FILSYS SRC 27.5

```
 10 0000          ;*****************************************************
 20 0000          ;
 30 0000          ;       PET FILE SYSTEM
 40 0000          ;      MAINLINE ROUTINES  ("FILSYS SRC")
 50 0000          ;
 60 0000          ;*****************************************************
 70 0000          ; COPYRIGHT 1978 1979 1980, LJ SHUSTEK, HJ SAAL
 80 0000          ;
 90 0000          ;      JUMP VECTOR DEFINITIONS
100 0000          ;
110 9080          *=FILSYS
120 9080          ;
130 9080          ; ADD ";" ON ORGS MARKED *M TO ADD MAPPER
140 9080          ;
150 9006          *=FREAD                   *M
160 9006 4C3991             JMP FLREAD
170 9009          *=FWRITE                  *M
180 9009 4C7691             JMP FLWRIT
190 900C          *=FWRITD                  *M
200 900C 4C7C91             JMP FLWRT2
210 900F          *=FDELET                  *M
220 900F 4C6C92             JMP FLDELT
230 9012          *=FRENAM                  *M
240 9012 4CA592             JMP FLRENA
250 9015          *=FALLO                   *M
260 9015 4C7191             JMP FLALLO
270 9018          *=FOPEN                   *M
280 9018 4C1793             JMP FLOPEN
290 901B          *=FBLKRD
300 901B 4C3593             JMP FLBKRD
310 901E          *=FBLKWR
320 901E 4C4493             JMP FLBKWR
330 9021          *=FDLIST                  *M
340 9021 4C8493             JMP DLIST
350 902D          *=DIRERR
360 902D 4C3A95             JMP ERR6
370 9030          ;
380 9080                   *=FILSYS
390 9080 5095              .WORD END
400 9082          ;-----------------------------------------------------
410 9082          ;      *** DIRECTORY SEARCH ROUTINES ***
420 9082          ;
430 9082          ; DSRCHI: INITIALIZE AND RETURN 1ST ENTRY. (THE VOLUME
440 9082          ;         DESCRIPTOR IS NOT RETURNED, BUT IS IN THE BUFFER.)
450 9082          ; DSRCHN: RETURN SUBSEQUENT ENTRIES
460 9082          ;
470 9082          ; LOADS A WITH FTYPE, COMPARED TO FLAST
480 9082          ;
490 9082          ; DIROFF/DIRBLK ALWAYS DESCRIBE THE DIR ENTRY BEING EXAMINED.
500 9082          ; PDBLK POINTS TO THE BLOCK IN CORE CONTAINING THAT ENTRY.
510 9082          ; SRCHCB COUNTS DOWN THE # OF DIR ENTRIES.
520 9082          ;-----------------------------------------------------
530 9082 A9AA      DSRCHI LDA #DBUF/256
540 9084 8550             STA PDBLK+1
550 9086 203090           JSR WMOVE  START WITH BLOCK# 0
560 9089 56               .BYTE K0,DIRBLK,0
560 908A 54
560 908B 00
570 908C A910             LDA #DBNUMS COUNT DIR BLKS
580 908E A540             LDA DSID   TEST DISK SIZE
```

add CR to DRLIST

```
590 9090 F002           BEQ SRCH8  1-SIDED...
600 9092 A920           LDA #DBNUMD  (FOR 2-SIDED)
610 9094 8D3CAF  SRCH8  STA SRCHCB
620 9097        ;
630 9097        ; READ THE 1ST 4 BLOCKS AND VALIDATE THE VOLUME LABEL
640 9097        ;
650 9097 20E390         JSR SRCHRD  READ 4
660 909A A010           LDY #VDTYP
670 909C B14F           LDA (PDBLK),Y  TYPE OF 1ST ENTRY
680 909E C910           CMP #FVDESC
690 90A0 F003           BEQ *+5
700 90A2 4CDD94             JMP DIRER3  NO LABEL
710 90A5 A920   SRCHSK LDA #DELEN  START WITH 2ND ENTRY
720 90A7 D005           BNE SRCH3 (UNC)  RETURN IT TO CALLER
730 90A9        ;
740 90A9        ;       READ THE NEXT 4 BLOCKS
750 90A9        ;
760 90A9 20E390 SRCH1  JSR SRCHRD  READ THEM
770 90AC A900    SRCH2  LDA #0  OFFSET IN DIR. BLK
780 90AE 8553    SRCH3  STA DIROFF
790 90B0 18             CLC
800 90B1 6910           ADC #DETYP
810 90B3 A8             TAY
820 90B4 B14F           LDA (PDBLK),Y  GET TYPE FIELD
830 90B6 C900           CMP #FLAST
840 90B8 60             RTS RETURN WITH CC SET
850 90B9        ;
860 90B9 A553    DSRCHN LDA DIROFF
870 90BB C9E0           CMP #DELEN*DENUM-DELEN
880 90BD F005           BEQ SRCH4  LAST ENTRY
890 90BF 18             CLC         GO TO NEXT ENTRY
900 90C0 6920           ADC #DELEN
910 90C2 D0EA           BNE SRCH3 (ALWAYS BRANCHES)
920 90C4 E654    SRCH4  INC DIRBLK  NEXT DIR BLK
930 90C6 D002           BNE SRCH5
940 90C8 E655           INC DIRBLK+1
950 90CA CE3CAF SRCH5   DEC SRCHCB  COUNT BLKS
960 90CD D003           BNE SRCH6
970 90CF 4C3E95         JMP ERR4  DIRECTORY FULL
980 90D2 E650    SRCH6  INC PDBLK+1 POINT TO NEXT BLOCK IN CORE
990 90D4 A903           LDA #3    EVERY FOUR TIMES
1000 90D6 2454          BIT DIRBLK    REREAD FROM DISK
1010 90D8 D0D2          BNE SRCH2    NO, IN CORE
1020 90DA A550          LDA PDBLK+1   RESET TO BEGINNING
1030 90DC 18            CLC
1040 90DD 69FC          ADC #256-4
1050 90DF 8550          STA PDBLK+1
1060 90E1 D0C6          BNE SRCH1    READ AGAIN
1070 90E3       ;
1080 90E3       ;  READ 4 DIRECTORY BLOCKS
1090 90E3       ;
1100 90E3 203090  SRCHRD JSR WMOVE  READ 4 DIR. BLKS
1110 90E6 54            .BYT DIRBLK,DBLK
1110 90E7 42
1120 90E8 4F            .BYT PDBLK,DADR
1120 90E9 46
1130 90EA 59            .BYT K400,DSIZ,0
1130 90EB 44
1130 90EC 00
1140 90ED 203390         JSR DREAD
1150 90F0 F003           BEQ SRCHZ
1160 90F2 4C4495         JMP ERR1  DISK ERROR
1170 90F5 60     SRCHZ   RTS
1180 90F6       ;
1190 90F6       ; LOOKUP FNAME/FTYPE IN THE DIRECTORY
1200 90F6       ; SET CARRY IF SUCCESS
```

```
1220 90F6 208290  LOOKUP JSR DSRCHI
1230 90F9 F00F           BEQ RETF LAST ENTRY:FAIL
1240 90FB C901    LOOK2  CMP #FEMPTY
1250 90FD F006           BEQ LOOK3 EMPTY ENTRY:SKIP IT
1260 90FF 200C91         JSR CNAME  COMPARE NAME AND TYPE
1270 9102 9001           BCC LOOK3  NO MATCH
1280 9104 60             RTS RETURN SUCCESS
1290 9105 20B990  LOOK3  JSR DSRCHN
1300 9108 D0F1           BNE LOOK2
1310 910A 18      RETF   CLC RETURN FAILURE
1320 910B 60             RTS
1330 910C        ;
1340 910C        ; CNAME  COMPARE FNAME/FTYPE TO DIR ENTRY
1350 910C        ;        SET CARRY IF MATCH
1360 910C        ;
1370 910C        ; AN ASTERISK TERMINATES NAME MATCH
1380 910C        ; A QUESTION MARK MATCHES ANY CHARACTER
1390 910C        ; FTYPE "FWILD" MATCHES ANYTHING
1400 910C        ;
1410 910C A200    CNAME  LDX #0
1420 910E A453           LDY DIROFF
1430 9110 200693  CNAMEL JSR GFNCH
1440 9113 C92A           CMP #'*
1450 9115 F00E           BEQ CNAMET
1460 9117 C93F           CMP #'?
1470 9119 F004           BEQ CNAMEM
1480 911B D14F           CMP (PDBLK),Y
1490 911D D018           BNE CNAMEF
1500 911F C8      CNAMEM INY
1510 9120 E8             INX
1520 9121 E010           CPX #DENAML
1530 9123 D0EB           BNE CNAMEL
1540 9125 A553    CNAMET LDA DIROFF COMPUTE INDEX TO TYPE
1550 9127 18             CLC
1560 9128 6910           ADC #DETYP
1570 912A A8             TAY
1580 912B A533           LDA FTYPE
1590 912D C9F0           CMP #FWILD
1600 912F F004           BEQ CNAMES  WILD TYPE MATCH
1610 9131 D14F           CMP (PDBLK),Y
1620 9133 D002           BNE CNAMEF
1630 9135 38      CNAMES SEC    SUCCESS
1640 9136 60             RTS
1650 9137 18      CNAMEF CLC    FAILURE
1660 9138 60             RTS
1670 9139        ;---------------------------------------
1680 9139        ;
1690 9139        ; READ A FILE
1700 9139        ;
1710 9139        ;    INPUT: DRIVE,FNAME,MEMAD,FTYPE
1720 9139        ;   OUTPUT: MEMSIZ,RCODE,FNAME,FTYPE
1730 9139        ;
1740 9139        ;---------------------------------------
1750 9139 207B94  FLREAD JSR SETUP
1760 913C 20F690         JSR LOOKUP
1770 913F B003           BCS FRD1
1780 9141 4C4295         JMP ERR2  FILE NOT FOUND
1790 9144 201195  FRD1   JSR SETFN  RETURN TRUE NAME/TYPE
1800 9147 20FD94         JSR SETD
1810 914A 203090  FRD3   JSR WMOVE  TENTATIVELY USE
1820 914D 46             .BYTE DADR,CMEMAD,0  DIR ADDR
1820 914E 3A
1820 914F 00
1830 9150 A538           LDA MEMAD
1840 9152 0539           ORA MEMAD+1  IF MEMAD <> 0
```

```
1850 9154 F006           BEQ FRD2  THEN USE IT INSTEAD
1860 9156 203090         JSR WMOVE
1870 9159 38             .BYTE MEMAD,CMEMAD,Ø
1870 915A 3A
1870 915B 00
1880 915C 203090  FRD2   JSR WMOVE
1890 915F 46             .BYTE DADR,MEMAD     RETURN DIR ADDR
1890 9160 38
1900 9161 44             .BYTE DSIZ,MEMSIZ    AND SIZE
1900 9162 35
1910 9163 3A             .BYTE CMEMAD,DADR,Ø SET READ ADDR
1910 9164 46
1910 9165 00
1920 9166 203390         JSR DREAD  READ THE FILE
1930 9169 F003           BEQ FRDXIT
1940 916B 4C4495         JMP ERR1  DISK ERROR
1950 916E 4C6B92  FRDXIT JMP EXIT
1960 9171        ;-----------------------------------------------------
1970 9171        ;
1980 9171        ; WRITE/ALLOCATE A FILE
1990 9171        ;
2000 9171        ;    INPUT: DRIVE,FNAME,MEMAD,MEMSIZ
2010 9171        ;           REPFLG,FTYPE
2020 9171        ;   OUTPUT: RCODE
2030 9171        ;
2040 9171        ;  ALTERNATE ENTRY FLWRT2 TAKES THE CURRENT LOCATION FROM
2050 9171        ;    CMEMAD, BUT WRITES MEMAD TO THE DIRECTORY.
2060 9171        ;  ALTERNATE ENTRY FLALLO ALLOCATES AND WRITE THE DIRECTORY,
2070 9171        ;    BUT DOESN'T WRITE ANY DATA
2080 9171        ;
2090 9171        ;-----------------------------------------------------
2100 9171 A901   FLALLO LDA #1       FALOFL="ALLOCATE, NOT WRITE"
2110 9173 4C8091        JMP FLWRT3
2120 9176        ;
2130 9176 203090 FLWRIT JSR WMOVE  CURRENT LOCATION
2140 9179 38            .BYT MEMAD,CMEMAD,Ø  IS MEMAD
2140 917A 3A
2140 917B 00
2150 917C        ;
2160 917C A900   FLWRT2 LDA #Ø       FALOFL="ALLOCATE AND WRITE"
2170 917E 8537          STA MEMSIZ+2  ALSO ZERO HIGHEST BYTE OF SIZE
2180 9180 8D5CAF FLWRT3 STA FALOFL
2190 9183        ;
2200 9183        ; MAKE ONE PASS THROUGH THE ENTIRE DIRECTORY TO:
2210 9183        ;   1. CREATE THE ALLOCATION BIT MAP
2220 9183        ;   2. LOOK FOR AN EXISTING FILE WITH THE SAME NAME
2230 9183        ;   3. LOOK FOR AN EMPTY DIRECTORY SLOT IN CASE WE NEED IT
2240 9183        ;
2250 9183 207B94          JSR SETUP
2260 9186 A000            LDY #Ø  ZERO THE BITMAP (MAX SIZE FOR DOUBLE SIDED)
2270 9188 98              TYA
2280 9189 9900AE  SETL1   STA BMAP,Y
2290 918C 88              DEY
2300 918D D0FA            BNE SETL1
2310 918F A034            LDY #TBNUMD/8-256
2320 9191 99FFAE  SETL2   STA BMAP+256-1,Y
2330 9194 88              DEY
2340 9195 D0FA            BNE SETL2
2350 9197 8D60AF          STA FDIRFL  ZERO SEARCH RESULT FLAGS
2360 919A 8542            STA DBLK  ALLOCATE THE DIRECTORY AT
2370 919C 8543            STA DBLK+1  TRK Ø, SEC Ø
2380 919E A210            LDX #DBNUMS
2390 91A0 A540            LDA DSID   WHICH DISK SIZE?
2400 91A2 F002            BEQ FWRADI
2410 91A4 A220            LDX #DBNUMD  DOUBLE
2420 91A6 864B    FWRADI  STX NBLKS
```

```
2440 91AA 854C            STA NBLKS+1
2450 91AC 202A90          JSR DMARK  ALLOCATE THE DIR
2460 91AF 208290          JSR DSRCHI  START THE SEARCH
2470 91B2 F02D            BEQ FWRFT1  LAST ENTRY (HWM)...
2480 91B4 C901     FWRSL  CMP #FEMPTY
2490 91B6 D009            BNE FWR2
2500 91B8 AD60AF          LDA FDIRFL  EMPTY ENTRY: DO WE NEED ONE?
2510 91BB D01F            BNE FWRNXD  NO (FOUND THE FILE OR ANOTHER EMPTY ALREAD
Y)
2520 91BD A901            LDA #$01    YES: FLAG 'FOUND EMPTY'
2530 91BF D011            BNE FWRSAD
2540 91C1 C910    FWR2    CMP #FVDESC
2550 91C3 F017            BEQ FWRNXD  SKIP VOLUME LABEL
2560 91C5 20FD94          JSR SETD  REAL FILE: UNPACK DIR INFO
2570 91C8 202A90          JSR DMARK  SET BITS IN MAP
2580 91CB 200C91          JSR CNAME  COMPARE NAME AND TYPE
2590 91CE 900C            BCC FWRNXD NO MATCH...
2600 91D0 A980            LDA #$80   FLAG: 'FOUND THE FILE'
2610 91D2 A204     FWRSAD LDX #4  SAVE FLAG, BLOCK#, AND OFFSET OF DIR ENTRY
2620 91D4 9D5CAF   FWRSAL STA FDIROF-1,X
2630 91D7 B551            LDA DIROFF-2,X
2640 91D9 CA              DEX
2650 91DA D0F8            BNE FWRSAL
2660 91DC 20B990   FWRNXD JSR DSRCHN  GET NEXT DIR ENTRY
2670 91DF D0D3            BNE FWRSL  CONTINUE UNTIL HWM
2680 91E1          ;
2690 91E1          ; FIGURE OUT WHICH DIRECTORY ENTRY TO USE
2700 91E1          ;
2710 91E1 AD60AF   FWRFT1 LDA FDIRFL  TEST FLAG
2720 91E4 F038            BEQ FWCHR  NEITHER EMPTY NOR RPLACE: USE LAST (HWM) EN
TRY
2730 91E6 AD5DAF          LDA FDIROF  ** USE THE ENTRY WE RECORDED
2740 91E9 8553            STA DIROFF  RESTORE ITS OFFSET
2750 91EB AD5EAF          LDA FDIRBL  RESTORE DIR BLOCK#, AND REREAD THE DIR BLK
2760 91EE AE5FAF          LDX FDIRBL+1  IF IT IS NOT THE LAST ONE READ
2770 91F1 C554            CMP DIRBLK
2780 91F3 D004            BNE FWRRDI
2790 91F5 E455            CPX DIRBLK+1
2800 91F7 F016            BEQ FWRFT2  (SKIP REREAD)
2810 91F9 8554     FWRRDI STA DIRBLK
2820 91FB 8655            STX DIRBLK+1
2830 91FD 203090          JSR WMOVE
2840 9200 54              .BYT DIRBLK,DBLK
2840 9201 42
2850 9202 4F              .BYT PDBLK,DADR
2850 9203 46
2860 9204 57              .BYT K100,DSIZ,0
2860 9205 44
2860 9206 00
2870 9207 203390          JSR DREAD
2880 920A F003            BEQ FWRFT2
2890 920C 4C4495          JMP ERR1  (DISK ERROR)
2900 920F 2C60AF   FWRFT2 BIT FDIRFL  TEST FLAG
2910 9212 100A            BPL FWCHR  NOT REPLACE...
2920 9214 A53C            LDA REPFLG  CHECK "OK TO REPLACE" FLAG
2930 9216 D003            BNE FWRREP
2940 9218 4C4095          JMP ERR3  "FILE ALREADY THERE" ERROR
2950 921B 20FD94   FWRREP JSR SETD  UNPACK THE DIR INFO
2960 921E          ;;;;;; JSR DFREE  FREE THE OLD BLOCKS
2970 921E          ;      UNCOMMENT THE PREVIOUS LINE TO ALLOW REPLACE TO USE OL
D TRKS
2980 921E          ;
2990 921E 2C60AF FWCHR    BIT FDIRFL
3000 9221 3007            BMI FWRSD   REPLACING...
3010 9223 A53C            LDA REPFLG  NOT REPLACING:
```

```
3020 9225 F008          BEQ FWRSD   IF "REP" WANTED, THEN
3030 9227 4C4295        JMP ERR2    "FILE NOT THERE" ERROR
3040 922A           ;
3050 922A           ; ALLOCATE AND WRITE THE FILE
3060 922A           ;
3070 922A 20E392    FWRSD  JSR SETDFN  MOVE FNAME TO DIR ENTRY
3080 922D 203090        JSR WMOVE  MOVE SIZE AND ADDR
3090 9230 35           .BYT MEMSIZ,DSIZ
3090 9231 44
3100 9232 38           .BYT MEMAD,DADR,Ø
3100 9233 46
3100 9234 00
3110 9235 A537          LDA MEMSIZ+2
3120 9237 8548          STA DSIZM
3130 9239 202095        JSR CNBLKS
3140 923C 202490        JSR DALLO  ALLOCATE ENOUGH BLKS
3150 923F 9003          BCC FWR4
3160 9241 4C3C95        JMP ERR5 NO ROOM
3170 9244 A533      FWR4   LDA FTYPE
3180 9246 8541          STA DTYP
3190 9248 A553          LDA DIROFF MOVE TYPE,BLOCK#,SIZE,ADDR,SIZEM
3200 924A 18            CLC          TO THE DIR. ENTRY
3210 924B 6917          ADC #DETYP+7
3220 924D A8            TAY
3230 924E A208          LDX #DESIZM-DETYP+1
3240 9250 B540      FWRL2  LDA DTYP-1,X
3250 9252 914F          STA (PDBLK),Y
3260 9254 88            DEY
3270 9255 CA            DEX
3280 9256 D0F8          BNE FWRL2
3290 9258 AD5CAF        LDA FALOFL
3300 925B D036          BNE DIRUPD  SKIP WRITE IF FALLO CALL
3310 925D 203090        JSR WMOVE
3320 9260 3A            .BYTE CMEMAD,DADR,Ø
3320 9261 46
3320 9262 00
3330 9263 203690        JSR DWRITE  WRITE THE FILE
3340 9266 F02B          BEQ DIRUPD  UPDATE THE DIRECTORY
3350 9268 4C4495        JMP ERR1
3360 926B           ;
3370 926B           ;  EXIT TO CALLER
3380 926B           ;
3390 926B 60        EXIT   RTS
3400 926C           ;
3410 926C           ;----------------------------------------
3420 926C           ;
3430 926C           ; DELETE A FILE
3440 926C           ;
3450 926C           ;     INPUT: DRIVE,FNAME,FTYPE
3460 926C           ;    OUTPUT: RCODE,FNAME,FTYPE
3470 926C           ;
3480 926C           ;----------------------------------------
3490 926C 207B94    FLDELT JSR SETUP
3500 926F 20F690        JSR LOOKUP
3510 9272 B003          BCS DEL1
3520 9274 4C4295        JMP ERR2  FILE NOT FOUND
3530 9277 201195    DEL1   JSR SETFN  RETURN TRUE FNAME/FTYPE
3540 927A 20FD94        JSR SETD
3550 927D A453          LDY DIROFF ZERO THE ENTIRE ENTRY
3560 927F A220          LDX #DELEN
3570 9281 A900          LDA #Ø
3580 9283 914F      DEL3   STA (PDBLK),Y
3590 9285 C8            INY
3600 9286 CA            DEX
3610 9287 D0FA          BNE DEL3
3620 9289 A553         LDA DIROFF  SET TYPE="EMPTY
```

```
3630 928B 18            CLC
3640 928C 6910          ADC #DETYP
3650 928E A8            TAY
3660 928F A901          LDA #FEMPTY
3670 9291 914F          STA (PDBLK),Y
3680 9293 203090  DIRUPD JSR WMOVE WRITE THE DIR BLK
3690 9296 54            .BYT DIRBLK,DBLK
3690 9297 42
3700 9298 4F            .BYT PDBLK,DADR
3700 9299 46
3710 929A 57            .BYT K100,DSIZ,0
3710 929B 44
3710 929C 00
3720 929D 203690         JSR DWRITE
3730 92A0 F0C9           BEQ EXIT
3740 92A2 4C4495         JMP ERR1  DISK ERROR
3750 92A5         ;-----------------------------------------------------
3760 92A5         ; RENAME A FILE
3770 92A5         ;
3780 92A5         ;    INPUT: DRIVE, FNAME/FTYPE (NEW), FNAME2/FTYPE2 (OLD)
3790 92A5         ;   OUTPUT: RCODE, TRUE OLD NAME IN FNAME2/FTYPE2
3800 92A5         ;-----------------------------------------------------
3810 92A5 207B94  FLRENA JSR SETUP
3820 92A8 20F690         JSR LOOKUP  LOOKUP NEW NAME
3830 92AB 9003           BCC FRN1
3840 92AD 4C4095         JMP ERR3  "FILE ALREADY THERE"
3850 92B0 20CB92  FRN1   JSR FNEXCH  EXCHANGE NAMES
3860 92B3 20F690         JSR LOOKUP  LOOKUP OLD NAME
3870 92B6 B003           BCS FRN2
3880 92B8 4C4295         JMP ERR2  "FILE NOT THERE"
3890 92BB 201195  FRN2   JSR SETFN  RETURN TRUE OLD NAME
3900 92BE 20CB92         JSR FNEXCH  EXCHANGE NAMES
3910 92C1 20E392         JSR SETDFN  MOVE FNAME TO DIR ENTRY
3920 92C4 A533           LDA FTYPE   MOVE FTYPE
3930 92C6 914F           STA (PDBLK),Y
3940 92C8 4C9392         JMP DIRUPD  GO REWRITE THE DIRECTORY BLK
3950 92CB         ;
3960 92CB         ; FNEXCH   EXCHANGE FNAME/FTYPE AND FNAME2/FTYPE2
3970 92CB         ;
3980 92CB A9AF    FNEXCH LDA #FNAME2-1/256  SETUP INDEX PTR
3990 92CD 854A           STA PNTH    (BORROW DISK PTR
4000 92CF A94A           LDA #FNAME2-1*256/256
4010 92D1 8549           STA PNTL
4020 92D3 A011           LDY #DENAML+1  NAME+TYPE
4030 92D5 B622    FNEXCL LDX FNAME-1,Y
4040 92D7 B149           LDA (PNTL),Y
4050 92D9 992200         STA FNAME-1,Y
4060 92DC 8A             TXA
4070 92DD 9149           STA (PNTL),Y
4080 92DF 88             DEY
4090 92E0 D0F3           BNE FNEXCL
4100 92E2 60             RTS
4110 92E3         ;
4120 92E3         ; SETDFN: MOVE FNAME TO DIR ENTRY
4130 92E3         ;         CHK FOR INVALID CHARS
4140 92F3         ;         RETURN OFFSET TO TYPE FIELD OF DIR ENTRY IN Y
4150 92E3         ;
4160 92E3 A200    SETDFN LDX #0  FNAME OFFSET
4170 92E5 A453           LDY DIROFF  DIR ENTRY OFFSET
4180 92E7 200693  SETDF1 JSR GFNCH
4190 92EA C920           CMP #$20    LEGAL CHARS ARE BLANK THRU UNDERSCORE
4200 92EC 900C           BCC SETDFE
4210 92EE C960           CMP #$60
4220 92F0 B008           BCS SETDFE
4230 92F2 C92A           CMP #'*     AND NOT * OR ?
4240 92F4 F004           BEQ SETDFE
```

```
4260 92F8 D003           CMP # ?
4260 92F8 D003           BNE SETDF2
4270 92FA 4C3895  SETDF1 JMP ERR7
4280 92FD 914F    SETDF2 STA (PDBLK),Y  STORE IN DIR ENTRY
4290 92FF C8             INY
4300 9300 E8             INX
4310 9301 E010           CPX #DENAML
4320 9303 D0E2           BNE SETDF1
4330 9305 60             RTS
4340 9306        ;-------------------------------
4350 9306        ; GFNCH     GET FILE NAME CHARACTER
4360 9306        ;
4370 9306        ;    GETS NEXT FILE NAME CHARACTER FROM FNAME FIELD
4380 9306        ;    WILL PAD A FIELD WITH BLANKS
4390 9306        ;      IF TERMINATED (EARLY) BY
4400 9306        ;      NULL (ZERO BYTE) OR
4410 9306        ;      CARRAIGE RETURN (HEX 0D)
4420 9306        ;
4430 9306 B523   GFNCH  LDA FNAME,X    X SET BY CALLER
4440 9308 D008          BNE GFNX       CHECK FOR NULL BYTE
4450 930A E00F   GFBLNK CPX #DENAML-1
4460 930C B002          BCS GFNST   CAN WE OVERWRITE ??
4470 930E 9524          STA FNAME+1,X  ERASE NEXT POSITION
4480 9310 A920   GFNST  LDA #$20    RETURN A BLANK
4490 9312 C90D   GFNX   CMP #$0D    ALSO CHECK CARRAIGE RETURN
4500 9314 F0F4          BEQ GFBLNK
4510 9316 60            RTS
4520 9317        ;-----------------------------------------
4530 9317        ;
4540 9317        ; OPEN A FILE FOR BLOCK I/O
4550 9317        ;
4560 9317        ;   INPUT: DRIVE,FNAME,FTYPE
4570 9317        ;  OUTPUT: RCODE,FNAME,FTYPE,MEMSIZ,FCB
4580 9317        ;
4590 9317        ;-----------------------------------------
4600 9317 207B94 FLOPEN JSR SETUP   INITIALIZE
4610 931A 20F690        JSR LOOKUP  SEARCH DIRECTORY
4620 931D B003          BCS *+5
4630 931F 4C4295            JMP ERR2  FILE NOT FOUND
4640 9322 201195        JSR SETFN   MOVE NAME
4650 9325 20FD94        JSR SETD    MOVE OTHER FIELDS
4660 9328 203090        JSR WMOVE
4670 932B 42           .BYT DBLK,FSTBLK SAVE STARTING BLOCK IN FCB
4670 932C 38
4680 932D 44           .BYT DSIZ,FTSIZ,0  ALSO TOTAL SIZE
4680 932E 35
4680 932F 00
4690 9330 A548          LDA DSIZM
4700 9332 8537          STA FTSIZ+2
4710 9334 60            RTS
4720 9335        ;---------------------------------------
4730 9335        ;
4740 9335        ; READ/WRITE FILE BLOCKS
4750 9335        ;
4760 9335        ;    INPUT: FCB, FBADR, FBSIZ, FBLKNO
4770 9335        ;   OUTPUT: RCODE
4780 9335        ;
4790 9335        ;---------------------------------------
4800 9335 207B94 FLBKRD JSR SETUP   INIT
4810 9338 205393        JSR FBLKCK  CHECK FOR VALID BLOCK(S)
4820 933B 203390        JSR DREAD   READ THEM
4830 933E F003          BEQ *+5
4840 9340 4C4495            JMP ERR1
4850 9343 60            RTS
4860 9344        ;
4870 9344 207B94 FLBKWR JSR SETUP   INIT
```

```
4880 9347 205395          JSR FBLKCK  CHECK FOR VALID BLOCK(S)
4890 934A 203690          JSR DWRITE  WRITE THEM
4900 934D F003            BEQ *+5
4910 934F 4C4495              JMP ERR1
4920 9352 60              RTS
4930 9353             ;--------------------
4940 9353             ; FBLKCK  VALIDATE BLOCKS TO BE READ/WRITTEN
4950 9353             ;         AND COMPUTE ABSOLUTE BLOCK#
4960 9353             ;
4970 9353 18          FBLKCK CLC          IF FBLKNO + FBSIZ > FTSIZ,
4980 9354 A542            LDA FBLKNO        THEN ERROR
4990 9356 6545            ADC FBSIZ+1 THE CODING IS TRICKY BECAUSE ALL
5000 9358 8D34AF          STA TEMP    THREE VARIABLES ARE DIFFERENT TYPES!
5010 935B A543            LDA FBLKNO+1
5020 935D 6900            ADC #0
5030 935F 8D35AF          STA TEMP+1
5040 9362 38              SEC
5050 9363 A535            LDA FTSIZ
5060 9365 E544            SBC FBSIZ
5070 9367 A536            LDA FTSIZ+1
5080 9369 ED34AF          SBC TEMP
5090 936C A537            LDA FTSIZ+2
5100 936E ED35AF          SBC TEMP+1
5110 9371 B003            BCS *+5
5120 9373 4C3495              JMP ERR9  OUT OF RANGE
5130 9376 18              CLC         SET DBLK (ALIAS FBLKNO)
5140 9377 A542            LDA FBLKNO  TO FBLKNO+FSTBLK
5150 9379 6538            ADC FSTBLK
5160 937B 8542            STA DBLK
5170 937D A543            LDA FBLKNO+1
5180 937F 6539            ADC FSTBLK+1
5190 9381 8543            STA DBLK+1
5200 9383 60              RTS
5210 9384             ;---------------------------------------
5220 9384             ;
5230 9384             ;  LIST THE DIRECTORY
5240 9384             ;
5250 9384             ;    INPUT: DRIVE,FTYPE,FNAME,LSTFLG
5260 9384             ;   OUTPUT: RCODE
5270 9384             ;
5280 9384             ;---------------------------------------
5290 9384 207B94      DLIST JSR SETUP
5300 9387 A90D            LDA #13     PRINT CR
5310 9389 204B90          JSR PRCHAR
5320 938C 208290          JSR DSRCHI  START DIR SEARCH
5330 938F 48              PHA         SAVE TYPE OF 1ST FILE
5340 9390             ;;;;    LDA LSTFLG
5350 9390             ;;;;    AND #LSTVIR
5360 9390             ;;;;    BNE DLIST3  VIRTUAL: SKIP HEADER
5370 9390 204890          JSR PRSTR
5380 9393 44             .BYT 'DISK ID: ',0
5380 9394 49
5380 9395 53
5380 9396 4B
5380 9397 20
5380 9398 49
5380 9399 44
5380 939A 3A
5380 939B 20
5380 939C 00
5390 939D A000            LDY #0+VDNAM  PRINT NAME FROM 1ST DIR ENTRY
5400 939F 206F94          JSR PRNAM1
5410 93A2 A90D            LDA #13
5420 93A4 204B90          JSR PRCHAR   BLANK LINE
5430 93A7 A900            LDA #0      SET BLKCNT:=0
5440 93A9 8D3EAF          STA BLKCNT
```

```
5460 93AF 68      DLIST3 PLA          RESTORE TYPE OF 1ST FILE
5470 93B0 C900           CMP #FLAST
5480 93B2 D003           BNE DLIST2
5490 93B4 4C3094             JMP DLISTZ (EMPTY DISK...)
5500 93B7 C901     DLIST2 CMP #FEMPTY
5510 93B9 F068            BEQ DLIST1 SKIP EMPTY ENTRIES
5520 93BB 20FD94          JSR SETD
5530 93BE 18              CLC    INCREMENT BLKCNT BY
5540 93BF AD3EAF          LDA BLKCNT  SIZE OF THIS FILE
5550 93C2 654B            ADC NBLKS
5560 93C4 8D3EAF          STA BLKCNT
5570 93C7 AD3FAF          LDA BLKCNT+1
5580 93CA 654C            ADC NBLKS+1
5590 93CC 8D3FAF          STA BLKCNT+1
5600 93CF 200C91          JSR CNAME  CHECK NAME/TYPE
5610 93D2 904F            BCC DLIST1   NO MATCH
5620 93D4 A90D     DLIST4 LDA #13      NEW LINE
5630 93D6 204B90          JSR PRCHAR
5640 93D9 206D94          JSR PRNAM   PRINT THE NAME
5650 93DC 206894          JSR PRBLNK  AND A BLANK
5660 93DF A53D            LDA LSTFLG
5670 93E1 2901            AND #LSTSHT
5680 93E3 D033            BNE DLIST8  SHORT LIST...
5690 93E5 A634           LDX DRIVE   REAL DRIVE#
5700 93E7         ;;;;    LDA LSTFLG
5710 93E7         ;;;;    AND #LSTVIR
5720 93E7         ;;;;    BEQ DLISTB
5730 93E7         ;;;;    LDX MAPDRV  VIRTUAL DRIVE#
5740 93E7 8A      DLISTB TXA
5750 93E8 0541           ORA DTYP
5760 93EA 204290          JSR PRBYTE
5770 93ED 206894          JSR PRBLNK
5780 93F0 203090          JSR WMOVE     PRINT ADDRESS
5790 93F3 46              .BYTE DADR,$11,0
5790 93F4 11
5790 93F5 00
5800 93F6 204590          JSR PRWORD
5810 93F9 206894          JSR PRBLNK
5820 93FC 18              CLC       PRINT END ADDR
5830 93FD A546            LDA DADR    =DADR+DSIZ
5840 93FF 6544            ADC DSIZ
5850 9401 8511            STA $11
5860 9403 A547            LDA DADR+1
5870 9405 6545            ADC DSIZ+1
5880 9407 8512            STA $12
5890 9409         ; NOTE THAT DSIZM (THIRD BYTE) OF SIZE IS IGNORED.
5900 9409 204590          JSR PRWORD
5910 940C 206894          JSR PRBLNK
5920 940F 203090          JSR WMOVE   PRINT BLOCK#
5930 9412 42             .BYT DBLK,$11,0
5930 9413 11
5930 9414 00
5940 9415 204590          JSR PRWORD
5950 9418 A54B    DLIST8  LDA NBLKS   PRINT #BLKS IN DECIMAL
5960 941A 8511            STA $11
5970 941C A54C            LDA NBLKS+1
5980 941E 8512            STA $12
5990 9420 205490          JSR PRDECF
6000 9423 202AF3  DLIST1 JSR STPTST  TEST STOP KEY
6010 9426 F03D            BEQ JEXIT
6020 9428 20B990          JSR DSRCHN
6030 942B F003           BEQ DLISTZ
6040 942D 4CB793             JMP DLIST2  NEXT FILE...
6050 9430         DLISTZ
6060 9430         ;;;;    LDA LSTFLG
```

```
6080 9430          ;;;;    AND #LSTVTR
6090 9430          ;;;;    BNE JEXIT   VIRTUAL: SKIP #BLOCKS FREE
6090 9430 204890           JSR PRSTR
6100 9433 0D              .BYT 13,'   ',0
6100 9434 20
6100 9435 20
6100 9436 20
6100 9437 00
6110 9438          ; COMPUTE NUMBER OF FREE BLOCKS
6120 9438 A540             LDA DSID
6130 943A D006             BNE DLIST6
6140 943C A9C0             LDA #DBLKSS*256/256  SINGLE-SIDED
6150 943E A204             LDX #DBLKSS/256
6160 9440 D004             BNE DLIST7
6170 9442 A980    DLIST6   LDA #DBLKSD*256/256  DOUBLE-SIDED
6180 9444 A209             LDX #DBLKSD/256
6190 9446 38      DLIST7   SEC
6200 9447 ED3EAF           SBC BLKCNT
6210 944A 8511             STA $11
6220 944C 8A               TXA
6230 944D ED3FAF           SBC BLKCNT+1
6240 9450 8512             STA $12
6250 9452 205190           JSR PRDEC
6260 9455 204890           JSR PRSTR
6270 9458 20              .BYT ' FREE BLOCKS',0
6270 9459 46
6270 945A 52
6270 945B 45
6270 945C 45
6270 945D 20
6270 945E 42
6270 945F 4C
6270 9460 4F
6270 9461 43
6270 9462 4B
6270 9463 53
6270 9464 00
6280 9465 4C6B92  JEXIT JMP EXIT
6290 9468          ;
6300 9468 A920     PRBLNK LDA #$20
6310 946A 4C4B90           JMP PRCHAR
6320 946D          ;
6330 946D          ;       PRINT THE NAME FROM A DIRECTORY ENTRY
6340 946D          ;
6350 946D A453    PRNAM    LDY DIROFF
6360 946F A210    PRNAM1   LDX #DENAML    **ENTRY IF Y SET
6370 9471 B14F     PRNAM2  LDA (PDBLK),Y  PRINT THE NAME
6380 9473 204B90           JSR PRCHAR
6390 9476 C8               INY
6400 9477 CA               DEX
6410 9478 D0F7             BNE PRNAM2
6420 947A 60               RTS
6430 947B          ;----------------------------------------
6440 947B          ;
6450 947B          ; INITIALIZATION FOR A FILE OP
6460 947B          ;
6470 947B          ; IF DISK IS CHANGED, VALIDATE LABEL AND RETURN ERROR 10
6480 947B          ;
6490 947B          ;----------------------------------------
6500 947B BA       SETUP   TSX SAVE SP FOR ERROR EXIT
6510 947C E8               INX
6520 947D E8               INX
6530 947E 8E3BAF           STX SPSAVE
6540 9481 A534     SETUP1  LDA DRIVE    SETUP DDRV
6550 9483 853F             STA DDRV
6560 9485 A900             LDA #0       MISC. INIT
```

```
6580 9489 853E            STA RCODE
6590 948B 8556            STA K0
6600 948D 8557            STA K100
6610 948F 8559            STA K400
6620 9491 8D60AF          STA FDIRFL  "DISK NOT JUST CHANGED"
6630 9494 A901            LDA #1
6640 9496 8558            STA K100+1
6650 9498 A904            LDA #4
6660 949A 855A            STA K400+1
6670 949C A9AA           LDA #DBUF/256
6680 949E 8550           STA PDBLK+1     BUFFER
6690 94A0 A53F           LDA DDRV    HARD DISK?
6700 94A2 C903           CMP #3
6710 94A4 3004           BMI SETUP5  NO
6720 94A6 A901           LDA #1      YES, ASSUME 2 SIDED
6730 94A8 D00C           BNE SETUP4
6740 94AA 203F90 SETUP5  JSR DCHTST   HAS THE DISKETTE CHANGED?
6750 94AD F00A           BEQ DSKCHD  YES (OR IS NOT READY)
6760 94AF A63F           LDX DDRV
6770 94B1 BD48AF         LDA DSIDES,X  HAS SOMEONE FORCED A DISK INIT?
6780 94B4 3003           BMI DSKCHD  YES...
6790 94B6 8540   SETUP4  STA DSID    NO: SET DSID
6800 94B8 60             RTS
6810 94B9        ;
6820 94B9        ; NEW DISKETTE: READ THE VOLUME DESCRIPTOR, IF ANY
6830 94B9        ;
6840 94B9 A63F   DSKCHD  LDX DDRV    FLAG A DISK INIT IN CASE
6850 94BB A9FF           LDA #$FF    WE FAIL AT THIS
6860 94BD 9D48AF         STA DSIDES,X
6870 94C0 8D60AF         STA FDIRFL  `"DISK JUST CHANGED"
6880 94C3 203090         JSR WMOVE
6890 94C6 4F            .BYT PDBLK,DADR
6890 94C7 46
6900 94C8 56            .BYT K0,DBLK      (BLOCK# 0)
6900 94C9 42
6910 94CA 57            .BYT K100,DSIZ,0
6910 94CB 44
6910 94CC 00
6920 94CD 203390         JSR DREAD
6930 94D0 F003           BEQ SETUP2
6940 94D2 4C4495         JMP ERR1    DISK ERROR
6950 94D5 A010   SETUP2  LDY #DETYP
6960 94D7 B14F           LDA (PDBLK),Y
6970 94D9 C910           CMP #FVDESC   VOLUME DESCRIPTOR?
6980 94DB F008           BEQ SETUP3  YES...
6990 94DD A903   DIRER3  LDA #3      ERROR: "DIRECTORY ERROR"
7000 94DF 8D42AF         STA DIRCOD  SUBCODE "NO VOLUME LABEL"
7010 94E2 4C3A95         JMP ERR6
7020 94E5 A012   SETUP3  LDY #VDFLAG  CHECK FLAGS
7030 94E7 B14F           LDA (PDBLK),Y
7040 94E9 2980           AND #VDF2SI
7050 94EB F004           BEQ SETP1S  1-SIDED
7060 94ED A901           LDA #1      2-SIDED
7070 94EF D002           BNE SETPSI
7080 94F1 A900   SETP1S  LDA #0      1-SIDED
7090 94F3 A63F   SETPSI  LDX DDRV    SAVE SIDE FLAG IN TABLE
7100 94F5 9D48AF         STA DSIDES,X
7110 94F8 8540           STA DSID
7120 94FA 4C3295         JMP ERR10   SIGNAL 'DISK CHANGED' ERROR
7130 94FD        ; SIMPLY RTS INSTEAD, IF THE OPERATION IS TO PROCEED.
7140 94FD        ;
7150 94FD        ; UNPACK THE DIRECTORY ENTRY INTO FIXED "DISK PARM" FIELDS
7160 94FD        ;     (DTYP,DBLK,DSIZ,DADR,DSIZM,NBLKS)
7170 94FD        ;
7180 94FD A553    SETD   LDA DIROFF
```

```
7200 9500 6917            ADC #DETYP+7
7210 9502 A8              TAY OFFSET INTO DIR. BLK
7220 9503 A208            LDX #DESIZM-DETYP+1
7230 9505 B14F    SETDL   LDA (PDBLK),Y
7240 9507 9540            STA DTYP-1,X
7250 9509 88              DEY
7260 950A CA              DEX
7270 950B D0F8            BNE SETDL
7280 950D 202095          JSR CNBLKS
7290 9510 60              RTS
7300 9511         ;
7310 9511         ; SET FNAME/FTYPE FROM DIR ENTRY
7320 9511         ;
7330 9511 A200    SETFN   LDX #0
7340 9513 A453            LDY DIROFF
7350 9515 B14F    SETFNL  LDA (PDBLK),Y
7360 9517 9523            STA FNAME,X
7370 9519 C8              INY
7380 951A E8              INX
7390 951B E011            CPX #DETYP+1
7400 951D D0F6            BNE SETFNL
7410 951F 60              RTS
7420 9520         ;
7430 9520         ; COMPUTE NBLKS FROM DSIZ/DSIZM
7440 9520         ;
7450 9520 18      CNBLKS  CLC           COMPUTE DSIZ-1+256
7460 9521 A544            LDA DSIZ    AND THROW AWAY LOW BYTE
7470 9523 69FF            ADC #255
7480 9525 A545            LDA DSIZ+1
7490 9527 6900            ADC #0
7500 9529 854B            STA NBLKS
7510 952B A548            LDA DSIZM
7520 952D 6900            ADC #0
7530 952F 854C            STA NBLKS+1
7540 9531 60              RTS
7550 9532         ;
7560 9532         ; ERRORS
7570 9532         ;
7580 9532 E63E    ERR10   INC RCODE  DISK CHANGED
7590 9534 E63E    ERR9    INC RCODE  BLOCK# OUT OF RANGE
7600 9536 E63E    ERR8    INC RCODE  -- SPARE --
7610 9538 E63E    ERR7    INC RCODE  BAD CHARS IN FILE NAME
7620 953A E63E    ERR6    INC RCODE  DIRECTORY ERR
7630 953C E63E    ERR5    INC RCODE  NO SPACE FOR FILE
7640 953E E63E    ERR4    INC RCODE  DIRECTORY FULL
7650 9540 E63E    ERR3    INC RCODE  FILE ALREADY THERE
7660 9542 E63E    ERR2    INC RCODE  FILE NOT THERE
7670 9544 E63E    ERR1    INC RCODE  DISK ERROR
7680 9546 8D3DAF          STA DSKERR  SAVE DISK ERROR
7690 9549 AE3BAF          LDX SPSAVE
7700 954C 9A              TXS RESTORE STACK PTR
7710 954D 4C6B92          JMP EXIT   TO ORIGINAL CALLER
7720 9550         END=*
```