Big Mac.
- 5) **Bit Copy Program** such as Copy II Plus, Locksmith or The Essential Data Duplicator.
- 6) **Text Editor** capable of producing normal sequential text files such as Appewriter II, Magic Window II or Screenwriter II.

You will also find COPYA, FID and MUFFIN from the DOS 3.3 System Master Disk useful.

Super IOB: This program has most recently appeared in Hardcore COMPUTIST No. 22. Several softkey procedures will make use of a Super IOB controller, a small program that must be keyed into the middle of Super IOB. The controller changes Super IOB so that it can copy different disks. To get the latest version of this program, you may order Hardcore COMPUTIST No. 22 as a back issue or order Program Library Disk No. 22.

RESET Into The Monitor: Many softkey procedures require that the user be able to enter the Apple's system monitor during the execution of a copy protected program. Check the following list to see what hardware you will need to obtain this ability.

Apple II Plus - Apple IIe - Apple 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 Plus - Apple compatibles: 1) Install an F8 ROM with a modified RESET vector on the computer's

motherboard as detailed in the "Modified ROM's" article of Hardcore COMPUTIST No. 6 or the "Dual ROM's" article in Hardcore COMPUTIST No. 19.

Apple IIe - Apple IIe: Install a modified CD ROM on the computer's motherboard. Don Lancaster's company (Synergetics; 746 First Street; Box 809-HC; Thatcher, AZ 85552; free voice HelpLine 602-428-4073) sells the instructions necessary to make this modification. Making this modification to an Apple IIe will void its warranty, but the increased ability to remove copy protection may justify it.

Recommended Literature: The Apple II Reference Manual and DOS 3.3 manual are musts for any serious Apple user. Other helpful books include: *Beneath Apple DOS*, Don Worth and Peter Lechner, Quality Software, \$19.95; *Assembly Language For The Applesoft Programmer*, Roy Meyers and C.W. Finley, Addison Wesley, \$16.95; and *What's Where In The Apple*, William Lubert, Micro Ink., \$24.95.

Keying In Applesoft Programs: BASIC programs are printed in Hardcore COMPUTIST in a format that is designed to minimize errors for readers who key in these programs. To understand this format, you must first understand the formatted LIST feature of Applesoft.

An illustration- If you strike these keys:

10 HOME:REMCLEAR SCREEN

a program will be stored in the computer's memory. Strangely, this program will *not* have a LIST that is exactly as you typed it. Instead, the LIST will look like this:

10 HOME : REM CLEAR SCREEN

Programs don't usually LIST the same as they were keyed in because Applesoft inserts spaces into a program listing before and after every command word or mathematical operator. These spaces usually don't pose a problem except in line numbers which contain REM or DATA command words: The space inserted after these command words can be misleading. For example, if you want a program to have a list like this:

10 DATA 67,45,54,52

you would have to omit the space directly after the DATA command word. If you were to key in the space directly after the DATA command word, the LIST of the program would look like this:

10 DATA 67,45,54,52

This LIST is different from the LIST you wanted. The number of spaces you key after DATA and REM command words is very important.

All of this brings us to the Hardcore COMPUTIST LISTING format. In a BASIC LISTING, there are two types of spaces: spaces that don't matter whether they are keyed or not and spaces that must be keyed. Spaces that must be keyed in are printed as delta characters (δ). All other spaces in a Hardcore COMPUTIST BASIC listing are put there for easier reading and it doesn't matter whether you type them or not.

There is one exception: If you want your checksums (See "Computing Checksums" section) to match up, you *must not* key in any spaces after a DATA command word unless they are marked by delta characters.

Keying In Hexdumps: Machine language programs are printed in Hardcore COMPUTIST as both source code and hexdumps. Only one of these formats need be keyed in to get a machine language program. Hexdumps are the shortest and easiest format to type in.

To key in hexdumps, you must first enter the monitor:
CALL -151

Now key in the hexdump exactly as it appears in the magazine ignoring the four digit checksum at the end of each line (a "S" and four digits). If you hear a beep,

you will know that you have typed something incorrectly and must retype that line.

When finished, return to BASIC with a:

E003G

Remember to BSAVE the program with the correct filename, address and length parameters as given in the article.

Keying In Source Code The source code portion of a machine language program is provided only to better explain the program's operation. If you wish to key it in, you will need an assembler. The S-C Assembler is used to generate all source code printed in Hardcore COMPUTIST. Without this assembler, you will have to translate pieces of the source code into something your assembler will understand. A table of S-C Assembler directives just for this purpose was printed in Hardcore COMPUTIST No. 17. To translate source code, you will need to understand the directives of your assembler and convert the directives used in the source code listing to similar directives used by your assembler.

Computing Checksums Checksums are four digit hexadecimal numbers which verify whether or not you keyed a program exactly as it was printed in Hardcore COMPUTIST. There are two types of checksums: one created by the CHECKBIN program (for machine language programs) and the other created by the CHECKSOFT program (for BASIC programs). Both programs appeared in Hardcore COMPUTIST No. 1 and The Best of Hardcore Computing. An update to CHECKSOFT appeared in Hardcore COMPUTIST No. 18. If the checksums these programs create on your computer match the checksums accompanying the program in the magazine, then you keyed in the program correctly. If not, the program is incorrect at the line where the first checksum differs.

1) To compute CHECKSOFT checksums:

**LOAD filename
BRUNCHECKSOFT**

Get the checksums with

&

And correct the program where the checksums differ.

2) To compute CHECKBIN checksums:

**CALL -151
BLOAD filename**

Install CHECKBIN at an out of the way place

BRUN CHECKBIN,AS6000

Get the checksums by typing the starting address, a period and ending address of the file followed by a Y.

XXX.XXX Y

And correct the lines at which the checksums differ.

How-To's Of Hardcore

Welcome to Hardcore COMPUTIST, a publication devoted to the serious user of Apple II and Apple II compatible computers. Our magazine contains information you are not likely to find in any of the other major journals dedicated to the Apple market.

Our editorial policy is that we do NOT condone software piracy, but we do believe that honest users are entitled to backup commercial disks they have purchased. In addition to the security of a backup disk, the removal of copy protection gives the user the option of modifying application programs to meet his or her needs.

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

GET RICH(?) QUICK...

Become a COMPUTIST author. Software protection is still the scourge of the computer world, so you can become part of the battle right now. Don't be discouraged by locked-up software. *Get inspired. Look upon it as a challenge. Or just get angry.* But don't just sit around imprisoned by your software. Break free. Keep an eye on the Most Wanted list and any of the REWARD and WANTED posters in Hardcore COMPUTIST and see if you can softkey them. Our Writer's Guide is now on the inside back cover. Don't wait. Become a COMPUTIST author, now.

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Check your mailing label to see if you need to renew your subscription. And if you think you might forget when that fatal time arrives, renew right now. Just use the order blank below.

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We are NOT

PIRATES!

but we're not fools, either.

We're serious programmers and software users who just want to have backup copies of any software we own. Hardcore COMPUTIST magazine shows us HOW TO MAKE BACKUPS OF COMMERCIAL SOFTWARE regardless of the maker's attempt to stop us from having legal copies. Don't let them stop you from protecting your own rights.

Remove copy-protection

from your valuable library of expensive software. The publisher of Hardcore COMPUTIST has been showing subscribers how to unlock and modify commercial software for the past 4 years. Don't be one of the users abused by user-FRIENDLY locked-up software. Subscribe.

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Jr. & Sr.**

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up to

\$80.00

Sundog, V2
FTL Games

If your softkey to this program is published in Hardcore COMPUTIST.

SEE THE WRITER'S GUIDE on the inside of the back cover and find out how to become a published Hardcore COMPUTIST author.

How to pick up a girl

Requirements:

A girl you really want to pick up

Some rippling biceps*

A pair of scissors

Certified Jock Sweat* or a compatible substitute

A new **Hardcore COMPUTIST'S Diskbusters T-shirt**

Some degree of DEXTERITY and a sense of humor is helpful but not necessary

Unlike all the other advice books and pamphlets sold at exorbitant prices, this method is inexpensive and absolutely works even if your CHARISMA is very low. If you've had any problems in the past using other methods, it's because you didn't use this procedure.

Follow these few simple steps and you'll soon be able to pick up girls anywhere.

1) Lay your Diskbusters T-shirt on a flat surface so that the diskbuster design is facing you.

2) Take your scissors and make a jagged cut all across the shirt just below the Diskbusters design. If your STRENGTH is high, or if your biceps happen to be rippling at this time, just rip the shirt across the chest area as you growl loudly.

3) Sloppily spill some Certified Jock Sweat* (or your own, if you qualify) onto the Diskbusters design and under the arms.

4) Wait a minute for the musky odor to permeate the T-shirt. If you like, you can spill some of the Certified Jock Sweat on your own body and feel your VIRILITY go up. Your AGILITY and DEXTERITY will not change.

5) Put on the specially modified Diskbusters T-shirt or an exact bit-by-bit unprotected backup.

6) Now walk up to the girl and take a deep breath, puffing out your chest (or a reasonable facsimile) as you do so.

7) Grasp girl firmly around her waist and lift.

*available at your local Gym.

I have my rippling biceps and Certified Jock Sweat, so rush me _____ (total) DISKBUSTERS T-SHIRTS in the sizes indicated below. I have enclosed \$9.95 (plus tax and shipping) for each shirt.

ADULT MENS: _____ Small _____ Medium _____ Large _____ Xtra large

Name _____ HC26

Address _____

City _____ State _____ Zip _____

Signature _____ Phone _____

VISA/MC _____ - _____ - _____ Exp. _____

Send check or money order to: Hardcore T-shirts, PO Box 110816, Tacoma, WA 98411. Washington orders add 7.8% sales tax. Foreign orders add 20% shipping and handling. US funds drawn on US bank.

The Book Of Softkeys shows you how to softkey (remove copy-protection from) commercial software.

Volume I (157 pages) contains softkeys for: Akalabeth, Ampermagic, Apple Galaxian, Aztec, Bag of Tricks, Bill Budge's Trilogy, Buzzard Bait, Cannonball Blitz, Casino, Data Reporter, Deadline, Disk Organizer II, Egbert II Communications Disk, Hard Hat Mack, Home Accountant, Homeward, Lancaster, Magic Window II, Multi-disk Catalog, Multiplan, Pest Patrol, Prisoner II, Sammy Lightfoot, Screen Writer II, Sneakers, Spy's Demise, Starcross, Suspended, Ultima II, Visifile, Visiplot, Visitrend, Witness, Wizardry, Zork I, Zork II, Zork III, plus how-to articles and program listings of need-to-have programs used to make unprotected backups.

Volumes II and III are being compiled now!

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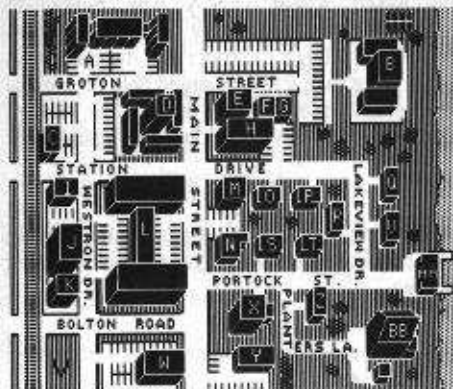
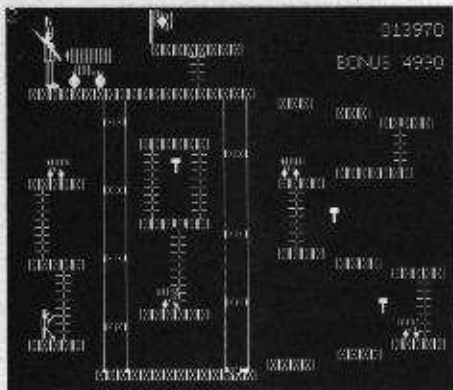
Book Of Softkeys Vol. 1, SoftKey Publishing, PO Box 110816, Tacoma, WA 98411

If you want to make backups, then you want The Book Of Softkeys Volume I,

COMPUTIST

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softkeys

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Follow Hardcore COMPUTIST as it tears into the copy protection on this classic.
 by *Denny Colt*

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Protect your original Instant Recall disk by following this procedure to back it up.
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Now you can perform sector edits on ProDOS disks without using complex tables to look up block numbers and their associated sector numbers. This program does all that for you.
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Looking for entertainment value? Before you spend any more of your hard-earned money on computer games that lose your interest after 5 hours, look through this article. You'll find critiques for several of the most recently released top-of-the-line games. This month's article focuses on the arcade games. by *Jeff Hurlburt*

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input

Please address letters to:

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Include your name, address and phone number.

Correspondence appearing in the INPUT section may be edited for clarity and space requirements. In addition, because of the great number of letters that we receive and the small size of our staff, a response to any letter is not guaranteed.

The views expressed in the input section of Hardcore COMPUTIST are not necessarily those of SoftKey Publishing or Hardcore COMPUTIST.

Bootlegger Rebuttal

Regarding your Hardcore COMPUTIST No. 22 letter, I would like to make it perfectly clear that Munson Compton wrote to you claiming to have not received an issue. As we mailed his lost issue immediately, he then claimed never to have gotten it or the next issue. We then mailed two issues which he claims to never have received. He then contacted us demanding a full refund and we knew he was trying to do things that weren't exactly kosher. Both he and I contacted postal authorities. I have proof of mailing those disks and have asked the Chief Postal Inspector to prosecute Munson Compton on mail fraud charges. Since he claims to also be a captain in the military, may I suggest that the National Security Agency and Military Intelligence look into his activities. (Why does he want info on hacking military computers?)

Nuff said.

Mike Beketic
Bootlegger

Mr. Beketic: Hardcore COMPUTIST has recently talked with Munson Compton and he recalls his dealings with your company like this: The first shipment he received from Bootlegger was a torn (by the postal system) envelope with

no contents. He wrote Bootlegger a letter explaining this. You wrote back stating that you would include a replacement issue with his next issue. He then received issue 3 with no issue(s) enclosed. Shortly after, he received a letter from you stating that you weren't sure if you enclosed replacement issues or not and to inform Bootlegger about the condition of his latest package. He then wrote you stating neither issue 1 or 2 was enclosed with his issue 3 package. You didn't reply. After waiting several months, he wrote Gary Peterson (former Technical Editor of Hardcore COMPUTIST) stating the situation. Gary called Bootlegger and you informed him that Munson's subscription started with issue 3 which Gary then relayed to Munson. He states that it has been over a year now and he still has only received issue 3.

Munson claims his letter asking for a refund gave you the option of sending him the issues he hasn't received or refunding his money. He also states that the Postal Inspector has sent you three letters in regards to this matter and that you haven't responded. Munson says that he has received nothing from the postal inspector concerning charges against him.

In conclusion, Munson asks what possible reason would he have of re-asking for issues.

Since this is the only unresolved complaint Hardcore COMPUTIST has encountered against Bootlegger and tempers seem to be pretty high on both sides, perhaps postal authorities can best settle this.

Visifile Preboot Anyone?

I use Visifile a lot both at home and at work (as a matter of fact, I have two copies of both sides of the disk). But it has ONE big drawback: speed. If anyone out there has a system or some type of pre-boot so that Visifile will make use of the 128K ram board (Saturn, Titan), please let me know how to do it.

P.S. This is a great magazine. I have learned a lot in the short time I have been reading it. Thanks again!!!!

Fred L. Carozzo
San Pedro, CA

A Few APT's

I am a fairly recent subscriber to Hardcore COMPUTIST, (being a Softalk orphan) and have in many ways found the three issues I've received so far to be superior to the six months worth of softalk that was sent to me. My compliments to an excellent periodical, read by

a larger age group than one might think.

Human Edge Software's Mind Prober, an interesting if subjective and slightly vague program, gives a fairly accurate assessment of a man's or woman's personality when a number of questions are answered. Also, I recently purchased Agent U.S.A., by Scholastic Software. Unfortunately, they are both protected, though I suspect that the protection is no more than a few changed data or address markers. Please add them to the Most Wanted list, unless they have previously been published.

H.E.R.O.

Pressing one of the digits while playing instantly transports the player to level indicated below:

- 1 level 1
- 2 level 5
- 3 level 9
- 4 level 13
- 5+ PRO level

Rescue Raiders

Typing 'ZIPPY' once the game has begun makes the following functions available:

- J jumps to left of screen
- K jumps to middle of screen
- L jumps to right of screen
- / extra helicopter
- followed by # jumps to level #

P.S. I am told the adventure tips for Rescue Raiders work; I don't own the game.

John Clements
San Francisco, CA

Mr. Clements: On page 7 of Hardcore COMPUTIST No. 25 there is a softkey for Mind Prober. Agent U.S.A. has been added to the most wanted list. Thanks for the A.P.T.s!

A Fix for the Applewriter Free Sector Patch

I was recently lent a copy of Hardcore COMPUTIST No. 18 by a friend who knew I was interested in Applewriter //e. The article in it by Peter Edelsten was fascinating.

The free sector patch by Bob Branger was something I had always wanted Applewriter to do. However, his code has a small bug if used

input

with some systems. The VTOC after track 34 is normally set to all hex 00. In some cases, and always with some of the different DOS versions that are around, this area is treated as normal DOS tracks. Thus, when you count the number of free sectors you get a number that is much too large. To overcome this, the byte at \$2D10 in the code should be \$8A instead of \$C0. This gives the correct number of free sectors on a normal 35 track drive.

I also found the routines in OBJ.APWRT][E (the 64K file) and it can also be patched now. To do so, make the following changes to the source listing (FREESEC1):

```
Change BELL to $2423 instead of $24AC
Change OUTPUT to $4886 instead of $49FF
Change CONVERT to $47D8 instead of $4951
Change the .OR to $2C3C instead of $2D0F
```

The hex dump then becomes:

```
2C3C- A0 8A A2 00
2C40- 0E 7F 2C B9 F2 EB F0 0B
2C48- 0A 90 FB E8 D0 FA EE 7F
2C50- 2C D0 F5 88 D0 ED AD 7F
2C58- 2C 20 D8 47 A0 0F B9 7F
2C60- 2C 20 86 48 88 D0 F7 BD
2C68- F0 16 20 86 48 CA 10 F7
2C70- 20 23 24 8D 10 C0 2C 00
2C78- C0 10 FB 8D 10 C0 60 00
2C80- BA D3 D2 CF D4 C3 C5 D3
2C88- A0 C5 C5 D2 C6 8D 8D
```

Also change the .OR in listing FREESEC2 to \$5022 instead of the original \$5190. This hex dump then becomes:

```
5022- CA AE A0 C3 EF F5
5028- EE F4 A0 E6 F2 E5 E5 A0
5030- F3 E5 E3 F4 EF F2 F3 A0
5038- EF EE A0 E4 E9 F3 EB A0
5040- A0 A0 A0 8D
```

I hope this helps those who, like me, still use Applewriter //e. It's main advantage to me is that you can enter any control characters you like into the text, thus making full use of your printer.

Keep up the good work.

Kevin Sartorelli
Upper Hutt, New Zealand

Modified ROMs Problems

I was very much interested in creating the "Better F8 ROM" as described in Hardcore COMPUTIST No. 19. I took a 2732D EPROM and burned into the lower half the normal F8 ROM information, and into the upper half, the modified program. I double checked the

modified portion, and it appeared okay. However, when I tried it in my Apple Clone (which uses 2716 EPROMS), only the lower half performed properly. When I tried the upper portion, the screen filled with a page of ASCII characters and then went into monitor ROM "*". When I hit RETURN as instructed, I got an "* FA". Striking RETURN again gave me "0000 and the code for that level". I checked the contents of the EPROM (read the information out) and it is as described in Hardcore COMPUTIST. Is there a correction cited in following (not received) issues?

I noticed in the text an error on page 10, where I believe in the 3rd column under the first figure it should have mentioned pin 21, not 24. This would agree with the figure that followed.

I was unsure about one modification. At the end of column two on same page 10, it states "FFFC: 59 FF". I wasn't sure how to handle this. What I did (Perhaps incorrectly) was to replace the modification on page 19 for 2FFC and 2FFD to 59 and FF respectively so I ended up with:

```
2FF8: F5 03 63 FB 59 FF 40 FA
instead of
F5 03 63 FB C9 FC 40 FA
```

If I made the wrong assumption, please advise me where the "59 FF" is supposed to be written.

Whatever assistance you can give in this matter would be greatly appreciated. I am very interested in the "Better F8 ROM" and have high hopes of getting it operating soon.

Stuart C. Keen, Jr.
Reston, VA

Mr. Keen: The text on the third column of page 10 should indeed have mentioned pin 21 instead of pin 24. We also incorrectly printed in the second column of the third page "FFFC:59 FF". We should have printed "2FFC:59 FF".

There are a number of reasons why your ROM doesn't work. First of all, you should ignore the "FFFC:59 FF" command on the second column of page 10. This is put here only if you do NOT use the enhanced Earl Taylor method. Secondly, the Earl Taylor procedure will not work on //e's or some Apple clones because the unused areas (and some used areas) changed by Earl Taylor are used by //e's and some compatibles.

Appleworks Problems

In February of 1985, I wrote Apple Computer regarding several problems I had

found with my copy of AppleWorks. The response, although fast, did not do much to deal with the problems that I had discovered. Perhaps you or your readers may know of someone who has encountered the same difficulties and knows of a solution.

Several basic but serious problems exist.

1.) The AppleWorks word processor screen is only 80 columns wide. I own a 15-inch ImageWriter. I do not have a "what you see on the screen is what you get on the paper" situation. I previously used Magic Window IIe which allows a screen width to 160 characters. The text is viewed in two separate windows that move as needed with the cursor. This is a definite advantage. Ideally, the screen width needs to be flexible to a maximum of 255 characters for a 15-inch platen and Untracondensed type (17 cpi). The limits of PW (platen width) would also need to be changed accordingly. Has anybody written a fix to widen the screen?

2.) The AppleWorks word processor does not allow entry of anything other than predefined printer control characters. From text, one cannot change the printer type to the alternate character set. Again Magic Window IIe allows this option. It is extremely handy for writing forms and unusual text. For that matter, no option is allowed to set up the printer to desired specifications such as printing a slashed zero. In this regard, the ImageWriter manual has a misprint and the printer has a bug. To make your printer print slashed zeros, enter the following printer control codes:

```
ESC D [ @ [ A ESC Z @ [ @
```

Has a fix been written?

3.) In the printer options section, vertical margins are listed in 1/10 of an inch. This caused quite a bit of confusion due to the rounding off that the program must do in order to make it fit on the page. This should be entered in lines. Perhaps the best solution would be to eliminate all this set up and allow the screen to be a true "what you see is what you get". This is a major change. Has a new AppleWorks been written?

4.) The "space bar" hold and "escape" halt for printer control does not work, at least not immediately on the ImageWriter. Is this a goof in the program or flaw in the printer? Is there a fix?

Any help would be appreciated.

Harland R. Davis
Bolingbrook, IL

input

Deprotecting Dazzle Draw on a //c

Since purchasing Dazzle Draw it has become the program I use most frequently, after AppleWorks, on my //c. As with any program I use frequently, I have been uncomfortable with not being able to make extra backups. I was therefore delighted to find a deprotection scheme for this program in Hardcore COMPUTIST No. 21. As I soon discovered, however, the method described in the excellent article by Clay Harrell would not work on my //c. The problem occurred in step 5. When that step of the procedure was executed the program booted to completion and I could not break into the monitor.

After consulting the Apple //c Reference Manual, I discovered the problem--the boot ROM code in the //c is different from the //e ROM code. Instead of setting the load address (\$0800) at \$C659 the //c ROM code sets the address in a subroutine (MAKTBL) which starts at \$C709. This subroutine is called at \$C63A. Thus, on the //c the published procedure must be modified to relocate \$C600 through \$C740 to \$8600 through \$8740, the JSR which call MAKTBL must be modified to call the relocated version at \$8709 and the load address at \$8729 must be changed from \$08 to \$50. The modifications to the step-by-step method with comments are (steps which do not require modification have not been reproduced) as follows:

- 3) 8600<C600.C740M (relocate all of //c
86F9:59 FF boot code)
- 5) C0E8
843:59 FF
86F9:01 08
86C3:86 (Call relocated MAKTBL)
8729:50 (Change load address to \$5000)
8600G

One other modification which I had to make to the published method was to use the supplied //c ProDos System disk (which apparently is different from the ProDos users disk in that it does not have a CONVERT program but rather a DOS to ProDos conversion routine which reformats the entire disk before writing the converted file) to convert SYSTEM.DAZZLE from the DOS 3.3 disk to a blank disk and then to copy the ProDos version from that disk to the copy of Dazzle Draw which was made in step 17.

Hopefully this letter will help other readers who have been frustrated in trying to deprotect Dazzle Draw using a //c. It may even be useful to those trying to use Boot Code Tracing techniques on other programs although in the future it would be nice to have other articles which use similar techniques to include explicit instructions for the //e and //c where there are differences.

I find your publication to be the most useful of all the Apple related magazines. Keep up the good work.

R.G. Henderson
Fairfax, VA

Piracy Comment

Let's face it. Piracy is in. Everybody is talking about pirates. Newsmedia is making big bucks off of it. Unfortunately, it all seems to be negative. What do I mean? Well, it seems to be fashion to take the offense against piracy. I believe I can quote one of your past readers as calling them "self-serving." Well, here is a short note in *defense* of piracy.

A gutsy magazine, Hardcore COMPUTIST comes into view. I believe that from 65 to 85 percent of Hardcore COMPUTIST readers use it for illegal purposes, while granted, mostly minor offenses.

Software companies are spending megabucks for advertising. What does this show to me? Simple. Software companies are not poor, floundering businesses. They are rich! And if they are worried about losing their 20-50 million in revenue per year, that is, as opposed to the 250,000,000 they make in that year from "honest" users, well, maybe they're in the wrong business. If anything, the anti-pirate ads are drawing the public's attention towards piracy. And towards the benefits of piracy, whereas they may have turned out to be "honest" users were this subject not so hot on the mind of everyone.

What I'm driving at is, mega-multi-million dollar software firms are crying, just like little rich kids who can't have their toys. The average guy will never make as much in his *lifetime* as one major software firm will in three months. The program's authors aren't starving either. Software firms are trying to hit our emotions with a sympathy scheme, like pirate's are making their children have to wear rags or something. And it is not true, I have respect for the authors and their ability, but I don't have pity for them because they are losing 1/500th of their annual salary.

Black Rose
Pirates Cove

Most Wanted List

Need help backing-up a particularly stubborn program?

Send us the name of the program and its manufacturer and we'll add it to our Most Wanted List, a column (updated each issue) which helps to keep Hardcore COMPUTIST readers informed of the programs for which softkeys are MOST needed. Send your requests to:

Hardcore COMPUTIST
Wanted List
PO Box 110846-K
Tacoma, WA 98411

If you know how to deprotect
unlock, or modify
any of the programs below,
let us know. You'll be helping your fellow
Hardcore COMPUTIST readers and earning
MONEY at the same time. Send the
information to us in article form on a DOS
3.3 diskette.

- Mouse Calc Apple Computer
- Apple Business Graphics Apple Computer
- Flight Simulator II Sub Logic
- Factory Sunburst Communicating
- Jane Artronics
- Bookends Sensible Software
- Visiblend Microlab
- Sundog FTL Games
- Sundog, V2 FTL Games
- Lifesaver Microlab
- Catalyst Quark, Inc.
- Gutenberg Jr. & Sr. Micromation LTD
- Prime Plotter Primesoft Corp.
- Zardav Computer Solutions
- The Handlers Silicon Valley Systems
- Milliken Math Series (NEW) Milliken Publishing
- The Apple's Core: Parts 1-3 The Professor
- King's Quest Sierra On-line
- Hayes Terminal Program Hayes
- Fun Bunch Unicorn
- Willy Byte Digital Dimension
- Trivia Fever Professional Software Inc.
- Terrapin Logo v2.00 Terrapin Software
- The Boston Computer Diet Scarborough Systems
- Conan Datasoft
- Cycloid Sirius Software
- Crisis Mountain Synergistic Software
- Adventure Microsoft
- Agent U.S.A. Scholastic

readers' softkey & copy exchange

Danny Pollak's softkey for...

The Financial Cookbook

Financial Cookbook
Electronic Arts
2755 Campus Dr.
San Mateo, CA 94403

Requirements

Super IOB v1.2
A blank disk
Financial Cookbook

In Issue No. 15, Pete Levinthal presented his way of deprotecting the Financial Cookbook. His method required the use of a copy card. Since I do not own one of these cards (and I am sure many of you do not), I have come up with another method of deprotecting the Financial Cookbook.

As was indicated in the previous article, the Cookbook disk is completely COPYAable except for track 6. A further examination of the disk will reveal that the program resides between tracks 0 and 14. Tracks 3 and 4 are blank and tracks 5 and 6 need not be copied because they are used only for the purpose of the nibble count.

Putting all this information together, I came up with the following Super IOB controller. The controller will copy the tracks needed and also perform the sector edit necessary to bypass the nibble count.

The bytes changed are:

Track	Sector	Byte	From	To
\$01	\$0F	\$00	\$4C	\$18
\$01	\$0F	\$01	\$69	\$60
\$01	\$0F	\$02	\$A0	\$DD

After running Super IOB with the following controller installed, you will have a completely COPYAable version of the Financial Cookbook.

controller

```
1000 REM FINANCIAL COOKBOOK CONTROLLER
1010 TK = 0 : ST = 0 : LT = 21 : CD = WR
1020 T1 = TK : GOSUB 490 : RESTORE
```

```
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 = 3 THEN TK = TK + 4
1055 IF TK < LT THEN 1030
1060 GOSUB 310 : GOSUB 490 : TK = T1 : ST = 0
1070 GOSUB 430 : GOSUB 100 : ST = ST + 1 : IF ST <
DOS THEN 1070
1080 ST = 0 : TK = TK + 1 : IF TK = 3 THEN TK = TK + 4
1085 IF BF = 0 AND TK < LT THEN 1070
1090 IF TK < LT THEN 1020
1100 HOME : PRINT : PRINT "DONE^ WITH^ COPY" :
END
5010 DATA 3^ CHANGES
5020 DATA 1 , 15 , 0 , 24
5030 DATA 1 , 15 , 1 , 96
5040 DATA 1 , 15 , 2 , 221
```

controller checksums

1000 - \$356B	1080 - \$79FE
1010 - \$8295	1085 - \$731B
1020 - \$50CA	1090 - \$FE61
1030 - \$46CB	1100 - \$4315
1040 - \$829A	5010 - \$3EAE
1050 - \$96BD	5020 - \$D951
1055 - \$51BF	5030 - \$2A7D
1060 - \$10A8	5040 - \$6440
1070 - \$18AD	

Sandy Eubank's softkey for...

Super Zaxxon

Datasoft, Inc.
19808 Nordoff
Chatsworth, CA 91311

Requirements:

Apple II, II Plus, IIc, or IIc
Super Zaxxon
Super IOB v1.5
A blank disk

A quick check of Super Zaxxon with CIA's The Linguist revealed that, except for end marks, it was in standard DOS 3.3 format. Further, only tracks 00-1B are used. The end marks were changed from the usual \$DE AA to \$AA DE.

A few minute's work with CIA's Tricky Dick uncovered the location of the offending code at track 0, sector 4. Super IOB seemed the likely choice for normalizing the disk. The controller has been set up for use with Super IOB v1.5, but it can be converted for an earlier version.

- 1) Install the accompanying controller into Super IOB v1.5.
- 2) Run Super IOB, following the prompts, and let it format the copy when it asks you.

The finished copy works just like the original and is COPYAable.

For those of you (like me a few months ago) who are unfamiliar with these procedures, Super IOB used Super Zaxxon's end marks to read the disk, but wrote normal end marks on the copy. The sector edits were necessary so Super Zaxxon looks for the normal marks instead of the altered ones. All the edits were to track 0, sector 4. Bytes \$35 and \$3F were changed from \$AA DE to \$DE AA. The same changes were made to bytes \$91 and \$9B. Not so hard after all, right?

controller

```
1000 REM SUPER ZAXXON CONTROLLER
1010 TK = 0 : LT = 28 : ST = 15 : LS = 15 : CD = WR : FAST
= 1
1020 GOSUB 490 : RESTORE : GOSUB 190 : GOSUB 210
: GOSUB 170 : GOSUB 610
1030 GOSUB 310 : GOSUB 230 : GOSUB 490 : GOSUB 610
: IF PEEK (TRK) = LT THEN 1050
1040 TK = PEEK (TRK) : ST = PEEK (SCT) : GOTO 1020
1050 HOME : PRINT "COPYDONE" : END
5000 DATA 213 , 170 , 150
5010 DATA 213 , 170 , 173
5020 DATA 170 , 222 , 170 , 222
5030 DATA 4^ CHANGES
5040 DATA 0 , 4 , 53 , 222
5050 DATA 0 , 4 , 63 , 170
5060 DATA 0 , 4 , 145 , 222
5070 DATA 0 , 4 , 155 , 170
```

controller checksums

1000 - \$356B	5010 - \$8F54
1010 - \$6CFB	5020 - \$19EE
1020 - \$DCEF	5030 - \$917A
1030 - \$77AE	5040 - \$A045
1040 - \$B717	5050 - \$7F6D
1050 - \$A2B1	5060 - \$5207
5000 - \$FAA2	5070 - \$8B83

readers' softkey & copy exchange

Tim Beckman's follow-up softkey for...

Wizardry

Sir-Tech Software, Inc.

Requirements:

Hardcore COMPUTIST No. 20
A Wizardry I or II that didn't copy

I have the version of Wizardry I dated 22-JAN-82. The softkey in Hardcore COMPUTIST No. 20 worked for my version with the following sequence bytes for the boot side.

```
A0 00 AE 28 8B BD 29 8B
85 0D 91 02 E8 C8 BD 29
8B 91 02 85 0E E8 8E 28
8B 60 00 0C 12 83 05 10
12 02 0A 15 12 7F 05 1D
12 FF 09 18 12 82 05 16
12 01 0A
```

The following bytes were needed for the Scenario Master Copy.

```
AE DC 20 BD DD 20 85 0D
8D 00 20 E8 BD DD 20 8D
01 20 85 0E E8 8E DC 20
```

```
8D E8 C0 60 00 3B 12 07
0A 3D 12 5F 09
```

For Wizardry II, Knight of Diamonds dated 10-MARCH-82 the following sequence was needed.

```
A0 00 AE 7F 8C BD 80 8C
85 0D 91 02 E8 C8 BD 80
8C 91 02 85 0E E8 8E 7F
8C 60 00 27 06 D8 05 6A
09 81 05 26 06 DF 05 68
09 84 05
```

The Master Scenario required this change.

```
AE DC 20 BD DD 20 8D 00
20 85 0D E8 BD DD 20 E8
8D 01 20 85 0E 8E DC 20
8D E8 C0 60 00 09 08 82
08 82 08 B1 09
```

(Note: This APT also appeared in Hardcore COMPUTIST No. 7.)

Now, one helpful APT for Wizardry. There is a bug in Wizardry that allows you to create a Super Bishop. First, create a bishop at the training grounds by getting a 12 in both intelligence and piety. Next, take the bishop to the maze and have the bishop try to identify item #9. You may fail a few times, but once you successfully identify it you will have one hundred million experience points. At this point return to the surface and go to the Adventurers' Inn. Once there, stay until you get tired of gaining levels or you finally reach the end of

your experience points (it takes a long time). When you are finished, you will have a bishop that is almost unbeatable by himself.

Mike Stafford's softkey for...

Preschool Fun

Thesis Software
P.O. Box 147
Garden City, MI 48135


Requirements:

48K][Plus or //e
A blank disk
Super IOB v1.5 and NewSwap controller
A way into the Monitor

This is one of the best educational programs I have come across for my pre-kindergarten age son. It teaches shapes, colors, counting and letters, and is even able to keep his interest for more than five minutes. I was amazed to find that this disk was copy protected - I don't know about you, but I'm not about to put an original disk in the hands of a four year old. Thesis has also made this program quite difficult to bit copy, but no matter, good old Swap controller works on this program without any difficulty.

Here is the cookbook method:

1) INIT a disk (preferably with a fast DOS)

```
INIT HZ[]MQS.REV2
```

2) Boot the protected disk. As soon the drive stops, reset into the monitor by your favorite method.

3) There is an instruction in the RWTS that calls outside of the RWTS area. This is a feeble attempt to keep you from taking it out and using it in something like Super IOB's Swap controller. It calls a routine at \$B78D, which consists of simply a NOP followed by a JMP \$B8B9. Replace it with a direct JSR to \$B8B9.

```
B84C:20 B9 B8
```

4) Move the RWTS to a safe location.

```
1900<B800.BFFFM
```

5) Insert a slave disk in your drive and boot it.

```
C600G
```

6) Save the RWTS on the same disk as your Super IOB program.

```
BSAVE RWTS,A$1900,L$800
```



readers' softkey & copy exchange

7) Install the Swap controller in your Super IOB program and RUN it.

That's all - you now have a completely unprotected version of Preschool Fun that you can let your child have without fear.

One note: If you want to modify this program in some way, use a sector editor to read the real file names off track \$11 - all the names contain hidden control characters.



Steve and Rod Smith's softkey for...

Holy Grail and Inca

Hayden Software
600 Suffolk St.
Lowell, MA 01854

Requirements:

COPYA

A sector editor

A blank disk

This article explains how to deprotect either The Holy Grail or Inca. Both are protected in the same manner, but Holy Grail will be used as the example. Since the scheme used is identical on both, Hayden may be using it again on future releases in the Timequest series.

To begin, make a copy of the backside of Holy Grail using COPYA off your System Master disk. After having copied the back side, return to the prompt for the source drive and enter BASIC with a . Enter the monitor with

CALL-151

Once in the monitor, make the following changes:

```
302:22  
35F:22
```

Return to BASIC, delete line 70 of COPYA and RUN it.

```
  
70  
RUN
```

Now copy the front side of Holy Grail. The changes made will allow COPYA to copy only tracks \$00-\$21, as track \$22 is used for the protection scheme. Once the front side is copied, leave COPYA. Load the boot program and enter the monitor.

BLOAD LOADER
CALL-151

If you List at \$7045, you should see the following code:

```
7045- 20 00 08 JSR $0800  
7048- F0 05 BEQ $704F  
704A- A9 00 LDA #500  
704C- 4C 51 70 JMP $7051  
704F- A9 01 LDA #501  
7051- 85 08 STA $08  
7053- A9 00 LDA #500  
7055- 85 09 STA $09  
7057- 60 RTS
```

At \$7045, the nibble count routine is called, and if it returns with a zero, the count was successful. In that case, a 1 is stored at \$08 and the program continues. If not, a zero is stored there and the program restarts.

What needs to be done to fool the nibble count is to remove the JSR \$0800 and replace it with code to load the accumulator with zero and store it at \$00 (this is done at the end of the nibble count if result is correct). So, while still in the monitor, type this:

```
7045:A9 00 85 00 4C 4F 70
```

which translates to this:

```
7045:A9 00 LDA #500  
7047:85 00 STA $00  
7049:4C 4F 70 JMP $704F
```

Once these changes have been made, you are ready to save the file back to your copy of Holy Grail.

BSAVE LOADER,A\$6000,L\$2B6C

You now possess a deprotected The Holy Grail, or Inca, as the case may be.



Steve and Rod Smith's softkey for...

128K Zaxxon

Datasoft, Inc.
19808 Nordoff
Chatsworth, CA 91311

Requirements:

A blank disk

COPYA

A sector editor

The methods to deprotect Zaxxon have been discussed here before, but this version of the program is slightly different in its protection. None of the previous methods work, yet they

are quite similar. We thought those of you who have this version ought to be able to make liberated back ups too!

The difference in the protection scheme comes from the fact that the code for the nibble counts is decoded right before execution, making it difficult to recognize and also hard to change in any way. We offer a way to bypass both offensive routines with a simple, straightforward softkey. First, boot DOS up and then enter the monitor with a

CALL-151

then, disable any RWTS errors by

B942:18

We now wish to copy the Zaxxon disk. To do so, run COPYA from the System Master disk.

RUN COPYA

To halt execution for some quick modifications, press ctrl-C when prompted for the source drive. Then enter the monitor and make the next few changes:

CALL-151

```
3A1:18  
302:1B  
35F:1B  
  
70  
RUN
```

These change COPYA to ignore errors and only copy tracks \$00-\$1A, which are all the tracks that this Zaxxon uses.

Now that you have made a normalized backup of Zaxxon, you are ready to finish the softkey. The modifications are summarized in the following table. You can make them with any good sector editor.

Track	Sector	Byte	From	To
\$00	\$04	\$4F	EC	:DE
\$00	\$04	\$59	DD	:AA

Trk	Sect	1st Byte	Change To
\$00	\$07	\$1E	:A9 7F 48 4C CD 07
\$00	\$07	\$71	:4C 4D 08

Just write the sectors back to your backup and you have an unprotected version of 128K Zaxxon!



Cannonball Blitz

by Denny Colt

Sierra On-Line Systems
36575 Mudge Ranch Rd
Coarsegold, CA 93614

Requirements:

Cannonball Blitz
48K and up
An initialized disk with no HELLO

Cannonball Blitz is On-Line's answer to Donkey Kong. The object of the game is to run, jump, and hammer your way through three screens to get the flag.

Since the game was a single load program that took a long time to load in, I decided to convert it to a standard DOS file that would work with a fast DOS.

Most of On-Line's programs are protected the same way. They use a standard DOS with a nibble count. The standard DOS makes it compatible with all the flavors of Apple and the nibble count makes it almost impossible to copy, even with a bit copier.

Two of the other protection schemes they use are direct disk writing and illegal file names. Direct disk writing is when the program is written directly on the disk instead of as a file. Then a loader program is written that will read the tracks back off the disk. Since there is no "file" on the disk, programs such as Demuffin plus won't work.

Just to add to the aggravation, They give the loader an illegal file name so it can't be loaded in and studied.

What has to be done to softkey the disk is to load in the loader program and intercept it after it's done all of its disk access (including the nibble count). Then all of the important memory is saved as a file.

For the impatient among you, a cookbook softkey is at the end.

On to The Softkey!

Boot a normal DOS 3.3 disk and DELETE the HELLO program (it gets in the way later). Try CATALOGing Cannonball Blitz. Instead of a list of files, the copyright notice is displayed.

What you're actually seeing are the names of files, preceded by seven backspace characters that back up over the file type and size. Trying to use a file name that doesn't start with a letter gets a syntax error, so we can't load in the loader.

To get around this, we need a little information about DOS.

A Little Info About DOS

DOS is broken up into 3 main parts: the command parser, the file manager, and of course, the RWTS. The command parser chops up whatever is typed in into a format that the file manager will understand. It puts all the numbers and names into their proper buffers so the file manager can find them. It also does all of the syntax checking. Then it jumps to the file manager. The file manager then tells RWTS which sectors to read and write.

Since all the syntax checking is done by the command parser, if DOS could be intercepted just before it jumped to the file manager, then different file names could be put into the buffers and DOS would be none the wiser. In this case, an illegal file name would be put in the primary filename buffer. From that idea, the program

Hi-Jacker was born.

Type in the program following this article and save it as "HI-JACKER".

Hi-Jacker puts a short machine language routine at \$300 by putting together a string that looks like what you would type into the monitor and storing it in the input buffer. Then the string is "typed in" by jumping into the monitor's command interpreter and letting the monitor do the dirty work. At the end of the string is the command "N" followed by a Go to \$D823, which re-enters BASIC.

The program puts a trap in the command parser that will jump to our machine language routine before the command is executed. The ML routine replaces a dummy file name with the illegal name and jumps back to continue the command. Then the BASIC program restores DOS back to normal.

The two lines that need to be changed for each application are 10 and 80. Line 80 is the actual DOS command to use with a dummy file name. Any valid DOS command will work. (Example: to rename an illegal file name, change the command to RENAME DUMMY, NEW NAME.)

In line 10, A\$ should be set to the hex equivalent (high bit set) of the ASCII code of the program name to be worked on. We need to modify DOS to find the correct name.

The easiest way to do this is

POKE 44572, 218

(I had you scared for a minute, didn't I?)

Now when Cannonball Blitz is CATALOGed, the first line should look something like this:

```
B 004 8888888888888888C3C1CECECFCEC2C1CCC  
CA0C2CCC9D4AA0A0A0A0A0A0A0A0
```

That's the real name (hex version) of Cannonball Blitz's loader program. It should

Instant

By B. Croome

Instant Recall
Howard W. Sams & Co., Inc.
4300 W. 62nd St.
Indianapolis, IN 46268

Requirements:

- A way to reset into the Monitor, or the Anti-Reboot Disk (from HC #23)
- Super IOB
- A blank disk
- Instant Recall disk

Instant Recall is probably one of the best garbage-type filing systems available. As an architect I use it extensively for recording all types of miscellaneous information that does not fit into a normal structured data base format. Although this program does not sort or calculate items for you it is perhaps one of the fastest and most easily edited linked-file data bases I have come across. It has an amazingly fast search capability, and records can be placed sequentially and ordered if desired. Because of its quick speed, however, it is easier to use a key word for each record and then ask it to find the key word. Recall will return each file with

that key word one after the other and you can dump them to a printer at will. The one problem with this program is that it doesn't come with a backup disk, and that terrifying prospect was unacceptable. The disk was copyable using EDD or Copy][Plus, but track zero was tricky and not always reliable on booting, even if copied with nibble counts. I resolved to deprotect this program so I'd have some assurance of continuous use and a series of backups.

The Instant Recall program operates slightly differently on an Apple //e than on a][Plus. Using this procedure on a][Plus, I was able to deprotect all the Applesoft files contained in Instant Recall. I couldn't however deprotect the Binary file. Therefore, you must use a //e if you wish to completely break Instant Recall.

After deprotecting this disk to a COPYable standard DOS 3.3 format you will still need to format a separate data disk to contain your data. The program itself has this feature built in.

How to Deprotect Instant Recall


I used Super IOB with a swap controller to get the files over to a normal 3.3 disk. Copying the disk is easy. Altering the files for normal DOS takes a little time. But first, let's copy the disk:

1) Initialize a blank disk with "SAMS" as the name of the hello program.

INIT SAMS

2) Boot up your original. When you reach the

menu, select the Instant Recall program. If you have a way into the Monitor, reset into it while Instant Recall is loading, and skip to step 5. 3) When Instant Recall is in, select Yes if you have a printer, No if you don't.

4) Type  Q as if you were going to exit the program. Answer Yes when it asks if you saved your file. Remove the Instant Recall disk and insert the Anti-Reboot Disk. The ARD will pretend to boot and enter the Monitor for you. 5) Here comes the tricky part. This RWTS has two modes. When it is time to load a program, a routine in normally unused space, at \$BA69, is called to enable it. After loading, it is returned to its other state, which cannot read the program disk. To make it work with Super IOB, we have to set it up for loading before capturing it. Execute the routine like this

BA69G

and the RWTS should be ready for use. 6) Move the RWTS to a safe location, boot up a DOS 3.3 slave disk with no HELLO program, and save the RWTS to disk.

1900<B800.BFFFM

 P

BSAVE

RWTS.RECALL,A\$1900,L\$800

7) Install the swap controller with this article into Super IOB. It ignores tracks 0-2 to protect the DOS.

8) Copy the Instant Recall disk. Do not use the INIT option.

9) When you have finished, you should have

ProDOS 2.0 or 9

Recall

the following files available to you on a normal DOS 3.3 disk:

- SAMS
- XPLAIN +
- XPLAIN E
- I.R.DEMO
- INSREPLUS
- INSREIIE

10) Load the program SAMS and list it. You will see that it is a short program that checks to see if you're running a JI Plus or //e, then calls the graphic page display. But wait a minute, there are some funny looking commands that won't work with the normal DOS we wish to use. Change the word "PDQ" in lines 20 and 30 to "RUN" and save it back to the disk.

UNLOCK SAMS SAVE SAMS

11) Load the other BASIC programs on the disk and change their funny commands as well. Save them back to the disk too.

LOAD XPLAIN +

- Line 190: change "SAMS" to "BRUN"
- Line 3000: change "GETIR" to "BLOAD"
- Line 3090: change "PUTIR" to "BSAVE"
- Line 4000: change "PDQ" to "RUN"

UNLOCK XPLAIN + SAVE XPLAIN +

Repeat what you did to XPLAIN + for XPLAIN E.

LOAD I.R.DEMO

- Line 2400: change "PDQ" to "RUN"
- Line 2410: change "PDQ" to "RUN"

UNLOCK I.R.DEMO SAVE I.R.DEMO

Now we're almost finished. Try running "SAMS". On my copy, the program bombed into the Monitor after I answered whether the printer was on or not. Here's how I completed the deprotection.

The file "INSREPLUS" is stored on disk at \$6500 but is loaded in at \$803 by the XPLAIN + program. The first time it is executed at \$803, it will crash after you tell it if your printer is on. BUT, if immediately executed again, it will put you right into the command mode. This means that it is self-modifying. The modified form of the program is the one we want to save to disk. To properly capture that one, load in the original file, execute it the first time, and save it so that it will be ready to run when first loaded. It's usually a good idea to keep the same addresses as found on the disk, as this one is loaded at \$6500 so the Applesoft program "XPLAIN +" OR "XPLAIN E" can reconfigure it.

- BLOAD INSREPLUS,A\$6500,L\$2522
- 803G
- Y
- BSAVE TEMP,A\$803,L\$2522
- BLOAD TEMP,A\$6500

BSAVE INSREPLUS,A\$6500,L\$2522
Then repeat for the file "INSREIIE".

- BLOAD INSREIIE,A\$803
- 803G
- Y
- BSAVE TEMP,A\$803,L\$241B
- BLOAD TEMP,A\$6500
- BSAVE INSREIIE,A\$6500,L\$241B

Now boot your new copy and it should put you into the command mode after selecting Instant Recall.

controller

```
1000 REM INSTANT RECALL CONTROLLER
1010 TK=3:LT=35:ST=15:LS=15:CD=WR:FAST=1
1020 GOSUB 360:GOSUB 490:GOSUB 610
1030 GOSUB 360:GOSUB 490:GOSUB 610:IF PEEK(TRK)=LT THEN 1050
1040 TK=PEEK(TRK):ST=PEEK(SCT):GOTO 1020
1050 HOME:PRINT "COPYDONE":END
10010 PRINT CHR$(4) "BLOAD"
RMTS.RECALL,A$1900"
```

controller checksums

1000	- \$356B	1040	- \$0D4F
1010	- \$2445	1050	- \$8E0B
1020	- \$C908	10010	- \$5A7E
1030	- \$FB9C		

ProDOS Block

by Bob Bergstrom

Requirements:
64K Apple II with ProDOS

Hardcore Computing volume 1, issues 1 and 2 contained the DiskEdit series of programs by Charles R. Haight. This program has been a very useful "zap" utility which I continue to use on DOS 3.3 disks. Recently, I purchased ProDOS, the most recent operating system from Apple and I immediately realized a need for ProEdit, a zap utility for ProDOS disks.

ProEdit tries to maintain some of the look of DiskEdit and therefore some of the routines will look familiar. Major differences appear in the disk I/O section and in the buffer display section. In addition, a number of enhanced operational features have been added.

Before going any further, an explanation of some differences between Apple DOS 3.3 and ProDOS is in order. ProDOS saves data in blocks on the disk instead of in sectors. Each block consists of two disk sectors, so ProDOS saves 512 bytes per block instead of 256 bytes per sector. Since the address and data markers remain the same, DOS 3.3 sector editors can read half of a ProDOS block, and ProEdit can read two (non-sequential) DOS 3.3 sectors. Unfortunately, the sectors are not numbered the same way, so selecting the correct ones to read can be a bit confusing. (For more on this, see "Dos to ProDOS and back", Hardcore COMPUTIST No. 25.)

ProDOS saves text in directories and TXT files with the most significant bit low. Since ProDOS expects "low ASCII" (bit 7=0) in the directory entries, what used to be inverse and flashing characters in DOS 3.3 are now interpreted as normal screen characters. This means that the use of a zap program to build flashing or inverse catalog entries has been eliminated. If you insist on inserting "high band" (bit 7=1) ASCII characters to the disk directory, the entry will look normal on the

screen but ProDOS will not recognize that file name for loading or running. A ProEdit option allows bit 7 of ASCII code to be set high for editing ProDOS blocks. This feature can be used to modify a file name into a non-RUNable directory entry, or it can be used to modify ASCII tables or other specialized text stored on diskette.

Firing Up ProEdit

Type in the Applesoft portion of the program and save it as "PROEDIT". ProEdit can be typed in under a Dos 3.3 environment if a favorite DOS 3.3-based line editor is to be used. The ProDOS conversion utility can then be used to move ProEdit to a ProDOS diskette.

Now type in the machine language portion (the hexdump) and save it with

BSAVE OBJ.PROEDIT,A\$300,L\$A5

this contains the machine language routines for reading in the block through ProDOS, and displaying the buffer data on the screen.

Before starting please note that line 1670 (activate printer) is set up for an Apple parallel printer card in slot 1. Change line 1670 to match your printer setup if necessary.

After ProEdit has been typed in, debugged and saved, it is ready for practice on an initialized ProDOS disk. Since irreversible damage can be done to a disk by writing modifications onto it, ALWAYS make a copy of the disk to be altered before starting. In this vein, carefully make a copy of the ProDOS User's Disk to practice on. Use the "copy a volume" feature of the User's Disk. This backup disk is what the following usage demonstration is based on.

Once the copy has been made, get ProEdit up and running. The "help" page should be on the screen. Press the space bar and place the **backup** copy you just made of the ProDOS User's Disk in drive one. To load the data buffer, press "R" and ProEdit will prompt you for a block number. If the present block number is correct, the RETURN key can be pressed; but for now, type a "2" and press RETURN (if you pressed the wrong key, press ESCAPE

and start over). When RETURN is pressed, the disk drive should rotate and new data should be displayed in the buffer field. If all is well, the volume directory of the ProDOS disk should be in the buffer.

Take a moment to observe the screen and notice that the buffer is displayed in a field of 20 lines with two lines of command data below. The command data lines show what mode ProEdit is in. "BLOCK" is the current ProDOS block number displayed in the buffer. Half of the word "BUFFER" is highlighted to show which half of the buffer is presently displayed on the screen. "HEX" or "ASC/MSB=" tells how the buffer is being displayed and if in ASCII (text) mode, whether the most significant bit (bit 7) of inserted data would be high or low. "PTR" tells where the pointer (cursor) is in the buffer. The upper "PTR" number is an absolute buffer location and the number beneath it is the relative pointer. "SLOT" indicates which disk interface slot will be accessed by READ and WRITE commands and "DRIVE" is the active drive number. "I/O" is either hex or decimal and tells which number system is being used in the command lines. "COMMAND" is the prompt area showing which command ProEdit is in while waiting for keyboard input.

The buffer display can be changed from ASCII (text) to hex and back again by pressing the "A" key. If the ASC mode is active, pressing "C" will toggle display of buffer control characters between inverse text and periods. If "?" is pressed, a help screen of ProEdit's key assignments will be displayed.

Press the I,J,K, and M keys to move around within the buffer. Note that only one half of the buffer can be displayed at a time. To see the other half, press "B". Press "B" again to see the first half of the buffer and press "P". Type in "79" and press RETURN. The cursor has moved to byte \$79 (" \$" means the number is a hex number) of the field. Press "Z" and the lower PTR (pointer) number, the relative byte number, is set to zero. Now to move the cursor over 16 (\$10) bytes, a mental count of 16 keystrokes is not required...just watch the relative pointer number and stop pressing when

Editor

it reads \$10! To change the number system displayed on the command lines, press "U" and the "10" (hex) will be converted to 16 (decimal). Press "I" once, "J" twice and "A" to toggle the buffer into text mode. The relative counter should read "1" and the cursor should be pointing to the first letter of the file name "FILER".

The relative count feature just used is invaluable when modifying a file entry in the ProDOS directory. Each file or subdirectory entry is divided into 13 fields for name, file length, file type, etc. The offset position for each field from the start of each directory entry is standardized. (For more information concerning directory fields, see *Beneath Apple ProDOS* by Don Worth and Peter Lechner.) Once the start of the directory entry is found, press "Z" to zero the relative counter and the cursor can be easily indexed to the field of interest by watching the relative counter.

Press the "E" key and type in a couple letters to modify the "FILER" file name. Press the escape key to exit the edit mode. When the center of the top line in the command area reads "ASC/MSB=", text is edited into the buffer. If that area reads "HEX" then the edited data is hex numbers (\$00 to \$FF) for each buffer position. If a large error is made during the edit mode, the original data can be restored by re-reading the disk IF the modified buffer has not been saved to disk. Remember, as long as the buffer is NOT written to disk, the original data is safe. Once the buffer is written back to disk, the original information is gone forever unless a backup disk has been made.

Learning More

Since a backup diskette is in the disk drive, go ahead and become familiar with the ProEdit commands. To learn more about the potential power of ProEdit, a "must" reference in addition to the ProDOS manuals is *Beneath Apple ProDOS* by Don Worth and Pieter Lechner. It explains everything about ProDOS starting with an introduction to what ProDOS is and going all the way to very technical aspects of the system.

With this new ProDOS tool in your hands, the power to alter and/or repair disk files and directories is within reach. Use it wisely and use it well.

Summary of ProEdit Commands

- A - switches buffer display between ASCII and hexadecimal
- B - toggles between first and second half of the buffer
- C - switches display of control characters from " " to inverse chars
- D - switch active drive from 1 to 2
- E - edit mode
- H - select high or low ASCII text entry
- I, J, K, M - cursor up, left, right, down
- L - disassemble buffer: Space bar freezes display, Return exits
- O - dumps screen to printer
- P - position cursor to byte number
- R - read block from disk
- S - select active disk slot
- U - switch command line display from hex to decimal numbers
- W - write block to disk
- X - exit to Applesoft
- Z - zeros relative byte marker
-  - read next buffer
-  - read last buffer

ProEdit BASIC Program

```
10 REM *****
20 REM * PROEDIT *
30 REM * PRODOS BLOCK *
40 REM * EDITOR *
50 REM * BY BOB BERGSTROM *
60 REM * (C) 1985 *
70 REM * SOFTKEY PUBLISHING*
80 REM *****
90 REM
100 TEXT : HOME : HIMEM : 36863 : GOSUB 1940 :
    GOSUB 550 : GOTO 1080
110 REM WAIT FOR KEY
120 KY = PEEK (KB) : IF KY < C7 THEN 120
130 POKE KS, 0 : RETURN
```

```
140 REM MOVE CURSOR IN FIELD
150 GOSUB 270 : PRINT "A" : KY = KY - 8 : ON KY GOTO
    160, 180, 200, 1080, 230
160 VT = VT - 1 : IF VT < 0 THEN VT = 19 : GOTO 240
170 GOTO 250
180 HT = HT - 1 : IF HT < 0 THEN HT = 13 : GOTO 160
190 GOTO 250
200 HT = HT + 1 : IF HT > 13 THEN HT = 1 : GOTO 230
210 IF VT = 19 AND HT > 9 THEN HT = 1 : GOTO 230
220 GOTO 250
230 VT = VT + 1 : IF VT > 19 THEN VT = 0
240 IF VT = 19 AND HT > 9 THEN HT = 9
250 GOSUB 270 : INVERSE : PRINT ">" : NORMAL : PT
    = VT * 13 + HT - 1 + BF * C2 : RETURN
260 REM CALC CURSOR POSITION
270 IF HT < 1 THEN HT = 13 : VT = VT - 1 : IF VT < 0
    THEN VT = 19 : HT = 9
280 HTAB (HT - 1) * 3 + 1 : VTAB VT + 2 : RETURN
290 REM PRINT CURSOR IN BUFFER FIELD
300 KY = ABS (KY) : GOSUB 270 : PRINT "A" : ; VT
    = INT (KY / 13) : HT = KY - (VT * 13) + 1 :
    GOSUB 550 : GOTO 250
310 REM PRINT "-----"
320 FOR I = 1 TO 40 : PRINT "-" : ; NEXT : RETURN
330 REM PROCESS EDIT DATA
340 NORMAL : GOSUB 270 : PRINT ">" CHR$ (8) CHR$
    (8) : ; IF HF = 1 THEN 370 : REM HEX DATA??
350 GOSUB 460 : IF NOT HB THEN KY = KY - C7 : REM
    GET ASCII CHAR, SET BIT 7?
360 GOTO 500
370 GOSUB 830 : IF KY > 15 THEN PRINT CHR$ (7) :
    : GOTO 370 : REM 1ST HEX DIGIT
380 A1 = KY : GOSUB 420
390 GOSUB 830 : IF KY > 15 THEN PRINT CHR$ (7) :
    : GOTO 390 : REM 2ND HEX DIGIT
400 A2 = KY : GOSUB 420 : GOSUB 900 : GOTO 500 :
    REM CONVERT DIGITS TO TOTAL
410 REM PRINT DEC/HEX DIGIT FROM LOOKUP TABLE
420 PRINT MID$ (HEX, KY + 1, 1) : ; RETURN
430 REM CALC A1 MOD A2
440 NU = INT (ABS (A1) - INT (ABS (A1 / A2)) *
    ABS (A2) + .05) * SGN (A1 / A2) : RETURN
450 REM INPUT ASCII CHAR
460 GOSUB 120 : IF KY < > 155 THEN RETURN
470 BL = PEEK (BK + 1) * C2 + PEEK (BK) : GOSUB
    1920 : GOSUB 550 : GOSUB 600 : GOSUB 530 :
    POKE CM, RD : ONERR GOTO 1080
480 POP : GOTO 480
490 REM POKE VALUE INTO BUFFER, PRINT TO FIELD
500 POKE BS + PT, KY : GOSUB 270 : PRINT "A" : ;
    POKE TM, KY : CALL DP : GOTO 200
```

```

510 REM ACCESS DISK , PRINT BUFFER FIELD
520 CALL PD
530 CALL PB : GOTO 250
540 REM PRINT STATUS LINE LABELS
550 VTAB 23 : HTAB 1 : CALL -958 : INVERSE : PRINT
"BLOCK" : : IF NOT BF THEN HTAB 12 : NORMAL
: PRINT ">" : : INVERSE : PRINT "BUF" : :
NORMAL : PRINT "FER" : : INVERSE
560 IF BF THEN HTAB 13 : NORMAL : PRINT "BUF" :
: INVERSE : PRINT "FER" : : NORMAL : PRINT
"<" : : INVERSE
570 HTAB 33 : PRINT "PTR" : PRINT "SLOT" : : HTAB
9 : PRINT "DRIVE" : : HTAB 18 : PRINT "I/O" :
580 VTAB 24 : HTAB 27 : FLASH : PRINT "COMMAND"
: : NORMAL : PRINT "" : : RETURN
590 REM PRINT STATUS LINE VALUES
600 VTAB 23 : HTAB 7 : IF CF THEN PRINT BL "" ""
: : HTAB 37 : PRINT PT "" "" : : VTAB 24 : HTAB
36 : IF PT - OF > -1 THEN PRINT "" "" "" :
CHRS ( 8 ) : CHRS ( 8 ) : CHRS ( 8 ) : PT - OF :
GOTO 700
610 IF CF THEN PRINT "" "" "" : CHRS ( 8 ) : CHRS
( 8 ) : CHRS ( 8 ) : CHRS ( 8 ) : PT - OF : GOTO 700
620 IF BL > C6 THEN PRINT "1" : : POKE TM , BL - C2
: CALL HP : GOTO 640
630 PRINT "0" : : POKE TM , BL : CALL HP
640 HTAB 37 : IF PT > C6 THEN PRINT "1" : : POKE
TM , PT - C2 : CALL HP : GOTO 660
650 PRINT "0" : : POKE TM , PT : CALL HP
660 VTAB 24 : HTAB 36 : PRINT "" "" "" : CHRS ( 8
) : CHRS ( 8 ) : CHRS ( 8 ) : CHRS ( 8 ) : : IF PT
- OF > -1 THEN PRINT "" : : GOTO 680
670 PRINT "" :
680 IF ABS ( PT - OF ) > C6 THEN PRINT "1" : : POKE
TM , ABS ( PT - OF ) - C2 : CALL HP : GOTO 700
690 PRINT "0" : : POKE TM , ABS ( PT - OF ) : CALL HP
700 VTAB 23 : HTAB 21 : PRINT "" : : INVERSE : IF
HF = 1 THEN PRINT "HEX" : : NORMAL : PRINT
"" "" "" :
710 IF HF = 2 AND NOT HB THEN PRINT "ASC/MSB=" :
: NORMAL : PRINT "0" :
720 IF HF = 2 AND HB THEN PRINT "ASC/MSB=" : :
NORMAL : PRINT "1" :
730 VTAB 24 : HTAB 6 : PRINT SL : : HTAB 15 : PRINT
DR : : HTAB 22 : IF NOT CF THEN PRINT "HEX"
: : RETURN
740 PRINT "DEC" : : RETURN
750 REM RING BELL
760 PRINT CHRS ( 7 ) : CHRS ( 7 ) : : RETURN
770 REM DECODE ERROR , PRINT TO FIELD
780 ER = PEEK ( EF ) : POKE 34 , 1 : POKE 35 , 21 : HOME
: VTAB 12 : HTAB 12 : IF ER = 39 THEN PRINT
"DISK I/O" ERROR"
790 IF ER = 40 THEN PRINT "NO" DEVICE "CONNECTED"
800 IF ER = 43 THEN PRINT "DISK" WRITE "
PROTECTED"
810 FOR I = 1 TO 2500 : NEXT : POKE 772 , 0 : POKE
35 , 24 : GOTO 530
820 REM KEYPRESS DECODE FOR NUMERICS
830 GOSUB 460 : IF KY = 141 THEN RETURN
840 KY = KY - 176 : IF KY < 0 OR KY > 22 THEN GOSUB
760 : GOTO 830
850 IF KY > 9 THEN KY = KY - 7 : IF KY < 10 OR KY >
15 THEN GOSUB 760 : GOTO 830
860 IF ED THEN RETURN : REM EDIT MODE? THEN MUST
BE HEX
870 IF CF AND KY > 9 THEN GOSUB 760 : GOTO 830 :
REM COMMAND LINE DEC NUMBER TOO BIG?
880 RETURN
890 REM ASSEMBLE NUMBER
900 IF ED OR NOT CF THEN KY = A1 * C3 + A2 :
RETURN : REM 'EDIT' OR COMMAND LINE HEX ( 2
DIGITS )

```

```

910 IF NOT ED AND CF THEN KY = A1 * C9 + A2 :
RETURN : REM NOT 'EDIT' , GET DEC NUMBER ( 2
DIGITS )
920 IF ED OR NOT CF THEN KY = A1 * C2 + A2 * C3
+ A3 : RETURN : REM 'EDIT' OR COMMAND LINE
HEX ( 3 DIGITS )
930 KY = A1 * C8 + A2 * C9 + A3 : RETURN : REM
COMMAND LINE DEC ( 3 DIGITS )
940 REM ENCODE STRING INPUT TO HEX VALUE
950 ABS = "000" + ABS : ABS = RIGHT$ ( ABS , 4 ) : J
= 1 : FOR I = 1 TO 4 : PR ( I ) = 0 : NEXT I : FOR
I = 1 TO LEN ( ABS ) : PR ( I ) = ASC ( MID$ ( ABS

```

```

, J , I ) - 48 : IF PR ( I ) > 9 THEN PR ( I ) = PR ( I
) - 7
960 J = J + 1 : NEXT I : PR = C1 * PR ( 1 ) + C2 *
PR ( 2 ) + C3 * PR ( 3 ) + PR ( 4 ) : RETURN
970 REM PRODOS BLOCK NUMBER
980 VTAB 23 : HTAB 1 : FLASH : PRINT "BLOCK" : :
NORMAL : PRINT "" : : GOSUB 830 : IF KY >
15 THEN KY = PEEK ( BK ) + PEEK ( BK + 1 ) * C2
: GOTO 1020
990 A1 = KY : GOSUB 420 : GOSUB 830 : IF KY > 15 THEN
KY = A1 : GOTO 1020
1000 A2 = KY : GOSUB 420 : GOSUB 830 : IF KY > 15

```

ProEdit Source Code

```

*-----*
*                MACHINE LANGUAGE                *
*                SUBROUTINES FOR                 *
*                PROEDIT                        *
*                BY BOB BERGSTROM               *
*-----*

*
*
0022- WNDTOP   .EQ $22   ;WINDOW TOP
0024- CH      .EQ $24   ;CURSOR HOR POSITION
0025- CV      .EQ $25   ;CURSOR VERT POSITION
BF00- MLI     .EQ $BF00 ;PRODOS SYSTEM CALL ADDRESS
FC22- VTAB    .EQ $FC22 ;VTAB TO CV
FC9C- CLREOL .EQ $FC9C ;CLEAR TO END OF LINE
FDDA- PRBYTE .EQ $FDDA ;PRINT A HEX BYTE
FDED- COUT   .EQ $FDED ;PRINT ASCII TEXT
FF3A- BELL   .EQ $FF3A ;RING BELL
*
*
;OR $0300
;TF OBJ.PROEDIT
*
*
0300: 01      PRNTMOD .HS 01   ;DATA PRINT MODE (01=HEX 02=ASCII)
0301: 00      LNLFT  .HS 00   ;SPACE LEFT ON CUR LINE (0D00)
0302: 00      BUFCNT .HS 00   ;BUFFER COUNT, DATA PRINT (00FF)
0303: 00      TEMP1  .HS 00   ;DEC DATA POKED HERE FOR HEX CONV.
0304: 00      EFLAG  .HS 00   ;MLI ERROR FLAG (00=NO ERROR)
0305: 00      CFLAG  .HS 00   ;CTRL CHAR PRINT FLG (00='.' 01=CTRL)
*
*                CALL HERE FOR DISK I/O                *
*
0306: 20 0C 03 ENTRY   JSR SYSCALL ;CALL THE SYSTEM CALL ROUTINE
0309: D0 08           BNE ERROR   ;IF A-REG = 0 THEN ERROR
030B: 60             RTS         ;CALL COMPLETE, NO PROBLEMS
*
*
030C: 20 00 BF SYSCALL JSR MLI    ;ENTER PRODOS MACH LANG INTERFACE
030F: 80             .HS 80     ;COMMAND POKED HERE (80=RD 81=WR)
0310: 1A 03         .DA PARMLST ;ADDRESS OF PARM LIST
0312: 60             RTS         ;PRODOS RETURNS TO HERE
*
*
0313: 8D 04 03 ERROR   STA EFLAG ;STORE ERROR CODE
0316: 20 3A FF       JSR BELL    ;RING BELL
0319: 60             RTS
*
*
031A: 03           PARMLST .HS 03 ;PARAMETER COUNT
031B: 60           UNITNUM .HS 60 ;SLOT/DRIVE PARM HERE BEFORE CALL
031C: 00 90       DATABUF .HS 0090;BUFFER ADDRESS LO,HI
031E: 00 00       BLOKNUM .HS 0000;BLOCK NUMBER TO READ POKED HERE
*
*                CALL HERE PRINTS BASELINE DATA AS HEX                *
*
0320: AD 03 03      LDA TEMP1
0323: 4C 30 03      JMP HEXPRINT

```



```

THEN GOSUB 900 : GOTO 1020
1010 A3 = KY : GOSUB 420 : GOSUB 920
1020 IF KY < 0 OR KY > 279 THEN PRINT CHR$ ( 7 ) :
: GOTO 980
1030 BL = KY : GOSUB 600
1040 VTAB 23 : HTAB 1 : INVERSE : PRINT "BLOCK"
: : NORMAL
1050 IF PEEK ( CM ) = 129 THEN VTAB 24 : HTAB 27 :
FLASH : PRINT "??WRITE??" CHR$ ( 7 ) CHR$ ( 7 )
) CHR$ ( 7 ) : : NORMAL : GOSUB 460 : IF KY <
> 141 THEN 470
1060 POKE BK + 1 , INT ( BL / C2 ) : POKE BK , INT

```

```

(BL - ( INT ( BL / C2 ) * C2 ) ) : GOTO 520
1070 REM TOP OF MAIN 'COMMAND' LOOP
1080 POKE 216 , 0 : ED = 0 : GOSUB 580 : GOSUB 600
: IF PEEK ( 772 ) > 0 THEN GOSUB 780
1090 REM GET COMMAND
1100 GOSUB 270 : GOSUB 120 : IF KY = 140 THEN GOSUB
1330 : GOTO 1080
1110 IF KY = 142 THEN GOSUB 1360 : GOTO 1080
1120 KY = KY - 192 : IF KY = - 1 THEN 1310
1130 IF KY > 0 AND KY < 27 THEN ON KY GOSUB 1160
, 1550 , 1200 , 1230 , 1260 , 760 , 760 , 1570
, 150 , 150 , 150 , 1710 , 150 , 760 , 1630 , 1390

```

```

, 760 , 1470 , 1490 , 760 , 1290 , 760 , 1530
, 1610 , 760 , 1590
1140 GOTO 1080
1150 REM TOGGLE ASCII/HEX FIELD DISPLAY
1160 HX = NOT HX : IF HX THEN 1180
1170 HF = 2 : POKE FM , HF : GOTO 530
1180 HF = 1 : POKE FM , HF : GOTO 530
1190 REM TOGGLE CTL-CHAR PRINT
1200 IF HF = 2 THEN CC = NOT CC : POKE CT , CC : GOTO
530
1210 RETURN
1220 REM TOGGLE ACTIVE DRIVE
1230 DR = ( NOT ( DR - 1 ) ) + 1
1240 POKE UT , ( DR - 1 ) * C7 + SL * C3 : GOTO 550
1250 REM EDIT
1260 VTAB 24 : HTAB 27 : FLASH : PRINT CHR$ ( 7 )
">>EDIT<<" : : ED = 1
1270 GOSUB 340 : GOSUB 600 : GOTO 1270
1280 REM TOGGLE COM'D LINE HEX/DEC
1290 CF = NOT CF : RETURN
1300 REM HELP SCREEN
1310 GOSUB 1860 : GOSUB 550 : GOSUB 530 : GOTO
1080
1320 REM LAST BLOCK
1330 BL = BL - 1 : IF BL >= 0 THEN 1060
1340 BL = 279 : GOTO 1060
1350 REM NEXT BLOCK
1360 BL = BL + 1 : IF BL <= 279 THEN 1060
1370 BL = 0 : GOTO 1060
1380 REM SET POINTER IN BUFFER
1390 VTAB 24 : HTAB 27 : INVERSE : PRINT
"SET-PTR" : : VTAB 23 : HTAB 33 : FLASH :
PRINT "PTR" CHR$ ( 7 ) : : NORMAL : PRINT "^^
^^" CHR$ ( 8 ) CHR$ ( 8 ) CHR$ ( 8 ) : : GOSUB
830 : IF KY > 15 THEN GOSUB 550 : GOTO 250
1400 A1 = KY : GOSUB 420 : GOSUB 830 : IF KY > 15
THEN KY = A1 : GOTO 300
1410 A2 = KY : GOSUB 420 : GOSUB 830 : IF KY > 15
THEN GOSUB 900 : GOTO 300
1420 A3 = KY : GOSUB 420 : GOSUB 920 : IF NOT BF
THEN IF KY > C6 THEN GOSUB 760 : GOTO 1390
1430 IF BF THEN IF KY < C2 OR KY > C5 THEN GOSUB
760 : GOTO 1390
1440 IF KY > C6 THEN KY = KY - C2
1450 GOTO 300
1460 REM READ A BLOCK FROM DISK
1470 VTAB 24 : HTAB 27 : INVERSE : PRINT ">READ<"
: : NORMAL : PRINT CHR$ ( 7 ) "^^" : : GOSUB
980 : GOTO 550
1480 REM SET ACTIVE SLOT
1490 VTAB 24 : HTAB 27 : INVERSE : PRINT "SET^
SLOT" : : HTAB 1 : FLASH : PRINT "SLOT" CHR$
( 7 ) : : NORMAL : HTAB 6 : PRINT "^^" : : GOSUB
830 : IF KY > 15 THEN GOTO 550
1500 IF KY < 1 OR KY > 7 THEN 1490
1510 SL = KY : POKE UT , ( DR - 1 ) * C7 + SL * C3
: GOTO 550
1520 REM WRITE BLOCK TO DISK
1530 POKE CM , WR : VTAB 24 : HTAB 27 : INVERSE :
PRINT ">WRITE<" CHR$ ( 7 ) : : NORMAL : GOSUB
980 : POKE CM , RD : GOTO 550
1540 REM TOGGLE DISPLAYED BUFFER HALF
1550 BF = NOT BF : PT = VT * 13 + HT - 1 + BF *
C2 : POKE BU , 144 + BF : GOSUB 530 : GOTO 550
1560 REM TOGGLE ASCII HI-BIT (EDIT MODE)
1570 HB = NOT HB : RETURN
1580 REM ZERO POINTER OFFSET
1590 OF = PT : RETURN
1600 REM EXIT TO BASIC
1610 TEXT : HOME : END
1620 REM OUTPUT TO PRINTER
1630 VTAB 23 : HTAB 1 : PRINT "^^ ^ VERIFY^
PRINTER^ ON^ &^ PRESS^ <RETURN>^^" :
1640 GOSUB 120

```

```

*
* CALL HERE PRINTS FIELD DATA AS TYPED IN *
*
0326: AD 03 03 LDA TEMP1 ;LOAD ACCUM FOR PRINTOUT
0329: AE 00 03 LDX PRNTMOD ;GET PRINT MODE CODE
032C: E0 02 CPX #502 ;ASCII PRINT REQUESTED?
032E: F0 04 BEQ ASCPRNT ;YES, PRINT FIELD AS TEXT
0330: 20 DA FD HEXPRNT JSR PRBYTE ;NO, PRINT FIELD AS HEX
0333: 60 RTS
0334: 09 80 ASCPRNT ORA #500 ;SET MSB=1 FOR COUT
0336: 20 ED FD JSR COUT ;PRINT TEXT
0339: 60 RTS
*
* CALL HERE PRINTS 1/2 BLOCK OF HEX/ASCII *
* WHICH HALF OF BUFFER CONTROLLED BY POKE *
*
033A: A9 01 LDA #501 ;SET CURSOR VERTICALLY
033C: 85 25 STA CV ;AT TOP OF FIELD WINDOW
033E: 20 22 FC JSR VTAB
0341: A9 00 LDA #500 ;SET CURSOR HORIZONTALLY
0343: 85 24 STA CH ;TO LEFT EDGE OF FIELD
0345: 80 02 03 STA BUFCNT ;INIT PTR TO BUF START
0348: A9 00 NEWLN LDA #500 ;SET COUNT FOR 13 PRINT
034A: 80 01 03 STA LNLFT ;POSITIONS PER LINE.
034D: A9 A0 LDA #5A0 ;PRINT A SPACE
034F: 20 ED FD JSR COUT
0352: AE 02 03 SAMELNL LDX BUFCNT ;GET OFFSET INTO BUFFER, CHAR
0355: BD 00 90 LDA #9000,X ;90=BUF 91=FER (POKE BEFORE CALL)
0358: AE 00 03 LDX PRNTMOD ;GET PRINT MODE (1=HEX 2=ASC)
035B: E0 02 CPX #502 ;PRINT ASCII TEXT?
035D: F0 00 BEQ TXTPRNT ;YES, GO DO IT.
035F: 20 DA FD JSR PRBYTE ;NO, PRINT HEX.
0362: A9 A0 LDA #5A0 ;PRINT A SPACE
0364: 20 ED FD JSR COUT
0367: 4C 8B 03 JMP COUNT
036A: 09 80 TXTPRNT ORA #500 ;SET MSB=1 FOR COUT
036C: C9 A0 CMP #5A0 ;VALUE >=5A0? (NORM OR LC)
036E: 10 0E BPL PROUT ;YES, GO PRINT
0370: AE 05 03 LDX CFLAG ;GET CTRL PRINT MODE
0373: E0 00 CPX #500 ;PRINT A ' '?
0375: F0 05 BEQ DOT ;YES
0377: E9 80 SBC #500 ;NO, SET FOR INVERSE CHAR
0379: 4C 7E 03 JMP PROUT
037C: A9 AE DOT LDA #5AE ;NO, CTRL-CHAR PRINT " ."
037E: 20 ED FD PROUT JSR COUT ;GO PRINT
0381: A9 A0 LDA #5A0 ;PRINT TWO SPACES
0383: 20 ED FD JSR COUT
0386: A9 A0 LDA #5A0
0388: 20 ED FD JSR COUT
038B: EE 02 03 COUNT INC BUFCNT ;MOVE POINTER 1 FURTHER
038E: F0 08 BEQ BUFEND ;IF ROLLED TO ZERO, BRANCH
0390: CE 01 03 DEC LNLFT ;DECREASE LINE SPACE REMAINING
0393: D0 8D BNE SAMELNL ;IF SPACE LEFT, BRANCH
0395: 4C 48 03 JMP NEWLN ;NEED NEW LINE
0398: 20 9C FC BUFEND JSR CLREOL ;PRINT SPACES ON REST OF LINE
039B: E6 25 INC CV ;MOVE CURSOR TO NEXT LINE
039D: 20 22 FC JSR VTAB
03A0: A9 16 LDA #516 ;SET TOP LINE OF SCROLL-
03A2: 85 22 STA WNDTOP ;WINDOW TO LINE 22
03A4: 60 RTS ;RETURN TO BASIC PROG

```

```

1650 VTAB 1 : GOSUB 1840 : GOSUB 600 : GOSUB 250
      : VTAB 1 : PRINT : IF KY <> 141 THEN RETURN
1660 REM SET UP FOR PARALLEL PRINTER CARD
1670 PRINT DS ; "PR#1" : PRINT IS ; "80N"
1680 FOR V = 1 TO 24 : VTAB V : X = PEEK (40) + PEEK
      (41) * 256 : FOR H = X TO X + 39 : AS = PEEK
      (H) : PRINT CHR$ ((AS < 32) * (AS + 64)
      ) + ((AS > 31) * AS) : NEXT : PRINT :
      NEXT
1690 FOR I = 1 TO 5 : PRINT : NEXT : PRINT DS "PR#0"
      : RETURN
1700 REM DISASSEMBLE BUFFER
1710 TEXT : HOME : INPUT "STARTING^ BYTE^ ($0^
      TO^ $1FE^ HEX)^ : ^ " : ABS : IF LEN (ABS) = 0
      THEN PR = 0 : GOTO 1740
1720 GOSUB 950 : IF PR < 0 OR PR > 510 THEN 1710
1730 REM PRINT LOOP STARTS HERE
1740 A1 = BS + PR : A2 = C2 : GOSUB 440 : POKE PC , NU
      : POKE PC + 1 , INT ((BS + PR) / C2) : CALL IO
1750 A1 = PEEK (BS + PR) : A2 = 32 : GOSUB 440 : IF
      NU <> C3 THEN 1790
1760 HTAB 27 : PRINT " " : NU = PEEK (BS + PR +
      1) : IF NU < C7 THEN 1780
1770 PRINT NU - 254 ; "]" : GOTO 1790
1780 PRINT "+" : NU + 2 ; "]" :
1790 PR = PEEK (LE) + PR + 1 : IF PR > C5 THEN PRINT
      : PRINT DS ; "PR#0" : PRINT : INPUT "^^^
      ^ PLEASE^ PRESS^ <RETURN>^ " : ABS : GOSUB
      1920 : GOSUB 550 : CALL PB : GOTO 250
1800 IF PEEK (KB) < C7 THEN 1740
1810 REM PRINT LOOP END - IF YOU'RE HERE
      : KEY WAS PRESSED
1820 KY = PEEK (KB) : POKE KS , 0 : IF KY <> 160
      AND KY < > 141 THEN 1740 : REM
      : SPACE OR RETURN?
1830 GOSUB 120 : IF KY <> 141 THEN 1740
1840 GOSUB 1920 : GOSUB 550 : CALL PB : GOTO 250
1850 REM PRINT HELP TABLE
1860 PRINT : TEXT : HOME : HTAB 8 : PRINT
      "COMMAND^ TABLE^ " : PRINT : HTAB 4 : PRINT
      "A^ -^ TOGGLE^ ASCII/HEX^ DISPLAY^ " : HTAB
      4 : PRINT "B^ -^ TOGGLE^ ACTIVE^ BUFFER^
      HALF^ "
1870 HTAB 4 : PRINT "C^ -^ TOGGLE^ CONTROL-CHAR^
      PRINT^ " : HTAB 4 : PRINT "D^ -^ SET^ DRIVE^ "
      : HTAB 4 : PRINT "E^ -^ EDIT^ (ESC^ TO^ END)^ "
1880 HTAB 4 : PRINT "H^ -^ TOGGLE^ ASCII^ EDIT^
      HI-BIT^ " : HTAB 4 : PRINT "I , J , K , M^ -^ MOVE^
      CURSOR^ IN^ FIELD^ " : HTAB 4 : PRINT "L^ -^
      DISASSEMBLE^ BUFFER^ " : HTAB 4 : PRINT "O^ -^
      OUTPUT^ SCREEN^ TO^ PRINTER^ "
1890 HTAB 4 : PRINT "P^ -^ POSITION^ CURSOR^ IN^
      FIELD^ " : HTAB 4 : PRINT "R^ -^ SET^ BLOCK^
      THEN^ READ^ " : HTAB 4 : PRINT "S^ -^
      (RETURN^ USES^ DISPLAYED^ VALUES)^ " :
      HTAB 4 : PRINT "S^ -^ SET^ SLOT^ " : HTAB 4 :
      PRINT "U^ -^ UPDATE^ COMMAND^ LINE^ TO^
      DEC/HEX^ "
1900 HTAB 4 : PRINT "W^ -^ WRITE^ BLOCK^ TO^
      DISK^ " : HTAB 4 : PRINT "X^ -^ EXIT^ TO^
      APPLESOFT^ " : HTAB 4 : PRINT "Z^ -^ ZERO^
      RELATIVE^ BYTE^ COUNTER^ " : PRINT "CTRL^
      L/N^ -^ LAST/^ NEXT^ SECTOR^ "
1910 VTAB 24 : HTAB 8 : PRINT "PRESS^ ANY^ KEY^
      TO^ CONTINUE^ " : GOSUB 460
1920 POKE 34 , 0 : HOME : GOSUB 320 : VTAB 22 :
      GOSUB 320 : RETURN
1930 REM POKE ML I/O , INIT VARIABLES
      , SET CONSTANTS
1940 IF PEEK (774) <> 32 THEN PRINT CHR$ (4)
      "BLOAD^ OBJ .PROEDIT , A$300"
1950 FW = 768 : TW = 771 : EF = 772 : CT = 773 : PD =
      774 : CM = 783 : UT = 795 : BK = 798 : HP = 800

```

```

      : DP = 806 : PB = 826 : BU = 855
1960 ID = 63696 : LE = 47 : PC = 58 : RD = 128 : WR =
      129 : BS = 36864 : KB = -16384 : KS = -16368
1970 C1 = 4096 : C2 = 256 : C3 = 16 : C5 = 511 : C6 =
      255 : C7 = 128 : C8 = 100 : C9 = 10 : DS = CHR$
      (4) : IS = CHR$ (9)
1980 SL = 6 : DR = 1 : HB = 0 : HX = 1 : HF = 1 : HT = 1
      : VT = 0 : BL = 0 : BF = 0 : CC = 0 : CF = 0 : HE$ =
      "0123456789ABCDEF" : GOSUB 1860 : GOTO 530

```

```

290 - $BBE9 1280 - $DE22
300 - $F3D2 1290 - $D43B
310 - $6A34 1300 - $9D0C
320 - $6A28 1310 - $25B3
330 - $40FB 1320 - $4D4F
340 - $37BD 1330 - $54E3
350 - $A1F3 1340 - $9D49
360 - $D278 1350 - $2708
370 - $349A 1360 - $7673
380 - $CCD2 1370 - $1E33
390 - $DD02 1380 - $2526
400 - $1E6D 1390 - $EE55
410 - $F11D 1400 - $5B2A
420 - $E654 1410 - $BC68
430 - $3C05 1420 - $0F11
440 - $49B1 1430 - $97F1
450 - $8532 1440 - $BC88
460 - $02EA 1450 - $A402
470 - $4EF4 1460 - $40DE
480 - $3265 1470 - $255A
490 - $7949 1480 - $802D
500 - $AAFB 1490 - $A73C
510 - $0FAF 1500 - $FCE8
520 - $7CCB 1510 - $CD88
530 - $B92E 1520 - $BAAD
540 - $99EC 1530 - $8BEF
550 - $B6FC 1540 - $A6AC
560 - $383C 1550 - $6506
570 - $3B34 1560 - $EB1E
580 - $C248 1570 - $2620
590 - $F73A 1580 - $9D6F
600 - $68E2 1590 - $329D
610 - $5208 1600 - $C4BF
620 - $5C79 1610 - $ECA2
630 - $E928 1620 - $4745
640 - $FA85 1630 - $195B
650 - $E8AA 1640 - $3DD2
660 - $3E57 1650 - $0F57
670 - $B2CF 1660 - $3E84
680 - $F291 1670 - $F344
690 - $69C6 1680 - $52CC
700 - $3A58 1690 - $A092
710 - $C1C2 1700 - $F7C1
720 - $579E 1710 - $63BB
730 - $D77A 1720 - $9F74
740 - $F395 1730 - $E931
750 - $5665 1740 - $E7DD
760 - $EE9D 1750 - $8AFE
770 - $24B3 1760 - $157A
780 - $F163 1770 - $EFA6
790 - $DCFC 1780 - $8E0D
800 - $5FBC 1790 - $2500
810 - $4B26 1800 - $38DF
820 - $83B3 1810 - $9495
830 - $A7C7 1820 - $3B7A
840 - $3E67 1830 - $71DE
850 - $5895 1840 - $F5B9
860 - $D901 1850 - $A2E4
870 - $0A02 1860 - $A1C6
880 - $2CA5 1870 - $ECFB
890 - $0CC5 1880 - $DC1D
900 - $D3DD 1890 - $AD61
910 - $A023 1900 - $0489
920 - $71F0 1910 - $9288
930 - $4712 1920 - $915B
940 - $67AB 1930 - $28EC
950 - $57CA 1940 - $ACD0
960 - $67C1 1950 - $15DB
970 - $6052 1960 - $E888
980 - $67D5 1970 - $933D
990 - $B616 1980 - $9F86

```

Hexdump for ProEdit

```

0300: 01 00 00 00 00 00 20 0C $5C84
0308: 03 D0 08 60 20 00 BF 80 $98FA
0310: 1A 03 60 8D 04 03 20 3A $7055
0318: FF 60 03 60 00 90 00 00 $6C0B
0320: AD 03 03 4C 30 03 AD 03 $CEDB
0328: 03 AE 00 03 E0 02 F0 04 $6CF7
0330: 20 DA FD 60 09 80 20 ED $0150
0338: FD 60 A9 01 85 25 20 22 $69F8
0340: FC A9 00 85 24 8D 02 03 $6E63
0348: A9 0D 8D 01 03 A9 A0 20 $52EC

0350: ED FD AE 02 03 B0 00 90 $087B
0358: AE 00 03 E0 02 F0 0B 20 $9A87
0360: DA FD A9 A0 20 ED FD 4C $2D51
0368: 8B 03 09 80 C9 A0 10 0E $C5DC
0370: AE 05 03 E0 00 F0 05 E9 $D1F2
0378: 80 4C 7E 03 A9 AE 20 ED $B06F
0380: FD A9 A0 20 ED FD A9 A0 $1A00
0388: 20 ED FD EE 02 03 F0 08 $C1BD
0390: CE 01 03 D0 BD 4C 48 03 $7D72
0398: 20 9C FC E6 25 20 22 FC $3E56

03A0: A9 16 85 22 60 $5858

```

ProEdit BASIC Checksums

```

10 - $BADD 1000 - $3368
20 - $9B13 1010 - $5AD3
30 - $403B 1020 - $2C7A
40 - $AD92 1030 - $AF38
50 - $C899 1040 - $230A
60 - $FF65 1050 - $705F
70 - $A3BF 1060 - $544E
80 - $A900 1070 - $D60E
90 - $924D 1080 - $FB18
100 - $F834 1090 - $105F
110 - $2E42 1100 - $EE36
120 - $45F1 1110 - $B6DF
130 - $3EBA 1120 - $738D
140 - $2035 1130 - $E1F9
150 - $5920 1140 - $78F9
160 - $D3AF 1150 - $9D74
170 - $09D2 1160 - $866C
180 - $FA14 1170 - $73B5
190 - $CC13 1180 - $FC85
200 - $2462 1190 - $51C4
210 - $B84E 1200 - $63F2
220 - $BB07 1210 - $717E
230 - $07FF 1220 - $A67E
240 - $D4A9 1230 - $E364
250 - $9C58 1240 - $FA76
260 - $788E 1250 - $4E96
270 - $1BAF 1260 - $0CB4
280 - $F2AF 1270 - $CE04

```


THE GAMES OF 1985!



Despite less than spectacular computer sales figures, 1985 has been a very good year for computer gaming. Overall, quality has continued to improve, as reflected in graphics techniques, broader use of sound peripherals, and freedom from bugs. Several vendors have gone to sturdier, more attractive packaging, and game manuals are better written and more colorful.

Perhaps of greatest interest is a trend towards greater variety in the kinds of games produced. Simulations have, at last, "arrived", word and knowledge-oriented games proliferate, and wargamers are foxhole-deep in new products. Educational games, long the "dogs" of gaming software, now include some very entertaining releases. Finally, the arcade/adventure dichotomy is more blurred than ever, with several "long play" arcades and more animated adventures.

This review focuses on new arcade, simulation, and other non-adventure products. My next review article will take a look at adventures.

Since my goal is to help you squeeze the most bang from your gaming dollar, each review aims to provide the maximum information in the space available. Compatibility and peripherals requirements plus the number of players for which the game is designed (if multi-player) are shown "up front" followed by a brief description. You will probably want to obtain several of the games mentioned, so the game's list price, publisher and publisher address and phone number are listed.

Comments and ratings reflect my evaluation based upon playing a game and watching others play. Each game is rated in five areas and "overall" on a ten-point scale:

10= SUPERIOR, 07= GOOD, 05= FAIR, and 03= POOR.

Graphics (GRFX) is the first area rated. It concerns quality of artwork, clarity, impact, smoothness, speed, and realism.

Good Support Materials (S.M.) include clear, thorough directions for play. In some cases attractiveness, tutorial value, or effectiveness in creating "atmosphere" may be important.

Playability (PLAY) relates to how much extraneous activity is required to play the game. Good parsing, rapid "save" and "restore" functions, efficient menus, smooth controls, and readily available "Help" screens are features which enhance playability.

Difficulty (DIFF) is self-explanatory for single-player games. For others it relates to how difficult it is to achieve a decent level of play.

High Interest (INTR) games are good at attracting and holding player attention. Typically, these are the adventures you can't wait to continue and the arcades you play, and replay, for hours at a time.

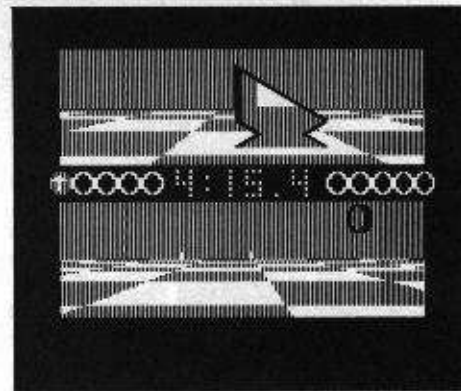
The **Overall (GAME)** rating amounts to a summary of player reaction(s) during tryouts. For educationally-oriented games, a second rating (/ED) of **educational** value is included.

Ballblazer

(Arcade for 1 or 2 players)

Compatible: 64K Apple II+, IIe, IIc
Requirements: One disk drive, KB or joystick input

In the multi-species galactic civilization of the late 31st century, sports have supplanted warfare as an outlet for aggressive instincts. Foremost among spectator entertainments is "Blazerball", a one-on-one version of Old Earth soccer played in force shielded hovercrafts called "rotofoils".



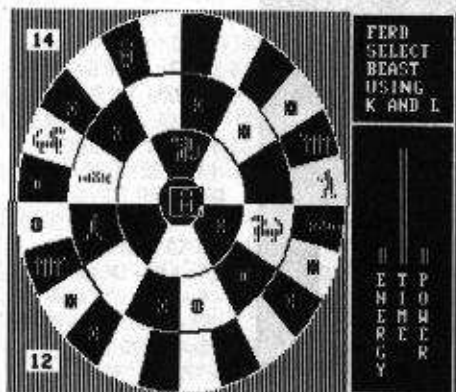
The Ballblazer field is a 55x21 curved grid with a pair of moving goal beams at each end. To score you must snatch the 1000 kg. "plasmorb" (i.e. the ball) in the rotofoil's capture field, maneuver around your opponent (who will try to rip the ball away), and fire it between your goal beams. Each score shrinks the goal; so it's best to try the three point, over-the-horizon shot early.

Glass smooth movement, responsive controls, and lively sound effects guarantee all the lightning fast action you can handle. Original, alien, and (for many) intimidating, "Ballblazer" is competition for the arcade elite.

Available from EPYX, 1043 Kiel Court, Sunnyvale, CA 94089. (408) 745-0700. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
09	08	08	08	07	08

Beast War



(Strategy & Tactics for 1-4 players)

Compatible: 48K Apple II+, IIe, IIc
Requirements: One disk drive, KB or joystick input

When constant warfare threatened to erase all life from Galaxy Alaxis, it was at last decided to find some less destructive means for settling disputes. The Beast War, a chess-like contest of strategy and tactics, proved the ideal solution.

In "Beast War" you always play against the computer, directing the movement of six different semi-intelligent beasts on a circular, 43-square field. In each round of a match, your objective is to maximize your score by destroying opposing beasts and capturing squares. When employed to adjudicate disputes, the player with the highest match score wins and is eligible to have his or her name and score saved to disk.

Each beast is characterized by movement pattern, energy level, strength, and unique combat advantage over one other beast. (Thus the fearsome Dracon can burn the winged Aeroctus to ash but fears the bite of the Saurus.) Any move consumes energy, especially when the target is a square previously occupied by the enemy (as indicated by the presence of an enemy marker). The same is true of combat initiated by moving to an occupied square. If a beast's energy level goes to zero it is eliminated; so control of the center, recharge square is crucial to victory.

Combats are resolved in a brief arcade sequence where each beast may advance, strike, or retreat. Here energy reserves, strength, number of adjacent friendly beasts, and special attributes determine the outcome.

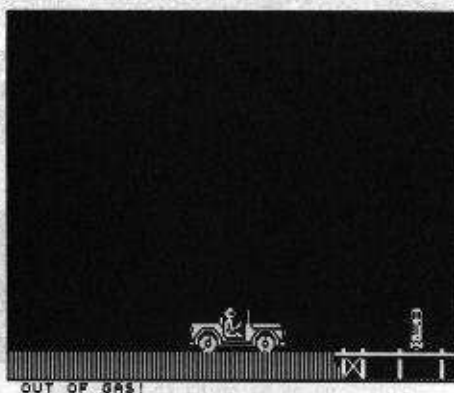
Like chess, this game is easy to play but difficult to play well. As challenging as it is

alien, "Beast War" offers yet another enjoyable alternative to traditional strategy-oriented boardgames.

Available from: Avalon Hill, 4517 Harford Road, Baltimore, MD 21214. (301) 254-5300. Cost: \$25.00

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	06	07	08	07	07

Captain Goodnight



(Arcade)

Compatible: 64K Apple II+, IIe, IIc
Requirements: One disk drive, joystick input

From the insidious Dr. Maybe's remote Fear Island headquarter comes an ultimatum: "Deliver \$200 billion in gold to my agents in

24 hours or face worldwide destruction." Your mission, as the redoubtable Captain Goodnight, is to outfight Dr. Maybe's mechanized minions and destroy the Doomsday Device.

A long playing combo of several earlier arcade hits, "Captain Goodnight and the Islands of Fear" features cleverly merged, expertly executed air, land, and sea action scenarios. Lives are unlimited; but each defeat sets you back to the beginning of the current scenario, costing precious minutes. Your "score" is the time remaining when you finally pull the plug. (Don't expect any medals for almost saving the world.) Unfortunately, the game is so difficult to win that, although high scores are saved, such competition is practically eliminated. This and the occasional forced defeat (to show off one of several rescue sequences) are definite minuses.

Complete with map and official decoder wheel, "Captain Goodnight" is fun to play, somewhat addictive, and often frustrating. If you can avoid ripping the diskette to pieces, this one is good for many stimulating replays.

Available from: Broderbund, 17 Paul Drive, San Rafael, CA 94903. (415) 479-1170. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
08	07	06	09	07	07

Where In The World Is Carmen Sandiego?

(Knowledge Game)

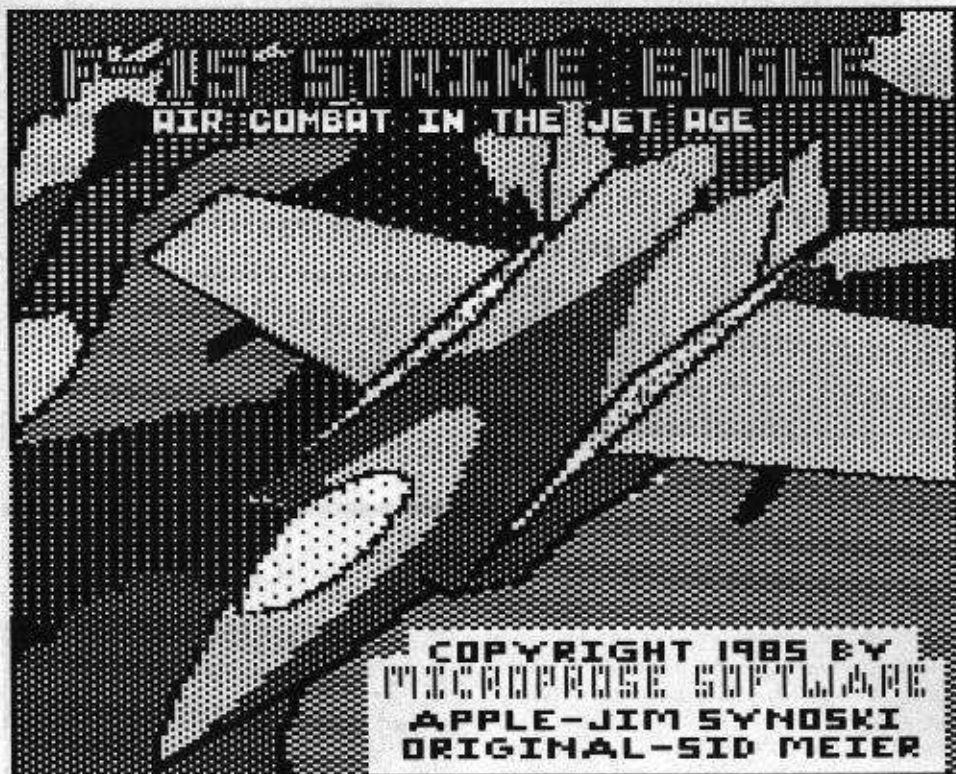
KIGALI
Monday, 9 a.m.



Marketplace
Hotel
Library

Kigali, the largest city in the east central African country of Rwanda, has a population of 150,000.

See connections
Depart by plane
Investigate
Visit Interpol



Compatible: 64K Apple][+, //e, //c
Requirements: One disk drive, KB or joystick input

Somewhere in the world another priceless knick-knack has been snatched and everything points to one of Carmen Sandiego's gang of no-goods. Armed with dossiers, a complete "World Almanac" (supplied with the game), and access to Interpol's Crime Computer, your assignment is to identify, track down, and arrest the culprit before the 5 p.m. Sunday deadline.

Representing the new crop of super slick, "different" entertainment software, "Where in the World is Carmen Sandiego?" challenges knowledge of geographical trivia and deductive skills. Though your elusive quarry hops jets the way most people use taxis, he can't avoid leaving some destination and ID clues (e.g. "he changed his money to dollars" or "he had black hair"). Insightful investigation is the key. The one-week deadline doesn't leave much time for sightseeing, especially at the higher levels where the chase may lead through six or seven cities.

Nominally a single person game, "Carmen Sandiego" is best in small groups. (It's more fun to be smart if someone else is watching.) Each of an endless supply of scenarios takes only about twenty minutes, so several players can compete, each to advance his or her sleuth (saved on disk) and the chance to nab Carmen herself. (Hint: She's been seen wherever great games are sold.)

Available from: Broderbund, 17 Paul Drive, San Rafael, CA 94903. (415) 479-1170. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME/ED
09	09	09	06	08	09 /07

Crosscountry USA



(Educational Simulation for 1 or 2 players)

Compatible: 64K Apple][+, //e, //c
Requirements: One disk drive, KB input

"Crosscountry USA" represents a new wave of good-enough-to-play educational simulations. In the role of a long haul trucker, your objective is to make assigned pickups and deliveries in the best possible time while minimizing expenses.

Food, lodging, fuel, and rig depreciation are

your principal costs; so the shorter the routing and quicker the the trip, the lower your expenses. However, too much speed, (besides risking tickets) can lead to costly accidents, as can long periods without food or rest.

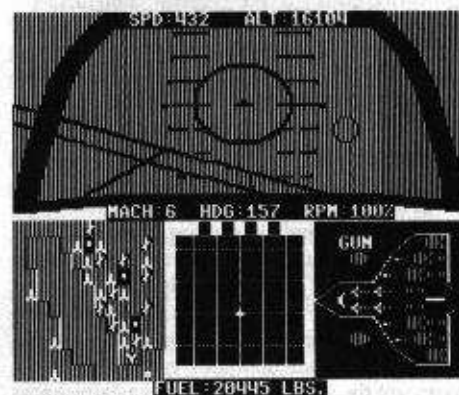
The game both looks and plays like many adventures, accepting text commands such as "start truck", "drive sw", and "turn wipers on". Numerous attractive hi-res frames (some with animation) show scenery as viewed through the cab's windshield (delivery stops, diners, etc.) and the dashboard is complete down to a lights-on indicator and CB radio (to call for help). National and local map screens facilitate routing, which is point-to-point instead of following the actual interstate highway layout.

Besides a commodities list and routing maps for the 180 cities represented, the package includes educational recommendations and an editor for game customizing. If you've ever felt the lure of life on the open road as a highballing trucker, then "Crosscountry USA" is bound to score a big 10-4.

Available from: Didatech, 549-810 West Broadway, Vancouver, BC, Canada V5Z 4C9. (604) 687-3468. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME/ED
08	08	08	06	07	08 /08

F-15 Strike Eagle



(Flight Combat Simulation)

Compatible: 64K Apple][+, //e, //c
Requirements: One disk drive, KB input, joystick optional

The first time I tried "F-15 Strike Eagle" there was a strong temptation to add the diskette to my "open for future use" box. (How can anyone take a combat arcade with zilch for sound effects seriously?!)

But reviewers are supposed to play the games they write up, so I forced myself to study the "Flight Manual" (when all else fails...) and gave it another try.

"Strike Eagle" is flight simulation with teeth; in this case, machine guns, bombs, and air-to-air missiles. In each of seven mission scenarios your objective is to knock out the primary targets, plus as many secondaries as possible, and get back in one piece. Complementing the armament is an excellent cockpit display and one of the most comprehensive control systems you are likely to encounter anywhere. Effective leveling moves you smoothly from "rookie" milkruns through "ace", where enemy fighters are thick as flies and everything below seems to be one big SAM installation.

There is something intrinsically rewarding about mastering any complex new skill, and this I suspect, is the secret of "Strike Eagle's" appeal. Admittedly, few arcades are as difficult to get into, but once you take out your first primary, the game's got you. They'll have to pry your fingers off the stick.

Available from: MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030. (301) 667-1151. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	08	07	07	08	08

Felony

(Parlor Game for 1 to 4 players)

Compatible: 48K Apple][+, //e, //c
Requirements: One disk drive, KB input

Dust off your trenchcoat. "Felony", CBS's sequel to "Murder by the Dozen", is ready with twelve more dastardly deeds requiring your special attentions.

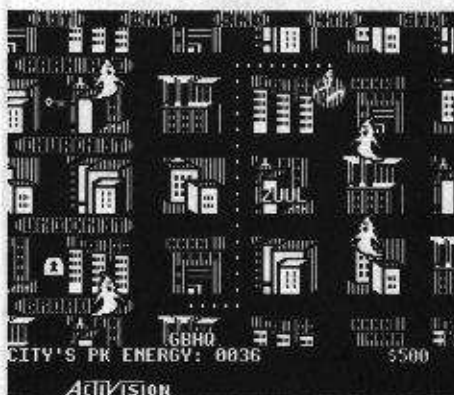
As in "Murder" you begin with a brief crime report and, via judicious questioning and keen investigation, not only crack the case; but do so before any of your fellow sleuths. Unlike its predecessor, "Felony" offers a nice potpourri of crimes; so the quarry may be a thief, forger, terrorist, or other felonious type. This is not to accuse the game designers of squeamishness (Note Case 2: The Garroted Photographer) or of otherwise letting up. If anything the new cases are even juicier and more involved than the first dozen.

At roughly ninety challenging minutes per four-player game, "Felony" is an entertainment bargain that's hard to top. Score another parlor game winner for CBS.

Available from: CBS Software, One Fawcett Pl., Greenwich, CT 06836. (203) 622-2525. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	08	06	07	07	08

Ghostbusters



(Arcade)

Compatible: 48K Apple][+, //e, //c
Requirements: One disk drive, KB and joystick input

A burgeoning ghost population has finally gotten out of hand, posing a serious threat to the quality of urban living. You can just sit around like everyone else (and wind up living in a slime bowl), OR you can open your own ghostchasing franchise, bust those turkeys, and save the city!

True to its motion picture origins, "Ghostbusters" delivers all the customers you can handle. The ghosts come rolling in, business thrives, and you can afford better equipment. Ultimately success leads to the roof of Zuul's temple and victory. Failure can mean a disaster of truly Marshmallow proportions.

Featuring an attractive scenario and several

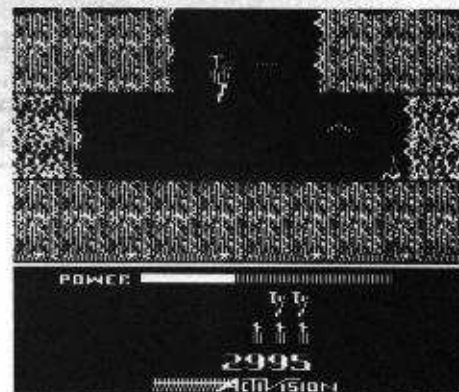
well-executed action sequences, "Ghostbusters" nonetheless manages to deliver remarkably little real entertainment. Perhaps 60% of play involves unobstructed movement between locations, while ghost trapping is cumbersome and decidedly ho-hum.

People WATCH movies. They want to PLAY games. "Ghostbusters" is too close to a copy of the movie to be an enjoyable game.

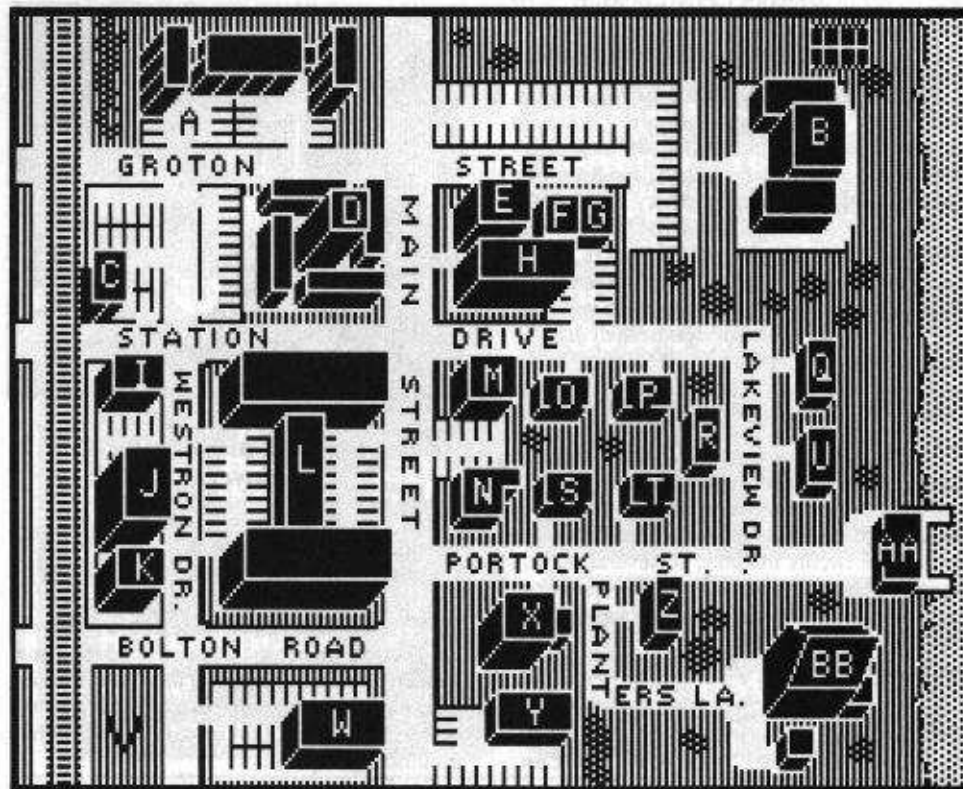
Available from: Activision, P.O. Box 7287, Mountain View, CA 94039. (415) 960-0410. Cost: \$39.95

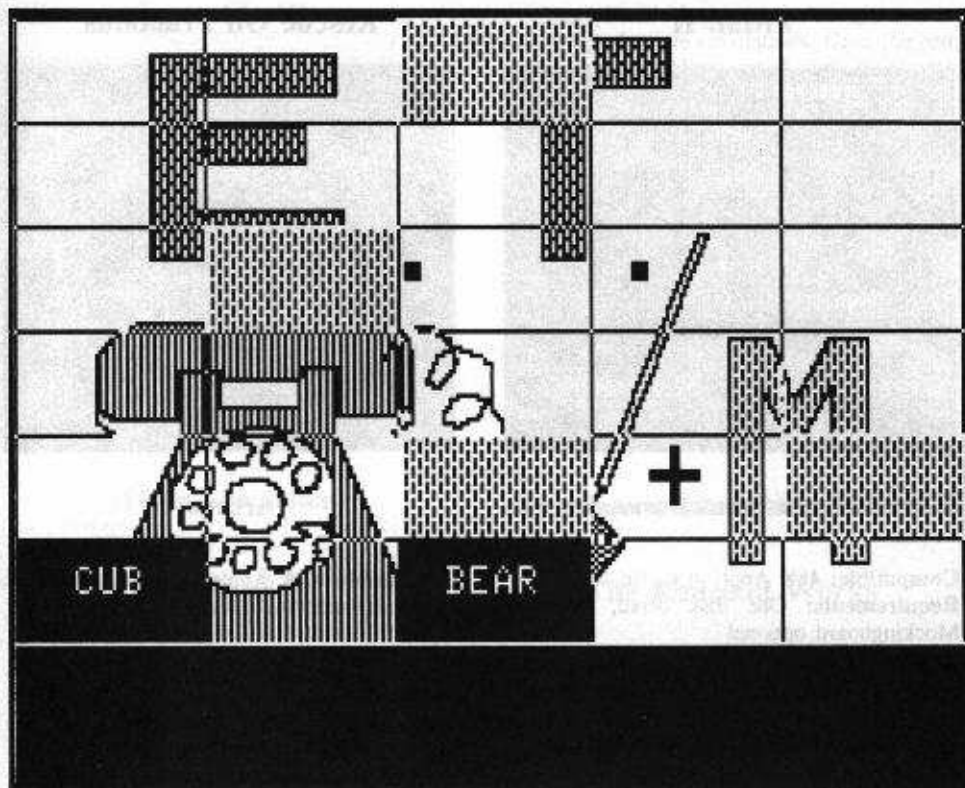
GRFX	S.M.	PLAY	DIFF	INTR	GAME
08	05	07	07	03	04

H.E.R.O.



(Arcade)





Compatible: 48K Apple][+, //e, //c
Requirements: One disk drive, joystick input

The trouble with being the ace prop packer of H.E.R.O. (Helicopter Emergency Rescue Operations) is that you only get the really dirty assignments. Now there's been a mine collapse. Deadly critters have swarmed through a newly opened fissure, lava is slopping down some of the shafts; and guess who's supposed to strap on a flying suit and hop in!

"H.E.R.O." pits you against an incredibly hazardous labyrinth and the clock at seventeen levels of difficulty ranging from "very tough" through "insane". Dynamite helps, creating needed shortcuts, and a helmet laser fries obstreperous monsters; but you will need a touch of ESP to get through areas where the lighting has failed. (As for the lava, don't touch it; it's hot!)

Each rescue recharges the power unit, restores some dynamite, and adds points to your score.

At the lowest (i.e. playable) difficulty levels the game is both tough and a good deal of fun. Failure to save high scores puts a damper on competition; but if you enjoy a solid quick-sticking challenge, "H.E.R.O." is a good bet.

Available from: Activision, P.O. Box 7287, Mountain View, CA 94039. (415) 960-0410. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	06	08	08	07	07

Impossible Mission



(Maze Arcade)

Compatible: 64K Apple][+, //e, //c
Requirements: One disk drive, joystick input

When his marathon effort to top the "Penguin Invaders" 100 billion all time high score was thwarted by a power failure (one penguin short of success!), something snapped in the young Elvin Atom Bender's brilliant mind. The world, he resolved, would pay for this gross injustice.

Now an expert in computers and robotics, Elvin is six hours away from invading the launch computers of every major power and triggering a nuclear holocaust. Only you know of Elvin's plans and therefore the burden of rescuing the human race is upon your shoulders. To save civilization you must penetrate Elvin's 32-room underground complex, discover the Control Room password,

and stop the warped genius before any launch codes are issued.

Being absent minded, Elvin did write down the password; however, he took the precaution of breaking it into pieces now hidden throughout his stronghold (in furniture, candy machines, etc.). Each multi-tiered room is patrolled by laser-armed robots, with lifts providing access to each tier. Fortunately, you are faster and more agile than the robots; and, better still, occasionally discover "snooze codes" which deactivate a room's guardians. In two rooms additional snooze codes may be won by sounding musical notes in the proper sequence.

The game is a nicely executed blend of several successful arcade ideas. The result is an engaging, mini-adventure challenge for thinking stick flippers everywhere.

Available from: EPYX, 1043 Kiel Court, Sunnyvale, CA 94089. (408) 745-0700. Cost: \$30.00

GRFX	S.M.	PLAY	DIFF	INTR	GAME
08	06	08	07	07	07

Match Wits

(Parlor Game for 1 or 2 players)

Compatible: 48K Apple][+, //e
Requirements: One disk drive, KB input

Patterned after TV's long-running "Concentration", "Match Wits" challenges knowledge, memory, and intuition on a broad front. Even better, the supply of rebus-based matching contests is close to inexhaustible.

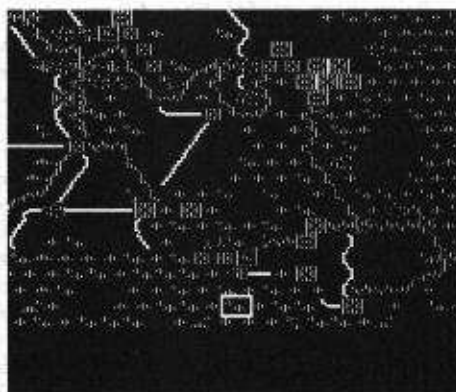
As in the game show, play begins with a blank (5x6) grid and you try to locate hidden pairs specifying x,y coordinates of selected squares. So, on a sports grid, "1,1" ("Dallas") and "3,4" ("Cowboys") would be a match. The puzzle pieces at 1,1 and 3,4 are revealed and the player has a chance to enter the solution. Points are awarded for each match, but the lion's share goes to the first player or team to solve the puzzle. After three puzzles, the side with the most points wins.

Except for the unfortunate omission of x,y labeling (necessitating a good deal of square counting and a few complaints), "Match Wits" has been well-received in small group play testing. Six on-disk categories, with provisions for adding ten more of your own, add up to long lasting parlor game fun.

Available from: CBS Software, One Fawcett Pl., Greenwich, CT 06836. (203) 622-2525. Cost: \$29.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
06	07	06	06	07	07

Nato Commander



(War Strategy Game
for 1 or 2 players)

Compatible: 64K Apple II+, IIe, IIc
Requirements: One disk drive, KB input, joystick optional

You're enjoying your new position as NATO's high commander when barely a week after being sworn in, you begin to receive some interesting and highly disturbing reports concerning a worker uprising in East Germany. A few days later, the situation is all over the news as workers take to the streets, rumors of "reunification talks" surface, and Warsaw Pact forces crunch toward the frontier. It's about then you realize this time the Russians really are coming!

In "NATO Commander" your task is to slow the Warsaw Pact (WP) advance until the West's air superiority and reserves can turn the tide.

Eight unit types ranging from mechanized infantry through tactical nukes, and control down to the brigade level offer numerous options. However, these soon shrink to a precious few once the political importance of cities, the need to protect SAM and air bases, and the strategic significance of the "Fulda Gap" are assessed.

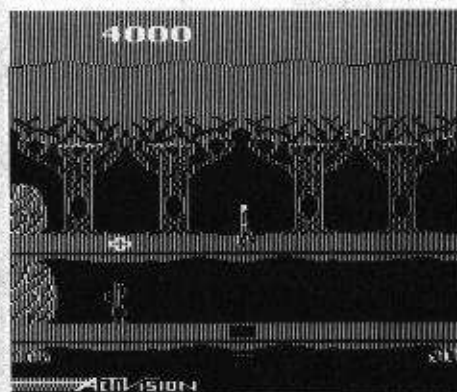
A scrolling situation map displays major terrain features, NATO and WP forces, and important cities. It is also the medium, via a cursor, for issuing orders to selected units. Incidentally, since combats are resolved on an on-going basis, if you do nothing the WP will simply march across the map.

Smooth running and easy to play, "NATO Commander" is, nonetheless, very challenging. If you've ever considered trying a wargame, but wanted something you could really get your teeth into, this is the one to go for.

Available from: MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030. (301) 667-1151. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	07	07	08	07	08

Pitfall II



(Arcade)

Compatible: 48K Apple II+, IIe, IIc
Requirements: One disk drive, joystick, Mockingboard optional

On the last expedition of the great caverns, (to find the incredibly valuable Raj diamond) a few explorers never made it back. (Namely Harry's niece Rhonda and his cat Quickclaw.)

Not one to let your comrades down, you (as Harry) immediately set off to the rescue, ready (you think) for all the dangers, excitement and surprises ahead.

The caverns are a very big place filled to the brim with snakes, bats, scorpions, and other dangerous creatures, along with bars of gold. Less frequent are the white crosses marking "Incan Healing Centers". Should Harry be zapped by some hazard, he is magically transported back to the last white cross touched. Though getting lost appears to be the main danger, Harry will occasionally need to leap a gap, swim a river, or catch a balloon to continue the quest.

While too many arcades emphasize competition at the expense of playability, "Pitfall II" comes near to the other extreme. Nobody dies in the caverns, there is no time limit, and the Mockingboard generated background music is actually relaxing.

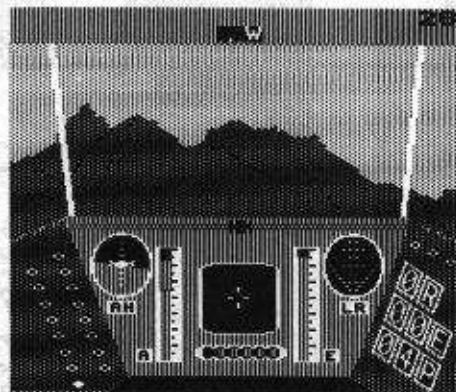
Every achievement (rescues, gold, etc.) and setback (getting zapped) adds or subtracts points respectively from your score. It was a big disappointment for me however when I discovered that the scores are not saved.

"Pitfall II's" graphics are a tad bland (just slightly better than the original "Pitfall's" graphics), but control is good and it is fun to explore the caverns. A masterpiece of low pressure arcading, this is one game you can play 'til the cows come home.

Available from: Activision, P.O. Box 7287, Mountain View, CA 94039. (415) 960-0410. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
06	06	09	06	07	07

Rescue On Fractalus



(Arcade)

Compatible: 64K Apple II+, IIe, IIc
Requirements: One disk drive, KB and joystick input

Things have been pretty hairy in this sector of the thus discovered interstellar universe. Too many good space pilots, even a few aces, have had to hide-out on an enemy infested planet (more like a rock) called "Fractalus".

Since you're one of the few air flyers still attached to Ether Corps, it is unquestionably your responsibility to fight your way through to the downed ships and bring back those pilots and space-acers!

To put it mildly, the situation on Fractalus is certainly LESS THAN NICE. Suicide saucers are a constant menace, laser batteries dot every ridge, and the terrain consists of mountain after mountain after mountain.

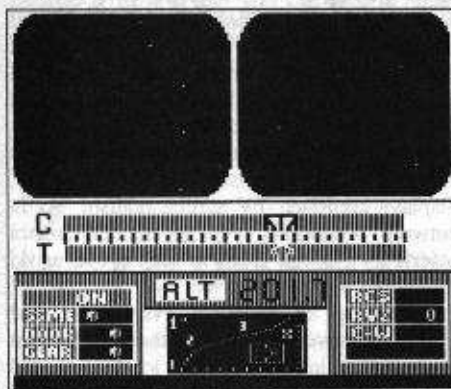
Force shields and anti-matter torpedoes bring your mission on Fractalus from impossible to bearable and even tolerable; but the higher your quota of rescues, the less space remains for anything else, including fuel. (Fortunately, rescued pilots bring along fuel canisters from their ships.) As always, the tougher the mission, the higher the payoff, including boosts in rank and a chance to place among the "Top Ten".

Moderately paced yet very challenging at the higher levels, "Rescue on Fractalus" trades speed and smoothness for an apparently endless (fractal generated) landscape and decent perspective effects. If you're ready for a "flight sim with guns", put this one on your list.

Available from: EPYX, 1043 Kiel Court, Sunnyvale, CA 94089. (408) 745-0700. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	07	07	07	07	07

Space Shuttle

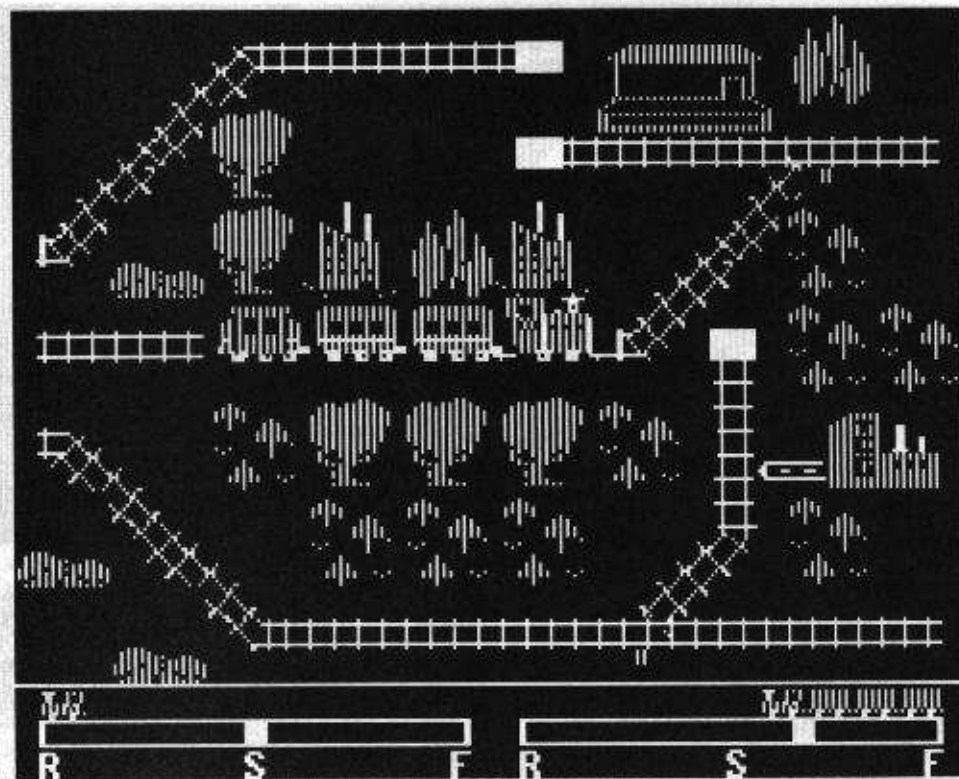


(Flight Simulation)

Compatible: 48K Apple II+, IIe, IIc
Requirements: One disk drive, KB input, joystick optional

Designed around NASA simulators, "Space Shuttle" aims to put you at the helm of the world's most advanced spacecraft. Your mission: achieve orbit, chase down and dock with a satellite, and return safely to earth.

Boasting smooth graphics, decent sound effects and one of the best, most active status/control consoles ever, this simulation quickly envelops you in the reality of a shuttle mission. You command a big, powerful, complex machine capable of plucking satellites like daisies or grinding you to pulp. Not for seat-of-the-pants stick jockeys, pre-launch study of the comprehensive flight manual is a must.



"Space Shuttle" has to rank among the most absorbing of Apple simulations. Once the pad restraining bolts blow; speed, fuel, three-axis positioning, target distance and elapsed time all demand constant monitoring and a deft feel for the controls. From bone rattling blastoff to blazing re-entry it's sure-fire fun for simulation addicts and would be space pilots alike.

Available from: Activision, P.O. Box 7287, Mountain View, CA 94039. (415) 960-0410. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	07	07	07	07	07

The Railroad Works

(Simulation for 1 or 2 players)

Compatible: 48K Apple II+, IIe, IIc
Requirements: One disk drive, KB or joystick input

Just when model railroaders began to believe layouts couldn't get any smaller, along comes CBS's "The Railroad Works". Now you can construct an elaborate two-train system on your Apple, operate it like any model railroad, or play a game!

Actually, the program allows building (and saving) any number of layouts complete with tracks, scenery, shipping and receiving sites,

and passenger depots. Rolling stock, which may be from the steam era or contemporary, includes two engines, boxcars, tenders, passenger cars, and cabooses. Simple paste/erase construction and twelve hi-res screens (4x3) of real estate make it a snap to realize even the most ambitious designs.

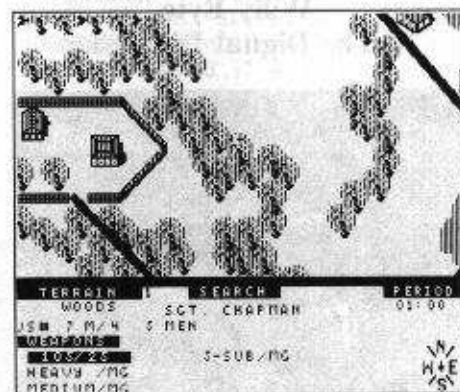
Whether the layout is your own or one of several included on disk, everything works like the real thing. The "Game" option is simply an extension of normal operation which awards a rank ("coal chipper" through "engineer") based upon cargo handling efficiency.

With two trains running at full throttle on a complex layout, the simulation can be quite demanding; but the real challenge is to your creativity. Endlessly entertaining, you won't find a better value than "The Railroad Works".

Available from: CBS Software, One Fawcett Pl., Greenwich, CT 06836. (203) 622-2525. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
08	07	08	06	07	08

Under Fire



(War Tactics Simulation for 1 or 2 players)

Compatible: 64K Apple II+, IIe, IIc
Requirements: One disk drive, KB or joystick, (joystick required with II+), Mockingboard optional

Somewhere a theatre commander has pushed your division's chit across a blue line on a map, thus securing a key bridge. But the bridge is five miles away, in German hands, and likely to stay that way unless your boys can knock out the enemy position on a ridge guarding the approach.

"Under Fire" moves computer wargaming down to the small units level, where you can see the men and tanks. Three maps and nine scenarios are supplied; but a choice of objectives and provisions for building and

arming each squad on a man-by-man, weapon-by-weapon basis greatly expand the actual number of situations. Add user-defined victory conditions and a design-your-own map making package (included), and you can recreate virtually any land warfare tactical situation of WWII.

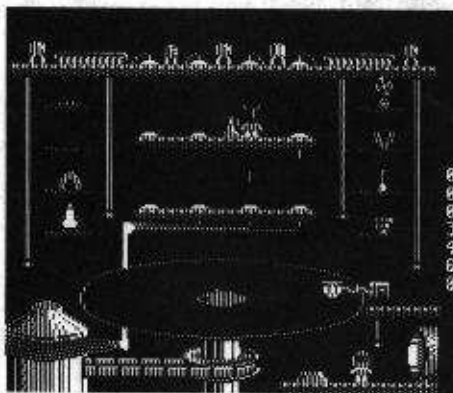
A typical game consists of several build/move/combat cycles. Three levels of map resolution ease planning; and your Apple takes care of combat results, sighting of enemy units, general bookkeeping, and fire/sound effects.

"Under Fire" is an extraordinarily flexible wargaming environment. Slow combat processing is a weakness and even "simple" variations demand close attention to detail. So be forewarned: "Under Fire" is for dedicated wargamers only.

Available from: Avalon Hill, 4517 Harford Road, Baltimore, MD 21214. (301) 254-5300. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
07	09	05	09	07	10

Willy Byte In The Digital Dimension



(Educational Arcade)

Compatibility: 64K Apple][+, //c, //c
Requirements: One disk drive, KB or joystick input, Mockingboard optional

Like any true-blue computer nerd, you have probably wondered what REALLY goes on inside your Apple when the power is on and the bytes are humming. Thanks to Data Trek the mystery is solved; as you, the indomitable Willy Byte, explore the wonders of the Digital Dimension.

Since computers are no-nonsense machines your journey quickly develops into a mission: take one or more bytes of data from the keyboard, through the RAM, and store them

on disk. Simple enough, except for the dastardly Hex Luthor, embodiment of glitchness. Hex's static charges, overheating, and magnetism constantly menace your efforts, sometimes forcing you to drop everything and rush over to restart a ragged clock or, even worse, repair the power supply. Your reward for success is a rating (based mainly on bytes moved and time used) and a chance to place among the "Top Eight", saved on disk.

Supposedly an educational experience, "Willy Byte" is in fact a graphics/sound-effects spectacular surprisingly free of educational content. From slick packaging through the five smoothly executing arcades, the appeal here is strictly to the senses. Put away your thinking cap and play this one for fun.

Available from: Data Trek, 621 Second Street, Encinitas, CA 92024. (619) 436-5055. Cost: \$39.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME/ED
09	07	07	06	07	08*/04

*with Mockingboard sound
(otherwise, delete 1 point)

Winter Games

(Sports Simulation for 1-8 players)

Compatibility: 64K Apple][+, //c, //c
Requirements: One disk drive, KB or joystick

Once more you troop into a packed stadium under the flag of your choice; but this time it's winter, the domain of skiers, ice skaters, and the bobsled. Successor to "Summer Games", Epyx's winter competition offers competition in seven exciting events; and, as always, the challenge is to "Go for the gold".

Showcasing smooth animation against colorful backgrounds, "Winter Games" displays approach TV screen realism. As in network broadcasts, you get second-camera inserts for closeup views in such events as ski jumping.

Reflecting an excellent events mix and improved movement control, there are at least seven options in figure skating, ice dancing, and stunt skiing where technique is critical. Speed skating is simpler, testing rhythm and endurance; the bobsled tests reflexes; and in the biathlon's rifle shoot, the premium is on accuracy. Even more than the contest for medals, this challenge to master a variety of skills involves you in the games "for real".

Among the best sports simulations, "Winter Games" is an entertainment bonanza playable as the Winter Olympics or on a single event basis. This is one you will surely want to introduce at your next gaming session (after a few days of practice, of course).

Available from: Epyx, 1043 Kiel Court, Sunnyvale, CA 94089. (408) 745-0700. Cost: \$34.95

GRFX	S.M.	PLAY	DIFF	INTR	GAME
09	07	08	07	08	09



Gessler Spanish Software

By Dave Stanton

*Batalla de Palabras
and La Corrida de Toros
Gessler Educational Software
900 Broadway
New York, NY 10003*

Requirements:

48K Apple II and up with Applesoft
A blank disk
Super IOB v1.2
Batallas de Palabras
(or La Corrida de Toros)
COPYA or similar copy program

Gessler Educational Software offers one of the widest selections of language programs available, and they seem to use a similar protection scheme on many of their disks. Here we will discuss two that can be deprotected with the same controller and the same Hello program requiring only one minor change.

La Corrida de Toros is a Spanish hangman-type game in the guise of a bullfight.

Batalla de Palabras is a Spanish language tutorial program based on the popular vocabulary building program Word Attack. Unfortunately it does not come with a backup, and each backup costs \$9.95 plus \$1.95 for shipping. None of the nibble copiers I tried could copy it without parameter changes. The disk begged for deprotection.

Locksmith 5.0 Fast Copy revealed standard formatting on all tracks except \$3 and \$11. Analysis of track \$11 confirmed the logical assumption that it was the catalog with some tampering. Track \$3 appeared to contain no meaningful data.

Sector editing of the catalog made its files accessible. The Hello program calls a binary file named SSPROT\$\$1. SSPROT\$\$1 tests for an original disk by looking at track \$3 and aborts the boot with the Disk Read Error if it doesn't like what it finds.

The solution then is clear. Write a Super IOB controller that will read tracks \$4 through \$22 ignoring checksums, sector edit track \$11 sector \$0 to create an entirely normal DOS 3.3 catalog, and put the whole thing on a disk with a standard DOS. Then we simply write a Hello program that bypasses SSPROT\$\$1 while duplicating its non-protection function of loading the title screens.

The result is a copy that works perfectly and is COPYable.

The Procedure

If you are copying Batalla De Palabras, follow the instructions normally. For La Corrida de Toros, change line 90 in the Hello program to read

```
90 PRINT D$ "RUN PART1"
```

and skip step 5, because there is no data disk to copy.

1) Init a new disk with DOS 3.3 or a high speed DOS.

INIT HELLO

2) Install the IOB Controller into Super IOB in whatever fashion you are accustomed to, and RUN to copy the original program disk. Do not format the duplicate, as doing so would eliminate the DOS which you added in ±1 above!

RUN

3) Type in the Hello program at the end of this article and save it on the duplicate disk.

SAVE HELLO

4) Use COPYA or a similar copy program to duplicate the data disk.

You should now have a good backup.

Some of the earlier Apple versions of GES software are delivered in a COPYable format, but this controller will still work on them if you wish to use it. Try this same technique on your other GES programs, and let us know how it works.

Good Luck!

controller

```
1000 REM BATALLA DE PALABRAS CONTROLLER
1010 TK=4 : LT=35 : ST=15 : LS=15 : CD=WR : FAST
      =1
1020 GOSUB 490 : GOSUB 270
1030 POKE 47405 , 24 : POKE 47406 , 96 : POKE 47497
      , 24 : POKE 47498 , 96
1040 GOSUB 610
1050 GOSUB 490 : GOSUB 230 : RESTORE : GOSUB 310
1060 POKE 47405 , 208 : POKE 47406 , 19 : POKE
      47497 , 208 : POKE 47498 , 185
1070 GOSUB 610 : IF PEEK (TRK) = LT THEN 1090
1080 TK=PEEK (TRK) : ST=PEEK (SCT) : GOTO 1020
1090 PRINT "COPYDONE" : END
5000 DATA 1^ CHANGES , 17 , 0 , 1 , 17
```

Hello program

```
10 HOME : D$ = CHR$ (4)
20 PRINT D$ "BLOADGES .PG1"
30 POKE - 16304 , 1 : POKE - 16297 , 1 : POKE 16302
      , 1
40 PRINT D$ "BLOADGES .PG2"
50 K = PEEK ( - 16368 )
60 POKE - 16299 , 1 : FOR X = 1 TO 500 : NEXT : POKE
      - 16300 , 1 : FOR X = 1 TO 500 : NEXT
70 IF PEEK ( - 16368 ) = K THEN 60
80 HOME : VTAB 10 : HTAB 10 : PRINT "ONE^ MOMENT^
      PLEASE" : TEXT
90 PRINT D$ "RUN^ SPANISH^ HELLO"
```

controller checksums

1000	- \$356B	1060	- \$5C4D
1010	- \$2744	1070	- \$D23F
1020	- \$07EB	1080	- \$FA70
1030	- \$8288	1090	- \$AD47
1040	- \$D4C8	5000	- \$9887
1050	- \$02C0		

Hello checksums

10	- \$3CA8	60	- \$2B78
20	- \$3C5C	70	- \$EE4A
30	- \$2B03	80	- \$D61D
40	- \$E484	90	- \$3558
50	- \$C869		

MORE STICKYBEARS

By Marc Lirrette

Stickybear Series
Xerox Educational Software
Computer Software Division
Dept. B-1
245 Long Hill Road
Middletown, CT 06457

Requirements:

Apple II Plus or equivalent
A blank disk
A slave disk with no HELLO program
A disk search utility
A sector editor
COPYA

Using Jerry Caldwell's information on the Stickybear series (featured in Hardcore COMPUTIST No. 15) and Randy Ramirez's hints (Issue No. 17) I was able to successfully backup only some of the Stickybear series.

Some of the recent Stickybear releases such as Opposites, Numbers and Shapes have a slightly different method of reading the protected sector.

In the older releases, the program would load the track and sector number of the protected sector and store them in RWTS's IOB (Input/Output control Block) starting at \$B7E8 (see below for IOB). For example, if the protected sector was at Track 1, Sector F, and was read into \$1F00, the program would look like the following:

```
LDA #01    LOAD TRACK NUMBER
STA $B7EC  STORE IT IN IOB
LDA #0F    LOAD SECTOR NUMBER
STA $B7ED  STORE IT IN IOB
LDA #00    LOAD BUFFER LO BYTE
STA $B7F0  STORE IT IN IOB
LDA #1F    LOAD BUFFER HI BYTE
STA $B7F1  STORE IT IN IOB
...
LDA #B7    LOAD A WITH IOB HI BYTE
LDY #E8    LOAD Y WITH IOB LO BYTE
...
JSR $B785  JUMP TO RWTS
```


Before jumping to the RWTS, the A and Y register must contain the high and low bytes of the IOB's address, respectively. In the example above, our IOB was at \$B7E8 and thus A=\$B7 and Y=\$E8. The newer Stickybears do not load and store the information in RWTS's IOB. Rather they load their own IOB off of the disk into some other memory and set A and Y to that location before jumping to the RWTS. To unprotect the disk, we must look for an IOB on the disk to find which sector is protected and where it is loaded. Then we rewrite the sector back to the disk with a DOS 3.3 format and alter the program to read it correctly.

Accompanying this softkey is a partial listing of the format of an IOB so you can follow the method more easily. For a proper explanation, see Beneath Apple DOS by Don Worth and Peter Lechner.

INPUT/OUTPUT CONTROL BLOCK (IOB)

BYTE#	DESCRIPTION
00	Type of Table (1)
01	Slot number times 16 (\$60)
02	Drive number (\$01 or \$02)
03	Volume number expected (00)
04	Track number
05	Sector number
06-07	Address of Device Characteristics Table
08-09	Address of 256 byte buffer for READ/WRITE
0A	Unused
0B	Byte count for partial sector (\$00 for 256 bytes)
0C	Command code

The Procedure

- 1) Boot the System Master disk and run COPYA.
- 2) Break out of the program with 
- 3) Alter COPY.OBJ0 to ignore unreadable sectors.
POKE 929,234
- 4) Delete line 70, then RUN again and copy the disk.
**70
RUN**

5) Boot your disk-search utility (ZAP, Inspector, etc.) and search the disk for the sequence 01 60 01 00.

6) The two bytes following the sequence 01 60 01 00 are the track and sector number, respectively. Write them down somewhere.

7) Skip the next two bytes and look at the bytes after them. These will be the low and high bytes, respectively, of the address the protected sector is loaded to.

8) Boot your Stickybear disk.

PR#6

9) Break out of the program by pressing Control-Reset until the drive stops.

10) Enter the monitor.

CALL-151

11) Move the protected sector (address found in step 7) to safe memory. xxxx represents where it starts, and yyyy is the start address + \$FF.

6000<xxxx.yyyyM

Example: the protected sector for Stickybear Shapes is loaded to \$1F00.

6000<1F00.1FFFFM

12) Boot a DOS 3.3 slave disk without a HELLO program.

6

13) Enter the monitor again.

CALL-151

14) Insert the copied Stickybear disk and write back the sector (tt=Track, ss=Sector) in an unprotected DOS 3.3 format.

**300:4C E3 03 4C D9 03
B7EB:00 tt ss
B7F0:00 60 00 00 02
300G**

15) Boot your disk search utility and search for the routine that reads the protected format. Look for the sequence 60 A2 00 A0 00.

16) Use a sector editor and change the A2 of that sequence to a 60.

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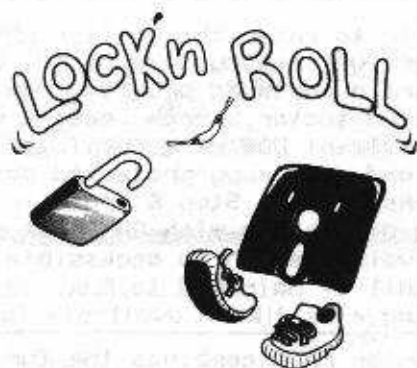


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Remember: A beginner should be able to type the program with ease.

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