

For The Serious User Of Personal Computers

COMPUTIST

Issue 58

August 1988

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- **Mixing ProDOS with Thexder**—By Matt Ownby
- **Infocom Decoder Revisited**—By Ryan Lanctot
- **Cracking on the Iie**—By Zorro
- **Might & Magic Revisited**—By Les Minaker
- **Might & Magic Character Editor**—By T. Scott
- **An indepth guide to Ultima IV**—By Jason Cobb
- **Computing for 1-3 year olds**—By Kathleen Herrmann
- **The Product Monitor**—By Jeff Hurlburt
- **A fix for FATAL SYSTEM ERROR 0911?**—By Jeff Hurlburt

🍏 RDEX *Softkeys*:

A.I. 🍏 BoulderDash 🍏 BoulderDash Construction Set 🍏 DeathSword 🍏 Design Your Own Home: Architecture 🍏 Design Your Own Home: Interior 🍏 Design Your Own Home: Landscape 🍏 Facemaker 🍏 Gauntlet 🍏 Kings Quest II 🍏 Mastery Arithmetic 🍏 Microzine #26 🍏 Muppet Slate v1.0 🍏 PFS: Graph 🍏 Polywriter 1.2 🍏 Rad Warrior 🍏 Rings of Zilfin 🍏 Seaspeller 🍏 Smart Eyes 🍏 Spell It! 🍏 Wings of Fury

IBM RDEX: *Help Wanted!!*

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Tacoma, WA 98411

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IBM RDDEX Contributors

Notes 'n things.....

■ What's happening to the Most Wanted List?

Readers have made a number of suggestions on ways to clear up the congestion on the Most Wanted List. Some were quite radical. Others made a lot of sense. Anyone can add to the list by simply writing to **COMPUTIST**. This will not change. However, the only way to remove a title from the list is by publishing a softkey. This makes for a very long list and that is what needs to change.

Titles stay on the list for many reasons. Some of the readers that requested a particular title be added to the list have since solved their problem but neglected to notify us. Often, a softkey will not work for a reader and they will request that the title be put back on the list. Later, they discover what they were doing wrong and now the softkey works. Some of the titles are very old and bit-copies are easily made, reducing the incentive to find a softkey. Sometimes the program is a one-of-a-kind with limited applications. All of this adds up to some titles making a career of being on the Most Wanted List.

With the help of your suggestions, we have decided to change the way the Most Wanted List is updated. Beginning with the next issue, all titles will be dated. After 6 issues, the title will be dropped automatically and someone must write and have it put back on the list. That way, a title that remains on the list indicates reader interest and not neglect. (Hopefully!)

BUGS

COMPUTIST #54, page 19
GOSUB 2330 to GOSUB 230.

In line 1060 of the Math Blaster controller, change

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Here's how to add semi-automatic decoding to the Infocom Decoder. No more tedious hand decoding.

Cracking on the Ile	16
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Another look at using the auxilliary memory on the Ile to remove copy protection.

Might & Magic Revisited	17
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More information on what's where and how to get a little more. Also included, a complete item list with the various equipping/use effects and bonuses.

Might & Magic Character Editor	20
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Some much need help for the adventurer in a neat and easy to use format.

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A fairly comprehensive look at the excellent adventure.

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Readers Data

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

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

What is a softkey, anyway?

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

Commands and control keys

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

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

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

Special requirements

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

■ Requirements:

Software recommendations

- ✓ Applesoft program editor such as *Global Program Line Editor (GPLE)*.
- ✓ Sector-editor such as *DiskEdit* (in the *COMPUTIST Starter Kit*) or *ZAP* from *Bag of Tricks*.
- ✓ Disk-search utility such as *The Inspector*, the *CIA* or the *Core Disk Searcher* (in the *COMPUTIST Starter Kit*).
- ✓ Assembler such as the *S-C Assembler* from S-C software or *Merlin/Big Mac*.
- ✓ Bit-copy program such as *Copy II Plus*, *Locksmith* or *Essential Data Duplicator (EDD)*.
- ✓ Text-editor (that produces normal sequential text files) such as *Applewriter II*, *Magic Window II* or *Screenwriter II*.
- ✓ *COPYA*, *FID* and *MUFFIN* from the *DOS 3.3 System Master* disk are also useful.

Super IOB and Controllers

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

Reset into the Monitor

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

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

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

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

Recommended literature:

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

Keying in Applesoft programs:

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

10HOME:REMCLEAR SCREEN

The LIST will look like:

10 HOME : REM CLEAR SCREEN
...because Applesoft inserts spaces into a program listing before and after every command word or mathematical operator. These spaces usually don't pose a problem except in line numbers which contain REM or DATA commands. There are two types of spaces: those that have to be keyed and those that don't. Spaces that must be typed appear in COMPUTIST as delta characters (^). All other spaces are there for easier reading. NOTE: If you want your checksums (See **Computing checksums**) to match up, you must key ONLY the ^spaces after DATA statements.

Keying In Hexdumps

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

CALL -151

Key in the hexdump exactly as it appears in the magazine, ignoring the four-digit checksum (\$ and four digits) at the end of each line. A beep means you have typed something that the monitor didn't understand and must, therefore, retype that line.

When finished, return to BASIC with:

3DOG

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

The source code is printed to help explain a program's operation. To key it in, you will need the *S-C Assembler* or you will have to translate pieces of the source code into something your assembler will understand (see table of *S-C Assembler* directives in *COMPUTIST #17*).

Computing checksums

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

There are two types of checksums: one created by the *CHECKBIN* program (for machine language programs) and the other created by the *CHECKSOFT* program (for BASIC programs). Both appeared in *COMPUTIST #1* and *The Best of Hardcore Computing*. An update to *CHECKSOFT* appeared in *COMPUTIST #18*.

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

CHECKSOFT instructions:

LOAD filename
BRUN CHECKSOFT

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

CHECKBIN instructions:

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

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

SSS.EEEⓈY

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

EXchange



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



when writing a letter to...

Apple RDEXed

RDEX stands for: Reader's Data EXchange

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

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

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

Send your articles and letters on DOS 3.3 standard text files

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

● Address your letters, articles, to:

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

Michael Paterno

Softkey for...

Design Your Own Home: Architecture Interior Landscape

Abracadata

■ Requirements

Super IOB v1.5

This is my first successful attempt to crack a disk on my own; I hate protected disks, because for one reason or another, they do give up the ghost.

The truth of the matter is I didn't get the idea all by myself; I tried all of the Copy II copy options, and none worked. However, when I used the "Copy using Sector Editor", I noticed that only the even tracks copied. In COMPUTIST #53, Tim Snyder used a controller to crack a similar problem with Troll Micro Courseware; what the heck, it's worth a try, right? Well, I entered the controller exactly as Tim wrote it, and bingo, it worked beautifully.

Just install the controller into Super IOB and copy the disk, that's all there is to it; and it is now fully copyable.

Controller

```
1000 REM ABRACADATA DESIGN YOUR OWN HOME
1010 TK = 0:ST = 0:LT = 35:CD = WR
1020 POKE 47507,0: POKE 47517,0
1030 T1 = TK: GOSUB 490
1040 POKE 47445,213
1050 IF TK <> ( INT ( TK / 2) ) * 2 THEN POKE
47445,212
1060 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
THEN 1060
1070 IF BF THEN 1090
1080 ST = 0:TK = TK + 1: IF TK < LT THEN 1040
1090 GOSUB 490: POKE 47445,213:TK = T1:ST = 0
1100 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
THEN 1100
1110 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT THEN
1100
1120 IF TK < LT THEN 1030
1130 POKE 47507,174: POKE 47517,164: POKE
47445,213
```

1140 HOME : PRINT : PRINT "DONE" : END

Checksums

1000	- \$356B	1080	- \$0507
1010	- \$3266	1090	- \$A256
1020	- \$5917	1100	- \$9356
1030	- \$0A12	1110	- \$F70D
1040	- \$AFB3	1120	- \$9811
1050	- \$26A1	1130	- \$BC98
1060	- \$29A5	1140	- \$92D3
1070	- \$077B		

Darren D. Moody

Thank you to J. Auferheide for the "DLM's Create With Garfield" softkey appearing in COMPUTIST #54.

⊗ I tried with moderate success using this softkey with another DLM product, Demolition Division. The softkey managed to convert the files to a format which CATALOGS with normal DOS 3.3. But when trying to run the program, it runs to a point and stops with the disk running. My presumption is that it is looking for a check byte. Can someone suggest a way to circumvent this problem?

† Softkey for...

Facemaker

Spinnaker

The "Kids on Keys" softkey in COMPUTIST #54 also works on Spinnaker's "Facemaker"

⊗ Does anyone know how to make this disk into a normal, catalogable disk so that I can transfer it to a hard drive?

Joseph P. Karwoski

Softkey for...

Wings of Fury

Broderbund

After reading a review on Wings of Fury, I decided to try the game. I couldn't find the game anywhere in town, so I ordered it through mailorder. Once I received the game and played it a few times, I decided that the review understated how good the game was. The

graphics and speed of action is fantastic—I strongly recommend this game! I decided that I needed a backup of this game, so I tried Locksmith Fast Copy—I had NO luck! No problem, I will just use a bit copier. I tried Locksmith, Copy II Plus and EDD III—again with NO luck! They left me with no choice but to try to deprotect it.

I used Copy II Plus sector editor in the patched mode to look at track \$00, sector \$00. I then got out my issues of COMPUTIST. I could not find a softkey for Wings of Fury, however, I did find it on the Most Wanted list.

After a few hours, I decided to try a different approach. Thanks to Eric W. Taylor's softkey in COMPUTIST #47, I was able to make a copy of Wings of Fury that could be copied easily with a bit copier.

The cookbook method is as follows:

1 Copy the original with a bit copier (I used Copy II Plus).

2 Using a sector editor (I used Copy II Plus in patched mode) search for BD 8D C0 A0. I found them on track \$00, sector \$0B, byte \$57.

3 Make the following change.

Trk	Sct	Byte(s)	From	To
\$00	\$0B	\$57	BD 8D C0 A0 10	A9 FC 85 F0 85
			24 80 BD 8C C0	F3 85 F6 A9 EE
			10 FB 88 F0 26	85 F1 85 F2 85
			C9 EE D0 F4 EA	F5 A9 E7 85 F4
			EA A0 07 BD 8C	85 F7 EA EA EA
			C0 10 FB 90 F0	EA EA EA EA EA
			00 EA 88 10 F4	EA EA EA EA EA

4 Write the change back to the disk.

You now have a copy of Wings of Fury that can be copied using a bit copier.

Thanks for a great magazine, and keep up the good work!

Iola UNK

† Softkey for...

Kings Quest II

Sierra On-Line

The exact same protection scheme is used on my version of Kings Quest II as in the softkey for the Black Cauldron. (COMPUTIST #52)

1 Copy all five sides using a standard copy program.

2 Sector edit.

Trk	Sct	Byte(s)	From	To
\$11	\$0F	\$2B-2C	C9 C9	29 00

Sam Bass

Softkey for...

BoulderDash Construction Set

Rad Warrior

Epyx

The protection is identical on these two disks. The first line of defense is altered address and data epilogs. In addition, the program reads four hidden bytes off the disk, which it EORs with four crucial DOS pages (\$B7 - \$BA, which reside on the disk at track \$00, sectors \$01-04).

1 Boot your DOS 3.3 system disk.

2 Tell DOS to ignore checksum and epilogs errors and use COPYA to copy the disk.

POKE 47426,24
RUN COPYA

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

Trk	Sct	Byte(s)	From	To
\$00	\$05	\$10	BD 89 C0 BD 8E	A9 FC 85 F3 85
			C0 A9 80 85 FD	F0 A9 EE 85 F2
			C6 FD F0 7A 20	85 F1 4C 7A BB

Scott Sanders

Playing Tips for...

Oo-Topos

Penguin

Treasures you need to take off

- ring (outside airlock)
- seashell (near lava sea)
- emerald (in flower)
- sphere (in light room)
- block of silver (in lounge area by playing game)
- moon jewel (on top of pyramid)
- psi cube (inside pyramid)

Ship parts necessary for take off

- navchip (radiation room need energy converter)
- data card (north from mirror room)
- energy converter (by grix)
- light rod (podium room)
- gyro (by huja in jungle)
- purifier (inside steel wall)
- shield unit (by lava sea)
- recirculator (inside steel wall)
- power cylinder (inside steel wall)

To get language translator

- get flask, fill with acid in lab, throw at scanner, shoot scanner to disable him completely.

To get out of mirror room

- Look mirror, look 4-D mirror. Do not send recall message to fleet.

To get spacesuit

- Go to bottom of the gravtube, wear goggles, push button, move garbage, take and wear suit to protect yourself from the outer world.

To leave pillar room

- Obtain translator, say taka to go through steel wall, to come back say leva. While in the steel wall room you need the shield unit to pass through force fields.

To get energy converter

- Get snarl in cage and release by Grix.

To activate computer

- type code: TSE957X.

To get out of building

- open airlock (must be wearing suit), go north, answer yes.

To get gyro

- Play reed by huja.

To destroy robot

- Throw reed into sea of lava.

Ryan Jones

Playing Tips for...

Coveted Mirror

Penguin

Things used to bribe Boris

- Necklace
- Ax
- Cookies
- Picture
- Telescope
- Jug

Things needed to turn invisible

- Ladder (by the well)
- Rope (by bull)
- Vase (in treasure room)
- Baby's shadow (by baby in town, but you need the vase to take it)
- Bones (in graveyard)

- Using ladder and rope climb the castle tower and in exchange for the bones and shadow you get invisibility spell.
- Find fairy in well. In exchange for moving glasses, she gives color spell.

Things needed to find mirror pieces

- Win fishing
- Read book in portals of stone
- Find chapel in castle (use colors spell)
- Find colors room in castle (use colors spell)
- Map out maze (find piece in maze)
- Give horseshoe to jester (find piece in cell)

To find final piece of mirror

- Win jousting
- Get ring (using candle in passage between barrel and magicians room)
- Get coat (in town)
- Have four pieces of mirror (brother John is now in tavern)
- Learn sign language in tavern
- Talk to deaf mute by the edge of forest

Jerome Rothweiler

A better way to print... Starter Kit DOC's

Like many others, I'm new to the deprotection process and really don't know what I'm doing yet, however, I've been playing around with Copy II Plus's sector editor and have learned a little.

I wanted to print the Starter Kit DOC's in eighty column format so there would be less pages to flip through while using the programs and also to conserve space in my DOC's binder. The following is how I accomplished this.

1 Copy all the DOC files to a formatted disk. Or you could just make a back-up copy of the starter kit disk.

2 Using a sector editor, (I used Copy II Plus), edit track \$11 sector \$0F and change the first byte preceding each of the DOC file names from 04 to 00. Write the changes to the disk. This changes the file type from a binary file to a text file.

3 Do a disk map of the back-up disk and write down the starting track and starting sector number of each DOC file.

4 Using the sector editor again, edit the second sector of each DOC file and change the first four bytes to A0. Write the changes to the disk. Actually, these four bytes are the starting address and file length of the original binary file.

You can now load the DOC files into your favorite word processor and format the printer output as you desire.

Q I have an Apple IIe that I had upgraded to an enhanced IIe. Now I find that some of my programs will no longer work. Where can I get a copy of the unenhanced ROM? I would like to see if I could change these programs so they will work again.

Matt Ownby

Mixing ProDOS with Thexder

■ Requirements

- Iigs program launcher* or Space Quest Iigs
- A deprotected copy of Thexder
- Copy II Plus 8.1 (or something similar)
- A blank, formatted disk

**The old system disk won't work. I have found that the Paintworks Plus program launcher works fine.*

As you may know, Thexder, by Sierra doesn't have ProDOS on it, which makes it a hassle to load. I have found two ways to put ProDOS on a deprotected copy.

Using Iigs Program Launcher

My first attempt was inspired with Paintworks Plus. "You can't load the file from BASIC, but can from the program launcher," I thought. I decided to erase Paintworks Plus (a copy of course), and everything that had to do with it and keep the Iigs program launcher. After I had done this, I put the Thexder program on the disk, along with the Finder.Root and Finder.Data files, since they were on the main directory too. I tried to copy all of the files in the subdirectory DATA, but I ran out of room. I noticed that most of the files had the numbers \$00-16 on the ends of them, so realized that these files were data for the different levels. I copied all of the files without numbers on the ends except the CHARSET files, which only had 1-4. After doing this, I copied as many of the level data files as I could onto my copy. In the end, I was able to fit seven levels on the copy. Later I found that you didn't even have to go to the program launcher if you erased the file start in the SYSTEM directory, and renamed your main file anything with the suffix of SYS16. Here's the procedure.

1 Copy the disk with the program launcher onto your blank disk. If you are using Paintworks Plus, delete all of the fonts from the directory FONTS to save memory. Also delete the file START from the SYSTEM directory.

2 Copy the Thexder file, the Finder.root files and the Finder.data file onto your disk, but change Thexder to Thexder.SYS16.

3 Create a subdirectory called DATA on your disk.

4 Copy all of the files in the subdirectory DATA from the Thexder disk on to your newly created subdirectory, except for any that have the numbers 01 through 16 on the end of their names. Don't forget the three at the end of the list. If you do, your game won't have sound.

5 Since the rest of the disk can only hold seven levels, you'll have to insert the game disk when you get to #8.

6 The procedure to copy the levels onto the disk is this: If you'll look at all of the files that hold the levels in DATA on the Thexder disk, (we'll call them level files. Each level file holds 16 levels of data) you'll notice that they're organized like this:

```
TEXMP01  
TEXMP02  
TEXMP03  
etc...
```

TEXMP is a level file. The other level files are PTR, TEKI and BUGDB. Copy the first seven files of each level file onto your copy, exactly like they were on the Thexder disk, in ascending order. If you don't, the levels will be a little bit different, which could be VERY disturbing.

Using Space Quest Iigs

This second procedure goes a lot faster in the loading process, because Thexder doesn't have to be loaded from the program launcher. It loads automatically! The reason I submitted the first procedure was because not everybody has Space Quest Iigs, which is needed to carry it out.

I noticed that Space Quest couldn't be loaded from BASIC either, but it loaded automatically. I also noticed that the ProDOS on Space Quest was 39 blocks instead of 42. Space Quest also had the subdirectory SYSTEM in it, but it didn't have the Finder.root and Finder.data files. The file SQ.SYS16 probably was the main file, so in this procedure, I renamed THEXDER to THEXDER.SYS16. In the end, the disk would hold twelve levels!

1 Copy Space Quest onto a formatted disk. Delete all of the files in the main directory except SYSTEM and PRODOS.

2 Copy THEXDER onto your disk and rename it to THEXDER.SYS16.

3 Create a subdirectory called DATA.

To understand the next step, you will need to read the first procedure.

4 Copy all of the files from DATA to your newly created subdirectory DATA except the level files.

5 Copy the first twelve files of each level file onto DATA. Make sure you keep the files in ascending order except BUGDB09. Put that one after BUGDB12.

That's it...

If any of you are interested in getting Activision's new paint program, Paintworks Gold, but are hesitating because of Activision's reputation for advertising software not even made yet and by taking weeks and weeks to deliver it to you, then here is the thing for you.

I received Paintworks Gold on March 18th, and it did take weeks. I ordered it near the beginning of February.

But it is ready now and believe me it's worth it, except for one modification that I didn't like. In the older versions while in fatbits, you could push option and your pencil would become a hand, but in Paintworks Gold, you have to select the hand option to move your picture around.

Also, an advertisement in A+ magazine shows a picture of the Taj Mahal and a fatbits picture of a leopard's face, which are both pretty nice. I suspected that the actual package wouldn't include either of these pictures, but fortunately, I was wrong. You can find both of these pictures on the Clip Art disk (also included), but the leopard picture is entitled Tiger.

A.P.T. for...

Marble Madness IIgs

Electronic Arts

In COMPUTIST #53, Greg Poulos submitted an A.P.T. for Marble Madness IIgs that told how to get unlimited time, but didn't tell how to get rid of the "You're History" problem. Since he modified the A.P.T. from Michael Horton's A.P.T. for Marble Madness IIe, in COMPUTIST #50, I decided to combine their information. Michael Horton had the correct byte sequence for the IIe, and Greg Poulos had the correct modification.

1 Boot a block editor and scan for the byte sequence A9 00 9D 15 BA A9 07 and change the 9D 15 BA to EA EA EA. I found it on block \$36C.

Since your marble starts at the same place you died, when you die, it is a BIG problem. If you get into a tight spot, you just disappear and reappear, forever! If someone could find out how the game is run, they could make your marble start at the first of the maze whenever you died. It might not be fun, but at least you could get a couple of shots at passing the water-maze.

Also, if you let your time run down to one, you will start over on the Water-Maze!

Dr. George Sabeh

† Softkey for...

Rings of Zilfin

SSI

The Softkey for Rings of Zilfin in COMPUTIST #52 didn't work for me. However, the Softkey for Wizard's Crown in COMPUTIST #42 works on Zilfin just fine.

Thanks for a wonderful magazine. I have thoroughly enjoyed it.

Carl D. Purdy

Softkey for...

Mastery Arithmetic

Troll Software

Softkey for...

Microzine #26

Scholastic

■ Requirements

- Advanced COPYA (COMPUTIST #54)

No sooner did I send my letter to you requesting some inclusions on the most wanted list than I discovered how to unlock these programs on the list.

Advanced COPYA published in COMPUTIST #54 is all that is needed for any of these programs.

Softkey for...

Smart Eyes

Addison Wesley Co.

■ Requirements

- Advanced COPYA (COMPUTIST #54)

Using Advanced COPYA and some minor program changes I was able to crack Smart Eyes.

1 Use Advanced COPYA to copy the program.

2 Make some changes.

BLOAD SMART.OBJ, A\$4000

4009:EA EA

4010:EA EA

BSAVE SMART.OBJ, A\$4000, L\$5480

That is all there is to it. Be sure to copy

both sides of the disk as the necessary text files are on the back of the disk.

? I still need help with Microzine #24, and #25, the MICROGRAMS programs, The PDI (Program Design International) programs, and Magic Spells (the ProDOS version). I have looked at the programs on the PDI disk (Montana Reading Program), and they seem to be Binary files with an Applesoft file type label. When I try to load the HELLO program the disk runs for a few seconds then everything halts until I press RESET. When I do this I get an ERROR message and control is returned to the keyboard. Any ideas?

Stephen Brown

Softkey for...

Polywriter 1.2

Passport Designs Inc.

■ Requirements

- Apple II with 64K, IIe, IIc
- One disk drive
- One blank disk
- A disk with DOS and no HELLO program
- Fast copy utility (eg. Locksmith Fastcopy)

PolyWriter is designed to be used with the Passport Designs MIDI interface and a MIDI-compatible musical instrument. You can load, save, and edit your musical masterpieces using this hardware/software combination.

For a program with such limited uses, I was surprised to find that my copy was well protected. Unable to pass up a good challenge, I scanned the disk with Locksmith Fastcopy. It appeared that tracks \$03 and \$10 were unreadable. The first thing I tried was to make a copy, ignoring the errors. When I booted the disk, I could hear the head "looking" for a nibble count. The program then proceeded to die with an infinite number of **CG**s. If the nibble count is satisfied (by inserting the original disk at the right moment) then the program runs a short graphic display, and then goes to the program. Unfortunately, no copy utility that I tried could make a faithful reproduction of the two protected tracks.

I decided to boot the original again, and press **CG** during the booting process to halt the "HELLO" program if it was AppleSoft. It was! Just my luck! Upon cataloging the disk, I found the DOS on the disk appeared to be an old version of Diversi-DOS. When I listed the program, I found that what the program seems to do is move DOS into the 16K card using DDMOVER, do a few pokes to change the reset vector, and finally run a file called POLYXX.

POLYXX was easy to trace through. It

does a few memory changes, and then routes the string "[CD] BRUN READER" through the subroutine at \$FDED. This is the character-out (COUT) routine. The effect of this is to run the file called READER.

I determined that READER did the nibble count. I decided to trace through READER, but I found it to be literally a nightmare: dozens of consecutive indirect jumps to trace through. I do not have kind words for the programmer of this.

I searched the file for strings that would look like filenames, but this was a dead end. I then looked for stings that would disassemble to things like LDA \$C08E,X which access the drive. This string appeared numerous times, but tracing the code that led to them was difficult. Also, it seemed as though READER was iteratively toying around with certain memory locations, including some in the zero page.

However, after seeing Ray Darrah's Softkey for MIDI/8 in COMPUTIST #39, and finding his softkey for MIDI/4 in COMPUTIST #29, I decided to give up tracing through READER and get right to the "meat and potatoes", the programs themselves. There were no hidden files (or hidden data), so all the information to run POLYWRITER and the graphic display had to be in the files in the catalog. I would bet that files would be BLOAded or BRUN in some order, and a few pokes would have to be made. Getting the display to run was easy. I could get the program to run, but it would die before disk operations. This was fixed by two pokes, which "NOPed" an endless loop.

To deprotect POLYWRITER 1.2, do the following:

1 Make a backup of the original using a fast copier ignoring the errors on track \$03 and track \$10.

2 Remove the copy, and boot the disk with DOS on it. Remove it, insert the copy, and enter the following:

FP

```
10 POKE 40206,0: PRINT CHR$(4) "BRUNDDMOVER"
11 HGR2
15 PRINT CHR$(4) "BRUN*MUSIC*TEXT*&*KEYBOARD"
20 PRINT CHR$(4) "BRUN*POLYHANDS"
30 PRINT CHR$(4) "BRUN*POLYMOVER-2"
40 PRINT CHR$(4) "BRUN*POLY*MOVER-2"
50 PRINT CHR$(4) "BRUN*POLYDOER-2"
100 PRINT CHR$(4) "BLOAD*CHARTS"
110 PRINT CHR$(4) "BLOAD*UPPERS"
120 TEXT
130 POKE 46432,234: POKE 46433,234
140 PRINT CHR$(4) "BRUN*MAINS"
```

SAVE HELLO

That's it! Test it thoroughly. It should work.

Checksums for HELLO

10	- \$14B8	50	- \$3529
11	- \$456F	100	- \$4319
15	- \$F90B	110	- \$FB07
20	- \$685D	120	- \$AA91
30	- \$7D10	130	- \$9AA0
40	- \$2F31	140	- \$F4E4

James E. Bulman

As a new subscriber to COMPUTIST, I would like to express my thanks for an excellent magazine. I have a problem. I have been stumped by Gary Rohr's softkeys for Math Blaster (Davidson & Associates) in COMPUTIST #54.

I thought I would try his Softkeys to deprotect WORD ATTACK! by the same company. Unfortunately, there is a bug in the controller used in both his Softkeys. SUPER IOB stops cold with an "UNDEFINED STATEMENT" error.

Line 1060 of his controller states "GOSUB 2330" but there doesn't seem to be a Line 2330 in my SUPER IOB nor in his controller. I'm stumped. Do you think you can help me out with this?

Now that I've gotten that off my chest, I would like to request the following programs be added to the Most Wanted list:

Magic Spells by The Learning Company, the softkey in COMPUTIST #53 did not work for me.

F-15 Strike Eagle by Microprose, the softkeys in COMPUTIST #24, #35, & #38 did not work.

Where In The World Is Carmen Sandiego by Boderbund, the recommendations in COMPUTIST #19 & #25 require hardware modifications which I do not wish to make.

Thank you again for a fine computer magazine. I am learning more and more with each issue.

I Try using "GOSUB 230" in line 1060 instead of the 2330. It should work much better.
..... RDEXed

Blain Johnson

A.P.T. for...

Castle Wolfenstein

Muse Software

Castle Wolfenstein is a fun game, but it has many drawbacks that slow the action down. I have created nine modifications to the game that will make the game play much faster and easier.

You need to know which Castle Wolfenstein you have before you get started. The Controller in COMPUTIST #9 that deprotects a modified DOS 3.2 (13-sector) disk is the version I have. There is a softkey for Castle Wolfenstein in COMPUTIST #39 which deprotects a modified DOS 3.3 (16-sector) disk. The sector edits will probably not be the same.

I will give step-by-step instructions for modifying the files from the monitor. If you have the DOS 3.2 Castle Wolfenstein you can read through these instructions to find out what each edit does, and then use the sector edit table at the end of this article to make the changes.

I am not certain whether these instructions will even work on the DOS 3.3 version. If possible, I would like to have some feedback to see if these "mods" work for that version.

One more thing before I get started. The Controller that was supplied with my Super IOB had an error in it. Line 1030 should read:

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

1 Boot up DOS. Insert your unprotected copy of Castle Wolfenstein.

**BLOAD @INIT
CALL -151**

2 My first mod will remove the wait for the RETURN key at the starting up of Castle Wolfenstein. If you have a slow DOS, the wait is a waste because you can see the screen long enough while the game is loading. To do this, you have to NOP 27 bytes from \$933 to \$94E.

933:EA N 934<933.94DM

3 If you have a fast DOS, the whole picture loading and waiting for RETURN is not essential to the game. To remove the screen loading, you have to NOP 20 bytes at \$8F4-907 and 6 bytes at \$90B-910. (Don't forget step 2.)

**8F4:EA N 8F5<8F4.906M
90B:EA EA EA EA EA EA**

4 One thing I get tired of is watching those instructions roll by every time I start a new game. If you have a slow DOS, the instructions take up a lot of time. NOP these locations with EA's:

**ABB:EA N ABC<ABB.AC7M 14 bytes
ACC:EA EA EA**

**AF8:EA EA EA
B2B:EA EA EA EA EA EA
B55:EA EA EA**

B96:EA N B97<B96.BA2M 14 bytes

**BA7:EA EA EA
BC7:EA EA EA**

**BF4:EA EA EA EA EA EA
C69:EA N C6A<C69.C75M 14 bytes**

Readers Data Exchange

And add this code.

182A:20 58 FC 20 49 13
1830:17 02 20 EB 12 D0 CC C5
1838:C1 D3 C5 A0 D7 C1 C9 D4
1840:AE AE AE

5 You are done with the INIT file, so you can save it back to disk now.

BSAVE @INIT,A\$880,L\$12BE

6 Load the next file.

BLOAD @WOLF

7 The game makes an annoying noise when you run into something. One simple change is all you need to disable this sound.

14CF:60

7a Now when you run into something there is no sound, but the guards move forward 3-6 steps really fast. When I disabled these steps, it caused the men not to move forward at all. If you walk into a room and happen to run into a guard, you would be caught in a endless loop. If you want to disable the 3-6 steps anyway, NOP these locations:

11F0:EA EA EA

If you do get caught in an endless loop, you can try to save your game with **[ESC]**, and then sector edit it back.

11F0:20 63 17

Sometimes this works, but most of the time you get caught right away when you startup again. I don't recommend this change, but you can do it if you want. Maybe someone can come up with a better way.

8 You are done with @WOLF.

BSAVE @WOLF,A\$810,L\$16EB

9 Load the next file.

BLOAD ^THINGS

10 The time spent waiting for a chest to open is almost worthless, unless you are being chased by SS Stormtroopers. I found an easy cure:

5A07:A2 00 EA EA

11 This change allows you to use whatever is in the chest without any wait.

5ADB:00

5AAE:A0 A0

5AB0:A0 A0 A0 A0 00

5AB5:EA N 5AB6<5AB5.5AD8M

37 bytes

12 This change is to search a guard faster.

51D0:EA EA

13 This change tests your keys faster (1 second).

5431:01

14 We're done with this file.

BSAVE ^THINGS, A\$4800, L\$1638

Some of the files that you BSAVE back to the disk may be locked. Just UNLOCK them before you BSAVE. You do not need to LOCK them after you BSAVE the file.

The following is a sector edit table for the DOS 3.2 version of Castle Wolfenstein. Each edit is preceded by a short description of what it does.

Trk	Sct	Byte(s)	From	To
\$19	\$01	\$C3	?	60

Disable 3-6 steps when you run into something

Trk	Sct	Byte(s)	From	To
\$19	\$04	\$E4-E6	?	EA EA EA

Eliminate RETURN at startup

Trk	Sct	Byte(s)	From	To
\$0B	\$09	\$B6-D2	?	all EAs

Eliminate picture load at startup

Trk	Sct	Byte(s)	From	To
\$0B	\$09	\$78-8B	?	all EAs
		\$8F-\$94	?	all EAs

To stop instructions at each new game, fill all these locations with EA's.

Trk	Sct	Byte(s)	From	To
\$0B	\$06	\$1A-27	?	all EAs
		\$2B-2D	?	all EAs
		\$4B-4D	?	all EAs
		\$78-7D	?	all EAs
		\$ED-FA	?	all EAs
\$0B	\$07	\$3F-4C	?	all EAs
		\$50-52	?	all EAs
		\$7C-7E	?	all EAs
		\$AF-B4	?	all EAs
		\$D9-DB	?	all EAs

The text: PLEASE WAIT...

Trk	Sct	Byte(s)	From	To
\$0A	\$05	\$AE-C6	?	20 58 FC 20 49 13 17 02 20 EB 12 D0 CC C5 C1 D3 C5 A0 D7 C1 C9 D4 AE AE AE

Immediate chest opening

Trk	Sct	Byte(s)	From	To
\$0D	\$06	\$0B-0E	?	A2 00 EA EA

Immediate object getting

Trk	Sct	Byte(s)	From	To
\$0D	\$06	\$DF	?	00
		\$B2-B7	?	A0
		\$B8	?	00
		\$B9-DD	?	all EAs

Immediate searching

Trk	Sct	Byte(s)	From	To
\$0E	\$02	\$D4-D5	?	EA EA

1 second wait for doors

Trk	Sct	Byte(s)	From	To
\$0D	\$0C	\$35	?	\$01

All these changes are separate and can be used in any combination. If you snoop around in the code that is contained in the three files used here (@INIT, @WOLF, ^THINGS) you can make modifications of your own. I have picked out the best nine. If you snoop long enough, you might even find out things that make the game too simple. I found a location to stop all the enemy. It sure makes the game easy!

If you need to reach me because of some problem with these changes, you can contact me at this address: Blain Johnson, 3658 Crook Drive, Torrington, WY 82240

Dick Lavalley

Softkey for...

Spell it!

Davidson & Associates, Inc.

Requirements

- Super IOB 1.5
- COPYA or similar type copier
- Blank disk
- Sector editor

■ **Optional:** Pronto-DOS or Diversi-DOS (don't use David-DOS)

Spell it! contains all Applesoft files with a **[CZ]** after the first letter in each file name (H**[CZ]**ELLO). My program disk had five Applesoft statements sprinkled through its files that checked for the original disk. One file, S**[CZ]**PELL IT! HELLO, appears to have a machine language program tucked behind it and was difficult to list the Applesoft program and then save them both as the original file. The Applesoft statement that checked for the original disk was " IF PEEK(... THEN". The Applesoft reserved word token for "IF" is AD and the token for "REM" is B2. By changing

the 'IF' to a 'REM' the rest of the Applesoft statement will be ignored. If the sector edit locations on your disk are different, search the disk for the following bytes: AD E2 28 32 31 36 and AD E2 28 34 30 33. In all locations, change AD to B2.

Deprotection

1 Boot DOS 3.3 and initialize a disk.

FP
INIT H **QZ** **ELLO**

2 Merge the controller into Super IOB and copy the front side of the disk (program side) to the initialized disk.

3 Copy the back side of the disk (data files) with COPYA.

4 With a sector editor, make the following edits to the front (program side) of the disk.

Trk	Sct	Byte(s)	From	To
\$17	\$0E	\$FD	AD	B2
\$0E	\$06	\$2B	AD	B2
\$13	\$06	\$2B	AD	B2
\$1A	\$0B	\$D2	AD	B2
\$1B	\$08	\$0C	AD	B2

Controller

```

1000 REM SPELL IT
1010 TK = 3:LT = 4:ST = 15:LS = 15:CD = WR
1020 POKE 47405,24: POKE 47406,96: POKE
      47497,24: POKE 47498,96
1030 POKE 47829,3:T1 = TK: GOSUB 490: GOSUB 210
1040 GOSUB 190: GOSUB 610
1050 TK = TK + 1:LT = LT + 1: IF PEEK (BUF) < MB AND
      TK < 35 THEN 1040
1060 POKE 47405,208: POKE 47406,19: POKE
      47497,208: POKE 47498,183: POKE
      47829,213: GOSUB 230
1070 TK = T1:LT = 35: GOSUB 490: GOSUB 610: IF
      PEEK (TRK) = LT THEN 1090
1080 TK = PEEK (TRK):ST = PEEK (SCT):LT = TK + 1:
      GOTO 1020
1090 HOME: PRINT "COPY DONE": END
5000 DATA 213,170,181,215,170,151,213,170,
      150,213,170,151,215,170,150
5010 DATA 215,170,151,221,170,158,221,170,
      159,213,170,181,223,170,158
5020 DATA 223,170,159,221,170,158,221,170,
      159,223,170,158,223,170,159
5030 DATA 213,170,150,213,170,181,213,170,
      151,215,170,150,215,170,151
5040 DATA 213,170,150,213,170,151,215,170,
      150,215,170,151,213,170,181
5050 DATA 221,170,158,221,170,159,223,170,
      158,223,170,159,221,170,158
5060 DATA 221,170,159,223,170,158,213,170,
      181,223,170,159,245,170,182
5070 DATA 245,170,183,247,170,182
    
```

Checksums

1000	- \$356B	1090	- \$50E7
1010	- \$3189	5000	- \$C979
1020	- \$C562	5010	- \$0053
1030	- \$545E	5020	- \$B8EB
1040	- \$DDB4	5030	- \$C2D7
1050	- \$A5C8	5040	- \$2755
1060	- \$044B	5050	- \$C31C
1070	- \$B732	5060	- \$735C
1080	- \$045C	5070	- \$BF41

Ryan Lanctot

Infocom Decoder Revisited

■ Requirements

- Apple II plus, IIe, IIc, IIgs
- One disk drive
- An Infocom Adventure
- A formatted disk
- Infocom Text Reader (from COMPUTIST #34)
- Infocom Text Reader enhanced (from COMPUTIST #41)

COMPUTIST #34 had a really neat utility program called "Infocom Text Reader" that allows you to read Infocom adventures and scan them for much needed clues. In COMPUTIST #41, enhancements were introduced to make the text more readable. During all this, there was no simple way to find out what the abbreviations were, except by decoding them by hand. It was at this point that I decided to take a crack at mechanizing this process. The result is a program I call "Infocom Decoder".

This program takes data, read with the program in COMPUTIST #34 (with some modifications) and decodes the abbreviations. It then produces a text file of DATA statements which you can EXEC into the modified program of COMPUTIST #41.

Infocom Text Reader Modifications

Since this article consists of BASIC programs only, keying them in is easy.

1 Load "Infocom Text Reader" (from COMPUTIST #34).

LOAD INFOCOM TEXT READER

2 Delete these lines:

610
620
700
720

730
740

3 Now add the modifications:

Infocom Text Reader Modifications

```

115 DIM X$(1200):A = 1:DS = CHR$(13) + CHR$(4)
150 COMDOS = 188:STDDOS = 173: POKE
      47356,COMDOS:DOS$ = "INFOCOM"
200 IF T$ = "Q" THEN POKE 47356,STDDOS: VTAB 24:
      HTAB 6: PRINT "PUT^DATA^DISK^IN^DRIVE^#1"
      ;; GET AS: PRINT DS: GOSUB 750: PRINT DS
      "RUN^INFOCOM^DECODER,D1": END
380 POKE 776,0: CALL 775: PRINT
390 POKE -16368,0: PRINT: VTAB 24: PRINT "SAVE^
      THIS^PAGE?^^(Y/N):": GET AS: IF AS = "Y"
      OR AS = "y" THEN 630
630 FOR Y = 3 TO 12
635 VTAB 24: HTAB 1: PRINT SPC(38): INVERSE:
      VTAB 24: HTAB 11: PRINT "WORKING": NORMAL
      : PRINT "^ON^LINE^#": Y;
665 IF XY - 128 < 33 THEN 680
670 D = (A - 1) * 400 + X + (40 * (Y - 3))
680 X$(D) = CHR$(XY)
690 NEXT X: NEXT Y
710 A = A + 1: GOTO 170
750 PRINT DS "OPEN^INFOCOM^DATA,D1"
760 PRINT DS "CLOSE^INFOCOM^DATA"
770 PRINT DS "DELETE^INFOCOM^DATA"
775:
780 PRINT DS "OPEN^INFOCOM^DATA"
790 PRINT DS "WRITE^INFOCOM^DATA"
800 PRINT A - 1
810 FOR I = 1 TO 400 * A
820 PRINT X$(I)
830 NEXT I
840 PRINT DS "CLOSE^INFOCOM^DATA"
850 PRINT: PRINT: RETURN
    
```

Checksums

115	- \$D0D2	750	- \$40D8
150	- \$97D2	760	- \$0857
200	- \$B8C6	770	- \$3CAC
380	- \$D467	775	- \$DC87
390	- \$CBC0	780	- \$D52D
630	- \$9690	790	- \$8FFA
635	- \$60BE	800	- \$17EA
665	- \$E6AF	810	- \$3B1F
670	- \$EEB3	820	- \$F013
680	- \$477E	830	- \$3A86
690	- \$4592	840	- \$B284
710	- \$2D37	850	- \$A40E

4 And finally, save the whole thing to disk.

SAVE INFOCOM TEXT READER V2


```

1360 IF S > 1 THEN INVERSE : VTAB 11: HTAB H + S
- 1: PRINT MID$(DE$(B), S - 1, 1): NORMAL
1370 IF S < L THEN INVERSE : VTAB 11: HTAB H + S
+ 1: PRINT MID$(DE$(B), S + 1, 1): NORMAL
1380 GOTO 1310
1390 ED$ = MID$(DE$(B), SP, L): DE$(B + 1) = ED$
1400 ED$ = MID$(DE$(B), 1, SP - 1): IF MID$(
DE$(B), SP - 1, 1) = "" THEN ED$ = MID$(
DE$(B), 1, SP - 2)
1410 DE$(B) = ED$
1420 W = W + 1: GOSUB 1440: INVERSE : VTAB 7: HTAB
16: PRINT DE$(B): VTAB 8: HTAB 16: PRINT
DE$(B + 1): NORMAL: RETURN
1430 REM PRINT BORDER
1440 HOME : INVERSE : PRINT SPC( 10);
"ABBREVIATION" EDITING"; SPC( 10)
1450 VTAB 2: PRINT SPC( 18); "MENU"; SPC( 18)
1460 FOR I = 2 TO 22: VTAB I: HTAB 1: PRINT "":
VTAB 1: HTAB 40: PRINT "": NEXT I
1470 VTAB 23: HTAB 1: PRINT SPC( 40);
1480 NORMAL
1490 VTAB 4: HTAB 4: PRINT "BEGINNING:"
1500 VTAB 5: HTAB 10: PRINT "END:"
1510 VTAB 7: HTAB 4: PRINT "SPLIT" WORDS:"
1520 VTAB 20: HTAB 4: PRINT "->" = "FORWARD"
1530 VTAB 10: HTAB 10: PRINT
"+-----+"
1540 VTAB 16: HTAB 10: PRINT
"+-----+"
1550 VTAB 21: HTAB 4: PRINT "<-;" = "REVERSE"
1560 VTAB 22: HTAB 5: PRINT "S" = "SPLIT" WORD"
1570 VTAB 20: HTAB 21: PRINT "<RET;" = "MARK" WORD"
1580 VTAB 21: HTAB 21: PRINT "<SPACE;" = "TO" JUMP" 5"
1590 VTAB 22: HTAB 21: PRINT "<ESC;" = "QUIT" MENU"
1600 RETURN
    
```

Checksums

10	- \$BADD	810	- \$92E3
20	- \$9B13	820	- \$B860
30	- \$4D3B	830	- \$5FB8
40	- \$BEF6	840	- \$353D
50	- \$A40E	850	- \$9054
60	- \$C5B0	860	- \$F38B
70	- \$22D1	870	- \$4D1A
80	- \$54D7	880	- \$1823
90	- \$31DA	890	- \$45D8
100	- \$9CB7	900	- \$A920
110	- \$2EC7	910	- \$ADF0
120	- \$F90D	920	- \$8D5F
130	- \$9B35	930	- \$DE92
140	- \$B3CC	940	- \$7576
150	- \$2577	950	- \$CCA3
160	- \$45A4	960	- \$60AB
170	- \$0B2D	970	- \$696E
180	- \$FE2C	980	- \$AA45
190	- \$5932	990	- \$CC81
200	- \$B186	1000	- \$76F2
210	- \$EC6D	1010	- \$738F
220	- \$2AED	1020	- \$897E
230	- \$2E98	1030	- \$8C78

240	- \$1DEE	1040	- \$24F4
250	- \$9CF0	1050	- \$C7A5
260	- \$BCD6	1060	- \$85DE
270	- \$E623	1070	- \$19B1
280	- \$0DFB	1080	- \$F2E7
290	- \$8A10	1090	- \$70D5
300	- \$E8F7	1100	- \$E5F6
310	- \$9661	1110	- \$BD9C
320	- \$B5FC	1120	- \$BBCB
330	- \$3928	1130	- \$7993
340	- \$A0D7	1140	- \$7FB4
350	- \$C361	1150	- \$0528
360	- \$2637	1160	- \$301A
370	- \$A107	1170	- \$10F6
380	- \$A847	1180	- \$326C
390	- \$FFF1	1190	- \$E281
400	- \$E635	1200	- \$C5B1
410	- \$8E83	1210	- \$EDEA
420	- \$EA7D	1220	- \$C5DD
430	- \$CFBD	1230	- \$78E0
440	- \$0788	1240	- \$186C
450	- \$D53D	1250	- \$2F49
460	- \$B632	1260	- \$1D72
470	- \$A215	1270	- \$2491
480	- \$DE5D	1280	- \$C2D0
490	- \$BACB	1290	- \$C098
500	- \$EA04	1300	- \$F6D9
510	- \$6142	1310	- \$4581
520	- \$56B5	1320	- \$B8C3
530	- \$623C	1330	- \$940D
540	- \$499B	1340	- \$5EA5
550	- \$16B8	1350	- \$9C63
560	- \$9F9D	1360	- \$27A2
570	- \$AC01	1370	- \$51C1
580	- \$6357	1380	- \$F9AA
590	- \$9C21	1390	- \$E6DD
600	- \$BD90	1400	- \$9818
610	- \$FD46	1410	- \$8ABA
620	- \$2ACE	1420	- \$79B8
630	- \$EC3B	1430	- \$7256
640	- \$CC2B	1440	- \$7D08
650	- \$E97C	1450	- \$9380
660	- \$28D6	1460	- \$7A04
670	- \$80C1	1470	- \$04B8
680	- \$B202	1480	- \$CDD8
690	- \$0A92	1490	- \$F01D
700	- \$5DC9	1500	- \$E9F7
710	- \$6E8E	1510	- \$9AC4
720	- \$22F8	1520	- \$B147
730	- \$47C3	1530	- \$B49A
740	- \$E35C	1540	- \$9CB4
750	- \$4DEB	1550	- \$791E
760	- \$09A4	1560	- \$0C07
770	- \$F323	1570	- \$F26B
780	- \$B2BD	1580	- \$784E
790	- \$34FD	1590	- \$F906
800	- \$696B	1600	- \$68EF

6 Save the program.

SAVE INFOCOM DECODER

NOTE: If you compile the Decoder, you will have to change the text reader to BRUN the Decoder instead of RUNing it.

Using the new Reader

Using the reader is easy. Put the disk with the reader and the decoder into drive 1 and run the reader. (I will refer to this disk as the data disk.) Take the data disk out and put it aside. Take your Infocom game and put it in drive 1.

The main menu of the program will ask you which track and sector you want to read. Read track \$03, sector \$00 and see if you can recognize any abbreviations. If the abbreviations are there, you will see a list of words separated by semicolons. The program will then ask you if you want to save this page. Press "Y" and the program will store screen lines 3 to 12. It starts at line #3 because the top two lines are of no use to us.

The program will then go back to the main menu, but don't worry, the data you have stored is still in memory. Read track \$03, sector \$0D and do the same as you did above. You should also read track \$03, sector \$0B. Even though there is usually no data there, there could be part of a word from sector \$0D. When you have all the abbreviation data in memory, you should be at the main menu. Press "Q" at the track prompt. You will then be prompted to put the data disk in drive 1 and to press any key. The text reader will then save the data and run the decoder automatically.

Using The Decoder

Since the decoder does 97% of the work for you, all you have to do is sit back and watch what happens. The decoder will first print a menu screen and tell you which parts of the program it is going through during its execution. This is done so you won't have to worry whether or not the computer has hung up. After the program has parsed the data into separate words, another menu screen will be printed.

In this menu, you must tell the program where the list starts and stops making sense to you. You need to do this because the computer, being quite literal, can't distinguish between random symbols and meaningful words. You mark the words by using the left and right arrow keys (← and → for Non-IIplus users), to move the word list and the return key to mark the beginning and ending words. In addition, another feature has been added to the above. The ability to split a word into two pieces is sometimes needed (as it is with Hitchhiker's Guide To The Galaxy when the data typed in doesn't contain spaces. For example, the words "YOU CAN" and "UNFORTUNATELY BE" are not decoded properly. This is where you come in. When you find words like this, simply move the word until it is highlighted with the inverse bar. Then, press the "S" key and the program will go into cursor edit mode. Use the arrows to move the non-inverse cursor over the first letter in the second word and press the "S"

key again. This splits the word into two pieces for you and re-inserts each piece into the word list.

YOU CAN UNFORTUNATELY BE becomes
YOU CAN UNFORTUNATELY BE

Keep doing this until you have gotten rid of all multiple-word words. Then tell the program where the end of the list is and the program will pop back to the main menu. You will be asked for a name for the text file where the data is saved. Type one in and press return. The program will then save the data.

Putting The Data In A Program

After going through this business, you have to load the "Infocom Text Reader" and type in the modifications in COMPUTIST #41. Save the new program as "MODIFIED TEXT READER".

When you have done this, make sure the program is in memory and enter the following:

EXEC filename

Where "filename" is the name you gave for the text file in the decoder program (this types the abbreviations at the end of the modified reader). Save this reader.

SAVE filename TEXT READER

Other Modifications

Some possible modifications to the Decoder will immediately spring to mind if you use the Decoder uncompiled. Most of the time is used in looking for abbreviations in the data. To speed it up, you could make the program look for a @ first and if you find one, look for an abbreviation character. This could present other problems, so I suggest only those who feel adventurous try this. In any case, the Decoder works, albeit slowly. If the Decoder runs too slow for you, I suggest you compile it. I used a friend's copy of Beagle Compiler (ProDOS) and it speeded up execution by 500%. Alternatively, if you don't have access to a compiler, have a cup of coffee or watch a TV program, since the process takes about 10 minutes uncompiled. Have Fun!

Harry M. Randel

Help!

Many years ago, I purchased the Einstein Compiler from the Einstein Corporation, 11340 W. Olympic Blvd., Los Angeles, CA 90064.

Over the years, I have used this compiler to 'hide' the listings of BASIC programs from my Elementary School students. It worked beautifully—give them a disk with a problem on it or a lo-res picture and tell them that they have one week to write a program on the disk that can be run and will duplicate the example.

Unfortunately, this past winter a research

organization contacted our computer store in search of a compiler for some lab problems. I made the mistake of loaning them my Einstein compiler. It came back with both disks 'blown'.

Now, it is time again to evaluate my students and I have no easy means of accomplishing the task. I can use the Beagle compiler, but it in no way compares with the old Einstein compiler.

I have tried to telephone the original listed phone number (213)-477-4539 without results.

I have talked with members of the NJ Apple Users club—and several other Apple individuals—all without luck.

As a long time subscriber to your super publication, I remember some time back reading of the softkey for the Einstein Compiler, but at the time I made another mistake—I just read the article and never took action.

Can anyone out there help me?

I have the two (2) original disks from The Einstein Compiler—now both blown—I will send them to anyone who can repair them along with any fee that they may require.

H Alright COMPUTISTS, here's your chance to do a good deed. Someone out there must have this compiler. Original compiler plus softkey equals fixed disk. And don't forget the COMPUTIST golden rule; Never use an original disk. RDEXed

Zorro

Cracking on the Iie

Requirements

- Tubeway by Datamost (or any game, such as Choplifter, as long as the file length and starting address are known)
- DOS 3.3 System Master, or any almost empty initialized disk with at least 138 sectors remaining and a fast DOS (Pronto-Dos by Beagle Bros. or Diversi-Dos preferable)
- Apple Iie with extended 80-column card

Recently, I discovered a method to deprotect virtually any type of single-load game such as Choplifter, Tubeway, etc. The following is similar to the XFER.BOOT & RESTORE (COMPUTIST #16), which loads the program into the Iie's auxiliary memory and allows the user to boot up a disk and restore the contents of aux.memory.

1 Boot the DOS 3.3 System Master disk.

2 Enter the monitor and setup to boot into auxiliary memory.

CALL-151

0: 8D 03 C0 8D 05 C0 4C 00 C6

3 Insert the protected disk in the drive and boot it. The computer will appear dead, and the hi-res screen may be filled with garbage. Don't panic while doing this step.

0G

4 Remove the protected disk, insert your blank initialized disk and reboot. (Auxiliary memory is not affected by pressing **RESET** or **RESET**.)

RESET

5 After the drive stops, enter the monitor again and setup the transfer routine call. The routine at \$300 calls the monitor auxiliary memory move routine. The \$03F8 code is the **Y** vector.

CALL-151

0300:18 4C 11 C3

03F8:4C 00 03

6 In the case of Tubeway, the program resides at \$900 and its length is \$87F0 (A\$900,L\$87F0). Now, move the contents of auxiliary memory from \$900 to \$90F8 into main memory at the same locations.

900<900.90F8 Y

7 The file is too large for DOS to allow to be saved at once, so change the file length limitation.

A964:FF

8 Finally, save your deprotected copy of Tubeway to disk:

BSAVE TUBEWAY,A\$900,L\$87F0

This is a very useful deprotection method that can be used with many single-load games, provided that the file length and starting address are known.

H This method was first advocated by Steve Dietz (COMPUTIST #25) as an easier way to use the auxiliary memory for disk cracking. RDEXed

Q Now, I have a question. I have several games that are very frustrating to play since I do not get far without getting killed. They are Hero by Activision, Pitfall II by Activision, and Montezuma's Revenge by Parker Brothers. These are all of the single-load variety and all have been 'cracked.'

I read Mr. Wiegley's article in COMPUTIST #51 on how to get 255 men in Broderbund's Lode Runner, and I tried to use the same method as he did for all of the above games. I must have changed over a hundred bytes of data and rerun the programs at least 3 times each, but I either got a screen full of garbage or the system hung. HELP!!

Les Minaker

Might and Magic Revisited

How to Keep up With the Joneses

■ Requirements

- Apple II plus, Iie, or Iic
- A back-up of Might and Magic, disk B (I recommend using a back-up only)
- A sector editor

Introduction and Disclaimer

Might and Magic is one of the better fantasy role-playing games that is currently in circulation. Published by New World Computing, I recommend it highly to fans of Infocom text adventures, Wizardry, The Bard's Tale, et al. The graphics are nice, the puzzles are well thought out and, to the designers credit, tough, but solutions can be found.

The following is the product of my desire to know all I could about the items, armour and weapons in Might and Magic. I read Carole Fox's article on sector edits/items in COMPUTIST #51 for Might and Magic and decided to research and expand upon the descriptions she presented. I have no intention of claiming this work as entirely original and I must tip my hat to Ms. Fox for doing all the really hard stuff and to exhausted adventures who brought me the enclosed information from all corners of Varn.

For the sake of simplicity, I have used the same conventions as Ms. Fox to describe the attribute values in the game. For example: "now" describes temporary or magic enhanced values, and "base" describes the normal value of an attribute. I have also included Ms. Fox's information to save time searching through back issues.

I have attempted to verify the information presented here, but despite the best efforts of mice and men, drivel and downright incorrect information slips through - sorry.

Playing Tips for...

Might & Magic

- Visit The Arena to increase you experience points.
- Interleave' gold and silver clues.
- Black boxes hold untold treasure.
- Seek the Wizard Ranalou about the six.
- Volcano God? Try 'BJ'!
- Brother Zam is acquainted with Brother Zom.

- Seek Luck Island after defeating 'monstrous' creature.
- Seeking resistance scores? Try Algary.
- Be generous at the pubs.
- Seek all keys. All but Crystal and Gold seem to be out not in.
- Gypsy seer assigns your colour.
- Thundranium provides great strength.
- Seek the Legendary Castle - if it even exists!

A.P.T. for...

Might & Magic

Looking at Track \$05, Sector \$00, on Disk B, the characters in the game can be examined and altered. Starting at byte \$00 and the character information can be read and, of course, edited with a sector editor.

The following chart shows how the information is stored. Note that there are about 2 characters per sector, but they never seem to start on the same byte from sector to sector. In some cases, they can go past the end of a sector. If this happens, simply continue your editing on the next sector. The chart shows the byte position of each item relative to the start of the character name. You must count the bytes from the beginning of the character's name in order to determine the location of the information you wish to change.

Attribute	offset
Name	\$00-\$0F
Sex	\$10
Current Alignment	\$11
Base Alignment	\$12
Race	\$13
Class	\$14
Current Intellect	\$15
Base Intellect	\$16
Current Might	\$17
Base Might	\$18
Current Personality	\$19
Base Personality	\$1A
Current Endurance	\$1B
Base Endurance	\$1C
Current Speed	\$1D
Base Speed	\$1E
Current Accuracy	\$1F
Base Accuracy	\$20
Current Luck	\$21
Base Luck	\$22
Current Experience Level	\$23
Base Experience Level	\$24
Age	\$25
nothing at all	\$26
Experience Points	\$2A-\$27 backwards
Current Spell Points	\$2B-\$2C
Base Spell Points	\$2D-\$2E
Spell Level	\$2F-\$30
Gems	\$33-\$31 backwards
Current Hit Points	\$34-\$35

Base Hit Points	\$36-\$37
nothing at all	\$38
Gold	\$39-\$3B
Attack Class (?)	\$3C
Armour Class	\$3D
Food	\$3E
Condition	\$3F
Equipment	\$40-\$45
Backpack	\$46-\$4B
Equipment Magic Charges	\$4C-\$51
Backpack Magic Charges	\$51-\$57
Magic Resistance	\$58-\$59 now/base?
Fire Resistance	\$5A-\$5B now/base?
Cold Resistance	\$5C-\$5D now/base?
Electricity Resistance	\$5E-\$5F now/base?
Acid Resistance	\$60-\$61 now/base?
Fear Resistance	\$62-\$63 now/base?
Poison Resistance	\$64-\$65 now/base?
Sleep Resistance	\$66-\$67 now/base?

Sex	\$01	male
	\$02	female
Alignment	\$01	good
	\$02	neutral
	\$03	evil
Race	\$01	human
	\$02	elf
	\$03	dwarf
	\$04	gnome
	\$05	h-orc
Class	\$01	knight
	\$02	paladin
	\$03	archer
	\$04	cleric
	\$05	sorcerer
	\$06	robber

The condition code seems to be based on bit position within the byte. There are 8 bit positions in a byte. A clear bit (0) indicates good condition. A set bit (1) indicates you have that condition. Add up the hex values of the set bits to get the actual byte to store. Some combinations do not occur naturally and may confuse the game. This is all "for your information" as the best byte to have here is \$00 indicating all good.

val	bit posn	Condition
\$01	0000 0001	asleep
\$02	0000 0010	blinded
\$04	0000 0100	silenced
\$08	0000 1000	diseased
\$10	0001 0000	poisoned
\$20	0010 0000	paralysed
\$40	0100 0000	unconscious
\$80	1000 0000	stoned

Be careful when entering in numbers. It is very easy to miscount and end up eradicated! Moral: make a backup of Disk B before you make alterations to your favorite paladin or cleric. Disk B can be copied by any standard copier such as Locksmith 6.0 Fastbackup.

Readers Data Exchange

Complete Item List — no stone left unturned!

Item Name	Equipping Bonus	Use Bonus/Effect	Code	Item Name	Equipping Bonus	Use Bonus/Effect	Code
accurate sword	accuracy +6	accuracy +5 (now)	\$34	demon's glaive	acid resistance	casts acid arrow	\$74
acid shield	acid resistance	none	\$A8	destroyer wand	magic resistance	casts disintegrate	DD
adamite axe	luck +8	casts sun ray	\$3A	devil's glaive	cold resistance	casts feeble mind	\$75
amber gem	n/a	none	\$B6	diamond collar	ages character 80 years	casts prismatic light	\$E4
antidote brew	n/a	casts neutralize poison	\$C3	diamond dagger	might +4	none	\$26
archer's bow	accuracy +5	casts disintegrate	\$54	diamond key	n/a	casts teleport	\$F0
axe destroyer	might +4	casts raise dead	\$38	dragon shield	magic resistance	casts power shield	\$AA
axe protector	magic resistance	casts prismatic light	\$37	dragon tooth	n/a	casts rejuvenate	\$F4
b queen idol	n/a	none	\$F8	dried beef	n/a	gives +6 food	\$B3
bag of garbage	cursed item	none	\$BF	electric shield	electrical resistance	none	\$A7
bag of sand	n/a	casts sleep	\$B8	electric spear	electrical resistance	casts electron arrow	\$27
bag of silver	n/a	none	\$B5	electric sword	electrical resistance	casts lightning bolt	\$2F
bardiche	none	none	\$58	element sacarab	personality +5	casts protection from elem.	\$DE
bardiche +1	speed +1	none	\$5F	element sword	magic resistance	casts protection from elem.	\$3C
bardiche +2	speed +2	none	\$66	evil flamberge	magic resistance	casts sun ray	\$F8
battle axe	none	none	\$0A	eye of goros	none	casts astral spell	\$FE
battle axe +1	attack/damage bonus	none	\$16	fire opal	ages character 80 years	casts meteor shower	\$E5
battle axe +2	fire resistance	might +2 (now)	\$22	fire shield	fire resistance	none	\$A5
belladonna	none	none	\$B1	flail	none	none	\$07
bells of time	n/a	ages character 10 years	\$DA	flail +1	attack/damage bonus	none	\$13
belt of power	might +5	none	\$CA	flail +2	personality +1	casts first aid	\$1F
blue ring mail	electrical resistance	casts lightning bolt	\$95	flail of fear	fear resistance	casts scare	\$2B
boots of speed	speed +5	speed +5 (now)	\$C5	flamberge	none	none	\$5C
bow of power	fear resistance	increases level +4 (now)	\$52	flamberge +1	attack/damage bonus	none	\$63
bracers AC4	none	none	\$8D	flamberge +2	might +2	might +2 (now)	\$6A
bracers AC6	fear resistance	casts shield	\$92	flamberge +3	might +4	speed +3 (now)	\$71
bracers AC6	fear resistance	casts shield	\$94	flaming bow	fire resistance	casts lightning bolt	\$4F
bracers AC8	fear resistance	casts shield	\$9B	flaming club	fire resistance	casts flame arrow	\$18
broad sword	none	none	\$09	flaming sword	fire resistance	casts fireball	\$30
broad sword +1	luck +2	none	\$15	flying carpet	+2 armour bonus	casts fly	\$C1
broad sword +2	might +1	none	\$21	garlic	n/a	none	\$AF
bronze key	n/a	casts detect magic	\$ED	gem sack	n/a	adds +10 gems	\$E3
cactus nectar	n/a	casts create food	\$F1	giant's bow	none	none	\$50
chain mail	none	none	\$7D	glaive	none	none	\$57
chain mail +1	fire resistance	none	\$84	glaive +1	speed +1	none	\$5E
chain mail +2	fire resistance	none	\$8A	glaive +2	speed +2	none	\$65
chain mail +3	luck +4	none	\$8F	gold key	n/a	casts invisibility	\$EF
chain mail +3	luck +4	none	\$93	great axe	none	none	\$5B
cleric's beads	personality +5	casts cure wounds	\$D1	great axe +1	attack/damage bonus	none	\$62
club	none	none	\$01	great axe +2	might +2	might +3 (now)	\$69
club +1	attack/damage bonus	none	\$0C	great axe +3	might +4	speed +3 (now)	\$70
club +2	attack/damage bonus	none	\$0D	great bow	none	none	\$41
club of noise	cursed item	none	\$19	great bow +1	attack/damage bonus	none	\$46
cold axe	cold resistance	casts cold beam	\$2E	great bow +2	fear resistance	none	\$4B
cold glaive	cold resistance	casts produce frost	\$6C	great hammer	none	none	\$5A
cold shield	cold resistance	none	\$A6	great hammer +1	personality +1	none	\$61
coral key	n/a	none	\$EC	great hammer +2	personality +2	casts bless	\$68
crossbow	none	none	\$3E	halberd	none	none	\$59
crossbow +1	attack/damage bonus	none	\$43	halberd +1	attack/damage bonus	none	\$60
crossbow +2	accuracy +2	none	\$48	halberd +2	speed +3	casts first aid	\$67
crossbow luck	luck +3	casts bless	\$4C	hand axe	none	none	\$03
crossbow speed	speed +4	casts blind	\$4D	hand axe +1	luck +1	none	\$0F
crystal key	n/a	none	\$EB	hand axe +2	luck +2	none	\$1B
curing potion	n/a	casts cure wounds	\$BC	holy flamberge	magic resistance	casts holy word	\$77
curing staff	poison resistance	casts power cure	\$6D	holy mace	personality +3	casts raise dead	\$28
dagger	none	none	\$02	holy plate	magic resistance	fear resistance (now)	\$98
dagger +1	attack/damage bonus	none	\$0E	horn of death	n/a	casts finger of death	\$D2
dagger +2	damage/attack bonus	casts light	\$1A	immortal sword	luck +5	casts rejuvenate	\$36
dagger of mind	intellect +3	casts shield	\$25	jade amulet	creates race = none	none	\$C2
dark flail	cursed item	casts dispel magic	\$2A	key card	n/a	none	\$FD
defense cloak	+2 armour bonus	none	\$CC	king's pass	n/a	none	\$E9
defense ring	+1 armour bonus	casts identify monster	\$BE	knowledge book	intellect +2	spell level +1 (now)	\$CD

Readers Data Exchange

Item Name	Equipping Bonus	Use Bonus/Effect	Code	Item Name	Equipping Bonus	Use Bonus/Effect	Code
lantern	n/a	casts light	\$AD	scimitar +2	none	none	\$20
large shield	none	none	\$9D	scroll of fire	n/a	casts fireball	\$C0
large shield +1	armour bonus	none	\$A0	sharp sword	magic resistance	casts finger of death	\$33
large shield +1	armour bonus	none	\$A1	shinny pendant	sleep resistance	casts hypotize	\$D4
large shield +2	armour bonus	none	\$A3	short bow	none	none	\$3F
large shield +2	armour bonus	none	\$A4	short bow +1	attack/damage bonus	none	\$44
laser blaster	accuracy +5	casts disintegrate	\$F3	short bow +2	sleep resistance	none	\$49
leather +1	armour bonus	none	\$81	short sword	none	none	\$05
leather +2	electrical resistance	none	\$87	short sword +1	attack/damage bonus	none	\$11
leather armour	none	none	\$7A	short sword +2	attack/damage bonus	casts detect magic	\$1D
lightning bow	electrical resistance	casts fireball	\$4E	silent chime	n/a	casts silence	\$C9
lightning wand	electrical resistance	casts lightning bolt	\$D5	silver key	n/a	casts leather shield	\$EE
long bow	none	none	\$40	silver shield	sleep resistance	none	\$9E
long bow +1	attack/damage bonus	none	\$45	skill potion	n/a	increases level +5 (now)	\$C4
long bow +2	sleep resistance	none	\$4A	sling	none	none	\$3D
long sword	none	none	\$0B	sling +1	attack/damage bonus	none	\$42
long sword +1	attack/damage bonus	none	\$17	small shield	none	none	\$9C
long sword +2	acid resistance	might +2 (now)	\$23	small shield +1	armour bonus	none	\$9F
lucky charm	luck +5	luck +10 (now)	\$C6	small shield +2	armour bonus	none	\$A2
lucky scimitar	luck +5	none	\$2C	smelling salt	n/a	casts awaken	\$B7
mace	none	none	\$06	sorcerer robe	intellect +5	casts invisibility	\$CF
mace +1	attack/damage bonus	none	\$12	sorcerer staff	intellect +4	casts meteor shower	\$72
mace +2	acid resistance	might +2 (now)	\$1E	spear	none	none	\$04
mace of undead	cursed item	ages character 10 years	\$2D	spear +1	luck +1	none	\$10
magic herbs	n/a	casts first aid	\$B2	spear +2	luck +2	none	\$1C
magic oil	n/a	casts recharge item	\$DB	speed potion	n/a	speed +5 (now)	\$BA
magic potion	n/a	adds +10 spell points (now)	\$BD	splint mail	none	none	\$7E
magic shield	magic resistance	casts shield	\$A9	splint mail +2	fire resistance	none	\$85
magic sling	magic resistance	magic resistance (now)	\$47	splint mail +2	fire resistance	none	\$8B
magic vest	magic resistance	casts jump	\$DC	splint mail +3	might +2	none	\$90
map of desert	n/a	casts location	\$F2	staff	none	none	\$56
medusa head	cursed item	none	\$F6	staff +1	intellect +1	none	\$5D
merchant pass	n/a	none	\$EA	staff +2	luck +2	casts sleep	\$64
might potion	n/a	increases might +5 (now)	\$B9	staff of light	sleep resistance	casts lasting light	\$6B
minotaur's axe	cursed item	none	\$6E	staff of magic	magic resistance	casts protection from magic	\$73
model boat	n/a	casts walk on water	\$CB	star ruby	luck +10	casts energy blast	\$E0
obsidian bow	cursed item	casts dispel	\$55	star sapphire	magic resistance	casts protection from magic	\$E1
padded +1	armour bonus	none	\$80	sun scroll	n/a	casts sun ray	\$DF
padded armour	none	none	\$79	sundial	n/a	casts location	\$BB
pirates map a	n/a	none	\$FA	sword of magic	magic resistance	casts protection from magic	\$35
pirates map b	n/a	none	\$FB	sword of might	might +6	might +5 (now)	\$31
plate mail	none	none	\$7F	sword of speed	speed +6	speed +5 (now)	\$32
plate mail +1	fire resistance	none	\$86	teleport helm	magic resistance	casts teleport	\$D8
plate mail +2	fire resistance	none	\$8C	10' pole	n/a	none	\$AE
plate mail +3	fire resistance	none	\$91	the flamberge	might +10	casts feeble mind	\$76
potion of life	n/a	casts raise dead	\$D3	the magic bow	magic resistance	casts teleport	\$51
power gauntlet	might +5	none	\$D0	thunder hammer	electricity resistance	casts summon zaapppp	\$6F
precision ring	accuracy +5	none	\$D6	thundranium	n/a	might +5 (now)	\$FC
red chain mail	fire resistance	casts fireball	\$95	torch	n/a	casts light	\$AC
return scroll	n/a	casts town portal	\$D7	ultimate plate	magic resistance	casts energy blast	\$9A
ring mail	none	none	\$7C	ultimate sword	might +10	speed +5 (now)	\$3B
ring mail +1	fire resistance	none	\$83	undead amulet	fear resistance	casts C 1/8	\$C8
ring mail +2	fire resistance	none	\$89	unholy mace	personality +3	casts moon ray	\$29
ring mail +3	speed +2	none	\$8E	unholy plate	magic resistance	fear resistance (now)	\$99
ring of okrim	luck +10	casts time deterioration	\$F7	unobtanium	sets sex = none	none	\$E6
robber's tools	increases thief skill	none	\$B4	useless item	none	none	\$FF
robber's x-bow	speed +4	casts duplication	\$53	vellum scroll	n/a	none	\$E7
rope and hooks	n/a	casts jump	\$AB	w queen idol	n/a	none	\$F9
royal dagger	none	none	\$24	wand of fire	fire resistance	casts fireball	\$C7
ruby idol	n/a	none	\$CE	wealth chest	n/a	adds +5100 gold pieces	\$E2
ruby whistle	luck +2	casts awaken	\$E8	wolfsbane	n/a	none	\$B0
scale armour	none	none	\$7B	wyvern eye	n/a	casts scare	\$F5
scale mail +1	armour bonus	none	\$82	X!XX!X's plate	luck +10	luck +5 (now)	\$97
scale mail +2	cold resistance	none	\$88	X!XX!X's sword	luck +15	luck +5 (now)	\$39
scimitar	none	none	\$08	youth potion	n/a	casts rejuvenate	\$D9
scimitar +1	luck +2	none	\$14				

Readers Data Exchange

Notes on Item List

1) In general; any weapon with pluses indicates a plus for both 'to hit' percentage and 'damage caused' minimum. For example: broad sword +2 increases the wielder's chance of actually hitting (by +2) and increases the amount of damage done (by +2 also!). Magic armor has the same feature with respect to armor class bonus. For example: chain mail +3 has an additional armor bonus of 3 points over regular, non-magical chain mail.

2) All magic items have a finite number of charges. You must recharge an item before the amount reaches 0 or the item will become useless (\$FF)! This can be changed by editing the 'magic charge' portion of the character data.

3) Items are sold for about 1/2 of their actual cost.

4) 'Now' indicates that the increase in skill/resistance is only temporary.

5) The 'equipping' bonus is permanent and it is always in effect while the item is equipped.

6) Some items have alignments. This means that only characters of the correct alignment can use/equip them. For example: X!XX!X's plate and sword seem to be neutral.

7) Most items have class restrictions. Some noted exceptions are: a few magic items; most of the club weapons; and padded armor. An example of these types of restrictions is plate mail +3. This armor is usable by only knights and paladins.

8) A 'n/a' in a column indicates that an item is not usable for that purpose.

9) A 'none' indicates that there is either no restriction or that an item has no special power.

10) Some items/weapons are better than others. Experiment and discover which items are the best for your party.

Example Character Editing

Now, let's suppose you had a character named Frostflower. You would start on track \$05, sector \$00 and search each track for the name "Frostflower" or the hex bytes C6 D2 D7 D3 D4 C6 CC CF D7 C5 D2, depending on what program or method you were using to examine/edit the disk - I have used C.I.A. and COMPUTIST's very own DiskEdit for this procedure.

Now, suppose you find that Frostflower starts on byte \$7F. All you would need to do is count (in hex!) according to the chart provided. I will use this as an example since it takes a few tries to not miscount bytes.

Loc	Attribute/Item (Notes)
\$7F-8E	character name
\$8F	gender
\$90-91	alignment (now/base)
\$92	race
\$93	class
\$94-95	intellect (now/base)
\$96-97	might (now/base)

\$98-99	personality (now/base)
\$9A-9B	endurance (now/base)
\$9C-9D	speed (now/base)
\$9E-9F	accuracy (now/base)
\$A0-A1	luck (now/base)
\$A2	now experience level
\$A3	base experience level
\$A4	age
\$A5	mystery byte #1
\$A6-A9	experience points (stored backwards)
\$AA-AB	now spell points
\$AC-AD	base spell points
\$AE-AF	spell level (now/base?)
\$B0-B2	gems (stored backwards)
\$B3-B4	now hit points
\$B5-B6	base hit points
\$B7	mystery byte #2
\$B8-BA	gold
\$BB	attack class (?? unverified)
\$BC	food
\$BD	armour class (recalculated after edit)
\$BE	condition
\$BF-C4	equipped items
\$C5-CA	backpack items
\$CB-D0	equipped item magic charges
\$D1-D6	backpack item magic charges
\$D7-D8	magic resistance (now/base?)
\$D9-DA	fire resistance (now/base?)
\$DB-DC	cold resistance (now/base?)
\$DD-DE	electrical resistance (now/base?)
\$DF-E0	acid resistance (now/base?)
\$E1-E2	fear/hold resistance (now/base?)
\$E3-E4	poison resistance (now/base?)
\$E5-E6	sleep resistance (now/base?)

T. Scott

Might & Magic Character Editor

Requirements

- Apple II Plus or better
- Might & Magic disk

Might & Magic is the best role-playing game for computers I have ever played. It totally blows Wizardry, Ultima IV, and Bard's Tale away. Each time you play it, you are bound to discover something new and exciting. It was this that kept me from cheating. But then I got slaughtered every time I tried to explore a hidden stronghold that I was sure was part of the quest I was currently on. After numerous attempts of entering and getting killed, I decided to make the Might & Magic Character Editor.

Background On Characters

The characters are stored from track \$05, sector \$00 to track \$05, sector \$08 on disk

side B. Data is composed of 128 bytes per character, with room for 18 characters. All data is stored in hexadecimal format and read as its decimal equivalent, thus, a \$0A in memory, is read as 10. In cases where numbers larger than 255 are needed, additional bytes are used, with the first extra byte multiplied by 256, the second by 65,536, and the third by 16,777,216.

Table 1 shows where all the bytes are for the first character. To locate the others, just use this formula: Byte X (decimal) for character number Y = (Y-1) * 127 + X.

Background On The Editor

When I decided to make the editor, I thought it would be neat if I added some flair to it. I didn't want it to be a boring editor, so I decided to set it up as a town full of people to see and places to go. The people are just an added touch, more like a "Do you really want to do this? Yes or No." with variety. The places that you can visit are what really makes up the editor. The following is a description of each.

Locations To Visit

Sign of Welcome. For those not wishing to read the detailed account of each location, this is for them. It very briefly explains the town in general.

Icarus' Lab. This is where the persona of your character is altered. Icarus can change your name, race, class, alignment, original alignment, and, yes, even sex. Do not let the term original alignment fool you. Your original alignment is the alignment you start out with. Alignments can change due to your actions throughout the game. If this happens then the only way to get it back to what it was is either 4th level cleric spell or this editor.

Battlefields of Hornblough. Quick Silver is the top athlete here. His amazing training techniques allow you to increase every statistic you've got. This includes Intellect, Might, Personality, Endurance, Speed, Accuracy, and Luck. On top of that, these wondrous effects can be made to remain long term rather than short term. That's when you change your originals. Original stats are what your stats will return to after a night of rest. Some potions increase your currents, but nothing short of finding a strong magical element will increase your originals.

Laragathra's Restaurant. Here Laragathra will supply you with enough food to last 40 days. In the art of cooking no one can compare. Her rations last for many a month yet still retain a good tasting quality.

Hall of Commendations. This is where Lord Ytilaer dwells. Supreme in all the land, it is he that can bestow higher levels to those he sees fit. His powers can be made, as with stats, long term or short term. The long term effect of increasing your original level is that

it will remain the same after resting. The short term lasts for but a short while - much like a Cleric's Super Heroism Spell.

Zaerdidain's Library. Here the wisest of gnomes lives out his life. He keeps many books of knowledge few mortal eyes have seen. With the reading of a spell book, you can increase your Spell Level. And with studying the Book of Life, you may receive a multitude of experience points. The choice of how far and how much you read is yours.

Guild of Strength. Ingold Inglorion is the trainer here. He works at making your body the best it can be. Whether at absorbing the shock from wounds or being able to resist fatigue while casting spells, his work always turns out good. Hit points come in three forms: current hit points, current hit point maximum, and original hit points. Current hit points, when diminished, will result in unconsciousness. Current hit point maximum is the total maximum you can be healed up to in your current condition. If you are Poisoned, this will gradually get smaller and smaller. Original hit points are the most you can ever have at the experience level you are at, regardless of condition. Maximum hit points will attain the same amount as original hit points if you are in GOOD condition. Spell points and original spell points are much the same. Spell points will assume an equal amount to original spell points after resting.

Vault of Riches. The people of the Town are far too trusting of strangers when it comes to money, for they have no guards posted here. Gems and gold are yours for the taking. Don't worry about getting caught, there haven't been any arrests in this place for ages.

Waspin Gearshop. The unique Dwelf lives here. Forged from the two mightiest races of the Land of Varn, he is the greatest adventurer that has ever lived, his shop attests to that. You may pick any item you want, and as many as you want for free. The Dwelf, you see, has an unlimited supply of every item. It is not necessary to have an item on the screen to Get it, all you have to do is type "G" and the number you want and it's yours. Table 2 lists items 1 through 255. The scanning helps when you don't have Table 2 handy.

Temple of Ak'Boru. Cura the Healer can be found here. Her deity allows her to make characters' conditions GOOD only. She has abstained from making them Asleep, Poisoned, or anything else that could harm them on their adventures.

Portal of Towns. The Portal of Towns is not very well guarded. The omnipotent looking Half Orc that watches over it could be overpowered by a little imp. The blue/white portal allows your character to be magically transported to the inn of any of the five towns of Varn, and you may enter it as many times as you wish.

Entering And Using The Might & Magic Character Editor

The Might & Magic Editor is a BASIC program and a BINARY program. The BASIC program is what edits, and the BINARY program is what handles the writing or reading of characters to and from disk. Type in the Might & Magic Editor and SAVE it:

SAVE MM EDITOR

Then type in the machine language part and save it:

SAVE M.BINARY,A\$9000,L\$31

Run the program and, if not already loaded, it will load in M.BINARY. Then press **RETURN** for drive 1 access or a "2" and a **RETURN** for drive 2 access after inserting Disk B in the drive.

You should be at the Main Menu where you can either load new characters from disk, write current characters to disk, view characters in memory, or quit the program.

Characters have probably been loaded in so type a V to View. A list of numbers 1 to 18 should be on the screen with characters names or the word empty after each number. Type the number of the character you want to work on and press **RETURN**. A stat screen will come on and at the bottom you will be prompted to type an E to Edit or **RETURN** to go back to the listing.

If you type an E, the Editing Menu, with locations you can visit, will appear. To visit a location type the letter that corresponds with it. When you type the letter, a person will appear and ask you a question. A **RETURN** is the same as typing "Y" for Yes to speed things up. If you do not wish to go further into that section, type an "N" and you will return to the Editing Menu.

If you typed a **RETURN**, a list might appear (depending on location, at the Temple, it will say you are feeling good and ask for a **RETURN**) and you can choose from there what to edit. A **RETURN** at this point will bring you to the Editing Menu. When you type the letter or number of the item you want to edit, you will see the current value shown and a question for what you want the new value to be. If you do not wish to change it, simply press **RETURN**.

To Save Edited Characters To Disk

After editing all the characters you want, press **RETURN** several times until you arrive at the Main Menu. Enter a "W" and you will be asked if you want to go ahead and write. If you do, type a "Y", anything else will bring you back to the Main Menu. After writing to disk, control will return to the main menu.

Possible Modifications

It is possible to modify the Temple so that you can change your character from one condition to something other than GOOD. I just didn't see the reason of going to all the trouble of making it possible to change your condition to something besides good. If you're one of those mad individuals, the following is what you need to know.

Condition is stored in one byte with the first digit dealing with being Poisoned, Paralyzed, Unconscious, Stone, Dead, and Eradicated, and the second digit having to do with being Asleep, Blinded, Silenced, and Diseased. For example, if you put a \$4C in the Condition byte, you would end up being Unconscious, Diseased, and Silenced. Table 3 contains the first digit and what it does. Table 4 details what the second digit does.

A couple additional notes about changing condition: entering into this byte numbers from \$80 to \$9F yields a blank condition - it doesn't say how you are feeling. A \$00 signifies you are good. Everything from SA0 to \$BF means you are Stone. Everything from \$C0 to \$CF means you are Dead. Values \$E0 to \$FE shows that you are Dead, Stone. And finally a \$FF means that you are Eradicated.

I hope this all helps out in solving the Secret of the Inner Sanctum. Good luck!

Table 1

Byte	Item
\$00-0E	Name
\$10	Sex \$01=M \$02=F Anything else=0
\$11	Original Alignment
\$12	Alignment \$01=Good \$02=Neutral \$03=Evil
\$13	Race \$01=Human \$02=Elf \$03=Dwarf \$04=Gnome \$05=H-Orc
\$14	Class \$01=Knight \$02=Paladin \$03=Archer \$04=Cleric \$05=Sorcerer \$06=Robber
\$15	Intellect Original
\$16	Intellect
\$17	Might Original
\$18	Might
\$19	Personality Original
\$1A	Personality
\$1B	Endurance Original
\$1C	Endurance
\$1D	Speed Original
\$1E	Speed
\$1F	Accuracy Original
\$20	Accuracy
\$21	Luck Original
\$22	Luck
\$23	Level Original
\$24	Level
\$25	Age
\$27	Experience Points
\$28	Experience Points (to be multiplied by 256)

Readers Data Exchange

Table 1 continued

Byte	Item
\$29	Experience Points (to be multiplied by 65536)
\$2A	Experience Points (to be multiplied by 16777216)
\$2B	Spell Points
\$2C	Spell Points (to be multiplied by 256)
\$2D	Spell Points Original
\$2E	Spell Points Original (to be multiplied by 256)
\$30	Spell Casting Level
\$31	Gems
\$32	Gems (to be multiplied by 256)
\$33	Hit Points Current
\$34	Hit Points Current (to be multiplied by 256)
\$35	Hit Points Original
\$36	Hit Points Original (to be multiplied by 256)
\$37	Hit Points Maximum
\$38	Hit Points Maximum (to be multiplied by 256)
\$39	Gold
\$3A	Gold (to be multiplied by 256)
\$3B	Gold (to be multiplied by 65536)
\$3C	Armor Class Original
\$3D	Armor Class
\$3E	Food
\$3F	Condition
\$40-45	Equipped Items
\$46-4B	Backpack Items

Table 3

Digit	Condition
0x	Read only the second digit
1x	Poisoned
2x	Paralyzed
3x	Paralyzed, Poisoned
4x	Unconscious
5x	Unconscious, Poisoned
6x	Unconscious, Paralyzed
7x	Unconscious, Paralyzed, Poisoned

Table 4

Digit	Condition
x1	Asleep
x2	Blinded
x3	Blinded, Asleep
x4	Silenced
x5	Silenced, Asleep
x6	Silenced, Blinded
x7	Silenced, Blinded, Asleep
x8	Diseased
x9	Diseased, Asleep
xA	Diseased, Blinded
xB	Diseased, Asleep, Blinded
xC	Diseased, Silenced
xD	Diseased, Silenced, Asleep
xE	Diseased, Silenced, Blinded
xF	Diseased, Asleep, Blinded, Silenced

Table 2

#	Item	#	Item	#	Item
1	CLUB	62	CROSSBOW	127	PLATE MAIL
2	DAGGER	63	SHORT BOW	128	PADDED +1
3	HAND AXE	64	LONG BOW	129	LEATHER +1
4	SPEAR	65	GREAT BOW	130	SCALE +1
5	SHORT SWORD	66	SLING +1	131	RING MAIL +1
6	MACE	67	CROSSBOW +1	132	CHAIN MAIL +1
7	FLAIL	68	SHORT BOW +1	133	SPLINT MAIL +1
8	SCIMITAR	69	LONG BOW +1	134	PLATE MAIL +1
9	BROADSWORD	70	GREAT BOW +1	135	LEATHER +2
10	BATTLE AXE	71	MAGIC SLING	136	SCALE +2
11	LONG SWORD	72	CROSSBOW +2	137	RING MAIL +2
12	CLUB +1	73	SHORT BOW +2	138	CHAIN MAIL +2
13	CLUB +2	74	LONG BOW +2	139	SPLINT MAIL +2
14	DAGGER +1	75	GREAT BOW +2	140	PLATE MAIL +2
15	HAND AXE +1	76	CROSSBOW LUCK	141	BRACERS AC 4
16	SPEAR +1	77	CROSSBOW SPEED	142	RING MAIL +3
17	SHORT SWORD +1	78	LIGHTNING BOW	143	CHAIN MAIL +3
18	MACE +1	79	FLAMING BOW	144	SPLINT MAIL +3
19	FLAIL +1	80	GIANT'S BOW	145	PLATE MAIL +3
20	SCIMITAR +1	81	THE MAGIC BOW	146	BRACERS AC 6
21	BROADSWORD +1	82	BOW OF POWER	147	CHAIN MAIL +3
22	BATTLE AXE +1	83	ROBBER'S X-BOW	148	BRACERS AC 8
23	LONG SWORD +1	84	ARCHER'S BOW	149	BLUE RING MAIL
24	FLAMING CLUB	85	OBSIDIAN BOW	150	RED CHAIN MAIL
25	CLUB OF NOISE	86	STAFF	151	XI'XIX'S PLATE
26	DAGGER +2	87	GLAIVE	152	HOLY PLATE
27	HAND AXE +2	88	BARDICHE	153	UN-HOLY PLATE
28	SPEAR +2	89	HALBERD	154	ULTIMATE PLATE
29	SHORT SWORD +2	90	GREAT HAMMER	155	BRACERS AC 8
30	MACE +2	91	GREAT AXE	156	SMALL SHIELD
31	FLAIL +2	92	FLAMBERGE	157	LARGE SHIELD
32	SCIMITAR +2	93	STAFF +1	158	SILVER SHIELD
33	BROADSWORD +2	94	GLAIVE +1	159	SMALL SHIELD +1
34	BATTLE AXE +2	95	BARDICHE +1	160	LARGE SHIELD +1
35	LONG SWORD +2	96	HALBERD +1	161	LARGE SHIELD +1
36	ROYAL DAGGER	97	GREAT HAMMER +1	162	SMALL SHIELD +2
37	DAGGER OF MIND	98	GREAT AXE +1	163	LARGE SHIELD +2
38	DIAMOND DAGGER	99	FLAMBERGE +1	164	LARGE SHIELD +2
39	ELECTRIC SPEAR	100	STAFF +2	165	FIRE SHIELD
40	HOLY MACE	101	GLAIVE +2	166	COLD SHIELD
41	UN-HOLY MACE	102	BARDICHE +2	167	ELEC SHIELD
42	DARK FLAIL	103	HALBERD +2	168	ACID SHIELD
43	FLAIL OF FEAR	104	GREAT HAMMER +2	169	MAGIC SHIELD
44	LUCKY SCIMITAR	105	GREAT AXE +2	170	DRAGON SHIELD
45	MACE OF UNDEAD	106	FLAMBERGE +2	171	ROPE & HOOK
46	COLD AXE	107	STAFF OF LIGHT	172	TORCH
47	ELECTRIC SWORD	108	COLD GLAIVE	173	LANTERN
48	FLAMING SWORD	109	CURING STAFF	174	10 FOOT POLE
49	SWORD OF MIGHT	110	MINOTAUR'S AXE	175	GARLIC
50	SWORD OF SPEED	111	THUNDER HAMMER	176	WOLFSBANE
51	SHARP SWORD	112	GREAT AXE +3	177	BELLADONNA
52	ACCURATE SWORD	113	FLAMBERGE +3	178	MAGIC HERBS
53	SWORD OF MAGIC	114	SORCERER STAFF	179	DRIED BEEF
54	IMMORTAL SWORD	115	STAFF OF MAGIC	180	ROBBER'S TOOLS
55	AXE PROTECTOR	116	DEMON'S GLAIVE	181	BAG OF SILVER
56	AXE DESTROYER	117	DEVIL'S GLAIVE	182	AMBER GEM
57	XI'XIX'S SWORD	118	THE FLAMBERGE	183	SMELLING SALT
58	ADAMANTINE AXE	119	HOLY FLAMBERGE	184	BAG OF SAND
59	ULTIMATE SWORD	120	EVIL FLAMBERGE	185	MIGHT POTION
60	ELEMENT SWORD	121	PADDED ARMOR	186	SPEED POTION
61	SLING	122	LEATHER ARMOR	187	SUNDIAL
		123	SCALE ARMOR	188	CURING POTION
		124	RING MAIL	189	MAGIC POTION
		125	CHAIN MAIL	190	DEFENSE RING
		126	SPLINT MAIL	191	BAG OF GARBAGE
				192	SCROLL OF FIRE
				193	FLYING CARPET
				194	JADE AMULET
				195	ANTIDOTE BREW
				196	SKILL POSITION
				197	BOOTS OF SPEED
				198	LUCKY CHARM
				199	WAND OF FIRE
				200	UNDEAD AMULET
				201	SILENT CHIME
				202	BELT OF POWER
				203	MODEL BOAT
				204	DEFENSE CLOAK
				205	KNOWLEDGE BOOK
				206	RUBY IDOL
				207	SORCERER ROBE
				208	POWER GAUNTLET
				209	CLERIC'S BEAD
				210	HORN OF DEATH
				211	POTION OF LIFE
				212	SHINY PENDANT
				213	LIGHTNING WAND
				214	PRECISION RING
				215	RETURN SCROLL
				216	TELEPORT HELM
				217	YOUTH POTION
				218	BELLS OF TIME
				219	MAGIC OIL
				220	MAGIC VEST
				221	DESTROYER WAND
				222	ELEMENT SCARAB
				223	SUN SCROLL
				224	STAR RUBY
				225	STAR SAPPHIRE
				226	WEALTH CHEST
				227	GEM SACK
				228	DIAMOND COLLAR
				229	FIRE OPAL
				230	UNOBTAINIUM
				231	VELLUM SCROLL
				232	RUBY WHISTLE
				233	KINGS PASS
				234	MERCHANTS PASS
				235	CRYSTAL KEY
				236	CORAL KEY
				237	BRONZE KEY
				238	SILVER KEY
				239	GOLD KEY
				240	DIAMOND KEY
				241	CACTUS NECTAR
				242	MAP OF DESERT
				243	LASER BLASTER
				244	DRAGON'S TOOTH
				245	WYVERN EYE
				246	MEDUSA HEAD
				247	RING OF OKRIM
				248	B QUEEN IDOL
				249	W QUEEN IDOL
				250	PIRATES MAP A
				251	PIRATES MAP B
				252	THUNDRANIUM
				253	KEY CARD
				254	EYE OF GOROS
				255	(USELESS ITEM)

Readers Data Exchange

M.BINARY

```

9000: A9 05 8D EC B7 A9 08 8D      $DE43
9008: ED B7 A9 00 8D EB B7 8D      $ECB1
9010: F0 B7 A9 68 8D F1 B7 A9      $343D
9018: 01 8D F4 B7 A0 E8 A9 B7      $BD95
9020: 20 B5 B7 CE ED B7 CE F1      $DA23
9028: B7 AD ED B7 C9 FF D0 EC      $9222
9030: 60                             $6622
    
```

MM EDITOR

```

100 REM *
110 REM *M & M CHAR. EDITOR
120 REM *
130 REM *BY TIMOTHY SCOTT
140 REM *
150 TEXT: HOME
160 DIM IT$(255)
170 FOR I = 1 TO 255: READ IT$(I): NEXT I
180 T = 1
190 D$ = CHR$(4): B = 24576
200 IF PEEK(36864) = 169 THEN 220
210 PRINT D$ "BLOAD*M.BINARY,A$9000"
220 POKE 47092,1: POKE 47082,1
230 VTAB 10: HTAB 5: PRINT "INSERT^CHARACTER^
DISK^IN^A^DRIVE"
240 HTAB 5: PRINT "^^^AND^PRESS^THE^<RETURN>^
KEY"
250 HTAB 5: INPUT "^^TYPE^A^'2'^FOR^DRIVE^2^
ACCESS";A$
260 IF A$ = "2" THEN POKE 47082,2
270 CALL 36864
280 REM MAIN MENU
290 TEXT: HOME: INVERSE: PRINT "^^^^MIGHT^AND^
MAGIC^CHARACTER^EDITOR^^^^"
300 POKE 34,1
310 NORMAL: HOME
320 VTAB 15: PRINT "^^L^OAD^NEW^CHARACTERS"
330 VTAB 16: PRINT "^^W^RITE^CHARACTERS^TO^
DISK"
340 VTAB 17: PRINT "^^V^IEW^CHARACTERS"
350 VTAB 18: PRINT "^^Q^UIT"
360 VTAB 13: INPUT "YOUR^CHOICE?^";A$
370 IF A$ = "L" THEN 420
380 IF A$ = "W" THEN 450
390 IF A$ = "V" THEN 490
400 IF A$ = "Q" THEN TEXT: HOME: END
410 GOTO 310
420 HOME: INPUT "LOAD^NEW^CHARACTERS?^";A$
430 IF A$ < > "Y" THEN 310
440 GOTO 230
450 HOME: PRINT "THIS^";: FLASH: PRINT
"WRITES";: NORMAL: PRINT "^^TO^DISK!"
460 PRINT: INPUT "GO^AHEAD?^";A$: IF A$ < > "Y"
THEN 310
470 HOME: PRINT "WRITING": POKE 36888,2: CALL
36864: POKE 36888,1: GOTO 310
480 REM CHARACTER MENU
490 HOME: FOR I = 1 TO 18: PRINT I "^";
500 GOSUB 4660: IF G = 0 THEN PRINT "EMPTY";:
GOTO 540
    
```

```

510 FOR X = 0 TO 14: GOSUB 4660: IF G = 0 THEN X =
14: GOTO 530
520 PRINT CHR$(G);
530 NEXT X
540 PRINT :X = 0: NEXT I
550 PRINT
560 INPUT "ENTER^CHOICE^ (0^RETURNS)^:";A$
570 A = VAL (A$): IF A < 1 OR A > 18 THEN GOTO 310
580 HOME : I = A: GOSUB 4660: IF G = 0 THEN HTAB 1:
VTAB 2: PRINT "EMPTY": GOTO 620
590 HTAB 1: VTAB 2: FOR X = 0 TO 14: GOSUB 4660:
IF G = 0 THEN X = 14: GOTO 610
600 PRINT CHR$(G);
610 NEXT X
620 VTAB 2: HTAB 17: PRINT "^^";
630 X = 16: GOSUB 4660: ON G + 1 GOTO 640,650,660
640 PRINT "^^O": GOTO 670
650 PRINT "^^M": GOTO 670
660 PRINT "^^F": GOTO 670
670 VTAB 2: HTAB 21: X = 18: GOSUB 4660
680 IF G = 1 THEN PRINT "GOOD": GOTO 720
690 IF G = 2 THEN PRINT "NEUT": GOTO 720
700 IF G = 3 THEN PRINT "EVIL": GOTO 720
710 PRINT "NONE"
720 VTAB 2: HTAB 26: X = 19: GOSUB 4660
730 IF G = 1 THEN PRINT "HUMAN": GOTO 790
740 IF G = 2 THEN PRINT "ELF": GOTO 790
750 IF G = 3 THEN PRINT "DWARF": GOTO 790
760 IF G = 4 THEN PRINT "GNOME": GOTO 790
770 IF G = 5 THEN PRINT "H-ORC": GOTO 790
780 PRINT "NONE"
790 VTAB 2: HTAB 33: X = 20: GOSUB 4660
800 IF G = 1 THEN PRINT "KNIGHT": GOTO 870
810 IF G = 2 THEN PRINT "PALADIN": GOTO 870
820 IF G = 3 THEN PRINT "ARCHER": GOTO 870
830 IF G = 4 THEN PRINT "CLERIC": GOTO 870
840 IF G = 5 THEN PRINT "SORCERER": GOTO 870
850 IF G = 6 THEN PRINT "ROBBER": GOTO 870
860 PRINT "NONE"
870 VTAB 4: HTAB 1: PRINT "INT=";:X = 22: GOSUB
4660: PRINT G
880 VTAB 4: HTAB 9: PRINT "LEVEL=";:X = 36: GOSUB
4660: PRINT G
890 VTAB 4: HTAB 18: PRINT "AGE=";:X = 37: GOSUB
4660: PRINT G
900 VTAB 4: HTAB 27: PRINT "EXP=";:X = 42: GOSUB
4660:A = G * 16777216:X = 41: GOSUB
4660:A = A + G * 65536:X = 40: GOSUB 4660:A
= A + G * 256:X = 39: GOSUB 4660:A = A +
G: PRINT A
910 VTAB 5: HTAB 1: PRINT "MGT=";:X = 24: GOSUB
4660: PRINT G
920 VTAB 6: HTAB 1: PRINT "PER=";:X = 26: GOSUB
4660: PRINT G
930 VTAB 6: HTAB 9: PRINT "SP=";:X = 44: GOSUB
4660:A = G * 256:X = 43: GOSUB 4660:A = A
+ G: PRINT A
940 VTAB 6: HTAB 17: PRINT "/";:X = 46: GOSUB
4660:A = G * 256:X = 45: GOSUB 4660:A = A
+ G: PRINT A
950 VTAB 6: HTAB 23: PRINT "(";:X = 48: GOSUB
4660: PRINT G; ")"
    
```

```

960 VTAB 6: HTAB 27: PRINT "GEMS=";:X = 50: GOSUB
4660:A = G * 256:X = 49: GOSUB 4660:A = A
+ G: PRINT A
970 VTAB 7: HTAB 1: PRINT "END=";:X = 28: GOSUB
4660: PRINT G
980 VTAB 8: HTAB 1: PRINT "SPD=";:X = 30: GOSUB
4660: PRINT G
990 VTAB 8: HTAB 9: PRINT "HP=";:X = 52: GOSUB
4660:A = G * 256:X = 51: GOSUB 4660:A = A
+ G: PRINT A
1000 VTAB 8: HTAB 17: PRINT "/";:X = 56: GOSUB
4660:A = G * 256:X = 55: GOSUB 4660:A = A
+ G: PRINT A
1010 VTAB 8: HTAB 27: PRINT "GOLD=";:X = 59:
GOSUB 4660:A = G * 65536:X = 58: GOSUB
4660:A = A + G * 256:X = 57: GOSUB 4660:A
= A + G: PRINT A
1020 VTAB 9: HTAB 1: PRINT "ACY=";:X = 32: GOSUB
4660: PRINT G
1030 VTAB 10: HTAB 1: PRINT "LUC=";:X = 34: GOSUB
4660: PRINT G
1040 VTAB 10: HTAB 9: PRINT "AC=";:X = 61: GOSUB
4660: PRINT G
1050 VTAB 10: HTAB 27: PRINT "FOOD=";:X = 62:
GOSUB 4660: PRINT G
1060 VTAB 12: HTAB 1: PRINT "COND=";:X = 63:
GOSUB 4660: IF X = 0 THEN PRINT "^^GOOD":
GOTO 1080
1070 PRINT "^^NON-GOOD"
1080 VTAB 13: HTAB 1: PRINT
"-----<EQUIPPED>-----<BACK^
PACK>-----"
1090 FOR J = 1 TO 6: VTAB J + 13: PRINT J ")";:X
= 63 + J: GOSUB 4660: IF G = 0 THEN PRINT:
GOTO 1110
1100 PRINT IT$(G)
1110 VTAB J + 13: HTAB 21: PRINT CHR$(J + 64);
");:X = 69 + J: GOSUB 4660: IF G = 0 THEN
PRINT: GOTO 1130
1120 PRINT IT$(G)
1130 NEXT J
1140 PRINT: INPUT "PRESS^E^TO^EDIT^OR^<RETURN>^
TO^GO^BACK";A$
1150 IF A$ = "E" THEN 1180
1160 X = 0: GOTO 490
1170 REM EDITING MENU
1180 TEXT: HOME: INVERSE: PRINT "^^^^^^^^^^TOWN^
OF^CHANGES^^^^^^^^^^": POKE 34,1: NORMAL
1190 PRINT: PRINT "YOU^ARE^STANDING^IN^THE^
TOWN^SQUARE."
1200 VTAB 11: PRINT "^^S^IGN^OF^WELCOME"
1210 VTAB 12: PRINT "^^I^CARUS^A^LAB"
1220 VTAB 13: PRINT "^^A^B^ATTLEFIELDS^OF^A^
HORNBOUGH"
1230 VTAB 14: PRINT "^^T^EMPLE^OF^AK^BORU"
1240 VTAB 15: PRINT "^^F^OUNTAIN^OF^YOUTH"
1250 VTAB 16: PRINT "^^A^L^ARAGATHRA^S^
RESTAURANT"
1260 VTAB 17: PRINT "^^H^ALL^OF^COMMENDATIONS"
1270 VTAB 18: PRINT "^^Z^AERIDAIN^S^LIBRARY"
1280 VTAB 19: PRINT "^^G^UILD^OF^STRENGTH"
1290 VTAB 20: PRINT "^^V^AULT^OF^RICHES"
1300 VTAB 21: PRINT "^^W^ASPIN^GEARSHOP"
1310 VTAB 22: PRINT "^^P^ORTAL^TO^TOWNS"
    
```

Readers Data Exchange

```

1320 VTAB 6: INPUT "GO*WHERE?*";A$
1330 IF A$ = "" THEN 1160
1340 IF A$ = "I" THEN 1480
1350 IF A$ = "B" THEN 2410
1360 IF A$ = "F" THEN 2780
1370 IF A$ = "L" THEN 2860
1380 IF A$ = "H" THEN 2940
1390 IF A$ = "Z" THEN 3060
1400 IF A$ = "G" THEN 3340
1410 IF A$ = "V" THEN 3670
1420 IF A$ = "W" THEN 3960
1430 IF A$ = "T" THEN 4260
1440 IF A$ = "P" THEN 4330
1450 IF A$ = "S" THEN 4460
1460 HOME: GOTO 1190
1470 REM LABORATORY
1480 TEXT: HOME: INVERSE: PRINT "*****
ICARUS'^LAB*****"
1490 POKE 34,1: NORMAL
1500 PRINT: PRINT "A*SKINNY*BALD-HEADED*MAN*IN*
A*BLOOD-****STAINED*LAB*COAT*STRUTS*UP*
AND*SAYS*****'CAN*I*BE*OF*ASSISTANCE?'"
1510 PRINT: INPUT "ANSWER*(Y/N):^";A$: IF A$ =
"N" THEN 1180
1520 HOME: VTAB 4: PRINT "^^N)AME"
1530 VTAB 5: PRINT "^^S)EX"
1540 VTAB 6: PRINT "^^A)LIGNMENT"
1550 VTAB 7: PRINT "^^O)RIGINAL^ALIGNMENT"
1560 VTAB 8: PRINT "^^R)ACE"
1570 VTAB 9: PRINT "^^C)LASS"
1580 VTAB 2: INPUT "ALTER:^";A$
1590 IF A$ = "" THEN GOTO 1180
1600 IF A$ = "S" THEN 1670
1610 IF A$ = "A" THEN 1750
1620 IF A$ = "O" THEN 1860
1630 IF A$ = "R" THEN 1970
1640 IF A$ = "C" THEN 2120
1650 IF A$ = "N" THEN 2290
1660 GOTO 1580
1670 HOME: PRINT: PRINT "CURRENT^SEX:^";:X =
16: GOSUB 4660
1680 IF G = 1 THEN PRINT "M": GOTO 1710
1690 IF G = 2 THEN PRINT "F": GOTO 1710
1700 PRINT "O"
1710 INPUT "NEW^SEX:^";A$: IF A$ = "" THEN 1520
1720 IF A$ = "M" THEN C = 1: GOSUB 4650: GOTO 1520
1730 IF A$ = "F" THEN C = 2: GOSUB 4650: GOTO 1520
1740 C = 3: GOSUB 4650: GOTO 1520
1750 HOME: PRINT: PRINT "CURRENT^
ALIGNMENT:^";:X = 18: GOSUB 4660
1760 IF G = 1 THEN PRINT "GOOD": GOTO 1800
1770 IF G = 2 THEN PRINT "NEUT": GOTO 1800
1780 IF G = 3 THEN PRINT "EVIL": GOTO 1800
1790 PRINT "NONE"
1800 VTAB 6: PRINT "1)^GOOD"
1810 VTAB 7: PRINT "2)^NEUT"
1820 VTAB 8: PRINT "3)^EVIL"
1830 VTAB 4: INPUT "NEW^ALIGNMENT:^";A$: IF A$
= "" THEN GOTO 1520
1840 A = VAL (A$): IF A < 1 OR A > 3 THEN 1830
1850 C = A: GOSUB 4650: GOTO 1520
1860 HOME: PRINT: PRINT "ORIGINAL^ALIGNMENT:^
";:X = 17: GOSUB 4660
1870 IF G = 1 THEN PRINT "GOOD": GOTO 1910
1880 IF G = 2 THEN PRINT "NEUT": GOTO 1910
1890 IF G = 3 THEN PRINT "EVIL": GOTO 1910
1900 PRINT "NONE"
1910 VTAB 6: PRINT "1)^GOOD"
1920 VTAB 7: PRINT "2)^NEUT"
1930 VTAB 8: PRINT "3)^EVIL"
1940 VTAB 4: INPUT "NEW^ORIGINAL^ALIGNMENT:^
";A$: IF A$ = "" THEN 1520
1950 A = VAL (A$): IF A < 1 OR A > 3 THEN 1940
1960 C = A: GOSUB 4650: GOTO 1520
1970 HOME: PRINT: PRINT "CURRENT^RACE:^";:X =
19: GOSUB 4660
1980 IF G = 1 THEN PRINT "HUMAN": GOTO 2040
1990 IF G = 2 THEN PRINT "ELF": GOTO 2040
2000 IF G = 3 THEN PRINT "DWARF": GOTO 2040
2010 IF G = 4 THEN PRINT "GNOME": GOTO 2040
2020 IF G = 5 THEN PRINT "H-ORC": GOTO 2040
2030 PRINT "NONE"
2040 VTAB 6: PRINT "1)^HUMAN"
2050 VTAB 7: PRINT "2)^ELF"
2060 VTAB 8: PRINT "3)^DWARF"
2070 VTAB 9: PRINT "4)^GNOME"
2080 VTAB 10: PRINT "5)^H-ORC"
2090 VTAB 4: INPUT "NEW^RACE:^";A$: IF A$ = ""
THEN GOTO 1520
2100 A = VAL (A$): IF A < 1 OR A > 5 THEN 2090
2110 C = A: GOSUB 4650: GOTO 1520
2120 HOME: PRINT: PRINT "CURRENT^CLASS:^";:X
= 20: GOSUB 4660
2130 IF G = 1 THEN PRINT "KNIGHT": GOTO 2200
2140 IF G = 2 THEN PRINT "PALADIN": GOTO 2200
2150 IF G = 3 THEN PRINT "ARCHER": GOTO 2200
2160 IF G = 4 THEN PRINT "CLERIC": GOTO 2200
2170 IF G = 5 THEN PRINT "SORCERER": GOTO 2200
2180 IF G = 6 THEN PRINT "ROBBER": GOTO 2200
2190 PRINT "NONE"
2200 VTAB 6: PRINT "1)^KNIGHT"
2210 VTAB 7: PRINT "2)^PALADIN"
2220 VTAB 8: PRINT "3)^ARCHER"
2230 VTAB 9: PRINT "4)^CLERIC"
2240 VTAB 10: PRINT "5)^SORCERER"
2250 VTAB 11: PRINT "6)^ROBBER"
2260 VTAB 4: INPUT "NEW^CLASS:^";A$: IF A$ = ""
THEN GOTO 1520
2270 A = VAL (A$): IF A < 1 OR A > 6 THEN 2260
2280 C = A: GOSUB 4650: GOTO 1520
2290 HOME: PRINT: PRINT "CURRENT^NAME:^";:X = 0
2300 GOSUB 4660: IF G = 0 THEN PRINT "EMPTY":
GOTO 2330
2310 FOR X = 0 TO 14: GOSUB 4660: IF G = 0 THEN X
= 14: GOTO 2330
2320 PRINT CHR$(G);: NEXT X
2330 PRINT: INPUT "NEW^NAME^(15^CHARS)^";A$:
IF A$ = "" THEN 1520
2340 IF LEN (A$) > 15 THEN 2290
2350 FOR X = 0 TO 14: C = 0: GOSUB 4650: NEXT X
2360 FOR X = 0 TO LEN (A$) - 1
2370 C = ASC (MID$(A$,X+1,1)) + 128: GOSUB 4650
2380 NEXT X
2390 GOTO 1520
2400 REM BATTLEFIELDS
2410 TEXT: HOME: INVERSE: PRINT "*****
BATTLEFIELDS^OF^HORNBLOUGH*****" POKE
34,1: NORMAL
2420 PRINT: PRINT "A^YOUNG^AND^NIMBLE^LOOKING^
PERSON^WALKS^OVER^TO^GREET^YOU:*****
*****'HULLO!'^THEY^CALL^ME^QUICK^
SILVER.^DO^YOU^REQUIRE^TRAINING?'"
2430 PRINT: INPUT "ANSWER*(Y/N):^";A$: IF A$ =
"N" THEN 1180
2440 HOME: VTAB 4: PRINT "^^I)NTELLECT"
2450 VTAB 5: PRINT "^^M)IGHT"
2460 VTAB 6: PRINT "^^P)ERSONALITY"
2470 VTAB 7: PRINT "^^E)NDURANCE"
2480 VTAB 8: PRINT "^^S)PEED"
2490 VTAB 9: PRINT "^^A)CCURACY"
2500 VTAB 10: PRINT "^^L)UCK"
2510 VTAB 2: INPUT "ALTER:^";A$
2520 IF A$ = "" THEN 1180
2530 IF A$ = "I" THEN 2610
2540 IF A$ = "M" THEN 2620
2550 IF A$ = "P" THEN 2630
2560 IF A$ = "E" THEN 2640
2570 IF A$ = "S" THEN 2650
2580 IF A$ = "A" THEN 2660
2590 IF A$ = "L" THEN 2670
2600 GOTO 2510
2610 C$ = "INTELLECT": X = 22: GOSUB 2680: X = 21:
GOTO 2730
2620 C$ = "MIGHT": X = 24: GOSUB 2680: X = 23: GOTO
2730
2630 C$ = "PERSONALITY": X = 26: GOSUB 2680: X =
25: GOTO 2730
2640 C$ = "ENDURANCE": X = 28: GOSUB 2680: X = 27:
GOTO 2730
2650 C$ = "SPEED": X = 30: GOSUB 2680: X = 29: GOTO
2730
2660 C$ = "ACCURACY": X = 32: GOSUB 2680: X = 31:
GOTO 2730
2670 C$ = "LUCK": X = 34: GOSUB 2680: X = 33: GOTO
2730
2680 HOME: VTAB 3: PRINT "CURRENT^" C$ "^";:
GOSUB 4660: PRINT G
2690 VTAB 4: PRINT "NEW^" C$ "^";: INPUT "":A$:
IF A$ = "" THEN 2720
2700 A = VAL (A$): IF A < 1 OR A > 99 THEN 2690
2710 C = A: GOSUB 4650
2720 RETURN
2730 VTAB 6: PRINT "ORIGINAL^" C$ "^";: GOSUB
4660: PRINT G
2740 VTAB 7: PRINT "NEW^" C$ "^";: INPUT "":A$:
IF A$ = "" THEN 2440
2750 A = VAL (A$): IF A < 1 OR A > 99 THEN 2740
2760 C = A: GOSUB 4650: GOTO 2440
2770 REM FOUNTAIN
2780 TEXT: HOME: INVERSE: PRINT "*****
FOUNTAIN^OF^YOUTH*****" POKE 34,1:
NORMAL
2790 PRINT: PRINT "YOU^ARE^STANDING^BEFORE^THE^
FOUNTAIN^OF^YOUTH,^TAKE^A^DRINK?"
2800 PRINT: INPUT "ANSWER*(Y/N):^";A$: IF A$ =
"N" THEN GOTO 1180
2810 HOME: PRINT: PRINT "CURRENT^AGE:^";:X =
37: GOSUB 4660: PRINT G
2820 PRINT: INPUT "NEW^AGE:^";A$: IF A$ = "" THEN
1180
2830 A = VAL (A$): IF A < 1 OR A > 100 THEN 2810
2840 C = A: GOSUB 4650: GOTO 1180

```

Readers Data Exchange

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2850 REM RESTAURANT
2860 TEXT: HOME: INVERSE: PRINT "*****
LARAGATHRA'S RESTAURANT*****": POKE
34,1: NORMAL
2870 PRINT: PRINT "A VERY BEAUTIFUL WOMEN
CLOTHED IN GOLDEN SILK SMILES AT YOU AND
SAYS: ***** DO YOU WISH SERVICE? "
2880 PRINT: INPUT "ANSWER (Y/N): "; AS: IF AS =
"N" THEN GOTO 1180
2890 HOME: PRINT: PRINT "CURRENT FOOD: "; X =
62: GOSUB 4660: PRINT G
2900 INPUT "NEW FOOD: "; AS: IF AS = "" THEN GOTO
1180
2910 A = VAL (AS): IF A < 0 OR A > 40 THEN 2890
2920 C = A: GOSUB 4650: GOTO 1180
2930 REM HALL
2940 TEXT: HOME: INVERSE: PRINT "***** HALL OF
COMMENDATIONS*****": POKE 34,1: NORMAL
2950 PRINT: PRINT "BEFORE YOU AND A HUGE DAI
SURROUNDED BY MANY GUARDS SITS LORD
YTILAER, A KING OF ALL THE LAND. HE
SPEAKS: ***** WELCOME MY FRIEND.
DO YOU DESIRE ANY PROMOTIONS? "
2960 PRINT: INPUT "ANSWER (Y/N): "; AS: IF AS =
"N" THEN 1180
2970 HOME: VTAB 3: PRINT "CURRENT LEVEL: "; X
= 36: GOSUB 4660: PRINT G
2980 VTAB 4: INPUT "NEW LEVEL: "; AS: IF AS = ""
THEN 3010
2990 A = VAL (AS): IF A < 1 OR A > 255 THEN 2970
3000 C = A: GOSUB 4650
3010 VTAB 6: PRINT "ORIGINAL LEVEL: "; X = 35:
GOSUB 4660: PRINT G
3020 VTAB 7: INPUT "NEW ORIGINAL LEVEL: "; AS:
IF AS = "" THEN GOTO 1180
3030 A = VAL (AS): IF A < 1 THEN 3010
3040 C = A: GOSUB 4650: GOTO 1180
3050 REM LIBRARY
3060 TEXT: HOME: INVERSE: PRINT "*****
ZAERDIDAIN'S LIBRARY*****": POKE 34,1:
NORMAL
3070 PRINT: PRINT "A WIZENED OLD GNOME
HOBBLES TOWARDS YOU: 'WELL, ADVENTURER! DO YOU
WISH TO LOOK AT MY TOMES OF
KNOWLEDGE? "
3080 PRINT: INPUT "ANSWER (Y/N): "; AS: IF AS =
"N" THEN GOTO 1180
3090 HOME: VTAB 4: PRINT "EXPERIENCE POINTS"
3100 VTAB 5: PRINT "SPELL LEVEL"
3110 VTAB 2: INPUT "ALTER: "; AS: IF AS = "" THEN
1180
3120 IF AS = "E" THEN 3150
3130 IF AS = "S" THEN 3290
3140 GOTO 3090
3150 HOME: PRINT "CURRENT EXPERIENCE: "
; X = 42: GOSUB 4660: A = A + G * 16777216: X =
41: GOSUB 4660: A = A + G * 65536: X = 40:
GOSUB 4660: A = A + G * 256: X = 39: GOSUB
4660: A = A + G: PRINT A
3160 INPUT "NEW EXPERIENCE: "; AS: IF AS = ""
THEN 3090
3170 FOR X = 39 TO 42: POKE (B + (I - 1) * 127 +
X), 0: NEXT X
3180 A = VAL (AS): IF A < 0 OR A > 4294967295 THEN
3150
3190 IF A < 16777216 THEN 3220
3200 C = INT (A / 16777216): X = 42: GOSUB 4650
3210 A = A - (C * 16777216)
3220 IF A < 65536 THEN 3250
3230 C = INT (A / 65536): X = 41: GOSUB 4650
3240 A = A - (C * 65536)
3250 IF A < 256 THEN 3280
3260 C = INT (A / 256): X = 40: GOSUB 4650
3270 A = A - (C * 256)
3280 C = A: X = 39: GOSUB 4650: GOTO 3090
3290 HOME: PRINT: PRINT "CURRENT SPELL LEVEL: "
; X = 48: GOSUB 4660: PRINT G
3300 INPUT "NEW SPELL LEVEL: "; AS: IF AS = ""
THEN 3090
3310 A = VAL (AS): IF A < 0 OR A > 7 THEN 3290
3320 C = A: GOSUB 4650: GOTO 3090
3330 REM GUILD
3340 TEXT: HOME: INVERSE: PRINT "***** GUILD
OF STRENGTH*****": POKE 34,1: NORMAL
3350 PRINT: PRINT "A WARRIOR OF IMMENSE
PROPORTIONS STRIDES UP TO YOU AND SAYS:
***** WELCOME. MY NAME IS
INGOLD INGLORION, AND IF YOU WISH, WE
CAN TONE UP YOUR BODY! "
3360 PRINT: INPUT "ANSWER (Y/N): "; AS: IF AS =
"N" THEN GOTO 1180
3370 HOME: VTAB 4: PRINT "HIT POINTS"
3380 VTAB 5: PRINT "SPELL POINTS"
3390 VTAB 2: INPUT "ALTER: "; AS: IF AS = "" THEN
GOTO 1180
3400 IF AS = "H" THEN GOTO 3430
3410 IF AS = "S" THEN GOTO 3510
3420 GOTO 3370
3430 HOME: VTAB 4: PRINT "1) CURRENT HIT
POINTS"
3440 VTAB 5: PRINT "2) CURRENT MAX (POISON
LOWERS THIS)"
3450 VTAB 6: PRINT "3) ORIGINAL HIT POINTS"
3460 VTAB 2: INPUT "ALTER: "; AS: IF AS = "" THEN
3370
3470 A = VAL (AS): IF A < 1 OR A > 3 THEN 3430
3480 IF A = 1 THEN CS = "CURRENT HIT POINTS: " : X
= 52: GOSUB 3570: GOTO 3430
3490 IF A = 2 THEN CS = "CURRENT MAX: " : X = 56:
GOSUB 3570: GOTO 3430
3500 IF A = 3 THEN CS = "ORIGINAL HIT POINTS: "
: X = 54: GOSUB 3570: GOTO 3430
3510 HOME: VTAB 4: PRINT "1) CURRENT SPELL
POINTS"
3520 VTAB 5: PRINT "2) ORIGINAL SPELL POINTS"
3530 VTAB 2: INPUT "ALTER: "; AS: IF AS = "" THEN
3370
3540 A = VAL (AS): IF A < 1 OR A > 2 THEN 3510
3550 IF A = 1 THEN CS = "CURRENT SPELL POINTS: "
: X = 44: GOSUB 3570: GOTO 3510
3560 IF A = 2 THEN CS = "ORIGINAL SPELL POINTS: "
: X = 46: GOSUB 3570: GOTO 3510
3570 HOME: PRINT: PRINT CS: GOSUB 4660: A = G *
256: X = X - 1: GOSUB 4660: A = A + G: PRINT A
3580 PRINT "NEW " CS: INPUT " "; AS: IF AS = ""
THEN RETURN
3590 X = X + 1
3600 A = VAL (AS): IF A < 0 OR A > 65535 THEN 3570
3610 IF A < 256 THEN 3640
3620 C = INT (A / 256): GOSUB 4650
3630 A = A - (C * 256)
3640 X = X - 1: C = A: GOSUB 4650
3650 RETURN
3660 REM VAULT
3670 TEXT: HOME: INVERSE: PRINT "***** VAULT
OF RICHES*****": POKE 34,1: NORMAL
3680 PRINT: PRINT "YOU'RE AT THE TOWN
TREASURY. IT IS UN-GUARDED!! ALL IS
YOURS FOR THE TAKING!! ENTER IN?"
3690 PRINT: INPUT "ANSWER (Y/N): "; AS: IF AS =
"N" THEN 1180
3700 HOME: VTAB 4: PRINT "J) EMS"
3710 VTAB 5: PRINT "G) OLD"
3720 VTAB 2: INPUT "TAKE WHICH: "; AS: IF AS = ""
THEN 1180
3730 IF AS = "J" THEN 3760
3740 IF AS = "G" THEN 3840
3750 GOTO 3700
3760 HOME: PRINT: PRINT "CURRENT GEMS: "; X =
50: GOSUB 4660: A = G * 256: X = 49: GOSUB
4660: A = A + G: PRINT A
3770 INPUT "NEW GEMS: "; AS: IF AS = "" THEN 3700
3780 A = VAL (AS): IF A < 0 OR A > 65535 THEN 3760
3790 C = 0: X = 49: GOSUB 4650: C = 0: X = 50: GOSUB
4650
3800 IF A < 256 THEN 3830
3810 C = INT (A / 256): X = 50: GOSUB 4650
3820 A = A - (C * 256)
3830 C = A: X = 49: GOSUB 4650: GOTO 3700
3840 HOME: PRINT: PRINT "CURRENT GOLD: "; X =
59: GOSUB 4660: A = G * 65536: X = 58: GOSUB
4660: A = A + G * 256: X = 57: GOSUB 4660: A
= A + G: PRINT A
3850 INPUT "NEW GOLD: "; AS: IF AS = "" THEN 3700
3860 A = VAL (AS): IF A < 0 OR A > 16777215 THEN
3840
3870 POKE 57, 0: POKE 58, 0: POKE 59, 0
3880 IF A < 65536 THEN 3910
3890 C = INT (A / 65536): X = 59: GOSUB 4650
3900 A = A - (C * 65536)
3910 IF A < 256 THEN 3940
3920 C = INT (A / 256): X = 58: GOSUB 4650
3930 A = A - (C * 256)
3940 C = A: X = 57: GOSUB 4650: GOTO 3700
3950 REM GEARSHOP
3960 TEXT: HOME: INVERSE: PRINT "*****
WASP IN GEARSHOP*****": POKE 34,1:
NORMAL
3970 PRINT: PRINT "A MUSCULAR AND GOOD LOOKING
CREATURE APPROACHES YOU. AS YOU SEE
HIS FACE, IT REMINDS YOU OF A HIGH ELF.
BUT AS YOU LOOK AGAIN -- HE SEEMS TO BE
OF A ROYAL DWARF STOCK. HE SPEAKS: "
3980 PRINT "'HELLO THERE! I AM THE DWELF. DO
YOU WISH TO LOOK AT OUR GOODS? "
3990 PRINT: INPUT "ANSWER (Y/N): "; AS: IF AS =
"N" THEN 1180
4000 POKE 34,1: HOME: GOSUB 4680: PRINT: POKE
34,9
4010 D = 0 + 1: E = D + 9
4020 HOME

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Readers Data Exchange

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4030 FOR J = D TO E
4040 GOSUB 4660: PRINT J ")"; ITS(J)
4050 NEXT J
4060 PRINT
4070 INPUT "(F)WD(B)ACK(J)UMP(10^R)VRS(10^G)ET^
"; AS
4080 IF AS = "" THEN 1180
4090 IF AS = "F" AND D < 246 THEN O = O + 1
4100 IF AS = "B" AND D > 1 THEN O = O - 1
4110 IF AS = "J" AND D < 241 THEN O = O + 9
4120 IF AS = "J" AND D > 241 THEN O = 245
4130 IF AS = "R" AND D > 9 THEN O = O - 9
4140 IF AS = "R" AND D = < 9 THEN O = 0
4150 IF AS = "G" THEN 4170
4160 GOTO 4010
4170 INPUT "GET^ITEM#"; AS: IF AS = "" THEN 4010
4180 A = VAL (AS): IF A < 1 OR A > 255 THEN 4010
4190 C = A
4200 HOME: PRINT "PUT^" ITS(A) ^"IN^WHICH"
4210 INPUT "POSITION^(1-6/A-F)^"; AS: IF AS =
"" THEN 4010
4220 IF AS = > "A" AND AS < "G" THEN X = ASC (AS)
+ 5: GOSUB 4650: GOTO 4000
4230 IF AS = > "1" AND AS < "7" THEN X = VAL (AS)
+ 63: GOSUB 4650: GOTO 4000
4240 GOTO 4200
4250 REM TEMPLE
4260 TEXT: HOME: INVERSE: PRINT "*****
TEMPLE^OF^AK^BORU*****": POKE 34, 1:
NORMAL
4270 PRINT: PRINT "A^VERY^PLAIN^WOMAN^DRESSED^
IN^ A^GRAY^ROBE^IS^STANDING^HERE.^
APPLYING^ BANDAGES^TO^A^PATIENT^S^EYES.^
SHE^TURNS^TO^YOU^AND^SAYS:"
4280 PRINT "I^AM^CURA,^CLERIC^OF^THE^TEMPLE.^
DO^YOU^REQUIRE^TREATMENT?"
4290 PRINT: INPUT "ANSWER^(Y/N)^"; AS: IF AS =
"N" THEN 1180
4300 HOME
4310 X = 63: C = 0: GOSUB 4650: PRINT "YOU^ARE^NOW^
FEELING^GOOD!": PRINT: INPUT "PRESS^
<RETURN>"; AS: GOTO 1180
4320 REM PORTAL
4330 TEXT: HOME: INVERSE: PRINT "*****
PORTAL^ TO^TOWNS*****": POKE 34, 1:
NORMAL
4340 PRINT: PRINT "YOU^SEE^A^H-ORC^GUARDING^A^
BLUE^WHITE^PORTAL.^HE^GROWLS.^
*****SO^YOU^THINK^YOU^RE^GONNA^GET^BY^
ME^DO^YA^???"
4350 PRINT: INPUT "ANSWER^(Y/N)^"; AS: IF AS =
"N" THEN 1180
4360 HOME: VTAB 4: PRINT "1)^SORPICAL"
4370 VTAB 5: PRINT "2)^PORTSMITH"
4380 VTAB 6: PRINT "3)^ALGARY"
4390 VTAB 7: PRINT "4)^DUSK"
4400 VTAB 8: PRINT "5)^ERLIQUIN"
4410 VTAB 10: PRINT "CURRENT^LOCATION^";:
PRINT PEEK (26861 + 1)
4420 VTAB 2: INPUT "TELEPORT^TO^"; AS: IF AS =
"" THEN GOTO 1180
4430 A = VAL (AS): IF A < 1 OR A > 5 THEN 4360
4440 POKE 26861 + 1, A: GOTO 1180
4450 REM SIGN
4460 HOME: PRINT "YOU^READ^THE^SIGN.^IT^SAYS:"
4470 PRINT
4480 PRINT "WELCOME^TO^THE^TOWN^OF^CHANGES.^
HERE^YOU^MAY^CHANGE^YOUR^CHARACTER^TO^
WHAT^YOU^SEE^FIT.^THERE^ARE^MANY^PLACES^
TO^VISIT^SO^HERE^IS^A^BRIEF^EXPLANATION^
OF"
4490 PRINT "OF^EACH^AREA:"
4500 PRINT: PRINT "ICARUS^LAB^: ^RACE, ^NAME, ^
SEX, ^ALIGN-^MENT^AND^CLASS"
4510 PRINT: PRINT "BATTLEFIELDS^OF^HORNBOUGH^
: ^ALL^YOUR^STATS, ^SUCH^AS^MIGHT, ^SPEED, ^
LUCK, ^ETC. ";
4520 PRINT: PRINT "TEMPLE^OF^AK^BORU^: ^
CONDITION^BACK^TO^GOOD"
4530 PRINT: PRINT "FOUNTAIN^OF^YOUTH^: ^AGE"
4540 PRINT: PRINT "LARAGATHRA^S^RESTAURANT^: ^
FOOD"
4550 PRINT: INPUT "PRESS^<RETURN>"; AS
4560 PRINT "HALL^OF^COMMENDATIONS^: ^LEVEL"
4570 HOME
4580 PRINT: PRINT "ZAERDIDAIN^S^LIBRARY^: ^
SPELL^ CASTING^LEVEL^AND^EXPERIENCE^
POINTS"
4590 PRINT: PRINT "GUILD^OF^STRENGTH^: ^HIT^
POINTS^AND^SPELL^POINTS"
4600 PRINT: PRINT "VAULT^OF^RICHES^: ^GEMS^AND^
GOLD"
4610 PRINT: PRINT "WASPIN^GEARSHOP^: ^ITEMS"
4620 PRINT: PRINT "PORTAL^TO^TOWNS^: ^WHERE^YOU^
ARE^PRESENTLY^LIVING"
4630 PRINT: INPUT "PRESS^<RETURN>"; AS
4640 GOTO 1180
4650 POKE (B + (I - 1) * 127 + X).C: RETURN: REM
WRITE NUMBER
4660 G = PEEK (B + (I - 1) * 127 + X): RETURN: REM
READ NUMBER
4670 REM EQUIPMENT PRINT
4680 PRINT "-----<EQUIPPED>-----<BACK^
PACK>-----"
4690 FOR J = 1 TO 6: VTAB J + 2: PRINT J ")";: X =
63 + J: GOSUB 4660: IF G = 0 THEN PRINT: GOTO
4710
4700 PRINT ITS(G)
4710 VTAB J + 2: HTAB 21: PRINT CHR$(J + 64);
")";: X = 69 + J: GOSUB 4660: IF G = 0 THEN
PRINT: GOTO 4730
4720 PRINT ITS(G)
4730 NEXT J
4740 RETURN
4750 REM DATA
4760 DATA CLUB, DAGGER, HAND^AXE, SPEAR, SHORT^
SWORD
4770 DATA MACE, FLAIL, SCIMITAR, BROADSWORD,
BATTLE^AXE
4780 DATA LONG^SWORD, CLUB^+1, CLUB^+2, DAGGER^
+1, HAND^AXE^+1
4790 DATA SPEAR^+1, SHORT^SWORD^+1, MACE^+1,
FLAIL^+1, SCIMITAR^+1
4800 DATA BROADSWORD^+1, BATTLE^AXE^+1, LONG^
SWORD^+1, FLAMING^CLUB, CLUB^OF^NOISE
4810 DATA DAGGER^+2, HAND^AXE^+2, SPEAR^+2,
SHORT^SWORD^+2, MACE^+2
4820 DATA FLAIL^+2, SCIMITAR^ +2, BROADSWORD^
+2, BATTLE^AXE^+2, LONG^SWORD^+2
4830 DATA ROYAL^DAGGER, DAGGER^OF^MIND, DIAMOND^
DAGGER, ELECTRIC^SPEAR, HOLY^MACE
4840 DATA UN-HOLY^MACE, DARK^ FLAIL, FLAIL^ OF^
FEAR, LUCKY^SCIMITAR, MACE^OF^UNDEAD
4850 DATA COLD^ AXE, ELECTRIC^ SWORD, FLAMING^
SWORD, SWORD^OF^MIGHT, SWORD^OF^SPEED
4860 DATA SHARP^SWORD, ACCURATE^SWORD, SWORD^OF^
MAGIC, IMMORTAL^SWORD, AXE^PROTECTOR
4870 DATA AXE^ DESTROYER, X!XX!X^S^ SWORD,
ADAMANTINE^ AXE, ULTIMATE^ SWORD, ELEMENT^
SWORD
4880 DATA SLING, CROSSBOW, SHORT^ BOW, LONG^
BOW, GREAT^BOW
4890 DATA SLING^ +1, CROSSBOW^ +1, SHORT^ BOW^
+1, LONG^BOW^+1, GREAT^BOW^+1
4900 DATA MAGIC^SLING, CROSSBOW^+2, SHORT^BOW^
+2, LONG^BOW^+2, GREAT^BOW^+2
4910 DATA CROSSBOW^ LUCK, CROSSBOW^ SPEED,
LIGHTENING^BOW, FLAMING^BOW, GIANT^S^BOW
4920 DATA THE^MAGIC^BOW, BOW^OF^POWER, ROBBER^S^
X-BOW, ARCHER^S^BOW, OBSIDIAN^BOW
4930 DATA STAFF, GLAIVE, BARDICHE, HALBERD,
GREAT^HAMMER
4940 DATA GREAT^AXE, FLAMBERGE, STAFF^+1, GLAIVE^
+1, BARDICHE^+1
4950 DATA HALBERD^+1, GREAT^HAMMER^+1, GREAT^
AXE^+1, FLAMBERGE^+1, STAFF^+2
4960 DATA GLAIVE^ +2, BARDICHE^ +2, HALBERD^
+2, GREAT^HAMMER^+2, GREAT^AXE^+2
4970 DATA FLAMBERGE^+2, STAFF^OF^LIGHT, COLD^
GLAIVE, CURING^STAFF, MINOTAUR^S^AXE
4980 DATA THUNDER^ HAMMER, GREAT^ AXE^
+3, FLAMBERGE^+3, SORCERER^STAFF, STAFF^OF^
MAGIC
4990 DATA DEMON^S^GLAIVE, DEVIL^S^GLAIVE, THE^
FLAMBERGE, HOLY^FLAMBERGE, EVIL^FLAMBERGE
5000 DATA PADDED^ ARMOR, LEATHER^ ARMOR, SCALE^
ARMOR, RING^MAIL, CHAIN^MAIL
5010 DATA SPLINT^ MAIL, PLATE^ MAIL, PADDED^
+1, LEATHER^+1, SCALE^+1
5020 DATA RING^MAIL^+1, CHAIN^MAIL^+1, SPLINT^
MAIL^+1, PLATE^MAIL^+1, LEATHER^+2
5030 DATA SCALE^+2, RING^MAIL^+2, CHAIN^MAIL^
+2, SPLINT^MAIL^+2, PLATE^MAIL^+2
5040 DATA BRACERS^AC^4, RING^MAIL^+3, CHAIN^MAIL^
+3, SPLINT^MAIL^+3, PLATE^MAIL^+3
5050 DATA BRACERS^AC^6, CHAIN^MAIL^+3, BRACERS^
AC^8, BLUE^RING^MAIL, RED^CHAIN^MAIL
5060 DATA X!XX!X^S^PLATE, HOLY^PLATE, UN-HOLY^
PLATE, ULTIMATE^PLATE, BRACERS^AC^8
5070 DATA SMALL^ SHIELD, LARGE^ SHIELD, SILVER^
SHIELD, SMALL^SHIELD^+1, LARGE^SHIELD^+1
5080 DATA LARGE^ SHIELD^ +1, SMALL^ SHIELD^
+2, LARGE^SHIELD^+2, LARGE^SHIELD^+2, FIRE^
SHIELD
5090 DATA COLD^ SHIELD, ELEC^ SHIELD, ACID^
SHIELD, MAGIC^SHIELD, DRAGON^SHIELD
5100 DATA ROPE^&^HOOK, TORCH, LANTERN, 10^FOOT^
POLE, GARLIC
5110 DATA WOLFSBANE, BELLADONNA, MAGIC^HERBS,
DRIED^BEEF, ROBBER^S^TOOLS

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Readers Data Exchange

5120 DATA BAG ^o OF ^a SILVER, AMBER ^a GEM, SMELLING ^a SALT, BAG ^o OF ^a SAND, MIGHT ^a POTION	400 - \$5522 410 - \$5749	2990 - \$8942 3000 - \$DCB5	1040 - \$3D34 1050 - \$0D5E	3630 - \$366A 3640 - \$E464
5130 DATA SPEED ^a POTION, SUNDIAL, CURING ^a POTION, MAGIC ^a POTION, DEFENSE ^a RING	420 - \$4FE2 430 - \$67A7	3010 - \$30C8 3020 - \$26AB	1060 - \$3011 1070 - \$D8F2	3650 - \$764F 3660 - \$5A59
5140 DATA BAG ^o OF ^a GARBAGE, SCROLL ^o OF ^a FIRE, FLYING ^a CARPET, JADE ^a AMULET, ANTIDOTE ^a BREW	440 - \$2EAE 450 - \$1E2F	3030 - \$4E86 3040 - \$3FBE	1080 - \$279F 1090 - \$9518	3670 - \$752E 3680 - \$1A21
5150 DATA SKILL ^a POTION, BOOTS ^o OF ^a SPEED, LUCKY ^a CHARM, WAND ^o OF ^a FIRE, UNDEAD ^a AMULET	460 - \$0D59 470 - \$F700	3050 - \$B7CC 3060 - \$A5B5	1100 - \$B076 1110 - \$36F1	3690 - \$EA4A 3700 - \$3099
5160 DATA SILENT ^a CHIME, BELT ^o OF ^a POWER, MODEL ^a BOAT, DEFENSE ^a CLOAK, KNOWLEDGE ^a BOOK	480 - \$8843 490 - \$7437	3070 - \$DF5C 3080 - \$6961	1120 - \$4353 1130 - \$4902	3710 - \$F2F8 3720 - \$BD29
5170 DATA RUBY ^a IDOL, SORCERER ^a ROBE, POWER ^a GAUNTLET, CLERIC ^{'s} BEAD, HORN ^o OF ^a DEATH	500 - \$8226 510 - \$93B6	3090 - \$34E3 3100 - \$A222	1140 - \$28D8 1150 - \$A640	3730 - \$6A3E 3740 - \$FD0A
5180 DATA POTION ^a OF ^a LIFE, SHINY ^a PENDANT, LIGHTNING ^a WAND, PRECISION ^a RING, RETURN ^a SCROLL	520 - \$1DA3 530 - \$0924	3110 - \$60C4 3120 - \$F0E3	1160 - \$B779 1170 - \$D529	3750 - \$F2BD 3760 - \$BF4B
5190 DATA TELEPORT ^a HELM, YOUTH ^a POTION, BELLS ^o OF ^a TIME, MAGIC ^a OIL, MAGIC ^a VEST	540 - \$6CC9 550 - \$AAACE	3130 - \$B802 3140 - \$20FF	1180 - \$23BD 1190 - \$2D26	3770 - \$AE3F 3780 - \$1251
5200 DATA DESTROYER ^a WAND, ELEMENT ^a SCARAB, SUN ^a SCROLL, STAR ^a RUBY, STAR ^a SAPPHIRE	560 - \$9431 570 - \$35D1	3150 - \$B403 3160 - \$A565	1200 - \$39F4 1210 - \$745C	3790 - \$E4B0 3800 - \$E0AB
5210 DATA WEALTH ^a CHEST, GEM ^a SACK, DIAMOND ^a COLLAR, FIRE ^a OPAL, UNOBTAINIUM	580 - \$7C3E 590 - \$3860	3170 - \$217F 3180 - \$DEE9	1220 - \$9191 1230 - \$02B2	3810 - \$3520 3820 - \$8A4C
5220 DATA VELLUM ^a SCROLL, RUBY ^a WHISTLE, KINGS ^a PASS, MERCHANTS ^a PASS, CRYSTAL ^a KEY	600 - \$6E15 610 - \$6E12	3190 - \$68CE 3200 - \$F393	1240 - \$D235 1250 - \$5A31	3830 - \$4C61 3840 - \$562B
5230 DATA CORAL ^a KEY, BRONZE ^a KEY, SILVER ^a KEY, GOLD ^a KEY, DIAMOND ^a KEY	620 - \$710E 630 - \$A277	3210 - \$54B9 3220 - \$E04E	1260 - \$E89D 1270 - \$C611	3850 - \$25D4 3860 - \$8C58
5240 DATA CACTUS ^a NECTAR, MAP ^o OF ^a DESERT, LASER ^a BLASTER, DRAGON ^{'s} TOOTH, WYVERN ^a EYE	640 - \$7F7E 650 - \$0F52	3230 - \$6EEC 3240 - \$7EE9	1280 - \$79E7 1290 - \$ADED	3870 - \$7E16 3880 - \$6B74
5250 DATA MEDUSA ^a HEAD, RING ^o OF ^a OKRIM, B ^a QUEEN ^a IDOL, W ^a QUEEN ^a IDOL, PIRATES ^a MAP ^a A	660 - \$3DC1 670 - \$EE67	3250 - \$BD62 3260 - \$FD33	1300 - \$95B2 1310 - \$A3BF	3890 - \$3F65 3900 - \$F4E7
5260 DATA PIRATES ^a MAP ^a B, THUNDRANIUM, KEY ^a CARD, EYE ^a OF ^a GOROS, (USELESS ^a ITEM)	680 - \$18A9 690 - \$74E1	3270 - \$6A75 3280 - \$35B8	1320 - \$E57D 1330 - \$6F96	3910 - \$5520 3920 - \$EC2B

Checksums

100 - \$0236	2690 - \$0B91	730 - \$8691	3320 - \$87F0	1370 - \$3981	3960 - \$1D99
110 - \$F454	2700 - \$2601	740 - \$5C0D	3330 - \$AEAA	1380 - \$7F9C	3970 - \$4E1A
120 - \$F699	2710 - \$41DA	750 - \$9448	3340 - \$AF9F	1390 - \$AEBB	3980 - \$891E
130 - \$F780	2720 - \$9AB3	760 - \$01EB	3350 - \$0076	1400 - \$63FD	3990 - \$AB3E
140 - \$BAAC	2730 - \$4C16	770 - \$00FC	3360 - \$D3BD	1410 - \$1C62	4000 - \$44E3
150 - \$C562	2740 - \$7ED5	780 - \$3F61	3370 - \$13CD	1420 - \$344B	4010 - \$85B1
160 - \$1B04	2750 - \$930A	790 - \$2DED	3380 - \$A596	1430 - \$88F1	4020 - \$0385
170 - \$675D	2760 - \$377F	800 - \$02B0	3390 - \$89A9	1440 - \$5648	4030 - \$BA7D
180 - \$0ABB	2770 - \$D00B	810 - \$0FCE	3400 - \$3506	1450 - \$3BD8	4040 - \$C1D1
190 - \$5C72	2780 - \$899F	820 - \$B561	3410 - \$8738	1460 - \$B024	4050 - \$326B
200 - \$A4B6	2790 - \$E7C8	830 - \$8431	3420 - \$8E14	1470 - \$76C7	4060 - \$8428
210 - \$1DDF	2800 - \$A3D2	840 - \$5AAA	3430 - \$C848	1480 - \$50C4	4070 - \$9B82
220 - \$CFE3	2810 - \$75BC	850 - \$A733	3440 - \$450B	1490 - \$25ED	4080 - \$582B
230 - \$4E07	2820 - \$B610	860 - \$3E5E	3450 - \$0328	1500 - \$1B67	4090 - \$093B
240 - \$C66A	2830 - \$20B5	870 - \$298D	3460 - \$850C	1510 - \$F37C	4100 - \$3817
250 - \$D765	2840 - \$28AC	880 - \$6D1E	3470 - \$CFE5	1520 - \$1A81	4110 - \$65AD
260 - \$7EDD	2850 - \$7557	890 - \$04FF	3480 - \$238E	1530 - \$8607	4120 - \$77B9
270 - \$BDDE	2860 - \$3034	900 - \$F11C	3490 - \$B9F1	1540 - \$352C	4130 - \$FACA
280 - \$9E11	2870 - \$931D	910 - \$33F3	3500 - \$B0A5	1550 - \$0EF4	4140 - \$222C
290 - \$6D95	2880 - \$50D3	920 - \$F551	3510 - \$5F96	1560 - \$D163	4150 - \$CF51
300 - \$407B	2890 - \$8506	930 - \$30BF	3520 - \$7426	1570 - \$3BDD	4160 - \$4E95
310 - \$725F	2900 - \$D10E	940 - \$FCC8	3530 - \$C99A	1580 - \$66B3	4170 - \$AEE7
320 - \$A084	2910 - \$AE6C	950 - \$AFA0	3540 - \$1B2D	1590 - \$5122	4180 - \$AFCD
330 - \$46A9	2920 - \$9D1A	960 - \$006D	3550 - \$2331	1600 - \$B2E2	4190 - \$85FF
340 - \$868D	2930 - \$F3D2	970 - \$2D1F	3560 - \$2183	1610 - \$5437	4200 - \$4F7E
350 - \$BBA0	2940 - \$6950	980 - \$6869	3570 - \$4AFD	1620 - \$ADC9	4210 - \$2951
360 - \$3700	2950 - \$7BB2	990 - \$0AAD	3580 - \$4D26	1630 - \$FB78	4220 - \$52BC
370 - \$AC0C	2960 - \$9F6B	1000 - \$A4AB	3590 - \$441C	1640 - \$B021	4230 - \$3B72
380 - \$1A28	2970 - \$7DCA	1010 - \$B90C	3600 - \$87F3	1650 - \$0B58	4240 - \$97EB
390 - \$04F6	2980 - \$65C5	1020 - \$0AAC	3610 - \$9EA5	1660 - \$CD3F	4250 - \$0DAD
		1030 - \$4636	3620 - \$0A20	1670 - \$7D24	4260 - \$C485

1680 - \$95E4	4270 - \$B41B	2320 - \$DC24	4910 - \$7699
1690 - \$17C5	4280 - \$A090	2330 - \$D2D3	4920 - \$73D1
1700 - \$7377	4290 - \$500C	2340 - \$C107	4930 - \$14AB
1710 - \$61C4	4300 - \$33AD	2350 - \$8495	4940 - \$A5B1
1720 - \$1786	4310 - \$F520	2360 - \$4739	4950 - \$CCDD
1730 - \$17BB	4320 - \$1218	2370 - \$F0E4	4960 - \$8C9E
1740 - \$E92D	4330 - \$C31E	2380 - \$F67C	4970 - \$229D
1750 - \$6B50	4340 - \$A50D	2390 - \$2D6E	4980 - \$C178
1760 - \$23E0	4350 - \$3F23	2400 - \$9A65	4990 - \$211B
1770 - \$4DBA	4360 - \$000A	2410 - \$FFC2	5000 - \$EBD7
1780 - \$DBEC	4370 - \$0C1D	2420 - \$5459	5010 - \$BEB A
1790 - \$0932	4380 - \$CFEE	2430 - \$CD83	5020 - \$E73E
1800 - \$6904	4390 - \$2373	2440 - \$4BCF	5030 - \$8837
1810 - \$1A9C	4400 - \$AA65	2450 - \$7ADB	5040 - \$6287
1820 - \$578E	4410 - \$F8DB	2460 - \$1E27	5050 - \$3961
1830 - \$F0D0	4420 - \$25A6	2470 - \$54AC	5060 - \$A979
1840 - \$E36B	4430 - \$FA9E	2480 - \$7861	5070 - \$05A2
1850 - \$557E	4440 - \$0F88	2490 - \$52B9	5080 - \$7AC0
1860 - \$1343	4450 - \$C01E	2500 - \$6377	5090 - \$45C6
1870 - \$DAC6	4460 - \$194F	2510 - \$B04C	5100 - \$698B
1880 - \$5F05	4470 - \$F3F8	2520 - \$DF80	5110 - \$7C48
1890 - \$8C66	4480 - \$2C89	2530 - \$B0F3	5120 - \$75A3
1900 - \$DF1D	4490 - \$4CAA	2540 - \$393D	5130 - \$612B
1910 - \$46B3	4500 - \$BCD5	2550 - \$728E	5140 - \$1C31
1920 - \$AD94	4510 - \$2311	2560 - \$7F93	5150 - \$3D05
1930 - \$5F62	4520 - \$2057	2570 - \$CF90	5160 - \$0EF9
1940 - \$1349	4530 - \$114D	2580 - \$F13B	5170 - \$AC7A
1950 - \$A288	4540 - \$2CCF	2590 - \$CF8F	5180 - \$A6FD
1960 - \$A676	4550 - \$96F0	2600 - \$4737	5190 - \$C931
1970 - \$B216	4560 - \$0BE0	2610 - \$8DDA	5200 - \$01E8
1980 - \$985D	4570 - \$ED64	2620 - \$79A8	5210 - \$2319
1990 - \$04ED	4580 - \$B5C1	2630 - \$BF53	5220 - \$668D
2000 - \$71B5	4590 - \$9090	2640 - \$2E93	5230 - \$7154
2010 - \$4787	4600 - \$70B8	2650 - \$F230	5240 - \$B53A
2020 - \$3DDE	4610 - \$14E1	2660 - \$D801	5250 - \$B9F6
2030 - \$07ED	4620 - \$96CA	2670 - \$70E7	5260 - \$EA9C
2040 - \$43D9	4630 - \$B596	2680 - \$A140	
2050 - \$2BCF	4640 - \$59AD		
2060 - \$0B7A	4650 - \$3577		
2070 - \$FB7D	4660 - \$A138		
2080 - \$2393	4670 - \$B7FD		
2090 - \$2EC6	4680 - \$1B58		
2100 - \$5F15	4690 - \$8916		
2110 - \$50C1	4700 - \$0DA2		
2120 - \$45E8	4710 - \$CD46		
2130 - \$C4B0	4720 - \$B950		
2140 - \$03E5	4730 - \$13BA		
2150 - \$D319	4740 - \$462B		
2160 - \$034F	4750 - \$1098		
2170 - \$B54B	4760 - \$C463		
2180 - \$404B	4770 - \$911A		
2190 - \$8F61	4780 - \$D687		
2200 - \$5C7C	4790 - \$188A		
2210 - \$F9BB	4800 - \$D070		
2220 - \$5193	4810 - \$3995		
2230 - \$06F3	4820 - \$FC4D		
2240 - \$2B97	4830 - \$8876		
2250 - \$7772	4840 - \$002A		
2260 - \$777B	4850 - \$425F		
2270 - \$101E	4860 - \$C76E		
2280 - \$13E5	4870 - \$8840		
2290 - \$0365	4880 - \$05EF		
2300 - \$500C	4890 - \$D4F8		
2310 - \$BE67	4900 - \$122F		

2 RUN Super IOB and copy the Seaspeller disk to a blank disk, formatting if necessary.

Controller

```

1000 REM SEASPELLER^CONTROLLER
1010 TK = 0:ST = 0:LT = 35:CD = WR
1020 POKE 47507,0: POKE 47517,0
1030 T1 = TK: GOSUB 490
1040 POKE 47445, 213
1050 IF TK <> (INT(TK/2)) * 2 THEN POKE
47445,212
1060 GOSUB 430: GOSUB 100:ST=ST+1: IF ST < DOS
THEN 1060
1070 IF BF THEN 1090
1080 ST = 0:TK = TK + 1: IF TK < LT THEN 1040
1090 GOSUB 490: POKE 47445,213:TK = T1:ST = 0
1100 GOSUB 430: GOSUB 100:ST=ST+1: IF ST < DOS
THEN 1100
1110 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT THEN
1100
1120 IF TK < LT THEN 1030
1130 POKE 47507,174: POKE 47517,164: POKE
47445,213
1140 HOME: PRINT: PRINT "DONE.": END
    
```

Checksums

1000 - \$356B	1080 - \$0507
1010 - \$3266	1090 - \$A256
1020 - \$5917	1100 - \$9356
1030 - \$0A12	1110 - \$F70D
1040 - \$AFB3	1120 - \$9811
1050 - \$26A1	1130 - \$BC98
1060 - \$29A5	1140 - \$4064
1070 - \$077B	

Jason Cobb

Charles Taylor

Softkey for...

Seaspeller

Fisher-Price Learning Software

■ Requirements

- Super IOB
- A blank disk

Examining this disk with the utilities from Copy II Plus quickly revealed the copy protection scheme used. While in the nibble editor I found that the address prologues alternated from D5 AA 96 on even-numbered tracks to D4 AA 96 on odd-numbered tracks. This is a common protection scheme, and is easily beaten by the Dragonworld controller (from COMPUTIST #30) with Super IOB.

1 Install the controller below into Super IOB.

Ultima IV: Tips & APTs

I successfully completed Ultima IV about one year ago and decided to let COMPUTIST readers know how to complete the game. Here is some information that plays an important part in solving a great game.

Party Members

The party members of the game are in their very own class and there are 8 of them. Try to build a party fast, if you want to survive. Here are the names of the ones that can become members, and where they can be found.

NAME	RACE	TOWNE
Iolo	Bard	Britian
Shamino	Ranger	Skara Brae
Dupre	Paladin	Trinsic
Mariah	Mage	Moonglow

Geoffrey	Fighter	Jhelom
Jaana	Druid	Yew
Julia	Tinker	Minoc
Katrina	Shepherd	Magincia

To Become an Avatar

To become an Avatar is a very long process, here is a quick guide to help accomplish this feat.

- **Honesty:** Never tell a lie.
- **Compassion:** Give to the beggars, as much as you can, and never tell a lie. Flee from non-evil creatures.
- **Valor:** Never flee from evil, but instead kill it.
- **Justice:** Do not kill fleeing creatures, unless they are evil, don't shortchange the blind lady at the herb shop.
- **Sacrifice:** Give blood, and give gold to beggars.
- **Honor:** Solve quests.
- **Spirituality:** Meditate at shrines, even if you are not ready to become an Avatar.
- **Humility:** Don't claim to be what you are not.

Hints, clues and helpful people

- Mentorium is in lock lake village, ask him of the gate spell.
- To get the candle, meditate on love at the shrine in the Lycaenum.
- Ask of mandrake at the folley tavern.
- Nightshade can be found at lat j'f long c'o on a dark night.
- For the skull ask the beggar Jude in Trinsic, for the bell ask Garam.
- Find the Magic Wheel to strengthen ship hull in the deep waters of the bay in the Cape of Hero's.
- Other evil creatures help to build a valorous soul.
- Ask the barkeep for sextant, found in guild shop's item D.
- Sir Simon & Lady Tesst know about Mystic arms.
- Ask brother beyond lock lake about the WORD needed to enter lock lake.
- There is a secret entrance in the great castle.
- Mystic armour lies in the center of oak grove.
- Ask paladin named Malchor about the silver horn, which is buried on a small island off the tip of spiritwood.
- Gate Spell: Ash, Pearl, & Mandrake.
- For Black stone, stand where the gate of both moon's go dark & search when they go dark. Red stone is the 3rd part of the Key.
- Dungeon Destard connects with Covdous, Shame, & Hythloth.
- Undead spell: Ask, Garlic.
- Resurrect spell: Sulphuric Ash, Ginseng, Garlic, Spider Silk, Bloodmoss, Mandrake Root.
- Skull of Mondain, the wizard, is found at lat P'F long M'F on the darkest of nights.

- Speak on the waters of the well at Britannia and ask of the Altars.
- Ask Chuckles in the Castle Britannia about his clue.
- The 4 cities of courage are: Jhelom, Minoc, Trinsic, Scara Brae.
- The bell is located at lat N'A long L'A.
- The book is located in the library in the Lycaenum under the R.
- The candle is in Cove in the NW energy field. Dispell it, go W.W.W.N. and Search.
- The wheel is located at lat N'H long G'A, reachable only by ship.

Castle Britannia

Inside the castle you will find many secrets, it is important to know what to ask the people in the town. Here is a list of the names of the people in the town, and what you can ask them to get information along with their job and health.

Character's Name	Item's To Ask About
Joshua	Help,Riddle
Juliet	Help,One
Jester Twin	Jester,Bard
Guard # 1	Guard,Liege
Le Chef	Food,Cook
A Reaper	Kill,Thing
Nameless Prisoner	Crime,Prison
Zorin	Help,Castle
Guard # 2	Guard,Castle
Water	Secret,Alter
Shawn	Water,Peace
Seesha	Wound,Country
Chuckles	Jester,Clue
Guard # 3	Guard,Treasure
Shelia	Light,Shrine
Landri	Warn,Peril

Lord British

Lord British is very helpful to your quest. He will answer many questions that you might have. Here are a list of words he should respond to by at least some brief description. You can also ask him about his health and he will heal you. All of this list might not work.

Abyss	Codex	Truth
Love	Courage	Honesty
Compassion	Valor	Justice
Sacrifice	Honor	Spirituality
Humility	Moonglow	Britian
Jhelom	Yew	Minoc
Trinsic	Scara Brae	Magincia
Shrine	Dungeon	Mondain
Minax	Exodus	Britannia
Lycaenum	Empath Abbey	Serpent Castle
Altar		

Virtues

Honesty	Moonglow
Valor	Jhelom
Sacrafice	Minoc
Spirituality	Scara Brae
Compassion	Britian
Justice	Yew
Honor	Trinsic
Humility	Magincia

Dungeons

There are eight dungeons, in the game, six of them have the stones needed to complete the game and altar rooms. The other dungeon is the Great Stygian Abyss which is where the final scene of the game takes place. Here are a list of the seven other dungeons, and what to expect in them.

Dungeon	Stone Found	Level #	Altar Room(s)
Shame	Purple Stone	L2	Truth,Courage
Wrong	Green Stone	L8	Love,Truth
Destard	Red Stone	L7	Courage
Hythloth	NONE		Tru.Love,Cour
Covetous	Orange Stone	L7	Love,Courage
Deceit	Blue Stone	L7	Truth
Despise	Yellow Stone	L5	Love

Stones

The dungeons of the game ask for colors to get the key of three parts, the colors are as follows:

Love	Courage	Truth
Orange	Red	Purple
Yellow	Orange	Blue
Green	Purple	Green
White	White	White

Gate Travel

The gate spell is very helpful in the game, here are the locations to which it takes you with the corresponding numbers.

- 1 = Moonglow & Lycaenum
- 2 = Main Castle & Britian
- 3 = Jhelom
- 4 = Yew & Empath Abbey
- 5 = Minoc
- 6 = Trinsic
- 7 = Skara Brae
- 8 = Magincia

The Balloon

There is a time in the game when you will need to use the balloon. It can be found in the secret dungeon entrance in Lord British's castle. Just enter & cast an Exit spell, enter the balloon and K for klumb & D for descend in which you can only land on regular terrain. If you eXit the craft you can enter a city and it is like you are floating on air. The people will not move, but don't try this in the dungeons or you will mess up your game.

Guide

Virtue	Mantra	Vision Granted	Stone Color
Honesty	AHM	I	Blue
Compassion	MU	N	Yellow
Valor	RA	F	Red
Justice	BEH	I	Green
Sacrifice	CAH	N	Orange
Honor	SUMM	I	Purple
Spirituality	OM	T	White
Humility*	LUM	Y	Black

*Before trying to go into this one, be sure to Use the silver horn every time you take a step closer to it, or you will be attacked by endless hords of daemons.

Rune, Stone & Shrine Locations

The following is a list of Rune locations, Shrine locations & Stone locations.

Rune	Shrine	Stone
Honesty	NW corner(gold)	Lat E'C/Long O'J
Compassion	End of long hall	E Britian 2 bridge
Valor	SE tower	Island near Jhelom
Justice	N part of prison	N & E from Yew
Sacrifice	Iron forge	E across 2 bridges
Honor	SW corner of towne	S & W from towne
Spirituality	Lord B. Treasure Rm	Minoc Moongate
Humility	SE corner Paws	on Island of Abyss

Principles

Here are the principles of the 8 virtues of the Avatar:

Honesty	..... Truth
Compassion	.... Love
Valor	..... Courage
Justice	..... Truth & Love
Sacrifice	..... Love & Courage
Honor	..... Truth & Courage
Spirituality	..... Truth & Love & Courage
Humility	..... Solely from Truth Love & Courage

To Enter Codex & Abyss

- Must be 8 part Avatar.
- Must have the key of three parts.
- Must have the Bell, Book, Candle, & Skull.
- Must have all of the 8 possible stones.
- Must know the word of passage (VERAMOCOR).
- Must know the pure Axiom (INFINITY).

Word:

truth	Lycaeum	ver
love	Empath Abbey	amo
Courage	Serpent Castle	cor

To Enter Abyss:

- Must have a ship with wheel of the HMS Cape.
- Must then (use) the Bell, Book, & Candle.
- Must toss the Skull into the Abyss.

The Great Stygian Abyss

Go only with a party of eight or you cannot enter the final chamber. When you go down, the levels are very tricky and it is easy to get stuck on level 6, I believe. It should take at least 3-4 hours to get through it so be prepared to be on it a while.

To pass through the levels you will need to (U)se a stone and then answer the questions which are asked.

Level 1	Honesty	Blue
Level 2	Compassion	Yellow
Level 3	Valor	Red
Level 4	Justice	Green
Level 5	Sacrifice	orange
Level 6	Honor	Purple
Level 7	Spirituality	White
Level 8	Humility	Black

The following questions must be typed in correctly. One wrong answer and the game teleports you back to the entrance to the Abyss to start all over again, which is a big pain, since it happened to me about 4 times before I got it right.

● Word of Passage: Veramocor

- Honesty
- Compassion
- Valor
- Justice
- Sacrifice
- Honor
- Spirituality
- Humility
- Truth
- Love
- Courage

● Pure Axiom: Infinity

I would like to thank Matt Ownby, COMPUTIST #49, for inspiring me to take the time to write almost all I know about Ultima IV.

If you have any more questions about the game, Origin Systems, Inc. publishes a book that has the maps and some very valuable information on completing the game. You can also write me a letter in RDEX, and I should be able to answer it for you.

Ultima IV Sector Editing Tips

■ Requirements

- Sector editor
- Ultima IV* side C

Ultima IV is a relatively easy game to start on, because if (when) you die Lord British will resurrect you, and it usually doesn't cost much. It is however a fairly large place so it's easy to get lost.

I found my characters easily. One reason was that on side C there is a file named ROST

(short for roster?). I found where it was on the disk (track \$14, sector's \$02-04) then searched for a name with a sector editor. I changed different things to see what would happen.

I organized all that I found into easy to use tables. Table I lists exactly what everything does for every character. Table II lists the weapons you can put on the characters. Table III lists the armour you can use. Table IV lists the changes needed to become an Avatar. Table V lists how to get the party items.

Table I - (track \$11, sector \$04)

Byte	Description
\$04-12	Name 1
\$17	Strength
\$18	Dexterity
\$19	Intellect
\$1A	Magic points
\$1C	Hit points (1st Number)
\$1D	Hit points (2nd & 3rd Numbers)
\$1E	Level & 1st Number of Hit Points out of
\$1F	2nd and 3rd number of Hit Points out of
\$20	Experience 1st 2 numbers
\$21	Experience 2nd 2 numbers
\$22	Weapon equipped with (see Table II)
\$23	Armour equipped with (see Table III)
\$24-32	Name 2
\$37	Strength
\$38	Dexterity
\$39	Intellect
\$3A	Magic Points
\$3C	Hit points (1st Number)
\$3D	Hit points (2nd & 3rd Numbers)
\$3E	Level & 1st Number of Hit Points out of
\$3F	2nd and 3rd Number of Hit Points out of
\$40	Experience 1st 2 numbers
\$41	Experience 2nd 2 numbers
\$42	Weapon equipped with (see Table II)
\$43	Armour equippes with (see Table III)
\$44-52	Name 3
\$57	Strength
\$58	Dexterity
\$59	Intellect
\$5A	Magic Points
\$5C	Hit points (1st Number)
\$5D	Hit points (2nd & 3rd Numbers)
\$5E	Level & 1st Number of Hit Points out of
\$5F	2nd and 3rd Number of Hit Points out of
\$60	Experience 1st 2 numbers
\$61	Experience 2nd 2 numbers
\$62	Weapon equipped with (see Table II)
\$63	Weapon equipped with (see Table III)
\$64-72	Name 4
\$77	Strength
\$78	Dexterity
\$79	Intellect
\$7A	Magic Points
\$7C	Hit Points (1st Number)
\$7D	Hit Points (2nd & 3rd Numbers)
\$7E	Level & 1st Number of Hit Points out of
\$7F	2nd and 3rd Number of Hit Points out of
\$80	Experience 1st 2 numbers

Readers Data Exchange

\$81	Experience 2nd 2 numbers
\$82	Weapon equipped with (see Table II)
\$83	Weapon equipped with (see Table III)
\$84-92	Name 5
\$97	Strength
\$98	Dexterity
\$99	Intellect
\$9A	Magic Points
\$9C	Hit Points (1st Number)
\$9D	Hit Points (2nd & 3rd Numbers)
\$9E	Level & 1st Number of Hit Points out of
\$9F	2nd and 3rd Number of Hit Points out of
\$A0	Experience 1st 2 numbers
\$A1	Experience 2nd 2 numbers
\$A2	Weapon equipped with (see Table II)
\$A3	Weapon equipped with (see Table III)
\$A4-B2	Name 6
\$B7	Strength
\$B8	Dexterity
\$B9	Intellect
\$BA	Magic Points
\$BC	Hit Points (1st Number)
\$BD	Hit Points (2nd & 3rd Numbers)
\$BE	Level & 1st Number of Hit Points out of
\$BF	2nd and 3rd Number of Hit Points out of
\$C0	Experience 1st 2 numbers
\$C1	Experience 2nd 2 numbers
\$C2	Weapon equipped with (see Table II)
\$C3	Weapon equipped with (see Table III)
\$C4-D2	Name 7
\$D7	Strength
\$D8	Dexterity
\$D9	Intellect
\$DA	Magic Points
\$DC	Hit Points (1st Number)
\$DD	Hit Points (2nd & 3rd Numbers)
\$DE	Level & 1st Number of Hit Points out of
\$DF	2nd and 3rd Number of Hit Points out of
\$E0	Experience 1st 2 numbers
\$E1	Experience 2nd 2 numbers
\$E2	Weapon equipped with (see Table II)
\$E3	Weapon equipped with (see Table III)
\$E4-F2	Name 8
\$F7	Strength
\$F8	Dexterity
\$F9	Intellect
\$FA	Magic Points
\$FC	Hit Points (1st Number)
\$FD	Hit Points (2nd & 3rd Numbers)
\$FE	Level & 1st Number of Hit Points out of
\$FF	2nd and 3rd Number of Hit Points out of
\$00	Experience 1st 2 numbers
\$01	Experience 2nd 2 numbers
\$02	Weapon equipped with (see Table II)
\$03	Weapon equipped with (see Table III)

Table III

Value	Description	Value	Description
\$01	Cloth	\$05	Magic Chain
\$02	Leather	\$06	Magic Plate
\$03	Chain Mail	\$07	Mystic Robe
\$04	Plate Mail		

Table II

Value	Description	Value	Description
\$00	None	\$08	Crossbow
\$01	Staff	\$09	Flaming Oil
\$02	Dagger	\$0A	Halberd
\$03	Sling	\$0B	Magic Axe
\$04	Mace	\$0C	Magic Sword
\$05	Axe	\$0D	Magic Bow
\$06	Sword	\$0E	Magic Wand
\$07	Bow	\$0F	Mystic Sword

Table IV - (track \$14, sector \$03)

Byte	Description/Attribute
\$04	Honesty
\$05	Compassion
\$06	Valor
\$07	Justice
\$08	Sacrifice
\$09	Honor
\$0A	Spirituality
\$0B	Humility
\$0C	Torches*
\$0D	Gems*
\$0E	Keys*
\$0F	Sextants*
\$10:xx	Stones: Each of the 8 bit positions in this byte are for a Stone. Setting the bit gives you that Stone, so FF gives you all of them.
\$11:xx	Runes: the same thing applies for Runes as for Stones. FF gives you all of them.
\$12	Bell, Book, Candle, Horn, Wheel and Skull. These should have 07 in \$12 and 01 in \$19-1B to have all of these items.
\$13:xx	Key: 00 = None, 01 = C, 02 = L, 03 = LC, 04 = T, 05 = TC, 06 = TL, 07 = TLC. The T, L, C are Truth, Love and Courage.
\$14-15	Food*
\$17-18	Gold*
\$19-1B	See \$12
\$3C-43	Reagents*
\$44-5D	Mixtures*

**Use hex values from 00 thru 99 in these because other values will not display as numbers during the game, and could confuse you.*

Kathleen Herrmann

Computing For 1 - 3 Year Olds

Do you share your home with both an Apple and a toddler? If so, then you know how eager your youngster is to play with that sophisticated toy of yours. But what is the best approach to introduce a toddler to the keyboard? Although the market is well stocked with

software for preschoolers on the verge of kindergarten, few programs have been written for youngsters three and under. This younger age group, unable to give precise keyboard responses, soon become exasperated with most existing children's software. Two-year old Ali Brown couldn't wait to pounce on her parents' brand new Apple II plus. However, her first hands-on session ended in disaster. "Whenever she hit a key, she wanted to see something happen on the screen," explained Ali's mother. "But most of the time, it just beeped at her. She got so frustrated that I had to turn it off."

To bridge this gap for Ali and other computer tots, Peter Vasilev, an educational programmer, designed an alphabet and numbers game just for one to three year olds. Compatible with the Apple II plus, IIe, and IIc, the program can be run three ways. Each program version challenges your child more, keeping pace with his or her growing abilities.

Version 1 gives the beginner total freedom on the keyboard. By punching any key on the keyboard, your one-year old will see a large, bold-faced character on the screen, accompanied by a brief musical tone. It remains on screen until another key is pressed. Sight and sound capture the toddler's interest, since infants and young children respond primarily to sensory stimulation. And since no keystroke is ever wrong, enthusiastic toddlers can attack the keyboard with gusto and still create big, bright images on the screen. The thrill of interacting with the computer motivates them to hit more keys, draw more characters and continue the game.

You select the characters that appear on screen. This gives you the option of starting off a one-year old beginner with a small set of three or four characters, and adding new ones to the program. Over the next twelve to eighteen months the entire alphabet, as well as numbers zero through nine, may be entered. To get off to a smooth start, choose letters that are easy to pronounce. A, B, C, D and E were a cinch for my 18 month old, while F, N, X and the formidable W required months of concentration.

The character-drawing subroutines and their corresponding line numbers (to be entered on line 400) are listed below:

A	1010	M	1130	Y	1250
B	1020	N	1140	Z	1260
C	1030	O	1150	0	1270
D	1040	P	1160	1	1280
E	1050	Q	1170	2	1290
F	1060	R	1180	3	1300
G	1070	S	1190	4	1310
H	1080	T	1200	5	1320
I	1090	U	1210	6	1330
J	1100	V	1220	7	1340
K	1110	W	1230	8	1350
L	1120	X	1240	9	1360

(Note the sample program in Listing 1, programmed to draw letters A, C, and E. Each time the program is expanded, make sure to reset the variable FC in line 215 to equal the number of subroutines that will be called in line 400.)

At approximately age 2, most toddlers can handle the second program version, which steps through the entire alphabet. Organization is important to the toddler, so although they may not have mastered all of the characters, putting them into sequence will appeal to the toddler's preoccupation with order. The 1 1/2 year old can start to place characters within the alphabet, learning for example, that "L" comes after "K" and before "M". Before reviewing the alphabet, the child may not have known either "K" or "M", but after a few run-throughs, learned that "L" came up right after "K". This helps him/her to place "L" between "K" and "M" and learn the whole three-letter cluster. The musical tones that accompany each letter play "The Alphabet Song", sung to the familiar melody of "Twinkle, Twinkle, Little Star". It plays note by note as each letter appears. Upon arriving at "Z", the last verse of the song displays the lyrics, "Now I know my ABC's/Next time won't you sing with me?" Not yet aware of the relationship between the keyboard and the screen, toddlers on Version II may still hit the keys at random. (Listing 2 details the main control loop for this version. Note that line 400 now contains the subroutines for all 26 letters.)

Sometime between ages 2 and 3, the young operator will begin to recognize familiar numbers and letters on the keys themselves. Now your toddler is ready for the final program version (see Listing 3). It reflects exactly what your child types. Punch a key and that same character materializes on screen. Due to his new awareness of the keys, his focus now toggles between keyboard and screen, checking to see if his keystrokes match the onscreen images.

Knowing the keyboard prepares young children to use other software on the market for preschoolers. Once youngsters actually type what they want to see, they can tackle these more advanced programs, and through them, continue to explore the world of Apple II computing.

Listing 1

```

210 REM MAIN PROGRAM LOOP - VERSION 1
215 FC = 3
220 NN = INT (( RND (1) * FC + 1)
225 IF NN = PR THEN GOTO 220
230 PR = NN
300 GET AS$
310 GR : COLOR= INT (( RND (1) * 15) + 1)
400 ON NN GOSUB 1010,1030,1050
500 CALL 768: REM PLAY A NOTE
510 FOR X = 1 TO 500: NEXT X
600 GOTO 210
    
```

Checksums

210	- \$DA01	310	- \$293A
215	- \$0834	400	- \$63E2
220	- \$3D1F	500	- \$8134
225	- \$F596	510	- \$E56C
230	- \$8EEB	600	- \$B842
300	- \$B1D5		

Listing 2

```

210 REM MAIN PROGRAM LOOP - VERSION 2
220 FOR NN = 1 TO 26
300 GET AS$
310 GR : COLOR= INT (( RND (1) * 15) + 1)
400 ON NN GOSUB 1010,1020,1030,1040,1050,
      1060,1070,1080,1090,1100,1110,1120,
      1130,1140,1150,1160,1170,1180,1190,
      1200,1210,1220,1230,1240,1250,1260
500 CALL 768: REM PLAY A NOTE
510 NEXT NN
515 FOR X = 1 TO 200: NEXT X
520 PRINT SPC(3) : "NOW" : POKE 0, CC : CALL 768:
      PRINT "I 'VE" : CALL 768: PRINT "LEARNED"
      : POKE 0, GG : CALL 768: PRINT "MY" : CALL
      768
530 PRINT "A," : POKE 0, AA : CALL 768: PRINT "B,"
      : CALL 768: PRINT "C'S" : POKE 0, GG :
      CALL 768
535 PRINT : FOR X = 1 TO 300: NEXT X
540 PRINT SPC(3) : "NEXT" : POKE 0, FF : CALL
      768: PRINT "TIME" : CALL 768: PRINT
      "WON'T" : POKE 0, EE : CALL 768: PRINT "YOU"
      : CALL 768
550 PRINT "SING" : POKE 0, DD : CALL 768: PRINT
      "WITH" : CALL 768: PRINT "ME." : POKE
      0, CC : CALL 768
560 GET AS$ : HOME
600 GOTO 210
    
```

Checksums

210	- \$DA01	520	- \$D1EA
220	- \$BF97	530	- \$9161
300	- \$BFD0	535	- \$B4A0
310	- \$4806	540	- \$01D0
400	- \$7F5B	550	- \$FB35
500	- \$DD5D	560	- \$6C86
510	- \$08CB	600	- \$7592
515	- \$D1D9		

Listing 3

```

210 REM MAIN PROGRAM LOOP - VERSION 3
300 GET AS$: A = ASC (AS)
310 GR : COLOR= (( RND (1) * 15) + 1)
320 IF A > 47 AND A < 58 THEN NN = A - 21
330 IF A > 64 AND A < 91 THEN NN = A - 64
    
```

```

340 IF A < 48 OR A > 90 THEN GOTO 300
350 IF A > 57 AND A > 65 THEN GOTO 300
400 ON NN GOSUB 1010,1020,1030,1040,1050,
      1060,1070,1080,1090,1100,1110,1120,
      1130,1140,1150,1160,1170,1180,1190,
      1200,1210,1220,1230,1240,1250,1260,
      1270,1280,1290,1300,1310,1320,1330,
      1340,1350,1360
500 CALL 768: REM PLAY A NOTE
600 GOTO 210
    
```

Checksums

210	- \$DA01	340	- \$CD80
300	- \$CB7E	350	- \$2137
310	- \$FD33	400	- \$6A08
320	- \$6F68	500	- \$587E
330	- \$A7EF	600	- \$F1E2

Gregory Mass

Softkey for...

Muppet Slate v1.0

Sunburst Corp.

■ Requirements

- One or two blank disks
- A fast copy program (Copy II Plus ProDOS version)
- A sector editor (Copy II Plus)
- Original program disks

Muppet Slate is similar to Print Shop, but it's for kids. The copy protection scheme was very simple to locate and eliminate.

1 Make a copy of the Teacher's and Student's disks. Use the fast copy program for this.

2 Replace the Original ProDOS with a different version. Here is where you need a copy of Prodos, preferably PRODOS 8 V1.4.

3 Locate the start of the file MS.SYSTEM on the disk. The copy I have started at track \$05, sector \$00. Make the following changes to the file:

Trk	Sct	Byte(s)	From	To
\$05	\$00	\$2C-2E	20 05 62 A9 81	EA EA EA EA EA
		\$31-32	B0 27	EA EA

This removes the check routine. There is no need to write-protect the Teacher's disk now.

4 Use the Fast Copy program to copy the Student's disk. There is no editing to be done on the Student's disk. You can copy the Teacher's disk to Side Two and the Student's disk to Side One, if you want to save disks.

Jeff Hurlburt

The PRODUCT MONITOR

Ratings

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

Into the Eagle's Nest

by Pandora

\$34.95

Mindscape



■ Requires:

- 128K Apple II series
- one 5 1/4" drive
- joystick recommended

What true-blue "Wolfenstein" devotee hasn't longed for the good old castle-bashing days of yesteryear? Well, thanks to Mindscape, your hard-won commando skills are once again in demand to knock out (what else?) yet another Nazi fortress. This time the assignment involves rescuing agents, recovering art treasures, AND blowing the whole place to smithereens. Okay, polishing off "Beyond Wolfenstein" got you out of the frying pan; but now it's "Into the Eagle's Nest"!

Rendered in double-hires, each Eagle's Nest castle is a sprawling four-level maze of rooms, corridors, and connecting elevators. Your view is from above, with a scrolling display to show walls, doors, cabinets, supply caches, enemy troops, etc.. Barriers do not create 'blackout' areas (you can see goodies on the other side); but, since the game employs somewhat fattened Ultima-type characters, the result is only 7x7 squares of visibility. Helpful

messages like "The door is locked" and "You have found an elevator pass" are displayed near the bottom, while "Ammo" and "Keys" in your possession plus hits taken and current score appear on a panel to the right of the action display.

It's just as well that "Eagle's Nest" maintains a top ten scores record on-disk; because winning the game outright definitely qualifies as a stiff challenge. True, only on-screen enemy troops respond to your presence, take only two shots to kill, and are at a speed disadvantage. BUT, there are lots of them, they don't need to replenish ammunition, and hit-restoring medical kits are generally hard to come by.

The clincher, of course, is that "Into the Eagle's Nest" is loads of fun. Nicely drawn, partially animated figures, lively sound, and responsive controls are the up-front attractions; but the keys to long-term enjoyment are the well-planned, interesting mazes and, despite all obstacles, a feeling of winnability. This is not one of those blitz arcades gushing endless 'monster' swarms. YOU set the pace; so there's ample time to plan and do some mapping.

Eight missions (three rescues and one demolition in each of two castles) guarantee LONG play— maybe too long, since the only game save allowed is after taking out the first castle. Like I said, this one is no 'piece of cake'; but then what else can you expect when the last two words of your orders read "Good Luck!"?

Death Sword

by Palace Software

\$24.95

Epyx



■ Requires:

- 128K Apple II series
- one 5 1/4" drive
- joystick recommended

After the spate of karate combat arcades, Apple action gamers are sure to welcome the chance to grab a sword and slice up a few obnoxious barbarians. In this Epyx "Maxx Out" series release you are a Conan type determined to rescue beautiful princess Mariana from the clutches of an evil sorcerer named Drax. Naturally, old Drax doesn't toss fireballs at just anyone; to qualify you must defeat EIGHT of his best warriors in single combat!

The package supplies two game setups. #1 lets you practice against a computer opponent OR another human player (who must, alas, employ keyboard controls). #2 is the 'real

thing', a series of duels pitting your character against successively better computer adversaries. Lose one of these and Drax's pet gremlin, Grundel, munches you for lunch. (Since there is no 'Game Save', this means you must start fresh in any subsequent challenge.)

"Death Sword", to be sure, offers detailed quarter-screen height figures, colorful double-hires backdrops, and decent sound; but, the game's 'star attraction' is exceptional animation. Eight-position stick control with fire-button 'modifier' delivers a total of sixteen maneuvers: eight chop, butt, kick attack moves and eight more or less defensive rolls, jumps, and blocks. As in the better sports simulations, the program 'smooths-out' fighter moves; so that, though you retain reasonably tight control, combat is very realistic and, in fact, almost as much fun for watchers as players.

Each duel's action is limited to a single screen (i.e. you can run, but you can't hide). Small analog displays keep track of a fighter's remaining hits with numeric readouts to tally 'skill points' won. The latter carry over from duel to duel and appear to affect a fighter's chances of avoiding injury and inflicting damage. Since the trickier, deadlier moves (such as the fight-ending "flying neck chop") work better for the more 'skilled' combatant, maintaining the lead in skills points is key to any winning strategy.

In case the duels don't make it clear just how Drax has held onto power so long, then the Final Confrontation with the sorcerer will. Earlier battles, you quickly discover, do little to prepare one for dodging Drax's deadly fireballs. Indeed, poor Mariana might never be rescued, were it not that (on a IIGS) Roger Wagner's "Soft Switch" permits saving and restoring the game prior to meeting Drax. Chalk-up one 'notable flaw'; but don't pass up some of the best one-on-one combat in computer gaming.

Multiscribe gs 3.0 (pgm & Utilities)

by K Harvey

\$99.95

StyleWare



■ Requires:

- 512K Apple IIGS
- one 3 1/2" drive
- 768K and second drive recommended

Boasting a super-res what-you-see-is-what-you-get display, "MultiScribe GS 3.0", from the start, is something more than your 'traditional' word processor. With it you can

import super-res graphics, shrink, expand, (stretch or squeeze) them, do cropping, and place them anywhere on a document. Cut and Paste functions allow duplication; simple drawing tools permit modifications (or creation of new graphics); and everything is in 640-mode resolution with a palette of up to sixteen dithered, user-adjustable colors.

Rather than a "desktop" listing names of RAM resident files, "MultiScribe" maintains each file in one of up to eight scrollable (sizable, movable) "document" windows. As with sheets of paper, you can look at pieces of several documents at once, or 'zoom' to a full-screen view of any one. Similarly, graphics may be stacked, shuffled, and, in general, manipulated like stretchable playing cards. Document formatting is via one or more 'hide'-able rulers with click-and-set margins, indents, tabs, line spacing, and justification.

"MultiScribe" lets you access any on-program-disk fonts, the eleven popular "MacIntosh-types" included plus any you may add (e.g. from Style Ware's own "Font Library"). By the time one factors-in the eight 'standard' sizes (8pt.-24pt.), a new feature to derive any size through 48pt., and eight styles (bold, italic, underline, super/sub script, ...) the variety is staggering. Naturally, you may type/print (remember, display equals product) in any of the palette colors; however, only "full" non-dithered colors preserve complete font detail.

Working with "MultiScribe" your outputs are word processor files, TEXT files, or printouts. The latter, to Imagewriter, Laserwriter, or compatible printers, can be in NLQ, "faster" or draft qualities with options for vertical compression, "darker", and 50% size reduction. A new Imagewriter driver speeds up printing; so that, for example, you can get a full page of Shaston 8pt. in "faster" 'compressed' quality in about three minutes. (Double this timing for NLQ.) Evidently, the printer (not the program) is the bottleneck here. With identical font and quality, "Appleworks" (plus Beagle Bros. "Superfonts") is no faster.

Word processor files preserve formatting, fonts, colors, AND any graphics. TEXT files are text-only and suitable for transfer to other word processors, especially since, unlike "Appleworks", "MultiScribe" does not insert 'formatting' CR's into the TEXT files it creates. For instance, a BASIC program LISTed to TEXT and edited using "MultiScribe" can be EXECed back into BASIC without having to worry about CR's appearing in the middle of long program lines. Besides its own WP files, "MultiScribe" can import TEXT and "Appleworks" AWP files.

Virtually any current 'flavor' of super-res graphics is fair game for your productions. These include standard unpacked \$C1 blocks, "Paintworks" 320-mode PAINT files,

320/640-mode Apple Preferred files (produced by both "Paintworks Gold" and "Deluxe Paint II"), and the newer PICT files. Since "MultiScribe" employs 640-mode and dithered colors, most imported pictures will undergo a hues shift which can be troublesome to correct if you intend to produce a color printout. Style Ware recommends you use one of the popular-painter palettes included on the "Utilities" diskette to assure that future artwork is color-true. ("Paintworks Gold"'s 640-mode default palette is already 100% "MultiScribe" compatible.) Of course, anything snipped from Style Ware's "Clip Art" diskette will transfer with colors preserved.

While the "MultiScribe" display is notably slower than the text-mode screens employed by "Appleworks", it is a good deal quicker than earlier super-res efforts. Some example timings: scroll up/down one screen- 1 sec; hop to the end of a ten-page document- 6 sec.; hop backward to any page- 1.5 sec.. Operations like search-and-replace, spell-checking, and synonym-finding are correspondingly slow. (Count on 30 seconds to a minute for search-and-replace-all for any high-frequency word in large, forty or fifty page documents.) Still, on-screen performance is really the chief determinant of usefulness and user comfort. "MultiScribe"'s mouse response is very good, with quick easy placement of the cursor ("insertion point") and no-lag selection of menu items and ruler adjustments. The same is true of typing response; and the click-and-move "select" highlighting (for deletion, copy, cut, etc.) is a good deal more convenient than "Appleworks"'s CTRL-D + arrow keys.

Every word processor has its own quirks, even a bug or or two, and "MultiScribe" is no exception. Most notable is an undocumented limit on carriage returns allowed per document. After approximately 500 (my guess is 512), any attempt to modify the document bombs the program. Granted, one is unlikely to have anything like this many CR's in any document except a large BASIC program which has been LISTed to TEXT. Still, the limit should be mentioned and error trapped. Another problem is the handling of NLQ output for the popular "TIMES" font. The program miscalculates line length (and refuses to exceed set margins) with the result that portions of text are over-printed. Finally, the prompt boxes for spelling-correction and synonym-finding sometimes cover the word addressed. All in all, nothing fatal; but a version 4.0 is clearly in order.

Supplied with a well-organized, illustrated manual and 3.0 addendum, "MultiScribe GS 3.0" is easy to learn and a pleasure to use. After a day or so of working with the package, I happened to be using "Appleworks" and was surprised to find myself playing with the screen, border, and text colors (for the first time in months). Finally, the realization dawned that

I was trying to reproduce the crisp, ultra-legible "MultiScribe" display! (No way.) True, a busy secretary doing extensive revisions on several large files is probably better off with something faster; but, for most of us, "MultiScribe GS 3.0" deserves serious consideration.

Fast Frames, Updates, etc.

Curing F.S. 0911!

What, one wonders, has happened to Apple's vaunted quality control? Scarcely had we nailed a load of faulty upgrade video controllers, when up crops an even more insidious malfunction.

Since setting up our IIGS we've put up with an occasional "FATAL SYSTEM ERROR", usually associated with resets, boots, and CMD-CTRL-ESCAPE accesses to the Desk Accessories menu. Annoying; but the bombs were not frequent enough to command serious attention UNTIL a few months ago. Now, hardly a day passed without several program-bombing FATAL SYSTEM ERROR 0911's.

Following correct protocol, I reported the problem to our dealer, who contacted Apple, who responded "we don't know"! (sigh) Fortunately, about this time Addison Wesley's "Apple IIGS Toolbox Reference" volumes arrived. If one checks the Tool #09 (Apple Desktop Bus) section, one discovers that error 0911 means that something in the ADB system "can't sync" — the logical candidate being the ADB controller (IC #19, on the front right side of the motherboard). I was also glad to discover that other users were having 0911 problems and that these seem to be on the increase.

True, misery loves company; but the point is that, once again, we appear to be dealing with a chip which malfunctions at low room temperatures. First, the observed rise in 0911 bombs turned out to coincide with installation of Kensington's "System Saver IIGS", a unit known to be very effective in cooling IIGS innards. Second, with air-conditioning, ambient room temperature actually drops during summer months — thus explaining the increase in reported 0911 failures by other users. (Note, however, that a squirt of circuit coolant does not precipitate the sort of consistent malfunction one might expect. Possibly, the glitch occurs only over a narrow range of temperatures.)

To test my diagnosis I connected the leads of a small 12V (20 ma.) bulb to the unused IIGS fan pins and taped the bulb to the top of the ADB controller IC. Viola! 0911 crashes plummeted! Over a two-week period, I've counted just four instances, all at or just after power-up (i.e. before the chip warmer could work). As to whether Apple will agree to replace a faulty ADB IC (it's soldered in place),

I can't say. For now, if "Fatal System Error 0911" plagues your IIGS, give the bulb cure a try.

RSC: IIGS Key to Dungeon Survival

By now you probably know that certain CDA's, like DSR's "Diversi Hack" and the built-in "Visit Monitor", permit game interruption, monitor diddling, and program resumption on the IIGS. This opens whole new vistas to SERIOUS gamers, including diskless *Realtime Situation Control*. With RSC, you can hop into the monitor in mid-combat to juice-up dwindling hitpoints, create food packets for a starving character, shift map coordinates, etc., etc..

My first 'RSC module' is directed to "Alternate Reality" mavens enmeshed in the labyrinthine Dungeon. Assuming you have installed either "Hack" or "Visit", during play do a CMD-CTRL-ESC, go to the monitor, and enter 800.8FF (RETURN). Here you will find most of your character parms and staple supplies: (All addresses are Hex offsets from \$800.)

EXPERIENCE: 3E-40
HITPOINTS current/base: 45,46/47,48
GOLD: B1,B2
SILVER: B3,B4
COPPER: B5,B6
GEMS: B7,B8
JEWELS: B9,BA
FOOD: BB
WATER: BC
TORCHES: BD
CRYSTALS: BE
KEYS: BF
COMPASSES: C0
TIMEPIECES: C1

The following parms are repeated, single-byte numbers:

STAMINA: 49/4A
CHARISMA: 51/52
STAMINA: 59/5A
INTELLIGENCE: 61/62
WISDOM: 69/6A
SKILL: 71/72.

LOCATION horz/vert/map#: 13/14/15.

The game views the 64x64 Level 1 as four 32x32 maps. Coordinates are \$00-\$1F left-to-right and up to down; maps #0-#3 are NW, NE, SW, SE sections of Level 1. For example, entering 813: 16 03 01 (RETURN) will place you just outside the "Retreat" upon returning to play.

Glare Bear

Screen glare, reflections, and wash-out can be serious problems if your computer must be located near uncovered windows, in a room lit by bright lamps, or in some similarly viewer-

unfriendly environment. The solution, of course, is one of those anti-glare screens you've heard about but put off buying because you couldn't find a model made specifically for the IIGS. (Smart move! A poorly fitted screen can be more bother than no screen at all.) Well, Kensington's "IIGS Anti-Glare Filter" (\$49.95) fits like a glove, is a perfect color match, and the tough multiple-coating plastic screen swallows glare, sharpens the image, and reduces eye strain. Stick-on velcro fasteners hold the frame firmly in place, yet permit easy removal for periodic cleaning.

Against the unit's considerable benefits must be weighed the standard anti-glare screen caveats. These include the need to run your monitor at higher intensity settings, a slight loss in peripheral viewing angle, and an awareness that plastic isn't glass. (i.e. no more pencil poking, alcohol rubs, and similar rough treatment.) If glare isn't a problem, this is one status symbol you can do without; if it is, WHAT are you waiting for?!

Rampant Rumor: Another Plus?

Could it be that pressure from Amiga and IBM PS-2 has pushed Big Green to 'go for it' with an 8-12 MHz IIGS Plus? (Or, perhaps, some cloner is eyeing the IIGS market.) Whatever, the tales of 'strange experiments' with souped-up machines persist. Don't be too shocked if something like an 11.2 MHz, 1 MByte IIGS surfaces before next spring.

Household Hint: FlightStick Fix

If the trigger on your "Flight Stick" doesn't always fire when squeezed, the problem is too much space between the trigger and the PB0 microswitch. A simple fix is to apply two or three layers of self-stick label to the back of the trigger piece (easily accessed once the handle is opened). To check your work, use an ohmmeter connected across the button output or plug in the stick and RUN a two-liner to display PB0 status:

```
10 IF PEEK (49249) > 127 THEN PRINT "X";
20 GOTO 10
```

Now, just slap it together and you've got the hair-trigger snap-action response "Flight Stick" is supposed to deliver.

VENDORS

EPYX: 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063 (415-366-0606)

KENSINGTON MICROWARE: 251 Park Avenue South, New York, NY 10010 (800-535-4242, in NY call 212-475-5200)

MINDSCAPE: 3444 Dundee Road, Northbrook, IL 60062 (312-480-7667)

STYLE WARE, INC: 5250 Gulfon, Suite E, Houston, TX 77081 (800-233-4088, in Texas call 713-668-0743)

Rob Fiduccia

Help! Deathlord: well it's a game for experts with no doubt. I have been using my computer for over five years and have a good overview of all games. I have never had so much trouble with any game before Deathlord. If you own it too, you know how complex, formidable, and how often you get in hot water. I have been struggling to get a reasonable party. My characters are mighty but aren't invincible. I've journeyed wide and deep and always come back to the questions: 'where is it?' and 'how do I do it?'. I've never come on a clue to help me on my goal and I'm not into calling ECA for help. I have some requests and answers, but I have more requests which unfortunately I'm really hoping you can help me with.

The following are my requests:

1. Could some kindly (and skillful) person create a program for mapping out land, dungeons, buildings or anything else.
2. How about a softkey for the boot disk and both playing disks.
3. Most important, how about a character editor that can edit: hit points, attributes, items, weapons and armor.

If you can help me, I would be very grateful. Please write to COMPUTIST RDEX and tell what you are working on or already have or even any hints.

NOTE: If you write to me, please address your letter to "ROB FIDUCCIA-OU812" so I really know you are talking to me. Please. I need your help! Thank you.

Playing Tips for...

Deathlord ECA

- It will be much easier for you to sail in the ocean if you have a Shizen wizard. He (or she) has a spell that tells you the direction to the closest piece of land.

- The easiest and fastest way to find a secret door is to use macro #2 and type: "FKFKFKFKFKFKKI". Let's say there is a brick wall to the east. As you know "F" is search, "K" is east and "I" is north. So in one key press you will search six times to the east and east once more to see if the wall is a space and then north. Just plan out what you want to do from memory and then type it in. This will work very well in search of a secret door, but if you really want to find a secret door, repeat it twice.

- To get the 'blue crystal', find the Second Stone and sail due south for a while. When you



hit land, there should be a village to the west; enter from the west end, (so you would type 'EK'): the village's name is "The Lagoon". Then walk a little east and you will come across a small hut to the south; smash the door and go directly south and walk through the fake stone and search the bushes.

Jeff Bingham

Softkey for...

Boulder Dash

Electronic Arts

Requirements

- Copy program that can ignore errors
- Sector editor
- Two blank disk sides

After reading Charles Taylor's softkey for Adventure Construction Set and looking over the disk for the byte sequence 4C 69 xx (as in JMP \$xx69), I realized that Electronic Arts uses almost the same protection for Boulder Dash as for A.C.S. I copied Boulder Dash ignoring the errors on track \$06 then scanned the disk for the protection scheme used. I found lots of places all over the disk but found the protection is only on track \$01, sectors \$0C and \$0F. I changed the byte sequence 4C 69 xx to 18 60 DD on sector \$0F, booted the disk, it made it up to where you start to play the game then it rebooted. I figured the protection on sector \$0C had to do with actual play. I went back and changed sector \$0C the same as sector \$0F, booted the disk and it worked.

I noticed that when the game is over it reloads the title page, so I searched the disk for when the game turns on the disk drive. I found it on track \$0D, sector \$0F, byte \$09. I looked at the listing to see how it loads the picture. When it is done it jumps back. So I changed where it turns on the drive to jump back before it loads the picture.

Be sure to disregard the ASCII string "DON'T BREAK THIS" on track \$01, sectors \$0B and \$0E.

Summary:

1 Copy the front side of the disk with a program that will ignore the read error on track \$06.

2 Using a sector editor, make the following changes and write them back to the disk.

Trk	Sct	Byte(s)	From	To
\$01	\$0C	\$00-02	4C 69 A0	18 60 DD
		\$6F-71	4C 69 A0	18 60 DD
\$01	\$0F	\$00-02	4C 69 A0	18 60 DD
		\$6F-71	4C 69 A0	18 60 DD

3 Copy Boulder Dash II (side 2) the same way and make the same changes as you did for Boulder Dash I.

4 One final edit to make the title page not load when you boot the disk.

Boulder Dash I

Trk	Sct	Byte(s)	From	To
\$0D	\$0F	\$09	8C E9 C0	4C DD 14

Boulder Dash II

Trk	Sct	Byte(s)	From	To
\$0D	\$0F	\$09	8C E9 C0	4C 53 16

Paul Byrnes

Softkey for...

A.I.

Scholastic Software

Requirements

- A blank disk
- COPYA
- ProDOS BASIC.SYSTEM

1 Copy A.I. with COPYA onto your blank disk.

2 Boot ProDOS BASIC.SYSTEM.

3 Delete the A and B boot files.

DELETE ABOUT.SYSTEM
DELETE BBOOT.SYSTEM

You now have a COPYA-able backup. The System file that ProDOS runs must be CBOOT.SYSTEM. (IE. When you CATALOG the disk the order of files must be PRODOS then CBOOT.SYSTEM.) The files ABOUT.SYSTEM and BBOOT.SYSTEM are the same file. However, this file does a nibble count on the disk so both must be deleted. This file is not accessed by any part of the program other than when booting the disk.

Mike Maginnis

Softkey for...

Gauntlet

Mindscape

Like Infiltrator and Infiltrator II, track \$00, sectors \$00-\$09 are in standard format and can be read by any sector editor. I looked up Jerome Thelia's softkey for Infiltrator II in COMPUTIST #52 page 35. I read track \$00, sector \$08 and searched for the bytes 20 00 02,

like the softkey said. I changed it to 18 60 42 and it worked. What surprised me was that the bytes were on the exact same place on the disk, so the protection is obviously the same. The crash code was located at \$200. The branch to the code is in the form of JMP \$200 in track \$00 sector \$08, bytes \$EA-\$EC, just like on the Infiltrator II disk. So, make a bit copy of the disk and make the following changes with a sector editor:

Trk	Sct	Byte(s)	From	To
\$00	\$08	\$EA-EC	20 00 02	18 60 42

Mark A.B.

Softkey for...

Gauntlet

Mindscape

I recently purchased Gauntlet, one of the newest releases from Mindscape. The program is a replica of the arcade game. After I got the program, my first thought was to make a back up. I copied the program, but the back up did not run because of a disk check.

I scanned the disk for the bytes BD 8C C0. I found several occurrences, but one on track \$00, sector \$09 was very suspicious. I decided to change it.

Trk	Sct	Byte(s)	From	To
\$00	\$09	\$16	BD 8C C0 30 03	BD 8C C0 EA EA

After this change the program did a perfect boot every single time. One of the problems that I found is that the program gets stuck every once in a while.

Bill Jetzer

Some Notes on Chuck Yeager's Advanced Flight Trainer

I noticed that Chuck Yeager's Advanced Flight Trainer is on the Most Wanted list. A friend of mine bought the game and gave it to me to deprotect, but so far I haven't been able to. I will tell you what I know about it and you can pass the information on to your readers if you wish.

The back side has no protection whatsoever, but the front side is anything but normal. I looked at it with a nibble viewer and found that it had no prologue or epilogue bytes at all. In addition, it had no discernable volume, track, sector, or checksum values following the address markers. Speaking of address markers, they aren't normal either. Instead of D5 AA 96, they go D5 AA ??, the third byte being different on each track.

I have tried several methods of copying. Manual bit copies made with Copy II Plus v8.2 (it didn't have the parms) didn't work, even with synchronized tracks and keeping the track length. It will boot to a point, but then all the memory gets cleared and it reboots.

It might be possible with a 128k machine to boot the program into auxilliary memory, move the data to main memory, and then save all the data as files. The problem with that is that the program stores information all the way from \$200-\$BFFF and the language card. The only bright spot is that the area from \$2000-\$5FFF is taken up by two hi-res pictures. It could be used as a buffer to load parts of the data into and then move to its proper place in memory.

I hope someone out there can figure something out.

Mrs. Ann Horton

A.P.T. for...

Ultima V

Origin Systems

- Beware of the yellow potion as occasionally there are side effects.
- Remember: Green potions and snakes go hand in hand.
- To avoid getting poisoned, try "flying" over the swampy areas.
- Practice on the harpsichord in Lord British's castle and keep a close watch.
- Ask a bartender all key words about your quest. He has lots of information that will aid you.
- Be sure to keep notes on 'who, when and where'. It's important!

Jerry Torczyner

Softkey for...

PFS: Graph

Software Publishing

After my recent letter wondering how to deprotect PFS:Graph on an Apple IIe, I set out to try deprotecting my ProDOS PFS:Graph to use it on a hard disk similar to your previous note about PFS:Graph for DOS 3.3. The mods described originally were to change the sequence D0 01 88 98 4A to D0 29 88 CA 98 4A. No such sequence was found for the ProDOS PFS:Graph I had recently bought. I also looked and tried to modify as per the Computist #31 modifications to PFS:File/Plan, or PFS:Write/Report but had no success.

I next tried to look by a COPY II Plus disk search for something similar to the D0 01 88 98 4A sequence. I found a D0 04 84 88 CA 10 F1 sequence on Track \$02, Sector \$06, Byte \$2B. Such a sequence is only found once on the disk. When I changed the 84 to a 29, like in your note, it succeeded in deprotecting the disk and avoiding the annoyance of searching for the original disk when running from the Sider Hard Disk. It was then put on the Hard Disk. I now have PFS:File; Write; Plan; Report and Graph all running off the Hard Disk on a common subdirectory with a common copy of PRODOS.

I thank you for your insight into the protection of PFS programs!

Sam Bass

Softkey for...

DeathSword

Epyx

The protection is similar to other Epyx games, but is located in a different place on the disk (probably because the game is ProDOS-based). First, copy the entire disk, ignoring epilog errors. Then make the following patch:

Trk	Sct	Byte(s)	From	To
\$00	\$0E	\$25-27	20 AD 09	4C 7F 09

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- Airheart Broderbund
- Algeblaster Davidson & Associates
- Algebra I Intelligent Tutor
- Apple Super Pilot ?
- Artificial Intelligence Scholastic
- Balance of Power Mindscape
- Bandits Sirius Software
- Bank Street Filer Broderbund
- Bank Street School Filer Sunburst Communications
- Barron's Computer SAT ?
- Battlegroup SSI
- Battlezone Atarisoft
- Brain Bank The Observatory
- Burgertime ?
- Calendar Crafter IIgs MECC
- Captain Goodnight ?
- Certificate Library Vol. 1 ?
- Championship Baseball ?
- Chuck Yeager's Advanced Flight Trainer Electronic Arts
- Colossus IV Firebird
- Creature Venture Softsmith Co.
- Cross Clues Science Research
- Cross Country Rally Softsmith Co.

- Crossword Magic Mindscape
- David's Midnight Magic ?
- DB Master V4.0 Stoneware
- Deathlord Electronic Arts
- Dome Bookkeeping Systems Dome Accounting
- F-15 Strike Eagle Microprose
- Fay: The Masked Woman Didatech Software
- Fay's Word Rally Didatech Software
- Fun Bunch Unicorn
- Galaxian Atarisoft
- Game Show Advanced Ideas
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- Gutenberg Jr. Micromation LTD
- Handicapping System Sports Judge
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- Little Computer Peoples House on a Disk Activision
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- Cursor Control Adventures
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- Snoggle Broderbund
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- Wheel of Fortune ?
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39 January 1987 ■*Softkeys*: •MIDI/8+ •Homework v2.1 •Borrowed Time •Amazon •Speed Reader II •Discovery! •M-ss-ng L-nks series •Donald Ducks's Playground •Mastering the SAT •Copy II Plus 4.4C •Master of the Lamps •One on One •Bridge Baron •A.E. •Great American Cross-Country Road Race •Computer Preparation for the SAT •Castle Wolfenstein •Luscher Profile •Skyfox •Silent Service •Echo Plus •Swashbuckler •Randamn ■*Features*: •Electronic Disk Drive Swapper •Abusing the Epilogues •Print Shop Companion's Driver Game ■*Core*: •Keyboard Repair •Fixing the Applesoft Sample Disk

38 December 1986 ■*Softkeys*: •Cyclod •Alternate Realty •Boulder Dash I & II •Hard Hat Mack (Revisited) •The Other Side •F-15 Strike Eagle •Championship Lode Runner •Gato V 1.3 •I, Damiano •Wilderness •Golf's Best ■*Features*: •The Enhanced/ Unenhanced II •Looking into Flight Simulator's DOS ■*Core*: •Appavarex •Installing a RAM disk into DOS 3.3

37 November 1986 ■*Softkeys*: •Under Fire •Pegasus II •Take I (revisited) •Flight Simulator II v1.05 (part 2) •Magic Slate •Alter Ego •Rendezvous •Quicken •Story Tree •Assembly Language Tutor •Avalon Hill games •Dark Crystal ■*Features*: •Playing Karateka on a //c •Track Finder •Sylk to Dif ■*Core*: •Breaking In: tips for beginners •Copy II Plus 6.0: a review •The DOS Alterer

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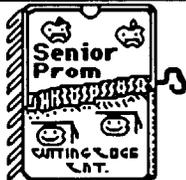
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