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YET ANOTHER MONTH....

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 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 months article on disk encryption.

Until next month.....

Randy Ubillos
USING AUTO-LOAD DISKETTES

To use the Auto-Load files stored on the Nibble News disk, refer to Chapter 6 of your NIBLES 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 B1 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 NIBLES 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..................5BE1

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

<table>
<thead>
<tr>
<th>Desired Directory</th>
<th>Value to enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

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.

Fun With The Sector Editor
by Mike Street

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 32 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 $BA9A 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. Sometimes 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 straightforward. 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.
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 PK50 interface and an Epson M1-80 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 //e, although it is set up for any Apple II, II+, or //e).

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, PK50, TTYMAC, 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 months issue. If you have any questions, please let us know by phone or mail.
BOO'T-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 'PRM' 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.

1200 * System variables
1205
@100- 1210 STACK .EQ @100
@2D6- 1215 TABLE1 .EQ @2D6
@300- 1226 TABLE2 .EQ @300
@356- 1225 TABLE3 .EQ @356
@600- 1228 BUFFER .EQ @600
@801- 1235 BOOT2 .EQ @801
C060- 1240 PHASEO FF .EQ C060
C061- 1245 PHASEO N .EQ C061
C069- 1250 MOTORON .EQ C069
C08A- 1255 DRIVEO .EQ C08A
C08C- 1260 DISKDATA .EQ C08C
C08E- 1265 D7L .EQ C08E
FCA9- 1270 WAIT .EQ FCA9
FF58- 1275 APPERTS .EQ $FF58
1280
@800- A2 20
C602- A0 00 1290 LDX @20
C604- A2 03 1295 LDX @03
C606- B6 3C 1300 LOOP1 STX TEMP1
C60B- BA 1305 TIA
C609- 0A 1310 ASL
C60A- 24 3C 1315 BIT TEMP1
C60C- F0 10 1320 BEO LOOP3
C60E- 05 3C 1325 ORA TEMP1
C610- 49 FF 1330 EOR @FF
C612- 29 7E 1335 AND @7E
C614- D0 0B 1340 LOOP2 BCS LOOP3
C616- 4A 1345 LSR
C617- D8 FB 1350 BNE LOOP2
C619- 98 1355 TYA
C61A- 9D 56 03 1360 STA TABLE3,X
C610- CB 1365 INY
C61E- EB 1370 LOOP3 INX
C61F- 10 E5 1375 BPL LOOP1
C621- 20 58 FF 1380 JSR APPERTS,X
C624- BA 1385 TSY
C625- BD 00 01 1390 LDA STAX,X
C628- 0A 1395 ASL
C629- 0A 1400 ASL
C62A- 0A 1405 ASL
C62B- 0A 1410 ASL
C62C- 05 2B 1415 STA SLOT16
C62E- AA 1420 TAX
6502 Stack.
TABLE3 - @00.
Temporary storage.
Untranslate table storage.
Buffer for second stage boot.
Start address of second stage.
Disk hardware addresses.

Monitor WAIT routine.
A fixed RTS instruction.

This is the main entry point.
First a table of values is created at TABLE3.
This table will be used later on to decode the data from the disk.

This calls a known 'RTS' instruction. Then the value pushed on the stack above is extracted to see where we are calling from, and hence which slot the controller is in.
Store the slot# times 16.

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 RMTS 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
1165 POINT .EQ $26
Pointer to memory buffer.

1170 SLOT16 .EQ $28
Slot number times 16.

1175 TEMP1 .EQ $3C
Temporary.

1180 SECTOR .EQ $3D
Desired sector number.

1185 TEMP2 .EQ $40
Temporary.

1190 TRACK .EQ $41
Desired track number.
C62F-  BD BE C0 1425  LDA Q7L,X Set read mode.
C632-  BD BC C0 1430  LDA DISKDATA,X Clear the latch.
C635-  BD BA C0 1435  LDA DRIVE0,X Select drive zero.
C638-  BD B9 C0 1440  LDA MOTORON,X Turn on the motor.
C63B-  A0 50 1445  LDY #50 Now we must go to track 0.
C63D-  BD BD C0 1450  LDA PHASEOFF,X We set up to move BD (decimal) tracks in since we do not
C640-  98 1455  THY tracks in since we do not
C641-  27 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 SLOTS phases of the stepper motor
C645-  AA 1475  TAI in the correct order, we
C647-  BD B1 C0 1490  LDA PHASEON,X cause the head to move to
C64A-  A9 56 1495  LDA #56 the outermost track (0).
C64C-  20 AB FC 1490  JSR WAIT Delay to allow motor to move
C64F-  B8 1495  DEY since it is a mechanical
C650-  10 EB 1500  BPL RECAL device.
C652-  BD 26 1505  STA POINT The wait routine puts a 0 in
C654-  BD 3D 1510  STA SECTOR the accumulator, so here we
C656-  BD 41 1515  STA TRACK zero out two temporaries
C658-  A9 08 1520  LDA /BUFFER and the put the address of
C65A-  BD 27 1525  STA POINT+1 our read buffer in POINT.*

C1535 * This is the entry point to access to read
C1540 * Function of the disk controller.
C1545
C1550 * The first section is a dual purpose routine which can
C1555 * Read both the address and data markers from the disk.
C1560 * The status of which is being read in at a given
C1565 * Time is stored on the stack by pushing the processor
C1570 * Status, carry clear specifying address mark read,
C1575 * and a set carry indicating data mark read.
C1580
C65C-  18 1585 GETADDR CLC Set address read mode.
C65D-  00 1590 GETFIELD PHP Save status on stack.
C65E-  BD BC C0 1595 ADDR1 LDA DISKDATA,X Read a byte from the disk.
C661-  18 FB 1600 BPL ADDR1 If <128, not ready, try again.
C663-  49 D5 1605 CHECK1 EOR #05 Check for 05 (first addremark).
C665-  D8 F7 1610 BNE ADDR1 If not, look some more.
C667-  BD BC C0 1615 ADDR2 LDA DISKDATA,X Read a byte.
C66A-  10 FB 1620 BPL ADDR2 Wait for ready.
C66C-  C9 A4 1625 CMP #0AA Check for AA.
C66E-  D0 F3 1630 BNE CHECK1 If not, check for 05.
C670-  EA 1635 NOP Delay.

C671-  BD BC 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 #6.
C678-  F0 09 1655 BEQ ISADDR Yes, get address field.
C67A-  2B 1660 PLP See if we are looking for data.
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 BNE 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 * 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-  BD 40 1750 READMORE STA TEMP2 Save ACC. (Will hold track0).
C687-  BD BC C0 1755 READ1 LDA DISKDATA,X Read a byte.
C690-  10 FB 1760 BPL READ1 Wait for ready.
C69C-  2A 1765 ROL Shift left. (Odd bits here)
C69D-  BD 3C 1770 STA TEMP1 Save this value.
C69F-  BD BC C0 1775 READ2 LDA DISKDATA,X Read a byte.
C6A2-  10 FB 1780 BPL READ2 Wait for ready.
C6A4-  25 3C 1785 AND TEMP1 Reassemble the value.
C6A6-  BB 1790 DEY Decrement our counter.
C6A8-  BD EC 1795 BNE READMORE Reading until we have sector.
C699-  2B 1800 PLP Remove status byte from track.
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 BB 1825 BNE GETADDR re-read addr field anyways.
C6A4-  BD B7 1830 BCS GETFIELD Now go get data field.

1835
1948 * This routine reads in and decodes a sector
1945 * of data using the previously created TABLE3.
1950 * DOS 3.3 uses a 6+2 encoding scheme, which splits each
1955 * 8 bit byte up into a 6 bit nibble and a 2 bit nibble.
1960 * The six bit nibble is written to the disk using a
1965 * translation table (6 bits gives 64 possible values which
1970 * is the number of valid disk bytes for DOS 3.3).
1975 * The 2 bit nibbles are gathered into six bit nibbles
1980 * of 3 at a time, and the written out to the disk. This
1985 * requires 256/3 = 86 (decimal) 6 bit nibbles, which is
1990 * $56$ (hex) nibbles. When these values are read back
1995 * off the disk, the reverse is performed to reassemble
2000 * the data bytes which were written out to the disk.

1996

C6A6- A8 5A 1910 ISDATA LDY $56 Set up for 'left over' nibbles.
C6A6- 04 3C 1915 MOREDATA STY TEMP1
C6AA- BC BC C0 1920 DATA1 LDY DISKDATA,X Read a byte.
C6AD- 16 FB 1925 BPL DATA1 Wait for ready.
C6AF- 5A D8 @2 1930 EOR TABLE1,Y Untranslate byte. (actually uses
C6B2- A4 3C 1935 LDY TEMP1 TABLE3 due to value of Y).
C6B4- BB 1940 DEY Get offset into table.
C6B5- 99 00 @3 1945 STA TABLE2,Y Store for use later.
C6B8- D8 EE 1950 BNE MOREDATA Loop if more to go.
C6BA- 04 3C 1955 MOREDAT2 STY TEMP1 Save zero.
C6BC- BC BC C0 1960 DATA2 LDY DISKDATA,X Read a byte.
C6BF- 16 FB 1965 BPL DATA2 Wait for ready.
C6C1- 59 D6 @2 1970 EOR TABLE1,Y Untranslate byte as above.
C6C4- A4 3C 1975 LDY TEMP1 Get buffer offset.
C6CB- 91 26 1980 STA (POINT),Y Store in buffer.
C6CB- C8 1985 INY Increment pointer.
C6C9- D0 EF 1990 BNE MOREDAT2 Get some more if not done yet.
C6CC- BC BC C0 1995 DATA3 LDY DISKDATA,X Read a byte into Y. (Checksum)
C6CE- 10 FB 2000 BPL DATA3 Wait for ready.
C6C8- 59 D6 @2 2005 EOR TABLE1,Y Untranslate.
C6D3- 98 B7 2010 DDAGAIN BNE GETADDR Should be zero, else try again.
C6D5- A0 @0 2015 LDY #$00 Set up pointer in Y.

C6D7- A2 56 2020 DECODE LDX #$56 Set up counter for 'left over'
C6D9- CA 2025 DECODE2 DEX
C6DA- 30 FB 2030 BMI DECODE
C6DC- B1 26 2035 LOA (POINT),Y Get a byte from buffer.
C6DE- 5E 00 @3 2040 LSR TABLE2,X Attach 2 bits from 'left over'
C6E1- 2A 2045 ROL to reassemble correct byte.
C6E2- 5E 00 @3 2050 LSR TABLE2,X
C6E5- 2A 2055 ROL
C6E6- 91 26 2060 STA (POINT),Y Store back into buffer.
C6E8- C0 2065 INY
C6F9- D8 EE 2070 BNE DECODE2 Do all 256 bytes.
C6EB- E6 27 2075 INC POINT+1 Increment buffer pointer.
C6ED- E6 30 2080 INC SECTOR Increment sector number.
C6EE- A5 30 2085 LDA SECTOR First byte in buffer specifies
C6F1- CD 00 @8 2090 CMP BUFFER if any more sectors are to be
C6F4- A6 28 2095 LDX SLOT16 read in.
C6F6- 90 DB 2100 BCC DDAGAIN If so, go get them.
C6FB- 4C 01 @0 2105 JMP BOOT2 Else execute second stage boot.

SYMBOL TABLE

C5E5- ADDR1 C68A- DRIVE0 C6B7- READ1
C5E7- ADDR2 C65C- GETADDR C66F- READ2
C571- ADDR3 C65D- GETFIELD C6B5- READMORE
FF58- APPLERTS C663- ISADDR C63D- RECAL
C680- BOOT C6A6- ISDATA C63D- SECTOR
C6B1- BOOT2 C686- LOOP1 #02B- SLOT16
C6B0- BUFFER C614- LOOP2 #010- STACK
C633- CHECK1 C61E- LOOP3 #206- TABLE1
C6AA- DATA1 C6BA- MOREDATA #038- TABLE2
C6CC- DATA2 C6A8- MOREDATA #036- TABLE3
C6CC- DATA3 C6A9- MOTORON #03C- TEMP1
C6D7- DECODE C6B0- PHASEOFF #040- TEMP2
C6D9- DECODE2 C6B1- PHASEON #041- TRACK
C6DC- DISKDATA #026- POINT FC8B- WAIT
C6D3- DDAGAIN C68E- 07L

#000 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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NOTE: 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.

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

Adventure International:  
Eliminator 0-21, Addr=D5 AA 96
  SECTMOD [F=16,C=OFF,T=03,S=00]
  Change address 2E from 20 to EA
  Change address 2F from 30 to EA
  Change address 30 from 73 to EA

Rear Guard 0-22, Addr=D5 AA 96
  SECTMOD [F=16,C=OFF,T=03,S=03]
  Change address 00 from 4C to 6F

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+ = 0E
  SHIFT N- = 00
  FINDMAX = 03

ADD SOFTWARE
Super Packman V3.0 * A-E, Addr=DD AD DA

AMERICAN EDUC COMPUTER
Micro-Read 0-2, Addr=D5 AA 96
  4-22, Addr=F7 A8 D5
  03-03, Addr=F7 A8 D5
  Micro-Read 1-3, Addr=D5 AA 96

Apple Computer:
VisiCalc /-0-22/, Addr=D5 AA 96
Apple Writer //0-22/, Addr=D5 AA 96
Apple Logo 0-22, Addr=D5 AA 96
  SYNC SIZ=0A, MATCH NUM=0A
  1-1, Addr=0E 09 EE
  NIBBLE COUNT
  FIND MAX=03
  SHIFT N+ = 0B
  SHIFT N- = 00

Apple Writer II -- 0-22, Addr=D5 AA 96 (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=03,S=00]
  Change address 79 from 43 to EA
  Change address 7A from 41 to EA
  Change address 7B from 64 to EA

ARTSCI INC.
Magic Window 0-0, Addr=FC FF FF
Magic Mailer 1-22, Addr=D5 AA 95
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 95
Temple of Apshai 0-0, Addr=D5 AA 95
  3-22, Addr=D5 AA 96
Star Warriors 0-22, Addr=DS AA 95
Hellfire Warrior
Rescue At Rigel
Avante-Garde Creations
Zero Gravity Pinball 0-22, Addr=D5 AA 95
Hi-Res Golf
Hi-Res Secrets 0-22, Addr=D5 AA 96
Air Traffic Cont. 0-22, Addr=D5 AA 95
Jump Jet 0-21, Addr=D5 AA 96
  22-22, DATAMOVER

ADD SOFTWARE
Super Puckman 0-0, Addr=D5 AA 95
  1-1, Addr=DD AD DA

BPI: (REVISED)
Accounting 0-22, Addr=D5 AA 96
  System
  FIX AMNT=04, GAPBYTE=C8
  GLOBAL MOD BYTE D972 from 03 to 00
  11-11, In=AD FB E6 FF E6
Broderbund Software:

Apple Panic 0-D
Genetic Drift 0-0. Addr=DS AA B5 1-3. Addr=BB DS BB 4.5-6 by 1.5 7.5-8.5 D-D. Addr=DD DS BB E.5-12.5. Addr=AD BS DE

Space Quarks 0-0. Addr=DS 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=DS 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=DS AA B5
Tawala's Last 0-22. Addr=DS AA B5
Redoubt

Budco:

Raster Blaster 0-0. Addr=DS AA 96, SYNC DATA M1N=18, DATA M1X=40 5-11 by 4. Addr=AD DE, DATA M1N=13, SYNC 6-12 by 4. ADDR=SYNC 7.5-5.5 by 4...SYNC 1.5-3.5 by 2...SYNC

Pinball
Constructor 0-5. Addr=DS AA 96 8-E 11 13-1B

CALIFORNIA PACIFIC
Ultima 0-22. Find Max = 08
Bill Budge's Space Album 0-0. Addr=DS AA B5 01-0B. Addr=DS AA AD

Cavalier Computer:

Microwave 0-22. Addr=DS AA 96
SECTMOD [F=16, C=OFF, T=02, S=01] Change address 0A from 09 to AD Change address DB from 6D to ÕB Change address DC from 0D to 01 Change address DD from 7E to 00

Central Point Software:

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

C. P. U. Software:

Oil Rig 0-0. Addr=DS AA 96 1-22. Ins=9C AC AB AB AB

Continental Software:

Ins=DF EA EB F7, SYNC SIZ=0A


3-D Skiing 0-22. Addr=DS AA B5

Data Most:

County Fair 0-22. Addr=DS 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=DS AA B5
(revised) SECTMOD [F=13, C=OFF, S=01, T=00] Change address 39 from 38 to 18

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

Canyon Climber 0-22. Addr=DS AA 96
SYNC SIZ=0A, FIX AMNT=04
11-17 SECTMOD [F=16, C=OFF, T=00, S=01] Change address 4B from 96 to 04 Change address 49 from 9B to 09

Space Kadet 0-22. Addr=DS AA 96

Mars cars Override Standardizer

Crazy Maze

A Round About 0-16. Addr=DS AA 96
11.5-0.5 Override Standardizer

Tax Beater 0-22. Addr=DS AA 96

REAP SECTMOD [F=16, C=OFF, T=0, S=03] Change address 42 from 38 to 18
Money Muncher **0-22**...........Addr=DS AA 96
Tobway, Aztec
Thoralian Tunnels

Data Soft:
Dung Beetles ------ **0-0**...........Addr=DS AA B5
1-1...........Addr=F$ 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 DS AA 96 FF
NOTE: Write-protect before booting.

DEPT OF NATURAL SCIENCES, ORU
Nutrichoke-81 **** **0-22**...........Addr= DS AA 96

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

Algebra I ********** **0-22**...........Addr=DS AA B5
Empire I World **** **0-22**...........Addr=DS AA 96
Builders
3-3...........Nibble Count

Prisoner II ********** **0-22**...........Addr=DS AA 96
SECTMOD [F=16,C=ON,T=1F,S=0E]
  Change address DS from AD to 2F
  Change address D6 from 99 to AF
  Change address D7 from F8 to 32

Rendezvous ********** **0-22**...........Addr=DS AA 96
OVERIDE NIBBLE FILTER

The Terrorist **** **0-22**...........Addr= DS AA B5
Space I
Space II

FRONTIER COMPUTING
Adventure ********** **0-22**...........Addr=DS AA 96
(colessal cave)

Gebelli Software:
Firebird --------- **0-0**...........Addr=DD AD DA, SYNC
1.5-B.5.........SYNC

Hayden
Sargon II ********** **0-2**...........Addr=DS AA B5
4-1A...........Addr=DS AA F7
Reversal ********** **0-0** ...........Addr= DS AA 96
1-15...........Addr= DS AA B5
3.5-3.5...........Addr= DS AA B5

Highland Computer:
Mummies Curse **** **0-22**...............Addr= DS AA 96

Howardsoft:
Tax Preparer --------- **0-22**.........Addr=DS AA 96

Howard W. Sams
P.D.O. Data ********** **0-22**...........Addr=DS AA 96

IDS:
Prism Print ********** **0-21**.........Addr=DS AA 96
  Overide Standardizer
SECTMOD [F=16,C=ON,T=21,S=001]
  Change address 27 from FB to 22

Infocus:
Deadline --------- **0-22**...........Addr=DS AA 96
StarCross ********** **0-22**.........Addr=DS AA 96
Zork 1,11 ********** **0-22**.........Addr=DS AA 96
Suspended

INFORMATION UNLIMITED
Easy Writer Pro. ** **0-22**...........Addr=DS AA B5

Innovative Design Software:
Pool 1.5 --------- **0-15**...........Addr=DS AA B5
1E-21
SECTMOD [F=13,C=OFF,T=08,S=07]
  Change address 6A from 8D to 68
SECTMOD [F=13,C=OFF,T=00,S=03]
  Change address 63 from 3B to 1B

Inssoft:
Electric Duet **0-22**..........Addr=DS AA 96
  Ins= DE AA EB
  Overide Standardizer
  Fix Amt=04 Sync Siz=0A

Graforth II ****** **0-22** ...........Addr= DS AA 96

Int'l Software MKT
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 D8 to EA
  Change Address 5C from 03 to EA

LJK Enterprises:
Letter Perfect ---- **0-22**...........Addr=DS AA B5
Learning Company
Bumble Games 0-22............Addr=D5 AA 96
Bumble Plot NOTE: Write Protect before booting!
Rocky's Boots
Jugger'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
16 SECTOR
SECTMOD [F=13,C=OFF,S=03,T=01]
Change address 63 from 38 to 18
SECTMOD [F=13,C=OFF,S=03,T=02]
Change address CB from 23 to 2E

Magnum Soft:
Tunnel Terror 0-0............Addr=D5 AA B5
1-12............Addr=D6 AA B5
IN=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=01,S=01]
Change address 5D from 01 to 7B
Change address 6E from 6A 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 A4 from 4C to 8A
Change address 85 from BE to 9E
Change address A6 from AE to B7

Invoice Factory 0-22............Addr=D5 AA 96
Jigsaw 0-0............Normal
1-9............Addr=D3 96 F2

Visibleblend 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 9E
Change Address A6 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

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

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 ********** 0-22........ 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
19-19 ........ Addr=D5 EF F7
Find Max=03
Shift N=00 Shift N=00

Expediter II ------- 0-22........ Addr=D5 AA 96
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
ERASE DEST TRACKS
Hires Adv #2 ---- 0-22........ Addr=D5 AA B5
ERASE DEST TRACKS
Paddle Graphics ---- 0-23........ Addr=D5 AA B5
Hires Soccer ------ 0-22........ Addr=D5 AA B5, SYNC
Thriology ------- 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 99 from A8 to 60
Marauder ********** 0-22........ Addr=D5 AA 96, OVERRIDE STANDARDIZER
SECTMOD [F=16,C=ON,T=11,S=07]
Change Address 99 from A8 to 60
Pegasas II ------- 0-22........ Addr=D5 AA 95
ERASE DEST TRACKS
Pegasas II ******** 0-22........ Addr=D5 AA 96
3-3 ........ Addr=EF BF DF
Find Max=03
Shift N=00 Shift N=00

ScreenWriter II --- 0-22........ Addr D5 AA 96
(REVISION)
Sync Size=0A, Fix Amt=00
SECTMOD [F=16,C=ON,T=03,S=00]
Change Address 94 from 28 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 28 to EA
4E from 00 to EA
4F from 60 to EA

Softporn ---------- 0-22........ Addr=D5 AA 95
Adventure 3.2 --- ERASE DEST TRACKS
Softporn ------- 0-22........ Addr=D5 AA 96
Adventure 3.3 --- ERASE DEST TRACKS
Softporn ********** 0-22 ........ Addr=D5 CF F7
3-3 ........ Addr=D5 EF F7
Find Max=03
Threshold -------- 0-22........ Addr=D5 AA 96
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
Time Zone (V1.0) --- 0-22........ Addr=D5 AA 96, "OVERRIDE STANDARDIZER"
than Disk A ---- SECTMOD [F=16,C=ON,T=03,S=05]
then Disk A ---- SECTMOD [F=16,C=ON,T=03,S=03]
Disks A-L --------- 0-22........ Addr=D5 AA 96, "OVERRIDE STANDARDIZER"
Cannonball Blitz --- 0-22........ Addr=D5 AA 96
SECTMOD [F=16,C=ON,T=17,S=03]
Mouskattack ------ 0-22........ Addr=D5 AA 96
SECTMOD [F=16,C=ON,T=18,S=03]
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 6B
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
(REVISIED)
SECTMOD [F=16, C=ON, T=21, S=00]
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
(REVISIED)
SECTMOD [F=16, C=ON, T=20, S=00]
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=00]
Change address 09 from 03 to 06

Sabotage ********** 0-22 ......... Normal
Alien Rain

Snuggle ********** 0-22 .......... Addr=D5 AA B5
Time Zone VI.1 **** 0-22 .......... Addr=D5 AA 96
SECTMOD [F=16, C=ON, T=03, S=00]
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=00]
Change address 33 to EA
Change address 36 to EA
Change address 37 to EA
Change address 04 to 06
SECTMOD [F=16, C=ON, T=05, S=00]
Change address 90 to 00
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 @ * 0-22 .......... Addr=D5 AA 96
Cross Fire ********** 0-22 .......... Addr=D5 AA 96
EREASE DEST TRACKS

Ultima II ********** 0-22 .......... Addr=D5 AA 96
Ins= D5 AA AD
OVERIDE SYNC CONVERT
OVERIDE NIBBLE FILTER
SECTMOD [F=16, C=ON, T=3, S=0C]
Change Address B4 from to EA
Change Address B5 from to EA
Change Address B6 from to EA

The Dark Crystal # 0-22 .......... Addr=D5 AA 96
DISK 1, SIDE 1 SECTMOD [F=16, C=ON, T=8, S=08]
Change F3 from 8D to 68

The Dark Crystal # 0-22 .......... Addr=D5 AA 96
Disk 1A SECTMOD [F=16, C=ON, T=5, S=F3]
Change B9 from 20 to EA
Change B9 from F0 to EA
Change AA from 5F to EA

Tazxon **************** 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:
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 85
Sync Siz=#0A
1-22 ............ Addr=04 AA 96
Zoom Graphics **** 0-22 by 2. .... Addr=D5 AA 96
2nd Edition Ins=DD AA ED 85
1-21 by 2. .... Addr=04 AA 96
N O T E: Write Protect before booting!!

Adventures In Time # 0-C .......... Normal
Birth of the **** 0-9 .......... Normal
Phoenix
Sherwood Forest *** 0-0. ..........Addr=DF AA 96
               Instr=EA AA EB 96
               1-1E. ..........Addr=04 AA 96
               Override Standardizer

Must Write Protect before Booting!!

Picadilly Software:
Suicide ----------- 0-0. ..........Addr=DF AA B5
11.5-22 by 1.5. Addr=DF AD DE
Star Blaster ------- 0-0. ..........Addr=DF AA 96
7-20 by 1.5. Addr=DF AD DE

Falkons ************* 0-0. ..........Addr=DF AA B5
1.5-4.5x1.5. Addr=DF AD DE
5.5-5.5x1
7-4x1
B.5-E.5x1.5
10-12x1
13.5-14.5x1
16-19x1.5
1A-18.5x1.5

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

Quality Software:
Bag of Tricks ***** 0-0. ..........Addr=DF AA B5, Instr=DF AA EF EC
SYNC SIZE=0A
1-15. ..........Addr=DF AA B5 or D6 AA 95

Bag of Tricks ****** 0-0. ..........Addr=DF AA B5, SYNC SIZE=0A
Instr=DF AA AB F7
1-15. ..........Addr=D6 AA B5

RAINBOW COMPUTING:
Stellar Trek ************ 0-22 ..........Addr=DF AA 96

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

Grand Prix

Sensible Software:
Image Printer ***** 0-2. ..........Addr=DF 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 3A from 2C to 4C
Change address 28 from 50 to 5D
Change address 26 from 57 to 84

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

The Bug ************* 0-0. ..........Normal
Gap Size=10
16.5-16.5

Disk Recovery V1.6 ***** 0-22. ......Addr=DF AA 96
Disk Organizer V2.2 1981 (error on trk 1 O.K.)

Sentient Software
Gold Rush -------- 0-22. ..........Addr=DF AA 96

Cyborg ************* 0-22. ..........Addr=DF AA 96

Dos-Topos
Instr=AB AB AB

Silicon Valley Software:
Word Handler II ---- 0-0. ..........Addr=DF AA 96
11-22
1-C. ..........Addr=FF DF DE

Word Handler II *** 0-6C. ..........Addr=FF DF DE
11-22

Sirius Software:

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

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

NOTE: Errors will begin to occur somewhere between track 5.5 and track 13.5, depending on the particular disk. This is normal.

Escape From ******* 0-2. ..........Addr=DF AA 96

Rugistein 3-21. ..........Addr=DF AA F7
22-22. ..........Data Move

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

24
Sneakers  
\( 0-0 \)............Addr=DD AD DA, SYNC
1.5-E.5............SYNC
D.5-D.5............Addr=DS AA B5, SYNC

Gamma Goblins  
\( 0-0 \)............Addr=DD AD DA, SYNC
1.5-B.5............SYNC
D.0............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 BS D5 AA
Outpost  
\( 0-0 \)............Addr=DD AD DA, SYNC
1.5-9.5............SYNC
B.5-B.5............Addr=DS AA AD, DATA MAX=25

Pulsar II  
\( 0-C \)
13-19
1A-5-1D.5

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

Twerp  
\( 0-0 \)............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 FF
21-21............Addr=AA, USE NIBBLE COUNT
SYNC SIZE=8A, MATCH NUM=86

Kabul Spy  
\( 0-21 \)............Addr=DS AA 96
(both sides)
SECTOR 1 [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=DS AA 96
(Side 1)
1-21............Addr=DS AA F7
22-22............Addr=AA D5 D5 BD BD
SECTOR 2 [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  
\( 0-21 \)............Addr=DS AA F7
(Side 2)
Dark Forest  
\( 0-22 \)............Addr=DS AA 95
Override Glitch detect

Freefall  
\( 0-B \)............Addr=AD DA DD
20-20............Addr=FE AA D5 D5 FF FB
22-22............Addr=AA D5 D5 FF D6 FF FF
21-21............Addr=AA USE NIBBLE COUNT
SYNC SIZE=8A, MATCH NUM=86

EZ Draw 3.3  
\( 0-B \)............Addr=DS AA 96
0-22
C-6............Addr=BE AB EB

Repton  
\( 0-F \)............Addr=AD DA DD

Wavy Navy  
(Error after 08 o.k.)
Flip Out  
22-22............Addr=AA D5 D5 FF D6 FF FF
21-21............Addr=AA, USE NIBBLE COUNT
SYNC SIZE=8A, MATCH NUM=86

Repton  
\( 0-D \)............Addr=AA DA DD
DATA MAX=25
20-20............Addr=FE AA D5 D5 FF FB
22-22
21-21............Addr=AA FD FF
SYNC SIZE=8A
MATCH NUM=86

Space Eggs  
\( 0-0 \)............Addr=DS AA 95
11-13
2-6............Addr=DS AA B6
14-17............Addr=DS AA F7
18-1A............Addr=F7 AA 95

Sirtech Software

Wizardry  
\( 0-22 \)............Addr=DS AA 96, SYNC, ERASE DEST TRACKS
GAP SIZE=85, SYNC SIZE=8A

Softape:
Pharat  
\( 0-22 \)............Addr=DS AA 96
Draw Poker  
\( 0-22 \)............Addr=DS AA 95
Night Crawler  
\( 0-22 \)............Addr=DS AA 96

SOFTWARE EMPORIUM:
Inferno  
\( 0-22 \)............Addr=DS AA 96

Software Publishing Corp

PFS Graph  
\( 0-0 \)............Addr=93 F3 FC FF
(REVISED)
Insr=93 F3 FC FF
OFFSET=02
SYNC SIZE=8A
1-13............Addr=DS AA 96
PFS/PFS Report **** 0-0 ..........Addr=93 F3 FC FF
(REVISED)
Insr=93 F3 FC FF
OFFSET = 0A
SYNCSIZ = 0A

1-13 ..........Addr=D5 AA 96
Insr=D5 AA 96

NOTE: Write Protect before booting!!

PFS/PFS Report **** 0-13 ..........Addr=D5 AA 96
Override Standardizer
Gap Byte 1=C0, Gap Byte 2=00
Filter=C0-C8 (no inverse)

NOTE: Write Protect before booting!!

PFS Graph ****** 0-22 ..........Addr=D5 AA 96
Override Standardizer
Gap Byte 1=C0, Gap Byte 2=00
Filter=C0-C8 (no inverse)

(For above 2, SYNCSIZ=0A may help)

PFS Files /// ****** 0-22 ..........Addr=D5 AA 96
Insr=DE AA EB
Offset=3

SOFTWARES

Softwar ****** 0-2 ..........Addr=D5 AA 96
4-22 ..........Addr=DE AA 96
3-3 ..........Addr=DE AA 96
Find Max=03
Shift N=00 Shift N=00

Special Delivery Software:

Personal ****** 0-22 ..........Addr=D5 AA 96
Finance Manager
Utopia Graphics 0-22 ..........Addr=D5 AA 96
System
Turn on 3.3 filter
SECTMOD IF=16,0=ON,T=0,S=0
Change address 42 from 38 to 18

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

SPINNAKER

Slooper Troops ****** 0-22 ..........Addr=D5 AA 96
Granit Point Ghost
Fix Alt=04 SYNCSIZ=0A
Missing Dolphin 3-22 ..........Addr=00 AA 96
Keys 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

STONWARE:

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

DB Master ****** 0-5 ..........Addr=D5 AA 96, Sync
Utility pac 01 6.5-22.5, Sync

DB Master 3.02

STRATEGIC SIMULATIONS:

Cartels & 0-0 ..........Addr=D5 AA 96
Cuthroats 2-22 ..........Addr=DE 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 DB 0-22 ..........Addr=D4 AA B7
Guadalcanal ****** 0-22 ..........Addr=D4 AA B7
Tigers In The Snow
Shattered Alliance

OPERATION APOCALYPSE

Germany 1905 0-22 ..........Addr=D5 AA B5
Computer Conflict 0-0 ..........Addr=D5 AA B5
01-22 ..........Addr=D4 AA EB

SUBLLOGIC:

FS-1 0-0
1.5-21 by 1.5 ..Addr=08 AB BF
7-8 RECOMMENDED ERROR CHECK
9.5-9.5 RECOMMENDED ERROR CHECK
Saturn Navigator 6-22 ..........Addr=D5 AA FD, FIND MA1=08
(Errors on $11 and $17 UK)
6.5-6.5 FF FF DS AA, FIND MA1=0C
9-4-0 ..........Addr=D5 AA B5
11-11
Escape 0-22 ..........Addr=D5 AA 96

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Synergistic Software:
Escape from - 0-22......Addr=D5 AA 96, 'OVERIDE STANDARDIZER'
Arcturus
'OVERIDE NIBBLE FILTER'
Apvnture to ***-0-22......Addr=D5 AA 96
Atlantis
'Override Standardizer'
'Override Nibble Filter'
U-Boat Command ****-0-22......Addr=D5 AA 96
'Crisis Mountain ***-0-22......Addr=D5 AA 96, 'Overide Standardizer'
'Override Nibble Filter'
Global Program Editor * 0-22.....Addr= D5 AA 96
Microbe ********** @-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
ULTRASOF
Mask of the Sun ***-0-22......Addr=D5 AA 96
SECTMOD(F=16,C=OFF,T=02,S=00)
Change Address 41 from 9D to EA
Change Address 42 from 9E to EA
Change Address 43 from 9F to EA
SECTMOD(F=16,C=OFF,T=00,S=00)
Change Address 42 from 98 to 10

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)
"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 silientype printer.

DATA PRINTOUT ............ Enhanced printing capability now allows sector data to be printed in ASCII, 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.

OVERSEAS AIRMAIL ADD $3.00

Send Check or Money Order in U.S. Funds to:

COMPUTER applications, Inc.
13300 S.W. 108 Street Circle
Miami, Florida 33186
**Broderbund Software:**

A.E. ******** 0-8 ............ 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 DS
17 - 17 .......... Addr=D5 AA F5
18.5 - 18.5 ...... Addr=DD DA DA
1A - 1A .......... Addr=D5 AA AD
1B - 1B .......... 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=AA 96 BF
1A ................ Addr=BA 89 EE
1B ................ Addr=DF 8B BD
1C ................ Addr=DB D7 07
1D ................ Addr=BE AE DB
1E ................ Addr=BE EE ED
1F ................ Addr=DB FA BD
20 ................ Addr=DE 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=El]
04 (BA) 28 to EA/(OB) D7 to EA/(OC) 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/ (79) 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.

**Artsie, Inc.**

Acewriter II ** 0-22 ............ Addr=D5 AA 96
SYNC SIZ=0A, FIX AMNT=04

Broderbund Software:  
A.M. D-2 SYNC
3-11 NORMAL
12-23 (SPiral TRACKS)
  12-23 (BY 5 SYNC)
  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
23-23 ............ Addr=D5 AA AA
Disk 1 1-22 ............ Addr=D6 AB 96
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
Laxxon 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:
Homework 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 II
AUTO-LOAD FILES

NIBBLES AWAY II
AUTO-LOAD FILES