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10 0000 ;*****
20 0000 ;
30 0000 ; PET FILE SYSTEM
40 0000 ; UTILITY ROUTINES
50 0000 ;
60 0000 ;*****
70 0000 ; COPYRIGHT L. J. SHUSTEK AND H. J. SAAL, 1978,1979 ,1980
80 0000 ;
90 9024 *=DALLO
100 9024 4C0E96 JMP ALLOC ALLOCATE FILE
110 9027 *=DFREE JMP FREE FREE FILE SPACE
120 9027 4C3E96 *=DMARK JMP MARK MARK FILE SPACE
130 902A 4C6596 *=WMOVE JMP MOVE MOVE PAGEØ WORDS
140 902A 4C4D97 *=PRSTR JMP PRSTRG PRINT INLINE STRING
150 9030 *=PRDEC JMP PRDC PRINT DECIMAL NUMBER
160 9030 4C9F97 *=PRDEC F JMP PRDCF PRINT DECIMAL NUMBER, FIXED FIELD
170 9048 ;-----
180 9048 4C8097 *=PRCHAR JMP PRINTA PRINT CHAR ROUTINE
190 9051 *=RDSCRN JMP $FFCF PET GET LINE ROUTINE
200 9051 4C9A97 *=RDKEY JMP $FFE4 PET GET CHARACTER ROUTINE
210 9054 ;-----
220 9054 4C9A97 *=FILUTL .WORD END
230 9057 ;-----
240 904B *=PRINTW PHA PRINT CHAR
250 904B 4C0296 LDA $204
260 9066 *=RDKEY CMP #1 WAIT FOR NO SHIFT KEY
270 9066 4CCFFF BEQ PRINTW
280 9069 PLA
290 9069 4CE4FF JMP $FFD2 PET PRINT ROUTINE
300 906C ;-----
310 9600 *=FILUTL
320 9600 FF97 .WORD END
330 9602 ;-----
340 9602 48 PRINTA PHA PRINT CHAR
350 9603 AD0402 PRINTW LDA $204
360 9606 C901 CMP #1 WAIT FOR NO SHIFT KEY
370 9608 F0F9 BEQ PRINTW
380 960A 68 PLA
390 960B 4CD2FF JMP $FFD2 PET PRINT ROUTINE
400 960E ;-----
410 960E ;-----
420 960E ; ALLOCATE NBLKS BLOCKS IN BIT MAP
430 960E ; SETS DEBK TO STARTING BLOCK #
440 960E ; RETURN CARRY SET IF NO SPACE
450 960E ;-----
460 960E 202797 ALLOC JSR SPBMAP SETUP PTR TO BITMAP
470 9611 A000 LDY #0
480 9613 A200 LDX #0
490 9615 B14D DALLO1 LDA (PBMAP),Y FIND Ø BIT
500 9617 3D4597 AND ORTAB,X
510 961A F007 BEQ DALLO2
520 961C 200797 JSR INCBM
530 961F 90F4 BCC DALLO1
540 9621 38 DALLO6 SEC NOT FOUND
550 9622 60 RTS
560 9623 20E996 DALLO2 JSR BMTORB SAVE REL BLK START
570 9626 208996 JSR MOVDAL DALLOS NBLKS IF NOT ZERO
580 9629 209E96 DALLO3 JSR DECDAL DECREMENT COUNT
590 962C F00E BEQ DALLO4 ENOUGH: MARK THEM
600 962E 200797 JSR INCBM TRY TO EXTEND THE AREA
610 9631 B0EE BCS DALLO6 END OF MAP: FAIL

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620 9633 B14D LDA (PBMAP),Y
630 9635 3D4597 AND ORTAB,X
640 9638 D0DB BNE DALLO1 FAILED: LOOK FOR NEXT AREA
650 963A F0ED BEQ DALLO3
660 963C DALLO4 =* FOUND SPACE
670 963C ;;;;; JSR DMARK MARK BIT MAP (NOT NECESSARY CURRENTLY)
680 963C 18 CLC
690 963D 60 RTS
700 963E ;
710 963E ; FREE NBLKS AT RELATIVE BLOCK DBLK
720 963E ;
730 963E 20B396 FREE JSR RBTOBM GET BITMAP OFFSETS
740 9641 208996 JSR MOVDAL
750 9644 BD4597 DFREEL LDA ORTAB,X
760 9647 314D AND (PBMAP),Y
770 9649 D003 BNE DFREE2
780 964B 4C3397 JMP ERRA FREEING A FREE BLK
790 964E BD4597 DFREE2 LDA ORTAB,X
800 9651 49FF EOR #\$FF
810 9653 314D AND (PBMAP),Y
820 9655 914D STA (PBMAP),Y
830 9657 200797 JSR INCBM
840 965A 9003 BCC DFREE3
850 965C 4C3C97 JMP ERRD ERROR: END OF MAP
860 965F 209E96 DFREE3 JSR DECDAL
870 9662 D0E0 BNE DFREEL
880 9664 60 DFREEZ RTS
890 9665 ;
900 9665 ; MARK NBLKS AT RELATIVE BLOCK DBLK
910 9665 ;
920 9665 20B396 MARK JSR RBTOBM GET BITMAP OFFSETS
930 9668 208996 JSR MOVDAL
940 966B BD4597 DMARKL LDA ORTAB,X
950 966E 314D AND (PBMAP),Y
960 9670 F003 BEQ DMARK2
970 9672 4C3697 JMP ERRB MARKING A MARKED BLK
980 9675 BD4597 DMARK2 LDA ORTAB,X
990 9678 114D ORA (PBMAP),Y
1000 967A 914D STA (PBMAP),Y
1010 967C 209E96 JSR DECDAL
1020 967F F0E3 BEQ DFREEZ ALL BLOCKS DONE...
1030 9681 200797 JSR INCBM MOVE TO NEXT MAP BIT
1040 9684 90E5 BCC DMARKL AND CONTINUE
1050 9686 4C3C97 JMP ERRD ERROR: RAN OF END OF MAP
1060 9689 ;
1070 9689 ; MOVDAL: IF NBLKS=0, RETURN TO CALLER'S CALLER WITH CARRY
1080 9689 ; OTHERWISE DALLOS_NBLKS
1090 9689 ;
1100 9689 A54B MOVDAL LDA NBLKS
1110 968B 054C ORA NBLKS+1
1120 968D F00B BEQ MOVDAZ
1130 968F A54B LDA NBLKS
1140 9691 8D40AF STA DALLOS
1150 9694 A54C LDA NBLKS+1
1160 9696 8D41AF STA DALLOS+1
1170 9699 60 RTS
1180 969A 68 MOVDAZ PLA ERROR RETURN
1190 969B 68 PLA
1200 969C 38 SEC
1210 969D 60 RTS
1220 969E ;
1230 969E ; DECDAL: DECREMENT DALLOS AND SET Z/NZ
1240 969E ;
1250 969E 18 DECDAL CLC
1260 969F AD40AF LDA DALLOS
1270 96A2 69FF ADC #\$FF

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1280 96A4 8D40AF STA DALLOS
1290 96A7 AD41AF LDA DALLOS+1
1300 96AA 69FF ADC #$FF
1310 96AC 8D41AF STA DALLOS+1
1320 96AF 0D40AF ORA DALLOS
1330 96B2 60 RTS
1340 96B3 ;
1350 96B3 ; CONVERT RELATIVE BLOCK "DBLK" TO BITMAP OFFSETS
1360 96B3 ; DBLK = 0000ZYYYYYYYYXXX
1370 96B3 ; X=BIT OFFSET, Y=BYTE OFFSET, Z=LSB OF PBMAP
1380 96B3 ;
1390 96B3 202797 RBTOBM JSR SPBMAP SETUP PBMAP
1400 96B6 A542 LDA DBLK LOW 3 BITS TO X
1410 96B8 2907 AND #$07
1420 96BA AA TAX
1430 96BB A542 LDA DBLK NEXT 8 TO Y, NEXT TO CARRY
1440 96BD 29F8 AND #$F8
1450 96BF 8D34AF STA TEMP
1460 96C2 A543 LDA DBLK+1
1470 96C4 290F AND #$0F
1480 96C6 4A LSR A ZYY,Y
1490 96C7 0D34AF ORA TEMP YYYYYZYY,Y
1500 96CA 6A ROR A
1510 96CB 6A ROR A
1520 96CC 6A ROR A
1530 96CD A8 TAY YYYYYYYY
1540 96CE 9002 BCC RBTOB2
1550 96D0 E64E INC PBMAP+1 Z=1 (OVERFLOW TO 2ND BITMAP PAGE)
1560 96D2 6A RBTOB2 ROR A ZYYYYYYY (FOR MAX CHECK)
1570 96D3 8D34AF STA TEMP
1580 96D6 A540 LDA DSID FIGURE OUT MAXIMUM BLOCK#
1590 96D8 D004 BNE RBTOB3
1600 96DA A94C LDA #TBNUMS/16-1 SINGLE-SIDED DISK
1610 96DC D002 BNE RBTOB4
1620 96DE A999 RBTOB3 LDA #TBNUMD/16-1 DOUBLE-SIDED DISK
1630 96E0 CD34AF RBTOB4 CMP TEMP MAX-1:BLOCK#
1640 96E3 9001 BCC RBTOB5 LT
1650 96E5 60 RTS
1660 96E6 4C3F97 RBTOB5 JMP ERRE BLOCK# TOO BIG
1670 96E9 ;
1680 96E9 ; CONVERT BITMAP OFFSETS TO RELATIVE BLOCK# IN DBLK
1690 96E9 ;
1700 96E9 8A BMTORB TXA
1710 96EA 8D34AF STA TEMP 00000XXX
1720 96ED A54E LDA PBMAP+1
1730 96EF 6A ROR A Z TO CARRY
1740 96F0 98 TYA
1750 96F1 2A ROL A
1760 96F2 2A ROL A
1770 96F3 2A ROL A
1780 96F4 8D35AF STA TEMP+1 A=Y4-Y0,Z,Y7-Y6, CARRY=Y5
1790 96F7 29F8 AND #$F8
1800 96F9 0D34AF ORA TEMP
1810 96FC 8542 STA DBLK Y4-Y0,XXX
1820 96FE AD35AF LDA TEMP+1
1830 9701 2A ROL A
1840 9702 290F AND #$0F 0000,Z,Y7-Y5
1850 9704 8543 STA DBLK+1
1860 9706 60 RTS
1870 9707 ;
1880 9707 ; INCREMENT BITMAP OFFSETS
1890 9707 ; SET FOR BCS IF END OF MAP
1900 9707 ;
1910 9707 E8 INCBM INX NEXT BIT
1920 9708 E008 CPX #8
1930 970A 1001 BPL INCBM1

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1940 970C 60 RTS
 1950 970D A200 INCBM1 LDX #0
 1960 970F C8 INY NEXT BYTE
 1970 9710 A540 LDA DSID TEST # SIDES
 1980 9712 D003 BNE INCBM2 2 SIDED...
 1990 9714 C09A CPY #TENUMS/8 SET CARRY IF TOO BIG
 2000 9716 60 RTS
 2010 9717 98 INCBM2 TYA BYTE OFFSET
 2020 9718 D004 BNE INCBM3 OFFSET NOT ZERO
 2030 971A E64E INC PBMAP+1 ZERO: MOVE TO NEXT PAGE
 2040 971C 18 CLC
 2050 971D 60 RTS
 2060 971E A54E INCBM3 LDA PBMAP+1
 2070 9720 C9AF CMP #BMAP/256+1
 2080 9722 9002 BCC INCBM4 NONZERO OFFSET ON 1ST PAGE - RET C=0
 2090 9724 C034 CPY #TBNUMD/8-256 2ND PAGE: CHECK FOR END
 2100 9726 60 INCBM4 RTS
 2110 9727 ;
 2120 9727 ; SPBMAP SET PTR TO BIT MAP
 2130 9727 ;
 2140 9727 A900 SPBMAP LDA #0
 2150 9729 854D STA PBMAP
 2160 972B 8D42AF STA DIRCOD ZERO DIR ERR SUBCODE, WHILE WE'RE HERE
 2170 972E A9AE LDA #BMAP/256
 2180 9730 854E STA PBMAP+1
 2190 9732 60 RTS
 2200 9733 ;
 2210 9733 EE42AF ERRA INC DIRCOD 5 FREE OF FREE BLOCK
 2220 9736 EE42AF ERRB INC DIRCOD 4 MARK OF MARKED BLOCK
 2230 9739 EE42AF ERRC INC DIRCOD 3 NO VOLUME LABEL (FROM MAIN RTN)
 2240 973C EE42AF ERRD INC DIRCOD 2 OFF END OF MAP
 2250 973F EE42AF ERRE INC DIRCOD 1 BAD BLOCK NUMBER
 2260 9742 4C2D90 JMP DIRERR DIRECTORY (BITMAP) ERR
 2270 9745 ;
 2280 9745 80 ORTAB .BYTE \$80,\$40,\$20,\$10
 2280 9746 40
 2280 9747 20
 2280 9748 10
 2290 9749 08 .BYTE \$08,\$04,\$02,\$01
 2290 974A 04
 2290 974B 02
 2290 974C 01
 2300 974D ;
 2310 974D ; MOVE WORDS ON PAGE 0
 2320 974D ; .BYTE FROM,TO,FROM,TO,...,0
 2330 974D ;
 2340 974D 68 MOVE PLA LOW PC
 2350 974E 8551 STA SPTR
 2360 9750 68 PLA HIGH PC
 2370 9751 8552 STA SPTR+1
 2380 9753 A001 LDY #1 PARM LIST INDEX
 2390 9755 B151 WMOVEV LDA (SPTR),Y "FROM"
 2400 9757 F018 BEQ WMOVER DONE IF ZERO
 2410 9759 AA TAX
 2420 975A C8 INY
 2430 975B B151 LDA (SPTR),Y "TO"
 2440 975D C8 INY
 2450 975E 8C41AF STY WMOVEY
 2460 9761 A8 TAY
 2470 9762 B500 LDA 0,X MOVE THE WORD
 2480 9764 990000 STA 0,Y
 2490 9767 B501 LDA 1,X
 2500 9769 990100 STA 1,Y
 2510 976C AC41AF LDY WMOVEY
 2520 976F D0E4 BNE WMOVEV
 2530 9771 38 WMOVER SEC

2540 9772 98 TYA
 2550 9773 6551 ADC SPTR COMPUTE RETURN ADDR
 2560 9775 8551 STA SPTR
 2570 9777 A552 LDA SPTR+1
 2580 9779 6900 ADC #0
 2590 977B 8552 STA SPTR+1
 2600 977D 6C5100 JMP (SPTR)
 2610 9780 ;
 2620 9780 ; PRSTR PRINT INLINE STRING UNTIL 0
 2630 9780 ;
 2640 9780 ; JSR PRSTR
 2650 9780 ; .BYTE 'STRING',0
 2660 9780 ;
 2670 9780 68 PRSTRG PLA LOW PC
 2680 9781 8551 STA SPTR
 2690 9783 68 PLA HIGH PC
 2700 9784 8552 STA SPTR+1
 2710 9786 A001 LDY #1 INDEX TO FIRST BYTE
 2720 9788 208F97 JSR PRSTRL PRINT UNTIL 0
 2730 978B F0E4 BEQ WMOVER BUILD RETURN ADDR
 2740 978D ;
 2750 978D ; PRSTRP PRINT STRING AT SPTR UNTIL 0
 2760 978D ;
 2770 978D A000 PRSTRP LDY #0
 2780 978F B151 PRSTRL LDA (SPTR),Y ALTERNATE ENTRY
 2790 9791 F006 BEQ PRSTRZ
 2800 9793 204B90 JSR PRCHAR
 2810 9796 C8 INY
 2820 9797 D0F6 BNE PRSTRL
 2830 9799 60 PRSTRZ RTS
 2840 979A ;
 2850 979A ; PRDEC/F PRINT WORD AT \$11 IN DECIMAL
 2860 979A ; WITH LEADING ZERO SUPPRESSION
 2870 979A ; PRDEC PRINTS A VARIABLE-WIDTH FIELD
 2880 979A ; PRDEC/F PRINTS A FIXED-WIDTH FIELD OF 5 (BLANK IF ZERO)
 2890 979A ;
 2900 979A BIN = \$11
 2910 979A ;
 2920 979A A901 PRDCF LDA #\$01 FLAG: PRINT 0 AS BLANK
 2930 979C 4CA197 JMP PRDECM
 2940 979F A980 PRDC LDA #\$80 FLAG: PRINT 0 AS NULL
 2950 97A1 48 PRDECM PHA SAVE FLAG FOR LATER
 2960 97A2 A900 LDA #0
 2970 97A4 8D43AF STA DECN 0 ZERO DECIMAL ACCUMULATOR
 2980 97A7 8D44AF STA DECN+1
 2990 97AA 8D45AF STA DECN+2
 3000 97AD ; FIRST LOOP: CREATE PACKED DECIMAL
 3010 97AD A010 LDY #16
 3020 97AF F8 SED
 3030 97B0 0611 PRN01 ASL BIN SHIFT LEFT INTO CARRY
 3040 97B2 2612 ROL BIN+1
 3050 97B4 A203 LDX #3
 3060 97B6 BD42AF PRN02 LDA DECN-1,X DOUBLE DEC, +1 IF CARRY
 3070 97B9 7D42AF ADC DECN-1,X
 3080 97BC 9D42AF STA DECN-1,X
 3090 97BF CA DEX
 3100 97C0 D0F4 BNE PRN02
 3110 97C2 88 DEY
 3120 97C3 D0EB BNE PRN01
 3130 97C5 D8 PRN03 CLD
 3140 97C6 ;SECOND LOOP: UNPACK AND PRINT
 3150 97C6 A200 LDX #0
 3160 97C8 68 PLA RESTORE FLAG
 3170 97C9 A8 TAY KEEP IT IN Y
 3180 97CA 4CD797 JMP PRN05 START W/ 2ND DIGIT OF 1ST BYTE
 3190 97CD BD43AF PRN04 LDA DECN,X A DIGIT PAIR

3200 97D0 6A ROR A
3210 97D1 6A ROR A
3220 97D2 6A ROR A
3230 97D3 6A ROR A
3240 97D4 20EB97 JSR PRNDIG DO 1ST DIGIT
3250 97D7 BD43AF PRN05 LDA DECN,X
3260 97DA 20EB97 JSR PRNDIG DO 2ND DIGIT
3270 97DD E8 INX
3280 97DE E003 CPX #3 CONTINUE FOR 3 BYTES
3290 97E0 D0EB BNE PRN04
3300 97E2 98 TYA ANY SIGNIFICANT DIGITS?
3310 97E3 1005 BPL PRNRTS YES: RETURN
3320 97E5 A930 LDA #'0 NO: PRINT A SINGLE ZERO
3330 97E7 204B90 JSR PRCHAR
3340 97EA 60 PRNRTS RTS
3350 97EB ;
3360 97EB 290F PRNDIG AND #\$0F ISOLATE DIGIT TO PRINT
3370 97ED D009 BNE PRNDIP NON-ZERO: PRINT
3380 97EF 98 TYA ZERO: TEST FLAG
3390 97F0 F006 BEQ PRNDIP PRINT 0
3400 97F2 30F6 BMI PRNRTS PRINT NULL
3410 97F4 A920 LDA #' PRINT BLANK
3420 97F6 D004 BNE PRNDIJ
3430 97F8 0930 PRNDIP ORA #'0 PRINT DIGIT
3440 97FA A000 LDY #0 FLAG: PRINT ALL
3450 97FC 4C4B90 PRNDIJ JMP PRCHAR
3460 97FF END=*