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                ;       TERMINAL.ASM   November 1, 1984
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                ;       THIS PROGRAM WAS ORIGINALLY DEVELOPED BY THE SMALL SYSTEMS
                ;  GROUP OF THE INSTITUTE OF COMPUTER SCIENCE, UNIVERSITY OF GUELPH,
                ;  COPYRIGHT 1979 BY DON GENNER.
                ;       ADAPTED TO RUN IN A MACHINE INDEPENDENT CP/M ENVIRONMENT
                ;  BY JOHN WILSON.
                ;       MODIFIED BY J. LAW, DEPT. OF PHYSICS, UNIVERSITY OF GUELPH,
                ;  WITH DON GENNER'S HELP.
                ;       EXTENSIVELY MODIFIED TO BE MORE NEARLY HOST INDEPENDENT,
                ;  TO RECEIVE INTO A BUFFER, TO SEND BY LOGICAL DISK SECTOR,
                ;  EXPANDED LOCAL MODE, TO WORK WITH STANDARD BDOS, AND MANY OTHERS
                ;  BY GEORGE CORLISS, DEPT. OF MATH., MARQUETTE UNIVERSITY.
                ;       MODIFIED FOR SLOW PRINTER BY J. GLENN BROOKSHEAR, MARQUETTE
                ;  UNIVERSITY.
                ;       MODIFIED FOR RECEIVER BUFFER OVERFLOW BY J. GLENN BROOKSHEAR
                ;  MARQUETTE UNIVERSITY.
                ;       Modified to disable console interrupts in order to run
                ;  on Heath H8 and H89 machines with CP/M 2.2.03 by J. Glenn
                ;  Brookshear, Marquette University.
                ;
                ;       DOCUMENTATION AND INSTRUCTIONS ARE IN FILE TERMINAL.DOC
                ;
                ;---------------------------------------------------------------
                ;
                ;
0000 =          BASE     EQU    0000H
0100 =          USER     EQU    BASE+100H
005C =          FCB      EQU    BASE+005CH
0F00 =          STACK    EQU    USER+0E00H
1000 =          BUFF     EQU    USER+0F00H
0E00 =          PRTBUF   EQU    USER+0D00H
0E00 =          OVFLBF   EQU    USER+0D00H
0000 =          CPM      EQU    BASE
0005 =          BDOS     EQU    BASE+0005H
                ;
0001 =          CTLA    EQU     01H
0002 =          CTLB    EQU     02H
0003 =          CTLC    EQU     03H
0005 =          CTLE    EQU     05H
0007 =          BEL     EQU     07H     ;CTRL G
0008 =          BS      EQU     08H     ;BACKSPACE = CTRL H
0009 =          TAB     EQU     09H     ;CTRL I
000A =          LF      EQU     0AH     ;LINE FEED = CTRL J
000C =          FF      EQU     0CH     ;FORM FEED = CTRL L
000D =          CR      EQU     0DH     ;CTRL M
0010 =          CTLP    EQU     10H
0011 =          XON     EQU     11H     ;CRTL Q
0013 =          XOFF    EQU     13H     ; CTRL S
0019 =          CTLY    EQU     19H     ;CTRL Y
001A =          EOD     EQU     1AH     ;CP/M END OF FILE = CTRL Z
001B =          ESC     EQU     1BH     ;ESCAPE
007F =          DEL     EQU     7FH
                ;
                ;-----------------------------  BEGIN
                                                      ;
0100                    ORG     USER
0100 C3B501             JMP     ENTER
0103 01         HOSTON  DB      01H
```

```
0104 000E      HEAD    DW      PRTBUF
0106 000E      TAIL    DW      PRTBUF
0108 00        BAKLOG  DB      00
00C0 =         STOPLMT EQU     0C0H
0020 =         STRTLMT EQU     20H
               ;
               ;
               ;  HOST DEPENDENCIES:
0109 0D24      CRMSG   DB      CR,'$'          ;CARRIAGE RETURN MESSAGE
0008 =         BADBS   EQU     BS              ;WRONG BS/DEL CHAR FOR HOST
007F =         GOODBS  EQU     DEL             ;CORRECT BS/DEL CHAR FOR HOST
000D =         HSTEOL  EQU     CR              ;HOST END OF LINE
001A =         HSTEOD  EQU     EOD             ;HOST END OF FILE
               ;
010B =         HOSTBF  EQU     $               ;INITIALIZED FOR SIGMA 9
010B 0D24333435HGO     DB      CR,'$','345'            ;  START HOST
0110 1124333435HREC    DB      XON,'$','345'           ; SET UP HOST TO BEGIN RECEIVING
0115 1B46132435HCLOSE  DB      ESC,'F',XOFF,'$','5'    ;CLOSE HOST FILE AFTER REC.
011A 1B48243435HSTOP   DB      ESC,'H','$','45'        ;HOST, STOP SENDING ME STUFF
011F 363237342CLONMSG  DB      '6274,BROOKSHEARG',CR
0130 4548420D54        DB      'EHB',CR,'T 37,0',CR,'$'
013C 3031323334        DB      '01234567890'
0147 4F46460D24OFFMSG  DB      'OFF',CR,'$','6789012345'
0156 1B480D1951HNOSND  DB      ESC,'H',CR,CTLY,'Q',CR,'$','890'
               ;
0160 =         VAXMSG  EQU     $                       ; VAX-11 MESSAGES START HERE.
0160 1124333435VHGO    DB      XON,'$','345'           ; START HOST
0165 2432333435VHREC   DB      '$','2345'              ; SET UP HOST TO BEGIN RECEIVING
016A 1A24333435VHCLOSE DB      EOD,'$','345'           ;CLOSE HOST FILE AFTER REC.
016F 1324333435VHSTOP  DB      XOFF,'$','345'          ;HOST, STOP SENDING ME STUFF
0174 3632373442VLONMSG DB      '6274BROOKSHE',CR,'EHB',CR
0185 5345542054        DB      'SET TERM/HOSTSYNC',CR,'$'
0198 37383930          DB      '7890'
019C 4C4F474F55VOFFMSG DB      'LOGOUT',CR,'$','9012345'
01AB 1303243435VHNOSND DB      XOFF,CTLC,'$','4567890'
               ;
               ;------------------------------------------------
               ;
               ;       PROGRAM LAYOUT
               ;       MAIN PROGRAM
               ;       I/O ROUTINES CONIO, PRNT, SOUT
               ;       SPECIAL CONTROL CODE HANDLERS
               ;           SWCHPT, CRTOUT, TRADE, LOCAL
               ;       SUBROUTINES FOR LOCAL
               ;           DSKDIR, HELP, LOGON, OFF, PRINTR, RECEIVE, SEND
               ;       CP/M BDOS CALLS
               ;
               ;
               ;
01B5 AF        ENTER    XRA   A                ;Disable interrupts
01B6 D3E9               OUT   350Q+1           ;  from H8 or H89 console
                                                                        ;
01B8 210000             LXI   H,0
01BB 39                 DAD   SP
01BC 22FE0F             SHLD  STACK+254
01BF 31FE0F             LXI   SP,STACK+254
               ;
               ;--------------------------------------
               ;       MVI     A,83H           ; THIS BLOCK USED TO INITIALIZE MODEM
               ;       OUT     330Q+3          ;PORT ON HEATH H8/H89 MACHINES TO
               ;       MVI     A,3             ;TO 300 BAUD, 8 DATA DITS, NO PARITY,
                    ;       OUT     330Q+4          ;AND 2 STOP BITS.
                    ;       MVI     A,80H
                    ;       OUT     330Q
                    ;       MVI     A,1
                    ;       OUT     330Q+1
                    ;       MVI     A,3
                    ;       OUT     330Q+3
                    ;       XRA     A
                    ;       OUT     330Q+1
                    ;----------------------------------------
                    ;
01C2 C3CC01                  JMP   TERMINAL
                    ;
01C5 2AFE0F         EXIT     LHLD  STACK+254
01C8 F9                      SPHL
01C9 C30000                  JMP   CPM
                    ;
                    ;
                    ;-----------------------------------
                    ;  BEGIN MAIN PROGRAM
                    ;
                    TERMINAL:
01CC 11DB01                 LXI     D,VERMSG
01CF CD700D                 CALL    STRINGF
01D2 11FF01                 LXI     D,TMESS
01D5 CD700D                 CALL    STRINGF
01D8 C31502                 JMP     TERM2
                    ;
01DB 0D0A544552VERMSG       DB      CR,LF,'TERMINAL PROGRAM    VER. 2.2.03',CR,LF,'$'
01FF 0D0A544552TMESS        DB      CR,LF,'TERMINAL MODE',CR,LF,LF,'>  $'
                    ;
0215 CD9702         TERM2   CALL    CONIO   ;ANYTHING FROM TERMINAL?
0218 CA5002                 JZ      SGET    ;NO - MOVE ON
021B 5F                     MOV     E,A     ;YES - LOAD E
                    ;
                    ;  PROCESS SPECIAL CONTROL CHARACTERS
                    ;
                    ;       ^P      TOGGLE PRINTER ON/OFF
                    ;       ^A      ENTER LOCAL MODE
                    ;       ^B      SET BELL TO RING ON NEXT HOST CHAR
                    ;       ^C      RETURN TO CP/M
                    ;       ^E      TOGGLE CRT ECHO ON/OFF
                    ;       ESC     FORCE SEND NEXT CHAR TO HOST
                    ;
021C FE10CA1A03             CPI     CTLP
                                            JZ      SWCHPT          ; IF ^P
0221 FE01                   CPI     CTLA
0223 CA4403                 JZ      LOCAL           ; IF ^A
0226 FE02                   CPI     CTLB
0228 CA2803                 JZ      SWBEL           ; IS ^B
022B FE03                   CPI     CTLC
022D CAC501                 JZ      EXIT            ; IF ^C
0230 FE05                   CPI     CTLE
0232 CA3103                 JZ      SWECHO          ; IF ^E
0235 FE1B                   CPI     ESC
0237 CA3D03                 JZ      FORSND          ; IF ESCAPE
023A FE08                   CPI     BADBS
023C CAEF03                 JZ      TRADE           ; IF WRONG BS/DEL FOR HOST
                    ;
023F D5             SPUT    PUSH    D
0240 CD4E0D                 CALL    PUNOUTF         ;SEND TO HOST
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```
 0243 D1                POP     D
 0244 3A3C03            LDA     ECHO            ;SHOULD CHARACTERS BE SENT TO CRT?
 0247 FE00              CPI     0               ;0 - YES, 1 - NO
 0249 C25002            JNZ     SGET
 024C 7B                MOV     A,E
 024D CD9E02    DPUTB   CALL    PRNT            ;SEND TO CONSOLE
 0250 CD350D    SGET    CALL    RDRINPF         ;ANYTHING FROM HOST?
 0253 CA6A02            JZ      CKPRT           ;NO.  CHECK PRINT BUFFER
 0256 CD9E02            CALL    PRNT            ;ECHO IT
 0259 3A3003            LDA     BELWAK          ;IS BELL SWITCH SET?
 025C FE00              CPI     0
 025E CA6A02            JZ      CKPRT           ;IF NOT SET
 0261 1E07              MVI     E,BEL           ;RING BELL
 0263 CD2A0D            CALL    CONOUTF
 0266 AF                XRA     A               ;RESET BELL SWITCH
 0267 323003            STA     BELWAK
 026A 3A0801    CKPRT   LDA     BAKLOG          ;ANYTHING IN PRINT BUFFER?
 026D FE00              CPI     00
 026F CA1502            JZ      TERM2           ;NO.  TRY TERMINAL
 0272 CD630D            CALL    PRTSTAT         ;PRINTER BUSY?
 0275 FE00              CPI     00
 0277 CA1502            JZ      TERM2           ;YES.  TRY TERMINAL
 027A 2A0401            LHLD    HEAD            ;SEND CHARACTER TO PRINTER
 027D 5E                MOV     E,M             ;AND SHIFT HEAD POINTER.
 027E 2C                INR     L
 027F 220401            SHLD    HEAD
 0282 CD5E0D            CALL    LSTOUTF
 0285 3A0801            LDA     BAKLOG          ;IF BACKLOG HAS DROPPED
 0288 3D                DCR     A               ;TO START LIMIT THEN TELL
 0289 320801            STA     BAKLOG          ;HOST TO START SENDING AGAIN.
 028C FE20              CPI     STRTLMT
 028E C21502            JNZ     TERM2
 0291 CD0803            CALL    STRTHST
 0294 C31502            JMP     TERM2           ;CHECK ON TERMINAL
                ;
                ;--------------------------  END OF MAIN PROGRAM
                ;
                ;
 0297 1EFFCD680DCONIO   MVI     E,0FFH  ;DIRECT CONSOLE INPUT
                                                      CALL    DIRCONF ;(A) = CHAR OR 00 IF NO CHAR
 029C B7                ORA     A       ;FORCE FLAG
 029D C9                RET
                ;
 029E E5        PRNT    PUSH    H       ;PRINT CHAR (A) AT CONSOLE
 029F D5                PUSH    D
 02A0 5F                MOV     E,A
 02A1 FE0D              CPI     HSTEOL  ;END OF LINE?
 02A3 CAB902            JZ      PRNT2
 02A6 D5                PUSH    D
 02A7 CD2A0D            CALL    CONOUTF
 02AA D1                POP     D
 02AB 3A2703            LDA     AUXON
 02AE FE00              CPI     0
 02B0 C2B602            JNZ     PRNT1   ;AND PERHAPS AT THE PRINTER
 02B3 CDE002            CALL    LIST
 02B6 D1        PRNT1   POP     D
 02B7 E1                POP     H
 02B8 C9                RET
                ;
 02B9 3A2703    PRNT2   LDA     AUXON
 02BC FE00              CPI     0
 02BE C2D402              JNZ     PRNT3
 02C1 11DD02              LXI     D,CRLF
 02C4 CD700D              CALL    STRINGF
 02C7 1E0D                MVI     E,CR
 02C9 CDE002              CALL    LIST
 02CC 1E0A                MVI     E,LF
 02CE CDE002              CALL    LIST
 02D1 C3B602              JMP     PRNT1
 02D4 11DD02      PRNT3   LXI     D,CRLF
 02D7 CD700D              CALL    STRINGF
 02DA C3B602              JMP     PRNT1
 02DD 0D0A24      CRLF    DB      CR,LF,'$'
                  ;
                  ;  PLACE CONTENTS OF E REGISTER IN PRINT BUFFER.
                  ;  IF BACKLOG IS THEN C0H, TELL HOST TO WAIT.
                  ;
                  ;  CAUTION*** HOST WAIT ROUTINE USES E REGISTER.
                  ;
 02E0 2A0601      LIST    LHLD    TAIL
 02E3 73                  MOV     M,E
 02E4 2C                  INR     L
 02E5 220601              SHLD    TAIL
 02E8 3A0801              LDA     BAKLOG
 02EB 3C                  INR     A
 02EC 320801              STA     BAKLOG
 02EF FEC0                CPI     STOPLMT
 02F1 C0                  RNZ
 02F2 CDF602              CALL    STOPHST
 02F5 C9                  RET
                  ;
 02F6 3A0301      STOPHST LDA     HOSTON  ;IS HOST ALREADY STOPPED?
 02F9 FE00                CPI     00
 02FB C8111A01            RZ              ;YES.  RETURN
                                                      LXI     D,HSTOP ;NO.  THEN STOP IT.
 02FF CD670B              CALL    MSGHOST
 0302 3E00                MVI     A,00
 0304 320301              STA     HOSTON
 0307 C9                  RET
                  ;
 0308 3A0301      STRTHST LDA     HOSTON  ;IS HOST ALREADY STARTED?
 030B FE00                CPI     00
 030D C0                  RNZ             ;YES.   RETURN
 030E 110B01              LXI     D,HGO   ;NO.  THEN START IT.
 0311 CD670B              CALL    MSGHOST
 0314 3E01                MVI     A,01
 0316 320301              STA     HOSTON
 0319 C9                  RET
                  ;
                  ;
                  ;--------------  SPECIAL CONTROL CODE HANDLERS
                  ;
 031A 3A2703      SWCHPT  LDA     AUXON
 031D 47                  MOV     B,A
 031E 3E01                MVI     A,1
 0320 90                  SUB     B
 0321 322703              STA     AUXON
 0324 C35002              JMP     SGET
                  ;
 0327 01          AUXON   DB       1
                  ;
 0328 3E01        SWBEL   MVI     A,1             ;SET BELL SWITCH
```

```
032A 323003             STA     BELWAK
032D C35002             JMP     SGET
                ;
0330 00         BELWAK  DB      0
                ;
0331 3A3C03     SWECHO  LDA     ECHO
0334 EE01               XRI     01H
0336 323C03             STA     ECHO
0339 C35002             JMP     SGET
                ;
033C 01         ECHO    DB      1       ;1 - NO ECHO, 0 - ECHO TO CRT
                ;
033D CD200D     FORSND  CALL    CONINPF         ;FORCE SEND NEXT CHAR TO HOST
0340 5F                 MOV     E,A
0341 C33F02             JMP     SPUT
                ;
0344 11B303     LOCAL   LXI     D,LMESS         ;DISPLAY 'LOCAL MODE'
0347 CD700D             CALL    STRINGF
034A CD200D             CALL    CONINPF
034D FE0D               CPI     CR
034F CAF703             JZ      HELP
0352 FE03               CPI     CTLC
0354 CAC501             JZ      EXIT
0357 E65F               ANI     5FH             ;CONVERT TO UPPER CASE
0359 D641               SUI     'A'             ;SET UP FOR JUMP TABLE
035B FAAA03             JM      NOTYET
035E FE1AF2AA03         CPI     1AH
                                  JP      NOTYET          ;IF > ASCII 'Z'
0363 217603             LXI     H,IFA
0366 5F                 MOV     E,A             ;LB OF INDEX
0367 1600               MVI     D,0             ;HB OF INDEX
0369 19                 DAD     D               ;ADD INDEX TO BASE OF JUMP TABLE
036A 19                 DAD     D               ; TWICE BECAUSE 2 BYTES/WORD
036B 23                 INX     H               ;ADDRESS HIGH BYTE FIRST
036C 56                 MOV     D,M             ;HB OF JUMP ADDRESS
036D 2B                 DCX     H
036E 5E                 MOV     E,M             ;LB OF JUMP ADDRESS
036F EB                 XCHG                    ;JUMP ADDRESS TO HL
0370 227403             SHLD    DUMMY+1         ;FILL IN JUMP ADDRESS
0373 C37303     DUMMY   JMP     DUMMY           ;JUMP ADDRESS IS SUPPLIED ABOVE
                ;
                ; TABLE OF JUMP ADDRESSES:
                ;                A       B      C      D        E         F        G
0376 AA03DF07C5IFA      DW      NOTYET,CHGBDR,EXIT,DSKDIR,TERMINAL,NOTYET,NOTYET
                ;               H      I      J      K      L      M      N      O
0384 F703AA03AA         DW      HELP,NOTYET,NOTYET,NOTYET,LOGON,NOTYET,NOTYET,OFF
                ;                P      Q      R       S     T        U      V
0394 CE08F705D9         DW      PRINTR,CHGBUF,RECEIVE,SEND,TERMINAL,NOTYET,VAXHST
                ;                W      X      Y Z
03A2 B00AAA03AA         DW      WAIT,NOTYET,NOTYET,NOTYET
                ;
                ;
03AA 11C503     NOTYET  LXI     D,YETMSG
03AD CD700D             CALL    STRINGF
03B0 C34403             JMP     LOCAL
                ;
03B3 0D0A4C4F43LMESS    DB      CR,LF,'LOCAL MODE  >  $'
03C5 070D0A4E4FYETMSG   DB      BEL,CR,LF,'NOT IMPLEMENTED YET.$'
03DD 0D0A46494CFMESS    DB      CR,LF,'FILE NAME?  >  $'
                ;
                ;
```

```
 03EF 1E7F      TRADE   MVI     E,GOODBS          ;SUBSTITUTE GOOD BS/DEL CHAR
 03F1 C33F02            JMP     SPUT              ;FOR A BAD ONE
                ;
                ;
                ;---------------  SUBROUTINES FOR LOCAL MODE
                ;
 03F4 C3AA03    DSKDIR  JMP     NOTYET
                ;
 03F7 110004    HELP    LXI     D,HLPMSG
 03FA CD700D            CALL    STRINGF
 03FD C34403            JMP     LOCAL
                ;
 0400 0C0A0A2020HLPMSG  DB      FF,LF,LF,'   OPTIONS AVAILABLE:',CR,LF,LF
 041B 0942094348        DB      TAB,'B',TAB,'CHANGE BAUD RATE (E)',CR,LF
 0434 0943094558        DB      TAB,'C',TAB,'EXIT TO CP/M (E)',CR,LF
 0449 0944094449        DB      TAB,'D',TAB,'DISK DIRECTORY (L)',CR,LF
 0460 0945094558        DB      TAB,'E',TAB,'EXIT TO TERMINAL MODE (E)',CR,LF
 047E 0948094845        DB      TAB,'H',TAB,'HELP (L)',CR,LF
 048B 094C095345        DB      TAB,'L',TAB,'SEND LOGON TO HOST (E)',CR,LF
 04A6 094F095345        DB      TAB,'O',TAB,'SEND LOGOFF TO HOST (E)',CR,LF
 04C2 095009544F        DB      TAB,'P',TAB,'TOGGLE PRINTER ON/OFF (L)',CR,LF
                                                                          DB      TAB,'Q',TAB,'CHANGE RECEIVING
 0505 0952095245        DB      TAB,'R',TAB,'RECEIVE FILE FROM HOST (L)',CR,LF
 0524 0953095345        DB      TAB,'S',TAB,'SEND FILE TO HOST (L)',CR,LF
 053E 0954095445        DB      TAB,'T',TAB,'TERMINAL MODE (E)',CR,LF
 0554 0956094348        DB      TAB,'V',TAB,'CHANGE TO VAX-11 MODE (E)',CR,LF
 0572 0957095741        DB      TAB,'W',TAB,'WAIT - SET SENDING DELAY (L)',CR,LF
 0593 0A09284C29        DB      LF,TAB,'(L) COMMANDS RETURN TO LOCAL MODE',CR,LF
 05B8 0928452920        DB      TAB,'(E) COMMANDS EXIT LOCAL MODE',CR,LF,LF,'$'
                ;
 05D9 11DD02    LOGON   LXI     D,CRLF
 05DC CD700D            CALL    STRINGF
 05DF 111F01            LXI     D,LONMSG
 05E2 CD670B            CALL    MSGHOST
 05E5 C31502            JMP     TERM2
                ;
 05E8 11DD02    OFF     LXI     D,CRLF
 05EB CD700D            CALL    STRINGF
 05EE 114701            LXI     D,OFFMSG
 05F1 CD670B            CALL    MSGHOST
 05F4 C31502            JMP     TERM2
                ;
 05F7 113706    CHGBUF  LXI     D,CHG1
 05FA CD700D            CALL    STRINGF
 05FD CD9702    GETOPT  CALL    CONIO
 0600 CAFD05            JZ      GETOPT
 0603 FE41              CPI     41H
 0605 CA1B06            JZ      GOTA
 0608 FE42              CPI     42H
 060A CA2906            JZ      GOTB
 060D 3E00              MVI     A,00
 060F 321D0D            STA     BFSIZE
 0612 11C807            LXI     D,CMSG
 0615 CD700D            CALL    STRINGF
 0618 C31502            JMP     TERM2
 061B 3E01      GOTA    MVI     A,01
 061D 321D0D            STA     BFSIZE
 0620 119A07            LXI     D,AMSG
 0623 CD700D            CALL    STRINGF
 0626 C31502            JMP     TERM2
 0629 3E80      GOTB    MVI     A,80H
 062B 321D0D             STA     BFSIZE
 062E 11B107             LXI     D,BMSG
 0631 CD700D             CALL    STRINGF
 0634 C31502             JMP     TERM2
 0637 0D0A0A5345CHG1     DB      CR,LF,LF,'SELECT THE SIZE OF THE RECEIVING'
 065A 2042554646         DB      ' BUFFER BY TYPING THE LETTER REPRESENTING',CR,LF
 0685 594F555220         DB      'YOUR CHOICE IN THE FOLLOWING TABLE.',CR,LF,LF,LF
 06AC 53454C4543         DB      'SELECTION         BUFFER SIZE       FOR SYSTEMS',CR,LF
 06DD 2020202020         DB      '               (IN CP/M SECTORS)       WITH',CR,LF,LF
 070B 2020204120         DB      '   A                    1             32K RAM',CR,LF
 073A 2020204220         DB      '   B                   128            48K RAM',CR,LF
 0769 2020204320         DB      '   C (DEFAULT)         256            64K RAM',CR,LF
 0798 0A24               DB      LF,'$'
 079A 4F5054494FAMSG     DB      'OPTION  A  SELECTED.',CR,LF,'$'
 07B1 4F5054494FBMSG     DB      'OPTION  B  SELECTED.',CR,LF,'$'
                                                   CMSG   DB      'OPTION  C  SELECTED.',CR,LF,'$'

                   ;
 07DF 112108       CHGBDR LXI    D,BDMSG1
 07E2 CD700D             CALL    STRINGF
 07E5 CD200D             CALL    CONINPF
 07E8 E65F               ANI     5FH               ; FORCE UPPER CASE
 07EA FE42               CPI     'B'
 07EC CA0808             JZ      BDR12
 07EF 116908             LXI     D,BDMSG2
 07F2 CD700D             CALL    STRINGF
 07F5 3E83               MVI     A,83H
 07F7 D3DB               OUT     330Q+3
 07F9 3E80               MVI     A,80H
 07FB D3D8               OUT     330Q
 07FD 3E01               MVI     A,01H
 07FF D3D9               OUT     330Q+1
 0801 3E03               MVI     A,03H
 0803 D3DB               OUT     330Q+3
 0805 C31502             JMP     TERM2
 0808 118308       BDR12  LXI    D,BDMSG3
 080B CD700D             CALL    STRINGF
 080E 3E83               MVI     A,83H
 0810 D3DB               OUT     330Q+3
 0812 3E60               MVI     A,60H
 0814 D3D8               OUT     330Q
 0816 3E00               MVI     A,00H
 0818 D3D9               OUT     330Q+1
 081A 3E03               MVI     A,03H
 081C D3DB               OUT     330Q+3
 081E C31502             JMP     TERM2
                   ;
 0821 0D0A0A5365BDMSG1   DB      CR,LF,LF,'Select baud rate by typing'
 083E 0D0A274127         DB      CR,LF,'''A'' for 300 baud or',CR,LF
 0855 2742272066         DB      '''B'' for 1200 baud',CR,LF,'$'
 0869 0D0A0A4261BDMSG2   DB      CR,LF,LF,'Baud rate set at 300',CR,LF,'$'
 0883 0D0A0A4275BDMSG3   DB      CR,LF,LF,'Buad rate set at 1200',CR,LF,'$'
                   ;
 089E 0655         VAXHST MVI    B,55H             ;MOVE VAXMSG BLOCK TO
 08A0 216001             LXI     H,VAXMSG          ;HOSTBF BLOCK AND THEN
 08A3 110B01             LXI     D,HOSTBF          ;GO TO TERM2.
 08A6 7E           MOVBYT MOV    A,M
 08A7 EB                 XCHG
 08A8 77                 MOV     M,A
 08A9 05                 DCR     B
 08AA FE00               CPI     00
 08AC CAB508             JZ      VAXH1
 08AF 13                  INX     D
 08B0 23                  INX     H
 08B1 EB                  XCHG
 08B2 C3A608              JMP     MOVBYT
 08B5 11BE08     VAXH1    LXI     D,VAXMOD                 ;INDICATE MODE IS VAX
 08B8 CD700D              CALL    STRINGF
 08BB C31502              JMP     TERM2
 08BE 5641582D31VAXMOD    DB      'VAX-11 MODE.',CR,LF,LF,'$'
 08CE 3A2703     ;
                  PRINTR         LDA     AUXON            ;TOGGLE PRINTER OFF/ON
 08D1 EE01                XRI     01H
 08D3 322703              STA     AUXON
 08D6 C34403              JMP     LOCAL
                 ;
                 ;
                 ;  RECEIVE A FILE FROM HOST
                 ;       ESTABLISH STATE
                 ;       LOOP FOR EACH CHAR
                 ;           CHECK CONSOLE
                 ;               ESC  ------------->
                 ;           GET CHAR FROM HOST
                 ;               NONE  ------------>
                 ;               END OF FILE  ----->
                 ;           WRITE CHAR TO MEMORY
                 ;               MANAGE BUFFER
                 ;               COUNT CHARS IN SECTOR
                 ;               WHEN NECESSARY, WRITE SECTOR
                 ;                   HOST WAIT
                 ;                   DISK WRITE
                 ;                   HOST CONTINUE
                 ;       CLOSE FILE
                 ;
 08D9 3E01       RECEIVE MVI      A,01             ;TURN PRINTER OFF
 08DB 322703              STA     AUXON
 08DE CDDC0A              CALL    GETFN            ;GET FILE NAME
 08E1 115C00              LXI     D,FCB
 08E4 CD860D              CALL    OPENFIF
 08E7 FEFF                CPI     0FFH
 08E9 CAF808              JZ      REC2             ;IF FILE IS NEW
 08EC 110C09              LXI     D,EXISTM         ;FILE EXISTS.
 08EF CD700D              CALL    STRINGF          ;WARN
 08F2 115C00              LXI     D,FCB            ;AND DELETE OLD ONE
 08F5 CD900D              CALL    DELETEF
 08F8 115C00     REC2     LXI     D,FCB
 08FB CD9F0D              CALL    MAKEFIF
 08FE FEFF                CPI     0FFH
 0900 C24D09              JNZ     REC7             ;IF MAKE WAS SUCCESSFUL
 0903 112709              LXI     D,FULLMSG
 0906 CD700D              CALL    STRINGF
 0909 C34403              JMP     LOCAL
                 ;
 090C 070D0A4558EXISTM    DB      BEL,CR,LF,'EXISTING FILE DELETED',CR,LF,'$'
 0927 070D0A4449FULLMSG   DB      BEL,CR,LF,'DIRECTORY FULL.  ACTION CANCELLED.$'
                 ;
 094D 110901     REC7     LXI     D,CRMSG
 0950 CD670B              CALL    MSGHOST
 0953 CD350D     REC4     CALL    RDRINPF ;WAIT FOR ECHO OF CR SENT TO START TRANSMISSION
 0956 FE0D                CPI     CR
 0958 C25309              JNZ     REC4
 095B CD9702     REC3     CALL    CONIO            ;LOOP FOR EACH CHAR
 095E FE1A                CPI     EOD              ;TO TERMINATE TRANSMISSION
```

```
0960 CA8B09            JZ      RECEOD          ;IF ESCAPE, ELSE IGNOR
0963 CD350D            CALL    RDRINPF         ;WAIT FOR CHAR
0966 CA5B09FE1A        JZ      REC3            ;IF NOTHING WAS RECEIVED
                                                                              CPI     HSTEOD
096B CA8B09            JZ      RECEOD          ;IF END OF FILE
096E F5                PUSH    PSW
096F CD9E02            CALL    PRNT            ;ECHO TO CONSOL
0972 F1                POP     PSW
0973 F5                PUSH    PSW
0974 CD9C0B            CALL    WRTMEMF
0977 C24403            JNZ     LOCAL           ;IF WRITE WAS NOT SUCCESSFUL
097A F1                POP     PSW
097B FE0D              CPI     CR
097D C25B09            JNZ     REC3
0980 3E0A              MVI     A,LF
0982 CD9C0B            CALL    WRTMEMF
0985 C24403            JNZ     LOCAL
0988 C35B09            JMP     REC3
               ;
098B 115601    RECEOD  LXI     D,HNOSND        ;END OF TRANSMISSION.  CLOSE FILES
098E CD670B            CALL    MSGHOST
0991 3E1A              MVI     A,EOD           ;CP/M END OF FILE
0993 CD9C0B            CALL    WRTMEMF
0996 C34403            JMP     LOCAL
               ;
               ;
               ;  SEND A FILE FROM TERMINAL TO HOST
               ;       ESTABLISH STATE
               ;           OPEN FILE
               ;           SEND START SIGNAL
               ;       LOOP FOR EACH LOGICAL SECTOR (128 BYTES)
               ;           READ SECTOR FROM DISK
               ;           LOOP FOR EACH OF 128 CHARS
               ;               GET CHAR FROM MEMORY
               ;               LF?  --------->
               ;               CR?  --------->
               ;               TAB?  -------->
               ;               EOD?  -------->
               ;               INVALID?  ---->
               ;               SEND CHAR TO HOST
               ;               IF RESPONSE, THEN XOFF?  ---->
               ;                       ELSE ECHO RESPONSE
               ;               CHECK CONSOLE
               ;                   ESC  -------->
               ;       EOD OR ESC:  CLOSE FILES
               ;
0999 3E01      SEND    MVI     A,01            ;TURN PRINTER OFF
099B 322703            STA     AUXON
099E CDDC0A            CALL    GETFN
09A1 115C00            LXI     D,FCB
09A4 CD860D            CALL    OPENFIF         ;OPEN SOURCE FILE
09A7 FEFF              CPI     0FFH
09A9 CA930A            JZ      SENDNOT         ;IF FILE NOT FOUND
09AC 111001            LXI     D,HREC          ;SET HOST TO RECEIVE A FILE
09AF CD670B            CALL    MSGHOST
               ;
09B2 110010    SENDL1  LXI     D,BUFF          ;LOOP FOR EACH SECTOR
09B5 D5CDA40D          PUSH    D               ;BUFF REAPPEARS IN HL
                                                                      CALL    SETDMAF
09B9 115C00            LXI     D,FCB
09BC CD950D            CALL    READSQF
09BF B7                ORA     A
```

```
09C0 CAC809            JZ      SENDL7          ;IF NOT END OF FILE
09C3 C5                PUSH    B               ;FILL STACK TO BE CLEARED
09C4 C5                PUSH    B               ;IN SENDOED
09C5 C3880A            JMP     SENDEOD
               ;
09C8 0681      SENDL7  MVI     B,129           ;INITIALIZE LOOP COUNTER
09CA C5                PUSH    B
               ;
09CB C1        SENDL2  POP     B               ;LOOP FOR EACH CHAR
09CC E1                POP     H
09CD 05                DCR     B
09CE AF                XRA     A
09CF 80                ADD     B               ;DONE WITH THIS SECTOR?
09D0 CAB209            JZ      SENDL1          ;GET NEXT SECTOR
09D3 7E                MOV     A,M             ;GET CHAR FROM MEMORY
09D4 23                INX     H
09D5 E5                PUSH    H
09D6 C5                PUSH    B
09D7 E67F              ANI     7FH             ;GUARANTEE VALID ASCII CHAR
09D9 5F                MOV     E,A
09DA FE0A              CPI     LF
09DC CA850A            JZ      SENDLF
09DF FE0D              CPI     CR
09E1 CAF309            JZ      SENDL3
09E4 FE09              CPI     TAB
09E6 CAFD09            JZ      SENDTAB
09E9 FE1A              CPI     EOD
09EB CA880A            JZ      SENDEOD
09EE FE20              CPI     20H             ;< 20H ARE CONTROL CODES
09F0 FA000A            JM      SENDINV
09F3 CD280A    SENDL3  CALL    SENDCHR         ;RETURNS (A) = 0 IF EOD.
09F6 B7                ORA     A
09F7 CA880A            JZ      SENDEOD
09FA C3CB09            JMP     SENDL2          ;GET NEXT CHAR
               ;
09FD C3F309    SENDTAB JMP     SENDL3          ;EXPAND TABS LATER
               ;
0A00 11090A    SENDINV LXI     D,INVMSG        ;INVALID CHAR IN FILE
0A03 CD700D            CALL    STRINGF         ;WARN AND IGNOR
0A06 C3CB09            JMP     SENDL2
               ;
0A09 070D0A494EINVMSG  DB      BEL,CR,LF,'INVALID CHARACTER IN FILE',CR,LF,'$'
               ;
0A28 3A3C03    SENDCHR LDA     ECHO
0A2B FE00              CPI     0
0A2D C2340A            JNZ     SENDL8          ;IF NO ECHO TO CONSOLE BEFORE SEND
0A30 7B                MOV     A,E
0A31 CD9E02            CALL    PRNT
0A34 CD4E0D    SENDL8  CALL    PUNOUTF         ;SEND CHAR (E) TO HOST
0A37 3ADA0A            LDA     NDELAY          ;NUMBER OF DELAY LOOPS
0A3A B7CA410A          ORA     A
                                      JZ      SENDL4          ;IF NO DELAY
0A3E CD860B            CALL    DELAYF
0A41 CD350D    SENDL4  CALL    RDRINPF         ;RESPONSE?
0A44 B7                ORA     A
0A45 CA530A            JZ      CKPUN           ;IF NOTHING RECEIVED
0A48 FE13              CPI     XOFF            ;XOFF MEANS WE MUST WAIT
0A4A CA670A            JZ      SENDOFF
0A4D CD9E02            CALL    PRNT            ;ECHO IT TO CONSOL
0A50 C3410A            JMP     SENDL4          ;MORE RESPONSE?
0A53 CD590D    CKPUN   CALL    PUNSTAT         ;KEEP WATCHING INPUT FROM
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```
0A56 FE00                CPI     00              ;HOST UNTIL PUN: PORT
0A58 CA410A              JZ      SENDL4          ;IS CLEAR.
0A5B CD9702    SENDL5    CALL    CONIO           ;CHECK FOR CONSOL INPUT
0A5E D61A                SUI     EOD             ;RETURN (A) = 0 IF ^Z
0A60 C9                  RET
               ;
0A61 11790A    SENDL6    LXI     D,WAITMG        ;TELL CONSOL WE ARE WAITING
0A64 CD700D              CALL    STRINGF
0A67 CD350D    SENDOFF   CALL    RDRINPF         ;HOST IS SLOW - WAIT FOR XON
0A6A FE11                CPI     XON
0A6C CA530A              JZ      CKPUN
0A6F B7                  ORA     A
0A70 CA670A              JZ      SENDOFF         ;NOTHING RECEIVED, WAIT
0A73 CD9E02              CALL    PRNT            ;ELSE ECHO RECEIVED CHAR
0A76 C3670A              JMP     SENDOFF         ;AND CONTINUE WAITING
               ;
0A79 0D0A574149WAITMG    DB      CR,LF,'WAITING',CR,LF,'$'
               ;
0A85 C3F309    SENDLF    JMP     SENDL3          ;LF CAN BE HANDLED LATER
               ;
0A88 111501    SENDEOD   LXI     D,HCLOSE        ;CLOSE HOST FILE
0A8B CD670B              CALL    MSGHOST
0A8E C1                  POP     B
0A8F E1                  POP     H               ;CLEAR STACK
0A90 C34403              JMP     LOCAL
               ;
0A93 119C0A    SENDNOT   LXI     D,FNFMSG        ;FILE NOT FOUND TO SEND
0A96 CD700D              CALL    STRINGF
0A99 C34403              JMP     LOCAL
               ;
0A9C 070D0A4649FNFMSG    DB      BEL,CR,LF,'FILE NOT FOUND',CR,LF,'$'
               ;
0AB0 11BF0A    WAIT      LXI     D,DELAYM        ;SET COUNTER FOR NUMBER
0AB3 CD700D              CALL    STRINGF         ;DELAY LOOPS
0AB6 CD200D              CALL    CONINPF         ;USE THE ASCII CODE AS INDEX
0AB9 32DA0A              STA     NDELAY
0ABC C34403              JMP     LOCAL
               ;
0ABF 0D0A454E54DELAYM    DB      CR,LF,'ENTER DELAY COUNTER  >  $'
0ADA 0000      NDELAY    DB      0,0
               ;
               ;
               ; GET A FILE NAME FROM THE OPERATOR
               ;
               ;         STORE FILE NAME IN FCB
                                              ;
0ADC 215C00    GETFN     LXI     H,FCB
0ADF AF                  XRA     A
0AE0 326800              STA     FCB+12          ;ZERO CURRENT EXTENT
0AE3 327C00              STA     FCB+32          ;ZERO CURRENT RECORD
0AE6 3600                MVI     M,0
0AE8 23                  INX     H
0AE9 0E0B                MVI     C,11
0AEB 3E20                MVI     A,' '
0AED CD7F0B              CALL    FILLF           ;BLANK NAME AREA
0AF0 11DD03              LXI     D,FMESS
0AF3 CD700D              CALL    STRINGF
0AF6 21570B              LXI     H,GETFNR
0AF9 0E0E                MVI     C,14
0AFB 3E20                MVI     A,' '
0AFD CD7F0B              CALL    FILLF           ;BLANK BUFFER AREA
```

```
0B00 11550B              LXI     D,GETFNRB
0B03 CD7B0D              CALL    READCNF
0B06 11570B              LXI     D,GETFNR
0B09 215C00              LXI     H,FCB
0B0C 13                  INX     D
0B0D 1A                  LDAX    D
0B0E 1B                  DCX     D
0B0F FE3A                CPI     ':'
0B11 C21F0B              JNZ     GETNAM
0B14 1A                  LDAX    D
0B15 E60F                ANI     0FH
0B17 FE03                CPI     3               ;VALID DISK NUMBER?
0B19 F2DC0A              JP      GETFN
0B1C 77                  MOV     M,A
0B1D 13                  INX     D
0B1E 13                  INX     D
0B1F 23         GETNAM   INX     H               ;FILE NAME
0B20 E5                  PUSH    H
0B21 0E09                MVI     C,9
0B23 1A         GETFNL1  LDAX    D
0B24 FE2E                CPI     '.'
0B26 CA3A0B              JZ       GETFNL1F
0B29 FE20                CPI     ' '
0B2B C8                  RZ
0B2C FE41                CPI     'A'
0B2E FA330B              JM      GETFN3          ;IF NOT LOWER CASE
0B31 E65F                ANI     5FH             ;CONVERT TO UPPER CASE
0B33 77         GETFN3   MOV     M,A
0B34 13                  INX     D
0B35 23                  INX     H
0B36 0D                  DCR     C
0B37 C2230B              JNZ     GETFNL1
0B3A E1         GETFNL1F POP     H
0B3B 010800              LXI     B,8
0B3E 09                  DAD     B
0B3F 13                  INX     D
0B40 0E03                MVI     C,3
0B42 1A         GETFNL2  LDAX    D               ;EXTENSION
0B43 FE20C8              CPI     ' '
                                        RZ
0B46 FE41                CPI     'A'
0B48 FA4D0B              JM      GETFN4          ;IF NOT LOWER CASE
0B4B E65F                ANI     5FH
0B4D 77         GETFN4   MOV     M,A
0B4E 13                  INX     D
0B4F 23                  INX     H
0B50 0D                  DCR     C
0B51 C2420B              JNZ     GETFNL2
0B54 C9                  RET
                ;
0B55 0E00313233GETFNRB   DB    14,0,'1234567890123456'
0B57 =          GETFNR   EQU   GETFNRB+2
                ;
                ;
                ;  MSGHOST:  SEND MESSAGE TO THE HOST
                ;        DE POINTS TO THE MESSAGE (MUST END IN A $)
                ;
0B67 D5         MSGHOST PUSH    D
0B68 D1         MSGL1   POP     D
0B69 1A                 LDAX    D
0B6A 13                 INX     D
```

```
 0B6B FE24                CPI     '$'
 0B6D C8                  RZ                      ;END OF MESSAGE
 0B6E D5                  PUSH    D
 0B6F 5F                  MOV     E,A
 0B70 CD4E0D              CALL    PUNOUTF         ;SEND CHAR TO HOST
 0B73 CD350D              CALL    RDRINPF         ;HAS HOST SENT ANYTHING BACK?
 0B76 CA680B              JZ      MSGL1           ;IF NOTHING RECEIVED
 0B79 CD9E02              CALL    PRNT            ;ECHO RECEIVED CHAR
 0B7C C3680B              JMP     MSGL1
                 ;
                 ;
                 ;  FILLF         FILL MEMORY WITH CHAR
                 ;
                 ;        ENTRY:  (A)   CHAR TO BE FILLED
                 ;                (C)   NUMBER OF LOCATIONS TO BE FILLED
                 ;                (HL)  BEGINNING ADDRESS
                 ;
 0B7F 77         FILLF    MOV     M,A
 0B80 23                  INX     H
 0B81 0D                  DCR     C
 0B82 C27F0B              JNZ     FILLF
 0B85 C9                  RET
                 ;
                 ;
                 ;  DELAYF:  DELAY FOR A WHILE.  (A) CONTAINS COUNTER
                 ;
 0B86 3D         DELAYF   DCR     A
 0B87 C8                  RZ
 0B88 C5                  PUSH    B
 0B89 0620                MVI     B,20H
 0B8B 05         DEL1     DCR     B
 0B8C CA980B              JZ      DEL2
 0B8F 2ADA0A22DA          LHLD    NDELAY
                                          SHLD    NDELAY
 0B95 C38B0B              JMP     DEL1
 0B98 C1         DEL2     POP     B
 0B99 C3860B              JMP     DELAYF
                 ;
                 ;
                 ;  WRTMEMF:  HANDLE WRITING A CHAR IN REGISTER A TO MEMORY
                 ;            AND TO DISK.
                 ;            ASSUMES DISK FILE HAS ALREADY BEEN OPENED.
                 ;            IF (A) = EOD (^Z), DISK FILE IS CLOSED
                 ;
                 ;        RETURNS (A) = 0 IF SUCCESSFUL, <> 0 OTHERWISE
                 ;
 0B9C 2A130D     WRTMEMF  LHLD    MEMADD
 0B9F 77                  MOV     M,A
 0BA0 23                  INX     H
 0BA1 22130D              SHLD    MEMADD
 0BA4 FE1A                CPI     EOD
 0BA6 CA5A0C              JZ      MEMCLOS         ;IF END OF FILE
 0BA9 3A190D              LDA     MEMCNT          ;MEMORY COUNT 0 .. 128
 0BAC C601                ADI     1
 0BAE FE80                CPI     80H
 0BB0 CAB80B              JZ      SECFUL          ;IF LOGICAL SECTOR IS FULL
 0BB3 32190D              STA     MEMCNT
 0BB6 AF                  XRA     A               ;SUCCESS
 0BB7 C9                  RET
                 ;
 0BB8 3A1D0D     SECFUL   LDA     BFSIZE
```

```
0BBB 47                      MOV     B,A
0BBC 3A1A0D                  LDA     SECNT              ;LOGICAL SECTOR FULL
0BBF C601                    ADI     1                  ;INCREMENT SECTOR COUNTER
0BC1 B8                      CMP     B
0BC2 CA060C                  JZ      BUFFUL             ;IF BUFFER FULL
0BC5 321A0D                  STA     SECNT
0BC8 AF                      XRA     A                  ;RESET CHAR COUNTER
0BC9 32190D                  STA     MEMCNT
0BCC C9                      RET
                   ;
0BCD 070D0A534FBFLMSG        DB      BEL,CR,LF,'SOURCE FILE IS TOO LARGE.'
0BE9 0D0A444553              DB      CR,LF,'DESTINATION FILE CLOSED.',CR,LF,'$'
                   ;
0C06 CDF602        BUFFUL    CALL    STOPHST            ;HOST MUST STOP SENDING
0C09 3A1B0D                  LDA     BFFL               ;SET BUFFER FULL FLAG
0C0C 3C                      INR     A
0C0D 321B0D                  STA     BFFL
0C10 21000E                  LXI     H,OVFLBF           ;PREPARE FOR OVERFLOW
0C13 22170D                  SHLD    OVBFAD
0C16 3E00          GETSTRG   MVI     A,0                ;GET STRAGGLERS UNTIL TIMED OUT
0C18 321E0D                  STA     TIME1
0C1B 3E1F                    MVI     A,1FH
0C1D 321F0D                  STA     TIME2
0C20 CD350D        GET1      CALL    RDRINPF
0C23 FE00                    CPI     0
0C25 C23F0C                  JNZ     GOTIT
0C28 3A1E0D3D                LDA     TIME1
                                             DCR     A
0C2C 321E0D                  STA     TIME1
0C2F C2200C                  JNZ     GET1
0C32 3A1F0D                  LDA     TIME2
0C35 3D                      DCR     A
0C36 321F0D                  STA     TIME2
0C39 C2200C                  JNZ     GET1
0C3C C35A0C                  JMP     MEMCLOS            ;ASSUME NO MORE COMING
                   ;
0C3F 2A170D        GOTIT     LHLD    OVBFAD             ;PUT STRAGGLER IN OVERFLOW BUFFER,
0C42 47                      MOV     B,A
0C43 77                      MOV     M,A
0C44 23                      INX     H                  ;....INCREMENT COUNTERS,
0C45 22170D                  SHLD    OVBFAD
0C48 3A1C0D                  LDA     OVCNT
0C4B 3C                      INR     A
0C4C 321C0D                  STA     OVCNT
0C4F 78                      MOV     A,B                ;....AND INSERT LINE FEEDS
0C50 FE0D                    CPI     CR                 ;          AFTER CARRIAGE RETURNS.
0C52 C2160C                  JNZ     GETSTRG
0C55 3E0A                    MVI     A,LF
0C57 C33F0C                  JMP     GOTIT
                   ;
0C5A 3A1A0D        MEMCLOS   LDA     SECNT              ;WRITE MEMORY BUFFER TO DISK
0C5D 47                      MOV     B,A                ;AND CLOSE DESTINATION FILE
0C5E 04                      INR     B                  ;(WE COUNTED FROM 0)
0C5F 2A150D                  LHLD    BUFADD             ;(B) COUNTS DOWN LOGICAL SECTORS
0C62 22130D                  SHLD    MEMADD             ;RESET ADDRESS OF MEMORY BUFFER
0C65 3E80          MEML1     MVI     A,80H              ;INCREMENT MEMADD BY 80H
0C67 2A130D                  LHLD    MEMADD             ;BYTES WRITTEN PER SECTOR
0C6A 54                      MOV     D,H
0C6B 5D                      MOV     E,L
0C6C 83                      ADD     E
0C6D 6F                      MOV     L,A
```

```
0C6E D2750C                JNC     MEML4
0C71 3E01                  MVI     A,1
0C73 82                    ADD     D
0C74 67                    MOV     H,A
0C75 22130D       MEML4    SHLD    MEMADD
0C78 C5                    PUSH    B
0C79 CDA40D                CALL    SETDMAF
0C7C 115C00                LXI     D,FCB
0C7F CD9A0D                CALL    WRITSQF
0C82 C1                    POP     B
0C83 B7                    ORA     A
0C84 C2ED0C                JNZ     MEML3           ;IF DISK FULL
0C87 05                    DCR     B
0C88 AF                    XRA     A
0C89 80                    ADD     B
0C8A C2650C                JNZ     MEML1           ;IF NOT ALL SECTORS ARE WRITTEN
                  ;
0C8D 3A1B0D                LDA     BFFL            ;HOW DID WE GET HERE?
0C90 FE00                  CPI     00H
0C92 CAD70C                JZ      MEML2           ;....BECAUSE OF EOF
0C95 AF321B0D              XRA     A               ;....BECAUSE OF FULL BUFFER
                                                                   STA     BFFL            ;INDICATE BUFFER NOT
0C99 321A0D                STA     SECNT           ;ZERO SECTOR COUNT
0C9C 32190D                STA     MEMCNT          ;  AND CHAR COUNT
0C9F 2A150D                LHLD    BUFADD          ;RESET ADDRESS OF MEMORY BUFFER
0CA2 22130D                SHLD    MEMADD
0CA5 3A1C0D                LDA     OVCNT           ;ARE THERE ANY
0CA8 FE00                  CPI     0               ;   OVERFLOW CHARACTERS?
0CAA CACF0C                JZ      HOSTGO          ;NO
0CAD 3A1C0D                LDA     OVCNT           ;YES...SO MOVE THEM INTO
0CB0 47                    MOV     B,A             ;    THE RECEIVER BUFFER.
0CB1 21000E                LXI     H,OVFLBF
0CB4 EB                    XCHG
0CB5 2A130D                LHLD    MEMADD
0CB8 1A           MOVE     LDAX    D
0CB9 FE1A                  CPI     EOD
0CBB CA5A0C                JZ      MEMCLOS         ;OOPS..END OF DATA IN OVERFLOW
0CBE 77                    MOV     M,A
0CBF 23                    INX     H
0CC0 22130D                SHLD    MEMADD
0CC3 13                    INX     D
0CC4 3A190D                LDA     MEMCNT
0CC7 3C                    INR     A
0CC8 32190D                STA     MEMCNT
0CCB 05                    DCR     B
0CCC C2B80C                JNZ     MOVE
0CCF CD0803       HOSTGO   CALL    STRTHST         ;TELL HOST TO START SENDING AGAIN
0CD2 AF                    XRA     A
0CD3 321C0D                STA     OVCNT           ;ZERO OVERFLOW COUNT
0CD6 C9                    RET
                  ;
0CD7 115C00       MEML2    LXI     D,FCB           ;DONE WRITING.  CLOSE FILE
0CDA CD8B0D                CALL    CLOSEFF
0CDD AF                    XRA     A               ;RESET ALL COUNTERS AND ADDRESSES
0CDE 32190D                STA     MEMCNT
0CE1 321A0D                STA     SECNT
0CE4 2A150D                LHLD    BUFADD
0CE7 22130D                SHLD    MEMADD
0CEA C601                  ADI     1               ;FORCE FLAG
0CEC C9                    RET
                  ;
```

```
 0CED 11F60C    MEML3   LXI     D,LOSTMG        ;DISK FULL
 0CF0 CD700D            CALL    STRINGF
 0CF3 C3D70C            JMP     MEML2
                ;
 0CF6 070D0A4449LOSTMG  DB      BEL,CR,LF,'DISK FULL.  FILE CLOSED',CR,LF,'$'
                ;
 0D13 0010      MEMADD  DW      BUFF
 0D15 0010      BUFADD  DW      BUFF
 0D17 000E      OVBFAD  DW      OVFLBF
 0D19 00        MEMCNT  DB      0
 0D1A 00        SECNT   DB      0
 0D1B 00        BFFL    DB      0
 0D1C 00        OVCNT   DB      0
 0D1D 00        BFSIZE  DB      00H             ;INITIALIZED FOR 256 SECTORS
 0D1E 0000      TIME1   DB      0
                                 TIME2 DB      0
                ;
                ;
                ;  FUNCTION 1:  CONSOLE INPUT
                ;
                ;       RETURN: (A) = ASCII CHARACTER
                ;
 0D20 DBED      CONINPF  IN     350Q+5
 0D22 E601               ANI    01
 0D24 CA200D             JZ     CONINPF
 0D27 DBE8               IN     350Q
 0D29 C9                 RET
                ;
                ;CONINPF         MVI     C,1
                ;       JMP      BDOS
                ;
                ;
                ;  FUNCTION 2:  CONSOLE OUTPUT
                ;
                ;       ENTRY:  (E) = ASCII CHARACTER
                ;
                ;CONOUTF         MVI     C,2
                ;       JMP      BDOS
                ;
 0D2A DBED      CONOUTF IN      350Q+5
 0D2C E620              ANI     20H
 0D2E CA2A0D            JZ      CONOUTF
 0D31 7B                MOV     A,E
 0D32 D3E8              OUT     350Q
 0D34 C9                RET
                ;
                ;
                ;  FUNCTION 3:  READER INPUT
                ;
                ;       RETURN:  (A) = ASCII CHARACTER
                ;
 0D35 DBDD      RDRINPF IN      330Q+5
 0D37 E601              ANI     1
 0D39 C8                RZ
 0D3A DBD8              IN      330Q
 0D3C E67F              ANI     7FH
                ;RDRINPF         MVI     C,3
                ;       CALL     BDOS
                ;       ANI      7FH     ;STRIP PARITY BIT
 0D3E C8                RZ
 0D3F FE7F              CPI     DEL
```

```
0D41 CA4C0D              JZ      IGNOR
0D44 FE07                CPI     BEL
0D46 CA4C0D              JZ      IGNOR
0D49 FE0A                CPI     LF
0D4B C0                  RNZ
0D4C AF         IGNOR    XRA     A
0D4D C9                  RET
                ;
                ;
                 ;
                ;  FUNCTION 4:  PUNCH OUTPUT
                ;
                ;        ENTRY:  (E) = ASCII CHARACTER
                ;
0D4E DBDD       PUNOUTF IN       330Q+5
                        ANI      20H
0D50 E620
0D52 CA4E0D             JZ       PUNOUTF
0D55 7B                 MOV      A,E
0D56 D3D8               OUT      330Q
0D58 C9                 RET
                ;PUNOUTF         MVI     C,4
                ;       JMP      BDOS
                ;
                ;   PUNCH STATUS
                ;
0D59 DBDD       PUNSTAT IN       330Q+5
0D5B E620               ANI      20H
0D5D C9                 RET
                ;
                ;
                ;  FUNCTION 5:  LIST OUTPUT
                ;
                ;        ENTRY:  (E) = ASCII CHARACTER
                ;
0D5E 0E05       LSTOUTF MVI      C,5
0D60 C30500             JMP      BDOS
                ;
                ;  CHECK PRINTER STATUS
                ;
0D63 DBE6       PRTSTAT IN       340Q+6
0D65 E610               ANI      10H
0D67 C9                 RET
                ;
                ;
                ;  FUNCTION 6:  DIRECT CONSOLE I/0
                ;
                ;       ENTRY:   (E) = 0FFH FOR INPUT FROM CONSOLE
                ;                    = ASCII CHAR FOR OUTPUT TO CONSOLE
                ;       RETURN:  (A) = ASCII CHAR, IF ANY
                ;                    = 00 IF NO CHAR WAS ENTERED
                ;
                ;       IF       BDOS VERSION DOES NOT SUPPORT FUNCTION 6
                ;DIRCONF         MVI     C,11            ;GET CONSOLE STATUS
                ;       CALL     BDOS
                ;       RZ                        ;NOTHING WAITING
                ;       MVI      C,1        ;CONSOLE READ (BETTER IF NO ECHO)
                ;       CALL    BDOS
                ;       ENDIF
                ;
0D68 DBED       DIRCONF  IN      350Q+5
0D6A E601                ANI     1
```

```
 0D6C C8                 RZ
 0D6D DBE8               IN      350Q
 0D6F C9                 RET
                            ;
                ;DIRCONF         MVI     C,6
                ;       JMP      BDOS
                ;
                ;
                ;  FUNCTION 9:  PRINT STRING
                ;
                ;       ENTRY:  (DE) = ADDRESS OF MESSAGE
                ;                       MESSAGE MUST END WITH '$'
                ;
                ;STRINGF         MVI     C,9
                ;       JMP      BDOS
                ;
 0D70 0E09      STRINGF  MVI     C,9
 0D72 CD0500             CALL    BDOS
 0D75 F3                 DI
 0D76 AF                 XRA     A           ; CP/M turns console interrupts on so
 0D77 D3E9               OUT     350Q+1      ;   we must turn them off again.
 0D79 FB                 EI
 0D7A C9                 RET
                ;
                ;  FUNCTION 10:  READ CONSOLE BUFFER
                ;
                ;       ENTRY:   (DE) = BUFFER ADDRESS
                ;       RETURN:  ((DE)) = CONSOLE CHARACTERS
                ;
                ;READCNF         MVI     C,10
                ;       JMP      BDOS
                ;
 0D7B 0E0A      READCNF MVI     C,10
 0D7D CD0500            CALL    BDOS
 0D80 F3                DI
 0D81 AF                XRA     A           ; CP/M turns the console
 0D82 D3E9              OUT     350Q+1      ;   interrupts on so we must
 0D84 FB                EI                  ;   turn them off again.
 0D85 C9                RET
                ;
                ;  FUNCTION 15:  OPEN FILE
                ;
                ;       ENTRY:   (DE) = FCB ADDRESS
                ;       RETURN:  (A) = 0 - 3 IF SUCCESS, 0FFH OTHERWISE
                ;
 0D86 0E0F      OPENFIF MVI     C,15
 0D88 C30500            JMP     BDOS
                ;
                ;
                ;  FUNCTION 16:  CLOSE FILE
                ;
                ;       ENTRY:   (DE) = FCB ADDRESS
                ;       RETURN:  (A) = 0 - 3 IF SUCCESS, 0FFH OTHERWISE
                ;
 0D8B 0E10      CLOSEFF MVI     C,16
 0D8D C30500            JMP     BDOS
                ;
                ;
                ;  FUNCTION 19:  DELETE FILE
                ;
                ;       ENTRY:   (DE) = FCB ADDRESS
```

```
              ;       RETURN:  (A) = 0 - 3 IF SUCCESS, 0FFH OTHERWISE
```

```
                  ;
 0D90 0E13        DELETEF MVI     C,19
 0D92 C30500              JMP     BDOS
                  ;
                  ;
                  ;  FUNCTION 20:  READ SEQUENTIAL
                  ;
                  ;       ENTRY:   (DE) = FCB ADDRESS
                  ;       RETURN:  (A)  = 0 IF SUCCESS, ELSE NONZERO
                  ;
 0D95 0E14        READSQF MVI     C,20
 0D97 C30500              JMP     BDOS
                  ;
                  ;
                  ;  FUNCTION 21:  WRITE SEQUENTIAL
                  ;
                  ;       ENTRY:   (DE) = FCB ADDRESS
                  ;       RETURN:  (A)  = 0 IF SUCCESS, ELSE NONZERO
                  ;
 0D9A 0E15        WRITSQF MVI     C,21
 0D9C C30500              JMP     BDOS
                  ;
                  ;
                  ;  FUNCTION 22:  MAKE FILE - OPEN FOR OUTPUT
                  ;
                  ;       ENTRY:   (DE) = FCB ADDRESS
                  ;       RETURN:  (A)  = 0 - 3 IF SUCCESS, ELSE 0FFH
                  ;
 0D9F 0E16        MAKEFIF MVI     C,22
 0DA1 C30500              JMP     BDOS
                  ;
                  ;
                  ;  FUNCTION 26:  SET DMA ADDRESS
                  ;
                  ;       ENTRY:   (DE) = DMA ADDRESS
                  ;
 0DA4 0E1A        SETDMAF MVI     C,26
 0DA6 C30500              JMP     BDOS
                  ;
                  ;
                  ;
                  ;
 0DA9                     END
```