

NIBBLE NEWS

VOLUME 2 / ISSUE 6 JULY 1983

IN THIS ISSUE:

USING AUTO-LOAD DISKETTES	2
FUN WITH THE SECTOR EDITOR	3
QUESTIONS AND ANSWERS	5
BOOT-STRAP	6
PARAMETERS: JULY 1983	12

This month's newsletter may seem to be arriving a bit on the late side.... well last month was a bit hectic with the new version of NA2 and the Auto-Load disks going out at the same time. Things are starting to get back on track and we have some really great articles and several new parameters this month.

A new column begins this month, it's called QUESTIONS AND ANSWERS. In it will be responses to some of the more asked questions which we receive each month. If you have any questions, send them to us and we'll try to answer as many as possible.

BOOT-STRAP continues this month with an in-depth description of the DOS 3.3 boot ROM's internal code. This article should give many of you an insight into the inner workings of the disk controller and how disks boot on the Apple.

Mike has another issue of 'Fun With the Sector Editor' this month which covers the continuation of last month's article on disk encryption.

Until next month.....

Randy Ubillos

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To use the Auto-Load files stored on the Nibble News disk, refer to Chapter 6 of your NIBBLES AWAY II Manual.

To make the Auto-Loads compatible with all combinations of source and destination drive, some of the Auto-loads on this disk are split into two parts, the first will be saved as the name of the program, the second will have the word 'SECTMOD' after it. The procedure to follow is:

1. Execute the first Auto-load file as normal.
2. Execute the second file, but when prompted to insert your disks, insert the DUPLICATE diskette into DRIVE 1, then press a key. This will perform the SECTMOD portion of the backup.

The following changes are required for versions A1 and B1 only. Version C1 prompts the user for the desired directory directly, so no special considerations are necessary.

The Nibble News Auto-Load disk contains 4 separate Auto-Load directories. When you look at the disk you will see about 56 entries. This is Auto-Load directory 1. To view the other directories it is necessary to make a GLOBAL modification to NIBBLES AWAY II. This is done by entering the GLOBAL modifier (press 'MG' from the main menu). Then use the byte number from the following table:

VERSION-B1.....5E67
VERSION-A1.....58E1

NIBBLES AWAY II will then ask you for a value to enter. The value may be found in the table below:

Desired Directory	Value to enter
1	11
2	10
3	13
4	14
5	15

You may change directories as many times as desired by simply entering in a new value in the GLOBAL modifier each time that you wish to use a different directory.

NOTE: When one of these changes has been made, you should reboot NA II before using the Filer for anything other than another parameter from the Nibble News Auto-Load file disk.

Computers are becoming more and more common both at home and in the office but with this rise in the number of computers, instances of a special kind of crime are also becoming more common. The term "Computer crime" covers a variety of sins ranging from the illegal copying of software to the transferring of bank funds from one account to another. The business world has tried to reduce their losses by protecting their systems and/or software against these crimes. We small computer users see the results of the ongoing battle when we purchase software. Many programs are "Locked-up" or protected to make it more difficult to copy. One of the less common types of computer crime occur when business or personal information is stored on disk and the disk falls into the wrong hands. If the information on the disk could be encoded so that only the person with the password could access it then it would not matter. It just so happens that Apple DOS provides a very easy method of 'encoding' the information on a disk. In fact every time any information is written it is encoded by DOS. All we need to do is slightly modify the normal encoding and we will have a protected disk. Note that the disk is still copyable but without the correct password it is worthless. This month we have a program that will create an encoded disk. (see listing 1.)

When DOS 3.3 writes a sector to the disk it must make a few changes. Due to hardware limitations the 256 data byte must be converted into 324 nibbles which are then written to the disk. The routine to do this is a complex one but it makes use of two tables. One is called the Read Translate table and the other is the Write Translate table. How the routine actually works is not important. All we need to remember is that if both the read and the write translate tables are re-arranged in the same way then the disk is encoded. The write translate table starts at location \$BA29 and takes up 64 bytes. The read translation table starts at location \$BA96 and takes up 150 bytes. What follows is an explanation of how DOS uses these tables. The disk hardware imposes certain requirements that the data must conform to in order to be valid. These are that the high bit must be set, there must be at least two adjacent bits set and there can be no more than one set of adjacent zero bits. After all that the result is used as an index into the write translate table. The byte from the table is then put on the disk. Something very similar occurs when reading from the disk except that it happens in reverse. The byte read in from the disk is used as an index into the read translate table. The byte from the table then goes through the de-nibbilize routine. This description is a vastly simplified version of what goes on.

The encoding program is very straight forward. It swaps values in both the read and the write translate tables in pairs which in effect scrambles the table. You can change as many or as few as you wish.

Listing 1
Encode program

```

100 WT = 47657:RT = 47616
1000 TEXT : HOME
1010 VTAB 5: PRINT "1.....SCRAMBLE TABLES": PRINT : PRINT
      "2.....FORMAT DISK"
1050 PRINT : PRINT "E.....EXIT"
1100 PRINT : PRINT : PRINT : PRINT "ENTER YOUR CHOICE- "; GET A$: PRINT A$
1110 IF A$ = "E" THEN END
1120 A = VAL (A$): IF A < 1 OR A > 2 THEN 1100
1130 ON A GOSUB 10000,20000
1140 GOTO 1000
10000 HOME :X = 1:Y = 1
10010 FOR A = 0 TO 63: HTAB X: VTAB Y
10020 IF A < 10 THEN PRINT "0";
10030 PRINT A;"--"; PEEK (47657 + A);
10040 Y = Y + 1: IF Y > 20 THEN Y = 1:X = X + 10
10050 NEXT A
10060 VTAB 23: HTAB 1: INPUT "EXCHANGE WHICH? (E=END) ";A$
10070 IF LEFT$ (A$,1) = "E" THEN RETURN
10080 T1 = VAL (A$): IF T1 < 0 OR T1 > 63 THEN 10060
10090 VTAB 24: HTAB 1: INPUT "EXCHANGE WITH WHICH ";A$
10100 T2 = VAL (A$): IF T2 < 0 OR T2 > 63 OR T1 = T2 THEN 10060
10110 T3 = PEEK (WT + T1): POKE WT + T1, PEEK (WT + T2): POKE WT + T2,T3
10120 T3 = PEEK (RT + PEEK (WT + T1)): POKE RT + PEEK (WT + T1), PEEK (RT +
      PEEK (WT + T2)): POKE RT + PEEK (WT + T2),T3
10130 GOTO 10000
20000 HOME : PRINT "INSERT DISK TO BE FORMATTED IN DRIVE 1": PRINT : PRINT
      "PRESS SPACE TO EXIT OR RETURN TO FORMAT"
20010 GET A$: IF A$ = " " THEN RETURN
20020 PRINT CHR$ (4);"INIT HELLO,D1": PRINT CHR$ (4);"DELETEHELLO"
20030 RETURN

```

QUESTIONS AND ANSWERS

In this column we will be answering some of the most common questions which our readers ask us. If you have a question about NA2 or any of the other subjects that we bring up in this newsletter, send them to us or give us a call. We'll try to answer as many of them here as possible.

I have a Corona Star-Fire hard disk drive and I would like to backup some of my business software onto it. Is this possible, and what options should I set to do this?

The way in which data is sent from the Apple to the Disk II and to a hard disk are entirely different, and do not allow this to be possible.

The Disk II drives have no internal intelligence and are completely controlled by the Apple. This means that the Apple has direct access to the head of the disk drive and is responsible for all read/write operations directly.

Hard disks, on the other hand, are usually intelligent devices. This means that the Apple only has to send commands to the drive, and then read the already decoded data from a port on the disk controller.

NIBBLES AWAY II uses the disk controller directly on the Disk II, and is able to read in information which is coded in special ways to 'protect' software. This coded information is fine for writing back to a Disk II drive, but would have no meaning on a hard disk. This is why it is not possible to 'bit-copy' programs to any type of hard disk. The only way that programs can be placed onto a hard disk is if they are accessible to an operating system which is supported by the hard disk, such as Apple DOS or CP/M.

When I try to use the 'O' function in the Track/Bit Editor to print out a track of data, I get a 'NO COMPATIBLE PRINTER DETECTED' error. I have a PKASO interface and an Epson MX-80 printer. What should I do?

NIBBLES AWAY II versions A1 and B1 used specialized routines for accessing some of the most popular printers which were available when the program was originally written. Since then the number of interfaces has increased tremendously, and those versions do not work with all of them.

Since that time, the Pascal 1.1 peripheral protocol has been set up to try to standardize the way that interface cards are handled on the Apple. (This protocol is documented in Apple's new 'Design Guidelines' manual for the Apple IIe, although it is set up for any Apple II, II+, or IIe).

Most peripheral cards now being manufactured use this protocol, and are therefore compatible with Pascal, CP/M and DOS. The C1 version of NA2 also uses this protocol, so it is completely compatible with all of the cards which use this technique (eg. Microbuffer II, Grappler, PKASO, TYMAC, among others).

If you wish to use your printer with NA2 you can update your current NA2 for the new C1 version, as noted in last month's issue. If you have any questions, please let us know by phone or mail.

BOOT-STRAP

This month we're going to take a look at the boot ROM on the DOS 3.3 disk controller. This is the code which is executed with a 'PR#6' command and understanding the way that this code works can help greatly in increasing your understanding of how Apple disks boot.

The listing below was produced by disassembling the controller's ROM and then adding the comments to it and putting in labels which convey some sort of meaning as to their purpose.

```

1025 *****
1030 *
1035 *      Apple DOS 3.3 Boot ROM
1040 *
1045 *
1050 *      Commented by
1055 *      Randy Ubillos
1060 *
1065 *      for
1070 *
1075 *      NIBBLE NEWS
1080 *      July 1983
1085 *
1090 *****
1095
1100 *      The boot rom has the task of reading
1105 * track 0 sector 0 from the disk into
1110 * memory, and executing it. It is then
1115 * used by the second stage boot for
1120 * loading in the full scale RWTS which
1125 * is used by DOS.
1130 *
1135 * This code is executable from any of
1140 * the Apple's 7 slots since it 'figures out'
1145 * which slot it is located in.
1150
1155 * Zero page variables
1160
0026- 1165 POINT    .EQ $26      Pointer to memory buffer.
002B- 1170 SLOT16 .EQ $2B      Slot number times 16.
003C- 1175 TEMP1  .EQ $3C      Temporary.
003D- 1180 SECTOR .EQ $3D      Desired sector number.
0040- 1185 TEMP2  .EQ $40      Temporary.
0041- 1190 TRACK  .EQ $41      Desired track number.
1195

```

1200 * System variables

```

1205
0100- 1210 STACK    .EQ $100    6502 Stack.
02D6- 1215 TABLE1 .EQ $2D6    TABLE3 - $80.
0300- 1220 TABLE2 .EQ $300    Temporary storage.
0356- 1225 TABLE3 .EQ $356    Untranslate table storage.
0800- 1230 BUFFER  .EQ $800    Buffer for second stage boot.
0801- 1235 BOOT2   .EQ $801    Start address of second stage.
C080- 1240 PHASEOFF .EQ $C080   Disk hardware addresses.
C081- 1245 PHASEON  .EQ $C081
C089- 1250 MOTORON .EQ $C089
C08A- 1255 DRIVE0   .EQ $C08A
C08C- 1260 DISKDATA .EQ $C08C
C08E- 1265 Q7L      .EQ $C08E
FCAB- 1270 WAIT     .EQ $FCAB   Monitor WAIT routine.
FF58- 1275 APPLERTS .EQ $FF58   A fixed RTS instruction.

1280
0800- A2 20 1285 BOOT    LDX #$20    This is the main entry point.
C602- A0 00 1290        LDY #$00
C604- A2 03 1295        LDX #$03
C606- B6 3C 1300 LOOP1   STX TEMP1   First a table of values is
C608- BA        1305        TXA        created at TABLE3.
C609- 0A        1310        ASL        This table will be used later
C60A- 24 3C 1315        BIT TEMP1    on to decode the data from
C60C- F0 10 1320        BEQ LOOP3    the disk.
C60E- 05 3C 1325        ORA TEMP1
C610- 49 FF 1330        EOR #$FF
C612- 29 7E 1335        AND #$7E
C614- B0 08 1340 LOOP2   BCS LOOP3
C616- 4A        1345        LSR
C617- D0 FB 1350        BNE LOOP2
C619- 98        1355        TYA
C61A- 9D 56 03 1360      STA TABLE3,X
C61D- C8        1365        INY
C61E- E8        1370 LOOP3 INX
C61F- 10 E5 1375        BPL LOOP1
C621- 20 5B FF 1380      JSR APPLERTS This calls a known 'RTS'
C624- BA        1385        TSX        instruction. Then the value
C625- BD 00 01 1390      LDA STACK,X pushed on the stack above is
C628- 0A        1395        ASL        extracted to see where we
C629- 0A        1400        ASL        are calling from, and hence
C62A- 0A        1405        ASL        which slot the controller
C62B- 0A        1410        ASL        is in.
C62C- 85 2B 1415        STA SLOT16   Store the slot# times 16.
C62E- AA        1420        TAX

```


C62F- BD 8E C0 1425	LDA Q7L,X	Set read mode.
C632- BD 8C C0 1430	LDA DISKDATA,X	Clear the latch.
C635- BD 8A C0 1435	LDA DRIVE0,X	Select drive zero.
C638- BD 89 C0 1440	LDA MOTORON,X	Turn on the motor.
C63B- A0 50 1445	LDY ##50	Now we must go to track 0.
C63D- BD 80 C0 1450 RECAL	LDA PHASEOFF,X	We set up to move 80 (decimal)
C640- 98 1455	TYA	tracks in since we do not
C641- 29 03 1460	AND ##03	know where the drive is now.
C643- 0A 1465	ASL	By turning on and off the
C644- 05 2B 1470	ORA SLOT16	phases of the stepper motor
C646- AA 1475	TAX	in the correct order, we
C647- BD 81 C0 1480	LDA PHASEON,X	cause the head to move to
C64A- A9 56 1485	LDA ##56	the outermost track (0).
C64C- 20 A8 FC 1490	JSR WAIT	Delay to allow motor to move
C64F- 88 1495	DEY	since it is a mechanical
C650- 10 EB 1500	BPL RECAL	device.
C652- 85 26 1505	STA POINT	The wait routine puts a 0 in
C654- 85 3D 1510	STA SECTOR	the accumulator, so here we
C656- 85 41 1515	STA TRACK	zero out two temporaries
C658- A9 08 1520	LDA /BUFFER	and the put the address of
C65A- 85 27 1525	STA POINT+1	our read buffer in POINT.

1530

1535 * This is the entry point to access to read

1540 * function of the disk controller.

1545

1550 * The first section is a dual purpose routine which can

1555 * read both the address and data markers from the disk.

1560 * The status of which is being read in at a given

1565 * time is stored on the stack by pushing the processor

1570 * status, carry clear signifying address mark read,

1575 * and a set carry indicating data mark read.

1580

C65C- 18 1585 GETADDR CLC	Set address read mode.
C65D- 08 1590 GETFIELD PHP	Save status on stack.
C65E- BD 8C C0 1595 ADDR1 LDA DISKDATA,X	Read a byte from the disk.
C661- 10 FB 1600 BPL ADDR1	If <128, not ready, try again.
C663- 49 D5 1605 CHECK1 EOR ##D5	Check for D5 (first addressmark).
C665- D0 F7 1610 BNE ADDR1	If not, look some more.
C667- BD 8C C0 1615 ADDR2 LDA DISKDATA,X	Read a byte.
C66A- 10 FB 1620 BPL ADDR2	Wait for ready.
C66C- C9 AA 1625 CMP ##AA	Check for AA.
C66E- D0 F3 1630 BNE CHECK1	If not, check for D5.
C670- EA 1635 NOP	Delay.

C671- BD 8C C0 1640 ADDR3 LDA DISKDATA,X	Read a byte.
C674- 10 FB 1645 BPL ADDR3	Wait for ready.
C676- C9 96 1650 CMP ##96	Check for \$96.
C678- F0 09 1655 BEQ ISADDR	Yes, get address field.
C67A- 28 1660 PLP	See if were looking for address.
C67B- 90 DF 1665 BCC GETADDR	If so, didn't find, look again.
C67D- 49 AD 1670 EOR ##AD	Otherwise want data, look for AD.
C67F- F0 25 1675 BEQ ISDATA	If so, read data field.
C681- D0 D9 1680 BNE GETADDR	Otherwise start over.

1685

1690 * This routine reads the address field from the disk.

1695 * The address field consists of the disk volume number,

1700 * the current track, the next sector, and a checksum.

1705 * Of these four, only the sector and track numbers are

1710 * used, since error checking is held to a minimum to

1715 * save space.

1720 * These values are encoded into two disk bytes each. The

1725 * odd bits are saved in one byte, and the even in the

1730 * next. This is done because not all possible bytes are

1735 * legal for the disk controller.

1740

C683- A0 03 1745 ISADDR LDY ##03	Set up to read 3 values.
C685- 85 40 1750 READMORE STA TEMP2	Save ACC. (Will hold track#)
C687- BD 8C C0 1755 READ1 LDA DISKDATA,X	Read a byte.
C68A- 10 FB 1760 BPL READ1	Wait for ready.
C68C- 2A 1765 ROL	Shift left. (Odd bits here)
C68D- 85 3C 1770 STA TEMP1	Save this value.
C68F- BD 8C C0 1775 READ2 LDA DISKDATA,X	Read a byte.
C692- 10 FB 1780 BPL READ2	Wait for ready.
C694- 25 3C 1785 AND TEMP1	Reassemble the value.
C696- 88 1790 DEY	Decrement our counter.
C697- D0 EC 1795 BNE READMORE	Reading until we have sector#.
C699- 28 1800 PLP	Remove status byte from stack.
C69A- C5 3D 1805 CMP SECTOR	Correct Sector?
C69C- D0 BE 1810 BNE GETADDR	If not, re-read address field.
C69E- A5 40 1815 LDA TEMP2	Check for Correct track info.
C6A0- C5 41 1820 CMP TRACK	Can't do much about this, but
C6A2- D0 B8 1825 BNE GETADDR	re-read addr field anyways.
C6A4- B0 B7 1830 BCS GETFIELD	Now go get data field.

1835

1840 * This routine reads in and decodes a sector
 1845 * of data using the previously created TABLE3.
 1850 * DOS 3.3 uses a 6+2 encoding scheme, which splits each
 1855 * 8 bit byte up into a 6 bit nibble and a 2 bit nibble.
 1860 * The six bit nibble is written to the disk using a
 1865 * translation table (6 bits gives 64 possible values which
 1870 * is the number of valid disk bytes for DOS 3.3).
 1875 * The 2 bit nibbles are gathered into six bit nibbles
 1880 * 3 at a time, and the written out to the disk. This
 1885 * requires $256/3 = 86$ (decimal) 6 bit nibbles, which is
 1890 * \$56 (hex) nibbles. When these values are read back
 1895 * off the disk, the reverse is performed to reassemble
 1900 * the data bytes which were written out to the disk.
 1905

C6A6- A0 56	1910 ISDATA	LDY #\$56	Set up for 'left over' nibbles.
C6A8- 84 3C	1915 MOREDATA	STY TEMP1	
C6AA- BC 8C C0	1920 DATA1	LDY DISKDATA,X	Read a byte.
C6AD- 10 FB	1925	BPL DATA1	Wait for ready.
C6AF- 59 D6 02	1930	EOR TABLE1,Y	Untranslate byte. (actually uses
C6B2- A4 3C	1935	LDY TEMP1	TABLE3 due to value of Y).
C6B4- 88	1940	DEY	Get offset into table.
C6B5- 99 00 03	1945	STA TABLE2,Y	Store for use later.
C6B8- D0 EE	1950	BNE MOREDATA	Loop if more to go.
C6BA- 84 3C	1955 MOREDAT2	STY TEMP1	Save zero.
C6BC- BC 8C C0	1960 DATA2	LDY DISKDATA,X	Read a byte.
C6BF- 10 FB	1965	BPL DATA2	Wait for ready.
C6C1- 59 D6 02	1970	EOR TABLE1,Y	Untranslate byte as above.
C6C4- A4 3C	1975	LDY TEMP1	Get buffer offset.
C6C6- 91 26	1980	STA (POINT),Y	Store in buffer.
C6C8- C8	1985	INY	Increment pointer.
C6C9- D0 EF	1990	BNE MOREDAT2	Get some more if not done yet.
C6CB- BC 8C C0	1995 DATA3	LDY DISKDATA,X	Read a byte into Y. (Checksum)
C6CE- 10 FB	2000	BPL DATA3	Wait for ready.
C6D0- 59 D6 02	2005	EOR TABLE1,Y	Untranslate.
C6D3- D0 87	2010 DOAGAIN	BNE GETADDR	Should be zero, else try again.
C6D5- A0 00	2015	LDY #\$00	Set up pointer in Y.

C6D7- A2 56	2020 DECODE	LDX #\$56	Set up counter for 'left overs'
C6D9- CA	2025 DECODE2	DEX	
C6DA- 30 FB	2030	BMI DECODE	
C6DC- B1 26	2035	LDA (POINT),Y	Get a byte from buffer.
C6DE- 5E 00 03	2040	LSR TABLE2,X	Attach 2 bits from 'left overs'
C6E1- 2A	2045	ROL	to reassemble correct byte.
C6E2- 5E 00 03	2050	LSR TABLE2,X	
C6E5- 2A	2055	ROL	
C6E6- 91 26	2060	STA (POINT),Y	Store back into buffer.
C6E8- C8	2065	INY	
C6E9- D0 EE	2070	BNE DECODE2	Do all 256 bytes.
C6EB- E6 27	2075	INC POINT+1	Increment buffer pointer.
C6ED- E6 3D	2080	INC SECTOR	Increment sector number.
C6EF- A5 3D	2085	LDA SECTOR	First byte in buffer specifies
C6F1- CD 00 08	2090	CMP BUFFER	if any more sectors are to be
C6F4- A6 2B	2095	LDX SLOT16	read in.
C6F6- 90 DB	2100	BCC DOAGAIN	If so, go get them.
C6F8- 4C 01 08	2105	JMP BOOT2	Else execute second stage boot.
	2110		

SYMBOL TABLE

C65E- ADDR1	C08A- DRIVE0	C687- READ1
C667- ADDR2	C65C- GETADDR	C68F- READ2
C671- ADDR3	C65D- GETFIELD	C685- READMORE
FF58- APPLERTS	C683- ISADDR	C63D- RECAL
C600- BOOT	C6A6- ISDATA	C63D- SECTOR
0001- BOOT2	C606- LOOP1	002B- SLOT16
0000- BUFFER	C614- LOOP2	0100- STACK
C663- CHECK1	C61E- LOOP3	02D6- TABLE1
C6AA- DATA1	C6BA- MOREDAT2	0300- TABLE2
C6BC- DATA2	C6AB- MOREDATA	0356- TABLE3
C6CB- DATA3	C089- MOTORON	003C- TEMP1
C6D7- DECODE	C080- PHASEOFF	0040- TEMP2
C6D9- DECODE2	C081- PHASEON	0041- TRACK
C08C- DISKDATA	0026- POINT	FCAB- WAIT
C6D3- DOAGAIN	C08E- Q7L	

0000 ERRORS IN ASSEMBLY

By studying this code, it is possible to learn some valuable techniques for writing code which does the most possible in the least possible amount of space. A disk bootstrap routine in 256 bytes with a non-intelligent disk drive is no small feat, and it is only the compact coding which the 6502 affords which allows routines like this to be so small.

PARAMETERS: JULY 1983

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N O T E : Those parameters which are followed by one or more asterisks (*) have been contributed by NIBBLES AWAY II users, or have not been tested by COMPUTER:applications Inc.

Parameters which are underlined have been added or updated this month.

COMPANY NAME:

PROGRAM NAME	COPY TRACKS	PARAMETERS TO CHANGE
--------------	-------------	----------------------

Adventure International:

Eliminator -----	0-21.....	Addr=D5 AA 96
	SECTMOD [F=16,C=OFF,T=03,S=0D]	
	Change address 2E from 20 to EA	
	Change address 2F from 30 to EA	
	Change address 30 from 72 to EA	

Rear Guard *****	0-22	Addr= D5 AA 96
	SECTMOD[F=16,C=OFF,T=03,S=03]	
	Change address 00 from AE to 60	

Sea Dragon *****	0-21	Addr= D5 AA 96
	22-22	Addr= FC 87 E9 BA

OVERIDE GLITCH DETECT
OVERIDE NIBBLE FILTER
OVERIDE SYNC CONVERT
OVERIDE STANDARDIZER
NIBBLE COUNT
SYNC SIZE = 0A
SHIFT N+ = 08
SHIFT N- = 00
FINDMAX = 03

ADD SOFTWARE

Super Packman V3.0 * 0-E	Addr= DD AD DA
--------------------------------	----------------

AMERICAN EDUC COMPUTER

Micro-Read *****	0-2	Addr=D5 AA 96
------------------	-----------	---------------

Master	4-22
--------	------

03-03.....	Addr=E7 AB D5
------------	---------------

Micro-Read 1-3 *****	0-22.....	Addr=D5 AA 96
----------------------	-----------	---------------

Apple Computer:

Visicalc ///	0-22.....	SYNC
--------------	-----------	------

Apple Writer ///	0-22.....	SYNC
------------------	-----------	------

Apple Logo -----	0-22.....	Addr D5 AA 96
	SYNC SIZ=0A	MATCH NUM=0A
	1-1.....	Addr AA D6 EE
		NIBBLE COUNT=Y
		FIND MAX=03
		SHIFT N+ = 08
		SHIFT N- = 00

Apple Writer II ---	0-2.....	Addr D5 AA DA (or D5 AA DB)
---------------------	----------	-----------------------------

(Corrected)	3-22.....	Addr D5 AA 96
-------------	-----------	---------------

Super Pilot *****	0-0.....	Addr=D5 AA 96
-------------------	----------	---------------

2-22

SECTMOD [F=16,C=OFF,T=0,S=0A]

Change address 79 from 43 to EA

Change address 7A from 41 to EA

Change address 7B from C6 to EA

ARTSCI INC.

Magic Window *****	0-0.....	Addr=FC FF FF
--------------------	----------	---------------

Magic Mailer	1-22.....	Addr=D5 AA B5
--------------	-----------	---------------

Magic Window II ***	0-22.....	Addr=D5 AA 96
---------------------	-----------	---------------

SYNC SIZ=0A, FIX AMNT=04

Automated Simulations:

Temple of Apshai **	0-22.....	Addr=D5 AA B5
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Temple of Apshai **	0-2.....	Addr=D5 AA B5
---------------------	----------	---------------

3-22.....	Addr=D5 AA 96
-----------	---------------

Star Warriors *****	0-22	Addr= D5 AA B5
---------------------	------------	----------------

Hellfire Warrior

Rescue At Rigel

Avante-Garde Creations

Zero Gravity Pinball	0-22.....	Addr=D5 AA B5
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Hi-Res Golf

Hi-Res Secrets *****	0-22.....	Addr=D5 AA 96
----------------------	-----------	---------------

Air Traffic Cont. **	0-22.....	Addr=D5 AA B5
----------------------	-----------	---------------

Jump Jet *****	0-21.....	Addr=D5 AA 96
----------------	-----------	---------------

22-22.....	DATAMOVER
------------	-----------

ADD SOFTWARE

Super Puckman *****	0-0.....	Addr=D5 AA D5
---------------------	----------	---------------

1-E.....	Addr=DD AD DA
----------	---------------

B P I: (REVISED)

Accounting -----	0-22.....	Addr=D5 AA 96
------------------	-----------	---------------

System

FIX AMNT=04, GAPBYTE1=C8

GLOBAL MOD BYTE D972 from 03 to 00

11-11.....	Ins=AD FB E6 FF E6
------------	--------------------

Broderbund Software:

Apple Panic ----- 0-D
 Genetic Drift ----- 0-0.....Addr=D5 AA B5
 1-3.....Addr=BB D5 BB
 4.5-6 by 1.5
 7.5-8.5
 D-D.....Addr=D4 D5 BB
 E.5-12.5.....Addr=AD B5 DE
 Space Quarks ----- 0-0.....Addr=D5 AA B5
 1-2.....Addr=FF DF DE, DATA MAX=25
 3.5-5.5
 7-9 by 2
 A.5-8.5
 D-15
 Space Warrior ----- 0-0.....Addr=D5 AA B5, DATA MAX=30
 2.5-3.5.....Addr=DF AD DE
 5-8 by 3
 6.5-6.5
 A-10 by 3
 Warlords ***** 0-F.....Addr=D5 AA B5
 Tawala's Last ***** 0-22.....Addr=D5 AA B5
 Redoubt

B u d g e o:

Raster Blaster ---- 0-0.....Addr=D5 AA 96, SYNC
 DATA MIN=18, DATA MAX=40
 5-11 by 4.....Addr=AD DE, DATA MIN=13, SYNC
 6-12 by 4.....SYNC
 7.5-F.5 by 4...SYNC
 1.5-3.5 by 2...SYNC

Pinball

Constructor ***** 0-5.....Addr=D5 AA 96
 8-E
 11
 13-1B

C A L I F O R N I A P A C I F I C

Ultima ***** 0-22.....Find Max = 0B
 Bill Budge's Space Album 0-0 Addr= D5 AA B5
 01-0B Addr= D5 AA AD

Cavalier Computer:

Microwave ----- 0-22.....Addr=D5 AA 96
 SECTMOD [F=16,C=ON,T=02,S=01]
 Change address DA from A9 to AD
 Change address DB from 60 to 03
 Change address DC from 8D to 81
 Change address DD from 7E to 60

Central Point Software:

Copy II Plus ***** 0-0.....Addr=D5 AA 96
 01-0F.....Addr=94 92 CD

C. P. U. Software:

Oil Rig ***** 0-0.....Addr=D5 AA 96
 1-22.....Ins=B2 AC AB AB AB

Continental Software:

Guardian ----- 0-1.....Addr=D5 AA B5
 2-11.....Addr=D6 AA B5
 Ins=DF AA EB F7, SYNC SIZ=0A

LA Land Monopoly ** 0-2.....Addr=D5 AA B5
 3-22.....Addr=D6 AA B5

3-D Skiing ***** 0-22.....Addr=D5 AA B5

D a t a M o s t:

County Fair ----- 0-22.....Addr=D5 AA B5
 Snack Attack SECTMOD [F=13,C=OFF,S=03,T=00]
 Change address 63 from 38 to 18

Snack Attack ----- 0-22.....Addr=D5 AA B5
 (revised) SECTMOD [F=13,C=off,S=01,T=00]
 Change address 39 from 38 to 18

Swashbuckler ----- 0-22.....Addr=D5 AA 96
 Casino 21 SECTMOD [F=16,C=OFF,S=03,T=00]
 Change address 42 from 38 to 18

Canyon Climber ---- 0-2.....Addr=D5 AA 96
 SYNC SIZ=0A, FIX AMNT=04

11-17
 SECTMOD[F=16,C=OFF,T=00,S=01]
 Change address 48 from 00 to 84
 Change address 49 from 9B to 9D

Space Kadet ***** 0-22.....Addr=D5 AA 96
 Mars cars Override Standardizer

Crazy Mazey

A Round About **** 0-10.....Addr=D5 AA 96
 11.5-D.5 Override Standardizer

Tax Beater ***** 0-22.....Addr=D5 AA 96
 REAP SECTMOD [F=16,C=OFF,T=0,S=03]
 Change address 42 from 38 to 18

Money Muncher ***** 0-22.....Addr=D5 AA 96
Tubway, Aztec
Tharolian Tunnels

Data Soft:

Dung Beetles ----- 0-0.....Addr=D5 AA B5
1-1.....Addr=F5 F6 F7
4-22

SECTMOD [F=13,C=ON,T=00,S=01]

Change address 6D from 01 to 7B

Change address 6E from 61 to 69

DOUBLE GOLD SOFTWARE:

Lock It Up 4.1 **** 0-22 Addr= EB D5 AA 96 FF

NOTE: Write-protect before booting.

DEPT OF NATURAL SCIENCES, ORU

Nutricheck-81 ***** 0-22 Addr= D5 AA 96

Edware:

The Prisoner ***** 0-22.....Sync

Algebra I ***** 0-22.....Addr=D5 AA B5

Empire 1 World **** 0-22.....Addr=D5 AA 96

Builders 3-3.....Nibble Count

Prisoner II ***** 0-22.....Addr=D5 AA 96

SECTMOD [F=16,C=ON,T=1F,S=0E]

Change address D5 from AD to 2F

Change address D6 from 99 to AF

Change address D7 from F0 to 32

Rendezvous ***** 0-22.....Addr=D5 AA 96

VERRIDE NIBBLE FILTER

The Terrorist ***** 0-22 Addr= D5 AA B5

Space I

Space II

FRONTIER COMPUTING

Adventure ***** 0-22.....Addr=D5 AA 96

(colossal cave)

Gebelli Software:

Firebird ----- 0-0.....Addr=DD AD DA, SYNC

1.5-B.5.....SYNC

HAYDEN

Sargon II ***** 0-2.....Addr=D5 AA B5

4-1A.....Addr=D5 AA F7

Reversal ***** 0-0 Addr= D5 AA 96

1-15 Addr= D5 AA B5

3.5-3.5 Addr= D5 AA B5

HIGHLAND COMPUTER:

Mummies Curse ***** 0-22 Addr= D5 AA 96

Howardsoft:

Tax Preparer ----- 0-22.....Addr=D5 AA 96

Howard W. Sams

P.D.Q. Data ***** 0-22.....Addr=D5 AA 96

IDS:

Prism Print ***** 0-21.....Addr=D5 AA 96

Override Standardizer

SECTMOD [F=16,C=ON,T=21,S=00]

Change address 27 from FB to 22

Infocom:

Deadline ----- 0-22.....Addr=D5 AA 96

StarCross ***** 0-22.....Addr=D5 AA 96

Zork I,II ***** 0-22.....Addr=D5 AA 96

Suspended

INFORMATION UNLIMITED

Easy Writer Pro. ** 0-22.....Addr=D5 AA B5

Innovative Design Software:

Pool 1.5 ----- 0-15.....Addr=D5 AA B5

1E-21

SECTMOD[F=13,C=OFF,T=0B,S=07]

Change address 6A from 8D to 60

SECTMOD[F=13,C=OFF,T=00,S=03]

Change address 63 from 38 to 18

Insoft:

Electric Duet ***** 0-22.....Addr=D5 AA 96

Ins= DE AA EB

Override Standardizer

Fix Amt=04 Sync Siz=0A

Graforth II ***** 0-22 Addr= D5 AA 96

Int'l Software MKTG

Math Magic ***** 0-22.....Normal

KRELL SOFTWARE

Logo ***** 0-22.....Normal

(1B error ok)

SECTMOD [F=16,C=ON,T=02,S=03]

Change Address 5B from D0 to EA

Change Address 5C from 03 to EA

LJK Enterprises:

Letter Perfect ---- 0-22.....Addr=D5 AA B5

Learning Company
 Bumble Games ***** 0-22.....Addr=D5 AA 96
 Bumble Plot NOTE: Write Protect before booting!
 Rocky's Boots
 Juggler's Rainbow

Level 10 Software:

Neutrons ----- 0-22.....Addr=D5 AA 96
 Kaves of Karkhan
 Rings of saturn *** 0-22.....Addr=D5 AA 96 Sync

Lightning Software:

Master Type ----- 0-2.....Addr=D5 AA B5
 3-22.....Addr=D4 AA B5
 (Error on \$1B OK)
 SECTMOD [F=13,C=OFF,S=03,T=00]
 Change address 63 from 38 to 18
 SECTMOD [F=13,C=OFF,S=0A,T=02]
 Change address CB from 23 to 2E
 Mastertype ----- 0-22 Addr= D5 AA 96
 (16 SECTOR) SYNC SIZ= 0A
 FIX AMNT= 04
 SECTMOD [F=16,C=OFF,T=00,S=03]
 Change address 42 from 38 to 18
 SECTMOD [F=16,C=OFF,T=00,S=05]
 Change address FF from BB to B7

Magna Soft:

Tunnel Terror ----- 0-0.....Addr=D5 AA B5
 1-12.....Addr=D6 AA B5
 Ins=DF AA D7 EB, SYNC SIZ=0A

Micro Lab:

Peeping Tom ----- 0-0.....Addr=D5 AA B5
 1-1.....Addr=F5 AB BE
 4-22
 SECTMOD [F=13,C=ON,T=00,S=01]
 Change address 6D from 01 to 7B
 Change address 6E from 60 to 6B
 Roach Hotel ----- 0-0.....Addr=D5 AA B5
 1-1.....Addr=EE EA FE
 4-22
 SECTMOD [F=13,C=OFF,T=00,S=01]
 Change address 75 from 01 to 7B
 Change address 76 from 61 to 69

VisiFactory ----- 0-22.....Addr=D5 AA 96
 SECTMOD [F=16,C=OFF,T=00,S=03]
 Change address 42 from 38 to 18
 SECTMOD [F=16,C=OFF,T=01,S=00]
 Change address 84 from 4C to AD
 Change address 85 from 8E to E9
 Change address 86 from AE to B7

Invoice Factory --- 0-22.....Addr=D5 AA 96

Jigsaw ***** 0-0.....Normal

A-17.....Normal

1-9.....Addr=D3 96 F2

Visiblend ***** 0-22.....Addr=D5 AA 96

(Errors on trks 3 & 4 OK)

SECTMOD[F=16,C=OFF,T=00,S=03]

Change address 42 from 38 to 18

SECTMOD[F=16,C=OFF,T=01,S=00]

Change address 84 from 4C to AD

Change address 85 from BE to E9

Change Address 86 from AE to B7

Miner 2049er ***** 1-22.....Addr=D3 96 F2

0-0.....Addr=D5 AA 96, USE NIBBLE COUNT

Madventure ***** 0-22.....Addr=D5 AA 96

Ins=D5 AA AD

Microsoft:

Olympic Decathlon* 0-22.....Addr=D5 AA B5

Adventure ***** 0-22 Addr= D5 AA B5

TASC Compiler ***** 0-22 Addr= D5 AA 96

Mind Systems Inc:

AirSim 1 ----- 0-2..... Addr= D5 AA B5

8-F

3-7 Addr= FF FF AB

Spitfire ***** 0-2..... Addr= D5 AA 96

8-F

3-7 Addr= FF FF AB

Mind Toys:

Jabbertalky ----- 0-22.....Addr=D5 AA 96

Ricochet ----- 0-22.....Addr=D5 AA 96

MUSE:

Best of MUSE ***** 0-22.....Sync

Three Mile Island

Global War

Know Your Apple *** 0-22.....Addr=D5 AA B5

Castle Wolfenstein* 0-22.....Addr=D5 AA 96

The Voice ***** 0-22 Addr= D5 AA B5
 U-Draw II
 Castle Wolfenstein
 Robot Wars
 Nikrom Technical Products:
 Master ***** 0-2 Addr=D5 AA 96
 Diagnostics +Plus 3-3 Addr=D7 AA 96
 5-22 Addr=D7 AA 96
 Online Systems:
 Cranston Manor ---- 0-22 ERASE DEST TRACKS
 Cranston Manor *** 0-22 Addr=D5 AA 96
 18-18 Addr=D5 EF F7
 Find Max=03
 Shift N-=00 Shift N+=00
 Expediter][----- 0-22 Addr=D5 AA 96
 ERASE DEST TRACKS
 Gobbler ----- 0-22 Addr=D5 AA B5
 ERASE DEST TRACKS
 Jaw Breaker ----- 0-22 Addr=D5 AA B5
 ERASE DEST TRACKS
 Hires Adv #1 ----- 0-22 Addr=D5 AA B5
 Hires Adv #2 ----- 0-22 Addr=D5 AA B5
 Paddle Graphics --- 0-23 Addr=D5 AA B5
 Hires Soccer ----- 0-22 Addr=D5 AA B5, SYNC
 Thrilogy ----- 0-22 Addr=D5 AA B5, SYNC
 Hires Cribbage --- 0-22 Addr=D5 AA B5, SYNC
 Missile Defense --- 0-22 Addr=D5 AA B5, SYNC
 Marauder ----- 0-22 Addr=D5 AA 96, Override Standardizer
 SECTMOD [F=16,C=ON,T=03,S=07]
 Change Address 90 from A8 to 60
 Marauder ***** 0-22 Addr=D5 AA 96, OVERRIDE STANDARDIZER
 SECTMOD [F=16,C=ON,T=11,S=07]
 Change Address 90 from A8 to 60
 Pegasus][----- 0-22 Addr=D5 AA B5
 ERASE DEST TRACKS
 * Pegasus][***** 0-22 Addr=D5 AA 96
 3-3 Addr=FE BF DF
 Find Max=03
 Shift N+=00 Shift N-=00

ScreenWriter][--- 0-22 Addr D5 AA 96
 (REVISED) Sync Siz=0A, Fix Amt=04
 SECTMOD [F=16,C=ON,T=03,S=0B]
 Change Address 94 from 20 to EA
 95 from 00 to EA
 96 from 7F to EA
 SECTMOD [F=16,C=ON,T=13,S=04]
 Change Address 4D from 20 to EA
 4E from 00 to EA
 4F from 6D to EA
 Softporn ----- 0-22 Addr=D5 AA B5
 Adventure 3.2 ERASE DEST TRACKS
 Softporn ----- 0-22 Addr=D5 AA 96
 Adventure 3.3 ERASE DEST TRACKS
 Softporn ***** 0-22 Addr=D5 AA 96
 3-3 Addr=D5 CF F7
 Find Max=03
 Shift N+=00 Shift N-=00
 Threshold ----- 0-22 Addr=D5 AA B5
 ERASE DEST TRACKS
 Ulysses & ----- 0-22 Addr=D5 AA 96
 Golden Fleece Erase DEST TRACKS
 Ulysses & ***** 0-22 Addr=D5 AA 96
 Golden Fleece 3-3 Addr=D5 EF F7
 Find Max=03
 Shift N+=00 Shift N-=00
 Time Zone (V1.0)
 Disks A-L ---- 0-22 Addr=D5 AA 96, 'OVERRIDE STANDARDIZER'
 then Disk A ----- SECTMOD [F=16,C=ON,T=03,S=05]
 Change address 5B from 4C to 60
 SECTMOD [F=16,C=ON,T=03,S=03]
 Change address AB from A9 to 60
 Cannonball Blitz -- 0-22 Addr=D5 AA 96
 SECTMOD [F=16,C=ON,T=17,S=0E]
 Change address CD from 49 to 60
 Mouskattack ----- 0-22 Addr=D5 AA 96
 SECTMOD [F=16,C=ON,T=18,S=03]
 Change address B1 from 49 to 60
 General Manager *** 0-22 Addr=D5 AA 96
 V1.5 SECTMOD [F=16,C=ON,T=1F,S=0E]
 Change address C1 from -- to 4B
 Change address C2 from -- to E0
 Change address C3 from -- to 49
 SECTMOD [F=16,C=ON,T=21,S=01]
 Change address 2E from -- to 60

General ***** 0-22.....Addr=D5 AA 96
 Manager 2.0 SECTMOD[F=16,C=ON,T=21,S=0B]
 (REVISED) Change address 09 from 20 to EA
 Change address 0F from 20 to EA
 Change address 10 from 00 to EA
 Change address 11 from 70 to EA
 General ***** 0-22.....Addr=D5 AA 96
 Manager 2.0 SECTMOD[F=16,C=ON,T=20,S=0B]
 (REVISED) Change address 09 from 20 to EA
 Change address 0F from 20 to EA
 Change address 10 from 00 to EA
 Change address 11 from 70 to EA
 General Manager 2.0 * 0-22 Addr= D5 AA 96
 SECTMOD [F=16,C=ON,T=21,S=0B]
 Change address 0B from 03 to 06

Sabotage ***** 0-22.....Normal
 Alien Rain
 Snoggle ***** 0-22.....Addr=D5 AA B5
 Time Zone V1.1 **** 0-22.....Addr=D5 AA 96
 SECTMOD [F=16,C=ON,T=03,S=0B]
 Change Address F0 from 20 to EA
 Change Address F1 from 00 to EA
 Change Address F2 from 17 to EA

The Artist ***** 0-22.....Addr=D5 AA 96
 SECTMOD[F=16,C=ON,T=05,S=0A]
 Change address B0 to EA
 Change address B1 to EA
 Change address B2 to EA
 SECTMOD[F=16,C=ON,T=05,S=0B]
 Change address 35 to EA
 Change address 36 to EA
 Change address 37 to EA
 Change address D4 to 60
 SECTMOD[F=16,C=ON,T=05,S=0B]
 Change address 90 to 60
 SECTMOD[F=16,C=ON,T=1C,S=07]
 Change address 4D to EA
 Change address 4E to EA
 Change address 4F to EA

Hi-Res Football *** 0-22.....Addr=D5 AA 96, SYNC
 Mission Asteroid ** 0-22.....Addr=D5 AA B5
 Hires Adventure 0 * 0-22.....Addr=D5 AA 96
 Cross Fire ***** 0-22 Addr= D5 AA 96
 ERASE DEST TRACKS

Ultima II ***** 0-22 Addr= D5 AA 96
 Ins= D5 AA AD
 OVERRIDE SYNC CONVERT
 OVERRIDE NIBBLE FILTER
 SECTMOD[F=16,C=ON,T=3,S=0C]
 Change Address 84 from to EA
 Change Address 85 from to EA
 Change Address 86 from to EA

The Dark Crystal ** 0-22 Addr= D5 AA 96
 DISK 1, SIDE 1 SECTMOD [F=16,C=ON,T=8,S=8]
 Change F3 from BD to 60

The Dark Crystal ** 0-22Addr= D5 AA 96
 Disk 1A SECTMOD [F=16,C=ON,T=5,S=F]
 Change A8 from 20 to EA
 Change A9 from F0 to EA
 Change AA from 5F to EA

Zaxxon ***** 1-12 Addr= D5 AA 96
 0-0 Add Nibble Count
 13-13

Lisa 2.5 ***** 0-22 Addr= D5 AA 96 Sync

Penguin Software:

Pie Man ----- 0-22.....Addr=D5 AA 96
 Spy's Demise ***** 0-10 by 2.....Addr=D5 AA 96 FIX AMT=04

1-11 by 2.....Addr=D4 AA 96
 Transylvania ***** 0-22 by 2.....Addr=D5 AA 96
 1-21 by 2.....Addr=D4 AA 96

Thunderbombs ***** 0-10 by 2.....Addr=D5 AA 96
 Crime Wave 1-11 by 2.....Addr=D4 AA 96

Personal Business Systems:
 Executive ----- 0-22.....Addr=D5 AA 96

Secretary

Phoenix Software:

Zoom Grafix ----- 0-0.....Addr=D5 AA 96, Ins=DD AA ED B5
 Sync Siz=0A

1-22.....Addr=D4 AA 96
 Zoom Graphics ***** 0-22 by 2.....Addr=D5 AA 96
 2nd Edition Ins=DD AA ED B5

1-21 by 2.....Addr=D4 AA 96
 N O T E: Write Protect before booting!!

Adventure In Time * 0-C.....Normal
 Birth of the ***** 0-9.....Normal
 Phoenix

Sherwood Forest *** 0-0.....Addr=D5 AA 96
 Insr=EA AA EB 96
 1-1E.....Addr=D4 AA 96
 Override Standardizer
 Must Write Protect before Booting!!

Picadilly Software:
 Suicide ----- 0-0.....Addr=D5 AA B5
 11.5-22 by 1.5.Addr=DF AD DE
 Star Blaster ----- 0-0.....Addr=D5 AA 96
 7-20 by 1.5....Addr=DF AD DE
 Falcons ***** 0-0.....Addr=D5 AA B5
 1.5-4.5x1.5....Addr DF AD DE
 5.5-5.5x1
 7-Ax1
 B.5-E.5x1.5
 10-12x1
 13.5-14.5x1
 16-19x1.5
 1A-1B.5x1.5

Professional Software Technology:
 Executive ----- 0-22.....Addr=D5 AA 96, Override Standardizer
 Briefing System SECTMOD [F=16,C=ON,T=21,S=00]
 Change Address 27 from FB to 22

Quality Software:
 Bag of Tricks ***** 0-0.....Addr=D5 AA B5, Insr=DF AA EF EF
 SYNC SI7=0A
 1-15.....Addr=D5 AA B5 or D6 AA B5
 Bag of Tricks ***** 0-0.....Addr=D5 AA B5, SYNC SI7=0A
 Insr=DF AA AB F7
 1-15.....Addr=D6 AA B5

RAINBOW COMPUTING:
 Stellar Treck ***** 0-22 Addr= D5 AA B5

Riverbank Software
 International ----- 0-C.....Addr=FF FF FF AA
 Grand Prix

Sensible Software:

Image Printer ***** 0-2.....Addr=D5 AA 96
 3-7.....Addr=F7 AA 96
 9-22
 SECTMOD [F=16,C=OFF,T=0,S=03]
 Change address 42 from 38 to 18
 SECTMOD [F=16,C=OFF,T=2,S=03]
 Change address 2A from 2C to 4C
 Change address 2B from 06 to 5D
 Change address 2C from B7 to B4

Super Disk Copy *** 0-22.....Addr=D5 AA 96
 (Version 3.7) Errors OK

The Bug ***** 0-0.....Normal
 15-15.....Gap Byte 2=FF
 Gap Size=10
 16.5-16.5

Disk Recovery V1.6 ***** 0-22 Addr= D5 AA B5
 Disk Organizer V2.2 1981 (error on trk 1 O.K.)

Sentient Software

Gold Rush ----- 0-22.....Addr=D5 AA 96
 Cyborg ***** 0-22.....Addr=D5 AA 96
 Oas-Topos Insr=AB AB AB
 Silicon Valley Software:
 Word Handler II --- 0-0.....Addr=D5 AA 96
 11-22
 1-C.....Addr=FF DF DE
 Word Handler II *** 0-0C.....Addr=FF DF DE
 11-22.....Addr=D5 AA 96

Sirius Software:

Autobahn ----- 0-0.....SYNC
 4-6.....SYNC
 9.5-C.5.....SYNC

Beer Run, Epoch --- 0-0.....Addr=DD AD DA, DATA MAX=25, SYNC
 Copts & Robbers, 1.5-13.5.....SYNC
 Hadron, Snake Byte

NOTE: Errors will begin to occur somewhere between track C.5 and track 13.5,
 depending on the particular disk. This is normal.

Escape From ***** 0-2.....Addr=D5 AA 96
 Rugistein 3-21.....Addr=D5 AA F7
 22-22.....Datamover

Gorgon ----- 0-0.....Addr=DD AD DA, DATA MAX=25, SYNC
 1.5-C.5.....SYNC
 E.5-E.5.....SYNC
 D.5-D.5.....Addr=D5 AA B5, SYNC

Sneakers ----- 0-0.....Addr=DD AD DA, SYNC
 1.5-C.5.....SYNC
 D.5-D.5.....Addr=D5 AA B5, SYNC

Gamma Goblins ---- 0-0.....Addr=DD AD DA, SYNC
 1.5-B.5.....SYNC
 D-D.....Addr=FF FF FF D5 AA EE
 DATA MAX=30

Orbitron ----- 0-0.....Addr=DD AD DA, DATA MAX=25, SYNC
 1.5-E.5.....SYNC
 F.5-F.5.....Addr=FF B5 D5 AA

Outpost ----- 0-0.....Addr=DD AD DA, SYNC
 1.5-9.5.....SYNC
 B.5-B.5.....Addr=D5 AA AD, DATA MAX=25

Pulsar JI ----- 0-C
 13-19
 1A.5-1D.5

Dark Forest ----- 0-0.....Addr=DD AD DA, SYNC
 1-22.....Addr=D5 AA A5, SYNC
 (Errors on 6-8 and last few tracks OK)

Twerps ----- 0-0.....Addr=DD AD DA, SYNC
 1.5-E.5.....SYNC
 1A-1A

Borg ----- 0-0.....Addr=DD AD DA, SYNC
 1.5-B.5.....SYNC
 D-20.....SYNC

Wayout ----- 0-1C.....Addr=AD DA DD
 22-22.....Addr=AA D5 D5 FF D6 FF FD
 21-21.....Addr=AA, USE NIBBLE COUNT
 SYNC SIZ=0A, MATCH NM=06

Kabul Spy ***** 0-21.....Addr=D5 AA 96
 (both sides) SECTMOD (F=16,C=OFF,T=0,S=0
 Change address 49 from 20 to EA
 Change address 4A from 03 to EA
 Change address 4B from 20 to EA

Kabul Spy ***** 0-0.....Addr=D5 AA 96
 (Side 1) 1-21.....Addr D5 AA F7
 22-22.....Addr=AA D5 D5 BD BD
 SECTMOD (F=16,C=OFF,T=0,S=0
 Change address 49 from 20 to EA
 Change address 4A from 03 to EA
 Change address 4B from 20 to EA

(Side 2)***** 0-21.....Addr=D5 AA F7

Dark Forest ***** 0-22.....Addr=D5 AA B5
 Override Glitch detect

Freefall ***** 0-B.....Addr=AD DA DD
 20-20.....Addr=FE AA D5 D5 FD FB
 22-22.....Addr=AA D5 D5 FF D6 FF FD
 21-21.....Addr=AA USE NIBBLE COUNT=Y
 SYNC SIZ=0A, MATCH NM=06

E-Z Draw 3.3 ***** 0-B.....Addr=D5 AA 96
 D-22
 C-C.....Addr=BE AB EB

Repton ***** 0-F Addr= AD DA DD

Wavy Navy (Errors after 0B o.k.)

Flip Out 22-22 Addr= AA D5 D5 FF D6 FF FD
 21-21 ADDR= AA, USE NIBBLE COUNT
 SYNC SIZ=0A, MATCH NM=06

Repton ***** 0-D Addr= AA DA DD
 DATA MAX= 25
 20-20 Addr= FE AA D5 D5 FD FB
 22-22
 21-21 Addr= AA FD FE
 SYNC SIZ= 0A
 MATCH NUM= 06

Space Eggs ***** 0-0Addr=D5 AA B5
 11-13
 2-6.....Addr=D5 AA BA
 14-19.....Addr=DD AA F7
 1A-1A.....Addr=F7 AA D5

Sirtech Software

Wizardry ***** 0-22.....Addr=D5 AA 96, SYNC, ERASE DEST TRACKS
 GAP SIZE=05, SYNC SIZ=0A

Softape:

Photar ----- 0-22.....Addr=D5 AA 96

Draw Poker ----- 0-22.....Addr=D5 AA B5

Night Crawler ***** 0-22.....Addr=D5 AA 96

SOFTWARE EMPORIUM:

Inferno ***** 0-22 Addr= D5 AA 96

Software Publishing Corp

PFS Graph ***** 0-0Addr=93 F3 FC FF
 (REVISED) Insr=93 F3 FC FF
 OFFSET= 02
 SYNC SIZ= 0A
 1-13Addr=D5 AA 96

PFS/PFS Report **** 0-0Addr=93 F3 FC FF
(REVISED) Insr=93 F3 FC FF

OFFSET- = 02

SYNCSIZ = 0A

1-13Addr=D5 AA 96

Insr=D5 AA 96

N O T E: Write Protect before booting!!

PFS/PFS Report **** 0-13.....Addr=D5 AA 96

Override Standardizer

Gap Byte 1=C0, Gap Byte 2=D0

Filter=C0-C8 (no inverse)

N O T E: Write Protect before booting!!

PFS Graph ***** 0-22.....Addr=D5 AA 96

Override Standardizer

Gap Byte 1=C0, Gap Byte 2=D0

Filter=C0-C8 (no inverse)

(For above 2, SYNC SIZ=0A may help)

PFS Files /// ***** 0-22Addr=D5 AA 96

Insr=DE AA EB

Offset+=3

S O F T R O N I C S

Softerm ***** 0-2.....Addr=D5 AA 96

4-22.....Addr=BE AA 96

3-3.....Addr=BE AA AB

Find Max=03

Shift N-=00 Shift N+=0B

S p e c i a l D e l i v e r y S o f t w a r e:

Personal ----- 0-22.....Addr=D5 AA 96

Finance Manager

Utopia Graphics *** 0-22.....Addr=D5 AA 96

System Turn on 3.3 filter

SECTMOD [F=16,C=ON,T=0,S=0]

Change address 42 from 38 to 18

Galactic Wars ***** 0-22.....Addr=D5 AA 96

Bridge Tutor

S P I N N A K E R

Snooper Troops **** 0-22.....Addr=D5 AA 96

Granit Point Ghost Fix Amt=04 Sync Siz=0A

Missing Dolphin 3-22.....Addr=BB AA 96

Xmas Sampler ***** 0-22.....Addr=D5 AA 96

Sync Siz=0A

Facemaker ***** 0-22.....Addr=D5 AA 96

Insr=DE AA 83

Override Sync Convert

Override Nibble Filter

S t o n e w a r e:

DB Master (old) --- 0-5.....Addr=D5 AA 96

6.5-22.5

DB Master (new) --- 0-5.....Addr=D5 AA 96, SYNC

6.5-22.5

D B Master ***** 0-5.....Addr=D5 AA 96, Sync

Utility pac #1 6.5-22.5.....Sync

DB Master 3.02

S t r a t e g i c S i m u l a t i o n s:

Cartels & ----- 0-0.....Addr=D5 AA B5

Cuthroats 2-22.....Addr=DB D5 DE

Operation 1-1.....Addr=D5 AA DA FF

Apocalypse

Cartels & ***** 0-0.....Addr=D5 AA 96

Cuthroats V1.1 1-22.....Addr=D4 AA B7

Torpedo Fire ----- 0-22.....Addr=D4 AA B7

Southern Command

Battle of Shiloh ** 0-22.....Addr=D4 AA B7

Warp Factor

Computer Air ***** 0-22.....Addr=D4 AA B7

Combat

Computer Ambush II

S.Hoot E.M. ***** 0-22.....Addr=D4 AA B7

U.P.I.N.S.PACE

S.E.I.U.S.

President elect *** 0-22.....Addr=D4 AA B7

Computer QB ***** 0-22.....Addr=D4 AA B7

Guadalcanal ***** 0-22 Addr= D4 AA B7

Tigers In The Snow

Shattered Alliance

Operation Apocalypse

Germany 1985 ***** 0-22 Addr= D5 AA B5

Computer Conflict ***** 0-0 Addr=D5 AA B5

01-22 Addr=DA AA EB

S u b l o g i c:

FS-1 ----- 0-0

1.5-21 by 1.5..Addr=DB AB BF

REDUCED ERROR CHECK

7-8.....REDUCED ERROR CHECK

9.5-9.5.....REDUCED ERROR CHECK

Saturn Navigator -- 8-22.....Addr=D5 AA FD, FIND MAX=0B

(Errors on \$11 and \$17 OK)

6.5-6.5.....FF FF D5 AA, FIND MAX=0C

0-4.....Addr=D5 AA B5

11-11

Escape ----- 0-22.....Addr=D5 AA 96

A2-PB1 Pinball ---- 0-0.....Addr=D5 AA 96, DATA MAX=25
1-15.....Addr=DB AB BF

Synergistic Software:

Escape from ----- 0-22.....Addr=D5 AA 96, 'OVERRIDE STANDARDIZER'
Arcturus 'OVERRIDE NIBBLE FILTER'
Adventure to ***** 0-22.....Addr=D5 AA 96
Atlantis 'Override Standardizer'
'Override Nibble Filter'
U-Boat Command **** 0-22.....Addr=D5 AA 96
'Override Standardizer'
Crisis Mountain *** 0-22.....Addr=D5 AA 96, 'Override Standardizer'
'Override Nibble Filter'
Global Program Editor * 0-22 Addr= D5 AA 96

Microbe ***** 0-0 Addr= D5 AA 96
1-22 Addr= D5 AA BF

Note: Save Game feature will crash disk.

Sytonic Software:

Interlude -----0-22.....Addr=D5 AA B5

Terrapin:

LOGO (both disks) **0-22.....Addr=D5 AA 96

Turnkey Software:

Ceiling Zero ----- 0-2.....Addr=D5 AA B5
3-11.....Addr=D6 AA B5

Ins=DE AA EB F9, SYNC SIZ=0A

USA Software:

Apple World ----- 0-23
Star Dance ----- 0-22.....Addr=D5 AA B5
Supergraphics ***** 0-23.....Addr=D5 AA 96

ULTRASOFT

Mask of the Sun *** 0-22.....Addr=D5 AA 96

SECTMOD[F=16,C=OFF,T=02,S=0D]

Change Address 41 from 9D to EA

Change Address 42 from 8F to EA

Change Address 43 from C0 to EA

SECTMOD[F=16,C=OFF,T=00,S=03]

Change Address 42 from 38 to 18

VIDEX CORP

Pre-Boot System --- 0-22.....Addr=D5 AA 96

NOTE: Override Standardizer

Visicorp:

Visicalc 3.3 ----- 0-0.....Addr=D5 AA 96
2-22.....Addr=D5 AA B5

(Errors toward end OK)

Visicalc III ***** 0-22.....Addr=D5 AA 96 Sync
Advanced (loader)

Advanced(program)** 0-22.....Addr=D5 AA 96, Ins=DE AA EB
Sync SIZ=0A, Fix Amt=04

Visidex ----- 0-22.....Addr=D5 AA 96, Ins=DE AA EB FD
SYNC SIZ=0A, FIX AMNT=04

Visiterm ----- 0-22.....Addr=D5 AA 96, Ins=DE AA EB FC
SYNC SIZ=0A, FIX AMNT=04

Visitrend ----- 0-22.....Addr=D5 AA 96, Ins=DE AA EB
/Visiplot SYNC SIZ=0A, FIX AMNT=04

Desktop Plan II --- 0-22.....Addr=D5 AA 96, Ins=AA EB FD
SYNC SIZ=0A, FIX AMNT=04

Visifile ----- 0-22.....Addr=D5 AA 96, Ins=DE AA EB
SYNC SIZ=0A, FIX AMNT=04

Visischedule----- 0-22.....Addr=D5 AA 96, Ins=DE AA EB EC
SYNC SIZ=0A, FIX AMNT=04

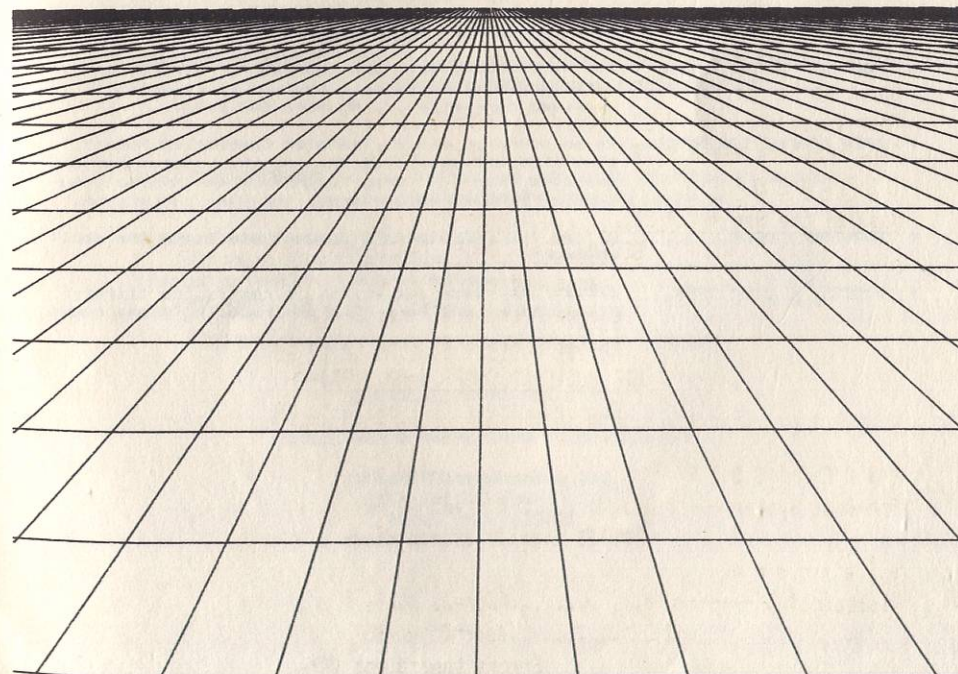
XPS Software:

Apple Cillin----- 0-D.....Addr=D5 AA 96

Apple Cillin ***** 0-0.....Addr=D5 AA 96

1-22.....Addr=D5 AA B5

11-11.....Addr=D5 AA 96



===== **COMPUTER:applications Inc.** =====

13300 S.W. 108 St. Cir. Miami, Fl. 33186
Tel (305) 385-4277 Source TCD328

presents

APPLE - LINK
A Communications System

< Price >
< \$ 59.95 >

F E A T U R E S

< F R E E >
< Back-up >

- * **TRANSMIT & RECEIVE.....**Send or Receive 'ANY' type of file between Apple II Systems; (Inc. Random Access Text, and Relocatable)
- * **EASY TO USE.....**Complete MENU DRIVEN operation requires NO previous Communications experience.
- * **MULTI-FILE TRANSFER.....**Select as many files as desired for Transmit or Receive, with complete AUTOMATIC file transfer.
- * **UNIQUE FILE SELECTION...**Both SEND & RECEIVE catalogs are displayed on screen, with 'Single Keystroke Selection' of files, <as many as you want !>, for transfer. NO File Conversions by User. Just Select and Go...
- * **REAL TIME CLOCK.....**Exact File Transfer Time is displayed on screen, in Minutes & Seconds, during the transfer process.....
- * **ONLY ONE A-L NEEDED.....**Complete File Operation requires only 'one' side to have the APPLE-LINK Communications System !!
- * **COMPLETE ERROR CHECK....**All file transfers are checked for errors, and if detected, will retransmit the bad block until it is received correctly ... No more BAD data...
- * **XFER COMPLETION REPORT..**As an operator aid, a Transfer Completion Report is generated automatically showing the status of all selected files. Errors, displayed in inverse, show type of problem encountered, for easy correction.
- * **CONVERSE MODE.....**Allows two operators to Communicate using the apple keyboard.
- * **DIRECT TO DISK XFER.....**APPLE-LINK reads and writes directly to diskette, eliminating Load/Save time and reducing phone costs

COMPUTER:applications, Inc.

SOFTWARE BY DESIGN

13300 S.W. 108 Street Circle, Miami, Florida 33186
Tel: (305) 385-4277 Source TCD328

NIBBLES AWAY II

Version C-1

"NIBBLES AWAY II" has been updated to Version C-1. This new edition replaces our earlier B-1 version. Many new and asked for features have been implemented, increasing the flexibility and usefulness of our product.

The following summary will introduce you to some of the new features incorporated in our new C-1 release ...

//e Compatibility NIBBLES AWAY II is now fully compatible with both the APPLE II and the new APPLE //e.

AUTO-LOAD REVISION A completely new procedure for selecting files from our optional AUTO-LOAD diskette, simplifies the parameter access.

INCREASED PRINTER USE... Compatibility with many currently available printer combinations to include the silentype printer.

DATA PRINTOUT Enhanced printing capability now allows sector data to be printed in ACSII, HEX, and ASSEMBLY formats.

VIDEO SCREEN SNAPSHOT .. A simple Ctrl P sends the video screen to the printer.

IMPROVED SECTOR EDIT Revised Sector Editing increases flexibility.

NEW DISK SEARCH This new feature allows the user to search an entire diskette for any user selected data.

UPDATE TO VERSION C-1 Updates will be made available for earlier versions per the following schedule ...

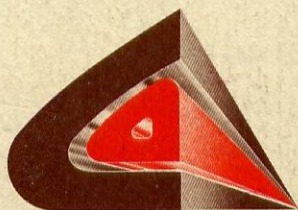
Version C-1 with manual addendum	\$20.00
(with return of your old version)	\$15.00
(Backup to Version C-1 without manual)	\$15.00
(with return of your B-1 backup)	\$10.00

SORRY, VISA/MC cannot be accepted for these products.

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SOFTWARE BY DESIGN

13300 S.W. 108 STREET CIRCLE
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• MIAMI

• FLORIDA 33186

SOURCE: TCD 328

Broderbund Software:

A.E. ***** 0-0 Addr=DD AA AD
(side 1)

1.5 - C.5

Data Max=25, Find Max=03

E-E Addr=D5 AA 96

F.5 - F.5 Addr=DD DA 9D

11-11 Addr=D5 AA 9F

12.5 - 12.5 ... Addr=DD DA 96

14 - 14 Addr=D5 AA DD

15.5 - 15.5 ... Addr=DD DA D5

17 - 17 Addr=D5 AA F5

18.5 - 18.5 ... Addr=DD DA DA

1A - 1A Addr=D5 AA AD

1B.5 - 1B.5 ... Addr=DD DA AE

1D - 1D Addr=D5 AA 96

1E.5 - 1E.5 ... Addr=DD DA AD

side 2 0-22 Addr=D5 AA 96

Bank Street *** 00-00 Addr=D5 B5 D5

Writer 01-19 Addr=A5 96 BF

1A Addr=BA B9 EE

1B Addr=DF AB BD

1C Addr=DB D7 D7

1D Addr=B6 AE DB

1E Addr=B6 EE ED

1F Addr=D6 BB FA

20 Addr=D6 AD FD

21 Addr=DF FA BA

22 Addr=EA AE BD

side 2 0-22 Addr=D5 AA 96

Print Shop **** 0-21 Addr=D5 AA 96

(New Version) SECTMOD [F=16,C=ON,T=02,S=E]

'84 (0A) 20 to EA/(0B) D7 to EA/(0C) BD to EA

Apple Computer

Apple Logo **** 0-22 Addr=D5 AA 96

(Version 1A)

Error on track 1 is OK!

SECTMOD [F=16,C=ON,T=00,S=0A]

(13) 20 to EA/ (14) 00 to EA/ (15) 3D to EA

(22) BD to 4C/ (23) 8C to 55/ (24) C0 to 40

(79) 4C to EA/ (7A) 00 to EA/ (7B) C6 to EA

If the bytes on location 79, 7A or 7B are

different than what was read from the disk

(ex: 5D, 5E and 5F used on another version)

use the Sector Editor search function to

search Track 00/Sector 0A for the occurrence

of 40 00. Then replace those two locations

plus the next byte location with EA's.

Artsci, Inc.

Acewriter II ** 0-22 Addr=D5 AA 96

SYNC SIZ=0A, FIX AMNT=04

Broderbund Software:

A.M. 0-2 SYNC

3-11 NORMAL

12-23 (SPIRAL TRACKS)

(i) BY ¹²⁰² SYNC

(ii) 12-25-23-25 BY 1 SYNC

CDEX

Training disks 0-22 Addr=D5 AA 96
for Visicalc
(all 3 disks)

Training disks 0-0 Addr=D5 AA 96
for Visicalc 23-23 Addr=D5 AA AA
Disk 1 1-22 Addr=D6 AB 96
(Revised)
Disks 2 & 3 0-0 Addr=D5 AA 96
1-22 Addr=D6 AB 96

Create-A-Test Co.

Create-A-Test * 0-2 Addr=D5 AA 96
2-22
3-3 Addr=D5 AA B5

Data Soft

Zaxxon ***** 0-16 Addr=D5 AA 96, Sync
20-20 Addr=CB DA FC, Sync

Sands of Egypt 0-3 Addr=D5 AA 96
Ins =D5 AA AD
OVERRIDE STANDARDIZER
NIBBLE COUNT
SYNC
4-11 Addr=D5 AA 96
Ins =D5 AA AD
OVERRIDE STANDARDIZER
SYNC
12-23 Data Mover

Online Systems:

Homeword ***** 0-22 Addr=D5 AA 96
SECTMOD [F=16,C=ON,T=10,S=0A]
(00) CE to 60 / (01) 03 to AD

BC's Quest **** 0-20 Addr=D5 AA 96
for Tires 22-22
21-21 DATA MOVER
SECTMOD [F=16,C=ON,T=06,S=07]
(E7) 20 to EA/(E8) 00 to EA/(E9) 96 to EA

NIBBLES AWAY)(

Disk Backup System

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EDD III(A) SIDE II

NIBBLES AWAY II

AUTO-LOAD FILES

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