

```
1 ;*****
2 ;
3 ;      TOS21 - ASSI
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - ASSI MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
22 SEC11      EQU      11H
23 SEC1B      EQU      1BH
24 SEC1C      EQU      1CH
25 SEC34      EQU      34H
26 SEC21      EQU      21H
27 SEC2E      EQU      2EH
28          ;
29          ;
30          ;
31 LF          EQU      0AH
32 CR          EQU      0DH
33 ROLL        EQU      0CH
34          ;
35          ;
36          ;
37 INCHAR      EQU      0FD09H
38 OPEN        EQU      0FD1EH
39          ;
40          ;
41          ;
42 CI          EQU      0FF00H
43 CO          EQU      0FF02H
44 DEVTAB      EQU      0FF00H
45 ROLLSW      EQU      271FH
46 CSAVE       EQU      271BH
47 COSAVE      EQU      271DH
48          ;
49          ;
50          ;
51 TTI         EQU      40H
52 TTO         EQU      43H
53 RCVI        EQU      82H
54 XMIO        EQU      0CAH
55 PRNT        EQU      52H
56          ;
57          ;
58          ;
59 INBIT       EQU      1
60 OUTBIT      EQU      2
61 AUTO        EQU      20H
62 DONTCLOSE   EQU      40H
63          ;
64          ;
```

```

        65 ;
        66 PUBLIC SCNOFF,SCN01,ASSIO
        67 PUBLIC CIFILE,FN,LDEV
        68 PUBLIC FILENAME,IBFIL,LOGNAM
        69 PUBLIC CIF2,COFILE,BUCKET,NULLFILE
        70 PUBLIC PRINTER,CEFILE,REFILE,XMF,RCF
        71 EXTRN PHYSX,LDIG,UPCHAR
        72 EXTRN ECHO,PPTR,BUFDEALLOC
        73 ;
        74 ;
        75 ;
        76 CSEG
        77 ;
        78 ; UTILITY TO SCAN WHEN COMMAND ERROR
        79 ;
        80 SCNOFF:
000 C FE0D      81 CPI      CR
002 C C8        82 RZ
        83 SCN01:
003 C 2A00FF    84 LHLD     CI
006 C C009FD    85 CALL    INCHAR
009 C D8        86 RC
00A C C30000    87 JMP     SCNOFF
        88 ;
        89 ; ASSIGNMENT INTERPRETER
        90 ;
00D C 00        91 LDEV:    DB      0
00E C          92 LPTR:    DS      2
        93 ASSIO:
010 C 2100D0    94 LXI      H,0
013 C 221D27    95 SHLD     CISAVE
016 C 221D27    96 SHLD     COSAVE
        97 ASSI9:
019 C CDD801    98 CALL    LOGNAM
01C C D8        99 RC
01D C A7        100 ANA      A
01E C C22400    101 JNZ      ASS10
021 C 3E24      102 MVI      A,'$'
023 C C9        103 RET
        104 ASS10:
024 C 320D00    105 STA      LDEV
027 C 97        106 SUB      A
028 C 320000    107 STA      ECHO
02B C 2A00FF    108 LHLD     CI
02E C C009FD    109 CALL    INCHAR
031 C D8        110 RC
032 C FE3D      111 CPI      '='
034 C C26200    112 JNZ      ASSE1
037 C C009FD    113 CALL    INCHAR
03A C D8        114 RC
03D C FE2F      115 CPI      '/'
03D C CA6900    116 JZ       ASSI1
040 C FE2C      117 CPI      ','
042 C CA6900    118 JZ       ASSI1

```

0045	C	FE24		119	CPI	'\$'	
0047	C	CA6900	C	120	JZ	ASSI1	
004A	C	FE0D		121	CPI	CR	
004C	C	CA6900	C	122	JZ	ASSI1	
004F	C	CD0000	X	123	CALL	PHYSX	
0052	C	D8		124	RC		
0053	C	FE2C		125	CPI	'.'	
0055	C	CA6F00	C	126	JZ	ASSI2	
0058	C	FE24		127	CPI	'\$'	
005A	C	CA6F00	C	128	JZ	ASSI2	
005D	C	FE0D		129	CPI	CR	
005F	C	CA6F00	C	130	JZ	ASSI2	
				131	ASSE1:		
0062	C	CD0000	C	132	CALL	SCNOFF	
0065	C	3E2E		133	MVI	A, SEC2E	
				134	;		** ERROR 2E **
0067	C	37		135	STC		
0068	C	C9		136	RET		
				137	ASSI1:		
0069	C	210000		138	LXI	H, 0	
006C	C	220000	X	139	SHLD	PPTR	
				140	ASSI2:		
006F	C	2A0000	X	141	LHLD	PPTR	
0072	C	F5		142	PUSH	PSW	
0073	C	3A0D00	C	143	LDA	LDEV	
0076	C	FE01		144	CPI	1	
0078	C	CAD F00	C	145	JZ	ASSI3	
007B	C	FE02		146	CPI	2	
007D	C	CAE500	C	147	JZ	ASSI4	
0080	C	D601		148	SUI	1	
0082	C	EH		149	XCHG		
0083	C	010000		150	LXI	B, 0	
0086	C	4F		151	MOV	C, A	
0087	C	2100FF		152	LXI	H, DEVTAB	
008A	C	09		153	DAD	B	
008D	C	09		154	DAD	B	
008C	C	220E00	C	155	SHLD	LPTR	
008F	C	73		156	MOV	M, E	
0090	C	23		157	INX	H	
0091	C	72		158	MOV	M, D	
				159	ASSI5:		
0092	C	2A0000	X	160	LHLD	PPTR	
0095	C	7C		161	MOV	A, H	
0096	C	B5		162	ORA	L	
0097	C	CAD 600	C	163	JZ	ASSI1	
009A	C	0601		164	MVI	B, INBIT	
009C	C	3A0D00	C	165	LDA	LDEV	
009F	C	FE01		166	CPI	1	
00A1	C	CAB000	C	167	JZ	ASSI2	
00A4	C	FE03		168	CPI	3	
00A6	C	CAB000	C	169	JZ	ASSI2	
00A9	C	FE06		170	CPI	6	
00AB	C	CAB000	C	171	JZ	ASSI2	
00AE	C	0602		172	MVI	B, OUTBIT	


```

173 ASS12:
10B0 C 78 174 MOV A,B
10B1 C CD1EFD 175 CALL OPEN
10B4 C D2D600 C 176 JNC ASS11
10B7 C F5 177 PUSH PSW ;
10B8 C 2A0000 X 178 LHLD PTR
10BB C 23 179 INX H
10BC C 7E 180 MOV A,M
10BD C E620 181 ANI AUTO
10BF C CAC600 C 182 JZ ASS13
10C2 C 2B 183 DCX H
10C3 C CD0000 X 184 CALL BUFDEALLOC
185 ASS13:
0C6 C 2A0E00 C 186 LHLD LPTR
10C9 C 3600 187 MVI M,0 ;
0CB C 23 188 INX H
10CC C 3600 189 MVI M,0
0CE C E1 190 POP H
0CF C F1 191 POP PSW
0D0 C E5 192 PUSH H
0D1 C CD0000 C 193 CALL SCNOFF
0D4 C F1 194 POP PSW
0D5 C C9 195 RET
196 ASS11:
0D6 C F1 197 POP PSW
0D7 C FE2C 198 CPI ' '
0D9 C C2E800 C 199 JNZ ASS16
0DC C C31900 C 200 JMP ASS19
201 ASS13:
0DF C 221B27 202 SHLD CSAVE
0E2 C C39200 C 203 JMP ASS15
204 ASS14:
0E5 C 221D27 205 SHLD COSAVE
0E8 C C39200 C 206 JMP ASS15
207 ASS16:
0EB C F5 208 PUSH PSW
0EC C 2A1B27 209 LHLD CSAVE
0EF C 7C 210 MOV A,H
0F0 C B5 211 ORA L
0F1 C CAF700 C 212 JZ ASS17
0F4 C 2200FF 213 SHLD CI
214 ASS17:
0F7 C 2A1D27 215 LHLD COSAVE
0FA C 7C 216 MOV A,H
0FB C B5 217 ORA L
0FC C CA0201 C 218 JZ ASS18
0FF C 2202FF 219 SHLD CO
220 ASS18:
102 C F1 221 POP PSW
103 C A7 222 ANA A
104 C C9 223 RET
224 ;
225 ;
226 ;
UTILITY - SCAN OFF UNIT DIGIT IN :FX:

```

```

227 FN:
1105 C 2A00FF      228      LHLD      CI
1108 C CD09FD      229      CALL     INCHAR
110B C D8          230      RC
110C C FE30        231      CPI      '0'
110E C FA2501      C 232      JM       FN1
1111 C FE34        233      CPI      '4'
1113 C F22501      C 234      JP       FN1
1116 C D630        235      SUI      '0'
1118 C 47          236      MOV      B,A
1119 C CD09FD      237      CALL     INCHAR
111C C D8          238      RC
111D C FE3A        239      CPI      ':'
111F C C22501      C 240      JNZ      FN1
1122 C 78          241      MOV      A,B
1123 C A7          242      ANA      A
1124 C C9          243      RET
244 FN1:
125 C CD0000      C 245      CALL     SCNOFF
128 C 3E11        246      MVI      A,SEC11
247 ;
12A C 37          248      STC
12B C C9          249      RET
250 ;
251 ;      SCAN FILE NAME
252 ;
253 ;      ENTERED WITH FIRST CHAR IN A
254 ;      DE - ADDRESS OF NAME AREA
255 ;
256 ;      RETURNS WITH NEXT CHAR IN A
257 ;
258 ;      REGISTERS NOT SAVED AND RESTORED
259 ;
260 FILENAME:
12C C D5          261      PUSH     D
12D C 0609        262      MVI      B,9
12F C EB          263      XCHG
264 FILN0:
130 C 3600        265      MVI      M,0
132 C 23          266      INX      H
133 C 05          267      DCR      B
134 C C23001      C 268      JNZ      FILN0
137 C D1          269      POP      D
138 C 2A00FF      270      LHLD     CI
13B C CD0000      X 271      CALL     LDIG
13E C DA8F01      C 272      JC       FILN1
141 C 0606        273      MVI      B,6
274 FILN2:
143 C 12          275      STAX     D
144 C 13          276      INX      D
145 C 05          277      DCR      B
146 C CA6001      C 278      JZ       FILN5
149 C CD09FD      279      CALL     INCHAR
14C C D8          280      RC

```

* ERROR 11 *

114D	C	CD0000	X	281	CALL	LDIG	
1150	C	D24301	C	282	JNC	FILN2	
1153	C	FE2E		283	CPI	'.'	
1155	C	C28D01	C	284	JNZ	FILN7	
				285	FILN3:		
1158	C	13		286	INX	D	
1159	C	05		287	DCR	B	
115A	C	C25801	C	288	JNZ	FILN3	
115D	C	C36F01	C	289	JMP	FILNB	
				290	FILN5:		
160	C	CD09FD		291	CALL	INCHAR	
163	C	D8		292	RC		
164	C	CD0000	X	293	CALL	LDIG	
167	C	D29601	C	294	JNC	FILN6	
16A	C	FE2E		295	CPI	'.'	
16C	C	C28D01	C	296	JNZ	FILN7	
				297	FILNB:		
16F	C	D603		298	MVI	B,3	
				299	FILN8:		
171	C	CD09FD		300	CALL	INCHAR	
174	C	D8		301	RC		
175	C	CD0000	X	302	CALL	LDIG	
178	C	DA8D01	C	303	JC	FILN7	
17B	C	12		304	STAX	D	
17C	C	13		305	INX	D	
17D	C	05		306	DCR	B	
17E	C	C27101	C	307	JNZ	FILN8	
181	C	CD09FD		308	CALL	INCHAR	
184	C	D8		309	RC		
185	C	CD0000	X	310	CALL	LDIG	
188	C	D29601	C	311	JNC	FILN6	
18E	C	A7		312	ANA	A	
18C	C	C9		313	RET		
				314	FILN7:		
18D	C	A7		315	ANA	A	
18E	C	C9		316	RET		
				317	FILN1:		
18F	C	CD0000	C	318	CALL	SCNOFF	
192	C	3E1B		319	MVI	A,SEC1B	
				320	;		* ERROR 1B *
194	C	37		321	STC		
195	C	C9		322	RET		
				323	FILN6:		
196	C	CD0000	C	324	CALL	SCNOFF	
199	C	3E1C		325	MVI	A,SEC1C	
				326	;		* ERROR 1C *
19B	C	37		327	STC		
19C	C	C9		328	RET		
				329	;		
				330	;	SCAN OFF IBM FILENAME	
				331	;		
				332	IBFIL:		
19D	C	F5		333	PUSH	PSW	
19E	C	D5		334	PUSH	D	

```

019F C 0609          335      MVI      B,9
01A1 C 3E20          336      MVI      A,' '
                                337 IBFI1:
01A3 C 12            338      STAX     D
01A4 C 13            339      INX      D
01A5 C 05            340      DCR      B
01A6 C 02A301        C      341      JNZ      IBFI1
01A9 C D1            342      POP      D
01AA C F1            343      POP      PSW
01AB C 2A00FF        344      LHLD     CI
01AE C CD0000        X      345      CALL    LDIG
01B1 C DA8F01        C      346      JC       FILN1
01B4 C 0608          347      MVI      B,8
                                348 IBFI2:
01B6 C 12            349      STAX     D
01B7 C 13            350      INX      D
01B8 C 05            351      DCR      B
01B9 C CAC801        C      352      JZ       IBFI3
01BC C CD09FD        353      CALL    INCHAR
01BF C D8            354      RC
01C0 C CD0000        X      355      CALL    LDIG
01C3 C D2B601        C      356      JNC      IBFI2
01C6 C A7            357      ANA      A
01C7 C C9            358      RET
                                359 IBFI3:
01C8 C CD09FD        360      CALL    INCHAR
01CB C D8            361      RC
01CC C CD0000        X      362      CALL    LDIG
01CF C D2D401        C      363      JNC      IBFI4
01D2 C A7            364      ANA      A
01D3 C C9            365      RET
                                366 IBFI4:
01D4 C CD0000        C      367      CALL    SCNOFF
01D7 C 3E34          368      MVI      A,SEC34      ;** ERROR 34 **
01D9 C 37            369      STC
01DA C C9            370      RET
                                371 ;
                                372 ;      LOGICAL UNIT NAME
                                373 ;
                                374 ;      0 - DOLLAR
                                375 ;      1 - CI
                                376 ;      2 - CO
                                377 ;      3 - SI
                                378 ;      4 - SO
                                379 ;      5 - SL
                                380 ;      6 - AI
                                381 ;      7 - AO
                                382 ;      8 - AL
                                383 ;
                                384 LOGNAM:
01DB C 2A00FF        385      LHLD     CI
                                386 LOGN1:
01DE C CD09FD        387      CALL    INCHAR
01E1 C D8            388      RC

```

01E2 C	FE0D		389	CPI	CR
01E4 C	CADE01	C	390	JZ	LOGN1
01E7 C	FE2F		391	CPI	'/'
01E9 C	CA3A02	C	392	JZ	LOGN4
01EC C	FE20		393	CPI	' '
01EE C	CADE01	C	394	JZ	LOGN1
01F1 C	FE24		395	CPI	'\$'
01F3 C	CA3A02	C	396	JZ	LOGN4
01F6 C	CD0000	X	397	CALL	UPCHAR
01F9 C	0601		398	MVI	B,1
01FB C	FE43		399	CPI	'C'
01FD C	CA2602	C	400	JZ	LOGN2
0200 C	0603		401	MVI	B,3
0202 C	FE53		402	CPI	'S'
0204 C	CA1502	C	403	JZ	LOGN3
0207 C	0606		404	MVI	B,6
0209 C	FE41		405	CPI	'A'
020B C	CA1502	C	406	JZ	LOGN3
			407	LOGN8:	
020E C	CD0000	C	408	CALL	SCNOFF
0211 C	3E21		409	MVI	A,SEC21
			410	;	
0213 C	37		411	STC	
0214 C	C9		412	RET	
			413	LOGN3:	
0215 C	CD09FD		414	CALL	INCHAR
0218 C	D8		415	RC	
0219 C	CD0000	X	416	CALL	UPCHAR
021C C	FE4C		417	CPI	'L'
021E C	C22D02	C	418	JNZ	LOGN5
0221 C	04		419	INR	B
			420	LOGN7:	
0222 C	04		421	INR	B
			422	LOGN6:	
0223 C	78		423	MOV	A,B
0224 C	A7		424	ANA	A
0225 C	C9		425	RET	
			426	LOGN2:	
0226 C	CD09FD		427	CALL	INCHAR
0229 C	D8		428	RC	
022A C	CD0000	X	429	CALL	UPCHAR
			430	LOGN5:	
022D C	FE49		431	CPI	'I'
022F C	CA2302	C	432	JZ	LOGN6
0232 C	FE4F		433	CPI	'O'
0234 C	CA2202	C	434	JZ	LOGN7
0237 C	C30E02	C	435	JMP	LOGN8
			436	LOGN4:	
023A C	97		437	SUB	A
023B C	A7		438	ANA	A
023C C	C9		439	RET	
			440	;	
			441	;	
			442	;	

* ERROR 21 *

FILE DEFINITIONS

```

443 XMF:
444 DB 2,OUTBIT+DONTCLOSE
445 DW 0
446 DW XMIO
447 RCF:
448 DB 2,INBIT+DONTCLOSE
449 DW RCVI
450 DW 0
451 NULLFILE:
452 DB 2,INBIT+DONTCLOSE
453 DW RETEF
454 DW 0
455 RETEF:
456 SUB A
457 STC
458 RET
459 BUCKET:
460 DB 2,OUTBIT+DONTCLOSE
461 DW 0
462 DW BUCK
463 BUCK:
464 ANA A
465 RET
466 COFILE:
467 DB 2,OUTBIT+DONTCLOSE
468 DW 0
469 DW COF1
470 COF1:
471 CALL TIO
472 CPI LF
473 JZ COF2
474 ANA A
475 RET
476 COF2:
477 PUSH PSW
478 LDA ROLLSW
479 ANA A
480 JZ COF3
481 CPI 'Y'
482 JZ COF4
483 INR A
484 STA ROLLSW
485 JMP COF3
486 COF4:
487 MVI A,ROLL
488 CALL TIO
489 COF3:
490 POP PSW
491 ANA A
492 RET
493 PRINTER:
494 DB 2,OUTBIT+DONTCLOSE
495 DW 0
496 DW PRNT

```

023D C 0242
023F C 0000
0241 C CA00

0243 C 0241
0245 C 8200
0247 C 0000

0249 C 0241
024B C 4F02 C
024D C 0000

024F C 97
250 C 37
251 C C9

252 C 0242
254 C 0000
256 C 5802 C

258 C A7
259 C C9

25A C 0242
25C C 0000
25E C 6002 C

260 C CD4300
263 C FE0A
265 C CA6A02 C
268 C A7
269 C C9

26A C F5
26B C 3A1F27
26E C A7
26F C CA8302 C
272 C FE59
274 C CA7E02 C
277 C 3C
278 C 321F27
27B C C38302 C

27E C 3E0C
280 C CD4300

283 C F1
284 C A7
285 C C9

286 C 0242
288 C 0000
28A C 5200

```

                                497 CIFILE:
028C C 0441                    498 DB 4,INBIT+DONTCLOSE
028E C 0000                    499 DW 0
0290 C 8000                    500 DW 128
0292 C C202 C 501 DW CIRUF
0294 C 9602 C 502 DW CIF1
                                503 CIF1:
0296 C 0341                    504 DB 3,INBIT+DONTCLOSE
0298 C 9C02 C 505 DW CIF2
029A C 5A02 C 506 DW COFILE
                                507 CIF2:
029C C 0241                    508 DB 2,INBIT+DONTCLOSE
029E C 4000                    509 DW TTI
02A0 C 0000                    510 DW 0
                                511 REFILE:
02A2 C 0241                    512 DB 2,INBIT+DONTCLOSE
02A4 C AE02 C 513 DW RERUT
02A6 C 0000                    514 DW 0
                                515 CEFILE:
02A8 C 0241                    516 DB 2,INBIT+DONTCLOSE
02AA C B402 C 517 DW CERUT
02AC C 0000                    518 DW 0
                                519 RERUT:
02AE C CD8200                  520 CALL RCVI
02B1 C C3B702 C 521 JMP CERU2
                                522 CERUT:
02B4 C CD4000                  523 CALL TTI
                                524 CERU2:
02B7 C FE03                    525 CPI 3 ; ETX
02B9 C C2BF02 C 526 JNZ CERU1
02BC C 97                      527 SUB A
02BD C 37                      528 STC
02BE C C9                      529 RET ; RETURN EOF
                                530 CERU1:
02BF C A7                      531 ANA A
02C0 C C9                      532 RET
02C1 C FF                      533 DB 0FFH ; STOP BYTE
                                534 CIRUF:
02C2 C 0A0A                    535 DB LF,LF
02C4 C                          536 DS 126
                                537 ;
                                538 ;
                                539 ;
                                540 END

```

0 ERROR MESSAGES

0024 C ASS10	00D6 C ASS11	00B0 C ASS12	00C6 C ASS13	0062 C ASSE1
0069 C ASSI1	006F C ASSI2	00DF C ASSI3	00E5 C ASSI4	0092 C ASSI5
00EB C ASSI6	00F7 C ASSI7	0102 C ASSI8	0019 C ASSI9	0010 C*ASSI0
0020 AUTO	0258 C BUCK	0252 C*BUCKET	X BUFDEA	02A8 C*CEFILE
02BF C CERU1	02B7 C CERU2	02B4 C CERUT	FF00 CI	02C2 C CIBUF
0296 C CIF1	029C C*CIF2	028C C*CIFILE	271B C ISAVE	FF02 CO
0260 C COF1	026A C COF2	0283 C COF3	027E C COF4	025A C*COFILE
071D COSAVE	000D CR	FF00 DEVTAB	0040 DONTCL	X ECHO
012C C*FILENA	0130 C FILN0	018F C FILN1	0143 C FILN2	0158 C FILN3
0160 C FILN5	0196 C FILN6	018D C FILN7	0171 C FILN8	016F C FILNB
0105 C*FN	0125 C FN1	01A3 C IBFI1	01B6 C IBFI2	01C8 C IBFI3
01D4 C IBFI4	019D C*IBFIL	0001 INBIT	FD09 INCHAR	000D C*LDEV
X LDIG	000A LF	01DE C LOGN1	0226 C LOGN2	0215 C LOGN3
023A C LOGN4	022D C LOGN5	0223 C LOGN6	0222 C LOGN7	020E C LOGN8
01DB C*LOGNAM	000E C LPTR	0249 C*NULLFI	FD1E OPEN	0002 OUTBIT
X PHYSX	X PPTR	0286 C*PRINTE	0052 PRNT	0243 C*RCF
0082 RCVI	02A2 C*REFILE	02AE C PERUT	024F C RETEF	000C ROLL
071F ROLLSW	0003 C*SCN01	0000 C*SCN0FF	0011 SEC11	001B SEC1B
001C SEC1C	0021 SEC21	002E SEC2E	0034 SEC34	0040 TTI
043 TTO	X UPCHAR	023D C*XMF	00CA XMIO	


```
1 ;*****
2 ;
3 ;      TOS21 - GET
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - GET MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
0016 22 SEC16      EQU      16H
0017 23 SEC17      EQU      17H
24          ;
25          ;
26          ;
000D 27 CR          EQU      0DH
000A 28 LF          EQU      0AH
29          ;
30          ;
31          ;
0004 32 LFBIT      EQU      4
0001 33 INBIT      EQU      1
080  34 EOFBIT      EQU      80H
35          ;
36          ;
37          ;
000C 38 OUTCHAR     EQU      0FDOCH
0021 39 READ        EQU      0FD21H
40          ;
41          ;
42          ;
43          PUBLIC INCHAR,GET,GETBIN
44          EXTRN  CHKDEV
45          ;
46          ;
47          ;
48          CSEG
49          ;
50          ;
51          ;
52          ;          GENERAL INPUT CHARACTER ROUTINE
53          ;
54          ;
55 INCHAR:
000 C  CD0000      X  56          CALL      CHKDEV
003 C  D8          57          RC
004 C  23          58          INX          H
005 C  7E          59          MOV          A,M
006 C  2B          60          DCX          H
007 C  E681        61          ANI          INBIT+EOFBIT
009 C  C21000      C  62          JNZ          INCH1
000 C  3E16        63          MVI          A,SEC16
64          ;

```

* ERROR 16 *

```

000E C 37          65      STC
000F C C9          66      RET
                        67 INCH1:
0010 C E680        68      ANI      EOFBIT
0012 C CA1900      C      69      JZ      INCHB
0015 C 3E17        70      MVI      A,SEC17
                        71 ;
0017 C 37          72      STC
0018 C C9          73      RET
                        74 INCHB:
0019 C 7E          75      MOV      A,M
001A C D5          76      PUSH     D
001B C E5          77      PUSH     H
001C C 23          78      INX      H
001D C 23          79      INX      H
001F C 5E          80      MOV      E,M
001F C 23          81      INX      H
0020 C 56          82      MOV      D,M
0021 C FE02        83      CPI      2
0023 C C23400      C      84      JNZ      INCH6
                        85 ;
                        86 ;
                        87 ;
0026 C EB          88      XCHG
0027 C 112D00      C      89      LXI      D,INCHC
002A C D5          90      PUSH     D
002B C E9          91      PCHL
                        92 INCHN:
002C C A7          93      ANA      A
                        94 INCHC:
002D C E1          95      POP      H
002E C D1          96      POP      D
002F C C9          97      RET
                        98 INCHE:
0030 C D1          99      POP      D
0031 C C32D00      C      100     JMP      INCHC
                        101 INCH6:
0034 C FE03        102     CPI      3
0036 C C25200      C      103     JNZ      INCHH
                        104 ;
                        105 ;
                        106 ;
0039 C E5          107     PUSH     H
003A C EB          108     XCHG
003B C CD0000      C      109     CALL     INCHAR
003E C E1          110     POP      H
003F C DA2D00      C      111     JC      INCHC
0042 C F5          112     PUSH     PSW
0043 C 23          113     INX      H
0044 C 5E          114     MOV      E,M
0045 C 23          115     INX      H
0046 C 56          116     MOV      D,M
0047 C EB          117     XCHG
0048 C CD0CFD      118     CALL     OUTCHAR

```

004B C	DA3000	C	119	JC	INCHE
004E C	F1		120	POP	PSW
004F C	C32D00	C	121	JMP	INCHC
			122	INCHH:	
0052 C	FE06		123	CPI	6
0054 C	C27F00	C	124	JNZ	INCHL
			125	;	
			126	;	
			127	;	
0057 C	EB		128	XCHG	
0058 C	23		129	INX	H
0059 C	7F		130	MOV	A,M
005A C	2B		131	DCX	H
005B C	E680		132	ANI	EOFBIT
005D C	C26A00	C	133	JNZ	INCHM
0060 C	CD0000	C	134	CALL	INCHAR
0063 C	D22D00	C	135	JNC	INCHC
0066 C	A7		136	ANA	A
0067 C	C2DF00	C	137	JNZ	INCHK
			138	INCHM:	
006A C	E1		139	POP	H
006B C	E5		140	PUSH	H
006C C	110400		141	LXI	D,4
006F C	19		142	DAD	D
0070 C	5E		143	MOV	E,M
0071 C	23		144	INX	H
0072 C	56		145	MOV	D,M
0073 C	EB		146	XCHG	
0074 C	CD0000	C	147	CALL	INCHAR
0077 C	D22D00	C	148	JNC	INCHC
007A C	E1		149	POP	H
007B C	E5		150	PUSH	H
007C C	C3D500	C	151	JMP	INCHI
			152	INCHL:	
007F C	13		153	INX	D
0080 C	72		154	MOV	M,D
0081 C	2B		155	DCX	H
0082 C	73		156	MOV	M,E
0083 C	23		157	INX	H
0084 C	23		158	INX	H
0085 C	FE04		159	CPI	4
0087 C	C2AB00	C	160	JNZ	INCH8
			161	;	
			162	;	
			163	;	
008A C	23		164	INX	H
008B C	23		165	INX	H
008C C	05		166	PUSH	B
008D C	4E		167	MOV	C,M
008E C	23		168	INX	H
008F C	46		169	MOV	E,M
0090 C	EB		170	XCHG	
0091 C	09		171	DAD	B
0092 C	01		172	POP	B

** DOUBLE INPUT FILE **

LINE ORIENTED FILE

1093	C	2B		173	DCX	H
1094	C	7E		174	MOV	A,M
1095	C	FE0A		175	CPI	LF
1097	C	C22C00	C	176	JNZ	INCHN
				177	INCHF:	
109A	C	F1		178	POP	H
109B	C	CD21FD		179	CALL	READ
109E	C	E5		180	PUSH	H
109F	C	DAD500	C	181	JC	INCHI
				182	INCHG:	
0A2	C	7E		183	MOV	A,M
0A3	C	23		184	INX	H
0A4	C	23		185	INX	H
0A5	C	5E		186	MOV	E,M
0A6	C	23		187	INX	H
0A7	C	56		188	MOV	D,M
0A8	C	C35200	C	189	JMP	INCHH
				190	;	
				191	;	
				192	;	
				193	INCH8:	
0AB	C	7E		194	MOV	A,M
0AC	C	23		195	INX	H
0AD	C	3C		196	INR	A
0AE	C	BB		197	CMP	E
0AF	C	C2B700	C	198	JNZ	INCHJ
0B2	C	7E		199	MOV	A,M
0B3	C	BA		200	CMP	D
0B4	C	CA9A00	C	201	JZ	INCHF
				202	INCHJ:	
0B7	C	23		203	INX	H
0B8	C	C5		204	PUSH	B
0B9	C	4E		205	MOV	C,M
0BA	C	23		206	INX	H
0BB	C	46		207	MOV	B,M
0BC	C	EB		208	XCHG	
0BD	C	09		209	DAD	B
0BE	C	C1		210	POP	B
0BF	C	2B		211	DCX	H
0C0	C	7E		212	MOV	A,M
0C1	C	FE0A		213	CPI	LF
0C3	C	C22C00	C	214	JNZ	INCHN
0C6	C	E1		215	POP	H
0C7	C	E5		216	PUSH	H
0C8	C	23		217	INX	H
0C9	C	7E		218	MOV	A,M
0CA	C	2B		219	DCX	H
0CB	C	F604		220	ANI	LFBIT
0CD	C	CAA200	C	221	JZ	INCHG
0D0	C	3E0A		222	MVI	A,LF
0D2	C	C32C00	C	223	JMP	INCHN
				224	INCHI:	
0D5	C	A7		225	ANA	A
0D6	C	C2DF00	C	226	JNZ	INCHK

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00D9 C 23          227      INX      H
00DA C 7E          228      MOV      A,M
00DB C F680        229      ORI      EOFBIT
00DD C 77          230      MOV      M,A
00DE C 97          231      SUB      A
                   232 INCHK:
00DF C E1          233      POP      H
00E0 C D1          234      POP      D
00E1 C 37          235      STC
00E2 C C9          236      RET
                   237 ;
                   238 ;
                   239 ;      GET ROUTINE (GENERAL)
                   240 ;
                   241 GET:
00E3 C CD0000      C      242      CALL     INCHAR
00E6 C D8          243      RC
00E7 C 12          244      STAX     D
00E8 C 13          245      INX      D
00E9 C FE0D        246      CPI      CR
00EB C C2E300      C      247      JNZ     GET
00EE C A7          248      ANA      A
00EF C C9          249      RET
                   250 ;
                   251 ;      GET (TRANSPARENT) ROUTINE
                   252 ;
                   253 GETBIN:
0F0 C 23          254      INX      H
0F1 C 7E          255      MOV      A,M
0F2 C F5          256      PUSH     PSW
0F3 C F604        257      ORI      LFBIT
0F5 C 77          258      MOV      M,A
0F6 C 2B          259      DCX      H
                   260 GETB2:
0F7 C CD0000      C      261      CALL     INCHAR
0FA C DA1001      C      262      JC      GETB1
0FD C 12          263      STAX     D
0FE C 13          264      INX      D
0FF C 05          265      DCR      B
100 C C2F700      C      266      JNZ     GETB2
103 C 23          267      INX      H
104 C F1          268      POP      PSW
105 C C5          269      PUSH     B
106 C 47          270      MOV      B,A
107 C 7E          271      MOV      A,M
108 C E6FB        272      ANI      OFBH
10A C B0          273      ORA      B
10B C C1          274      POP      B
10C C 77          275      MOV      M,A
10D C 2B          276      DCX      H
10E C A7          277      ANA      A
10F C C9          278      RET
                   279 GETB1:
110 C 33          280      INX      SP

```

0111	C	33	281	INX	SP
0112	C	C9	282	RET	
			283	;	
			284	;	
			285	;	
			286	END	

0 ERROR MESSAGES

X	CHKDEV	000D	CR	0080	EOFBIT	00E3	C*GET	0110	C	GETB1				
00F7	C	GETB2	00FD	C*GETBIN	0001	INBIT	0010	C	INCH1	0034	C	INCH6		
00AB	C	INCH8	0000	C*INCHAR	0019	C	INCHB	002D	C	INCHC	0030	C	INCHE	
009A	C	INCHF	00A2	C	INCHG	0052	C	INCHH	00D5	C	INCHI	00B7	C	INCHJ
00DF	C	INCHK	007F	C	INCHL	006A	C	INCHM	002C	C	INCHN	000A	LF	
0004	LFBIT	FDOC	OUTCHA	FD21	READ	0016	SEC16	0017	SEC17					


```
1 ;*****
2 ;
3 ;      TOS21 - PHYS
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE  TOS21 - PHYS MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
0012 20 SEC12      EQU      12H
0020 21 SEC20      EQU      20H
22          ;
23          ;
24          ;
0001 25 INTEL      EQU      1
0002 26 IBM        EQU      2
0020 27 AUTO      EQU      20H
0001 28 INBIT      EQU      1
0002 29 OUTBIT     EQU      2
0080 30 EBCBIT     EQU      80H
31          ;
32          ;
33          ;
000D 34 CR          EQU      0DH
35          ;
36          ;
37          ;
F00 38 CI          EQU      0FF00H
F00 39 DEVTAB      EQU      0FF00H
77E 40 ASCII      EQU      277EH
712 41 FILNAM      EQU      2712H
42          ;
43          ;
44          ;
DD0 45 IBFIL      EQU      0FD00H
DD0 46 FILENAME    EQU      0FDCDH
D36 47 BUFALLOCC  EQU      0FD36H
DD0 48 INCHAR     EQU      0FD09H
49          ;
50          ;
51          ;
52          PUBLIC  PHYSX,PREL
53          EXTRN   LDIG,UPCHAR,FN,LDEV,SCNOFF,LOGNAM
54          EXTRN   CIF2,COFILE,BUCKET,NULLFILE
55          EXTRN   PRINTER,CEFILE,REFILE,XMF,RCF
56          EXTRN   RDID,OIID,CIID,WRID,OOID,COID
57          EXTRN   RDIB,OIIB,CIIB,WRIB,OIIB,COIB
58          EXTRN   RDTIC,OITC,CITC,WRITC,OOTC,COTC
59          EXTRN   BUFDEALLOCC
60          PUBLIC  ECHO,PPTR
61          ;
62          ;
63          ;
64          CSEG

```

```

        65 ;
        66 ;      INTERPRET PHYSICAL UNIT
        67 ;
0000 C  00      68 PUN:   DB      0
0001 C  0000    69 PPTR:  DW      0
0003 C  0000    70 PPTR0: DW      0
0005 C  00      71 ECHO:  DB      0
0006 C  00      72 DSTYP: DB      0
0007 C  0000    73 PYNÜ:  DW      0
        74 PHYTAB:
0009 C  4349    75      DB      'CI'
000B C  0000    X      76      DW      CIF2
000D C  434F    77      DB      'CO'
000F C  0000    X      78      DW      COFILE
0011 C  4242    79      DB      'BR'
0013 C  0000    X      80      DW      BUCKET
0015 C  4E46    81      DB      'NF'
0017 C  0000    X      82      DW      NULLFILE
0019 C  4C50    83      DB      'LP'
001B C  0000    X      84      DW      PRINTER
001D C  4345    85      DB      'CE'
001F C  0000    X      86      DW      CEFILF
0021 C  5245    87      DB      'RE'
0023 C  0000    X      88      DW      REFILE
0025 C  5840    89      DB      'XM'
0027 C  0000    X      90      DW      XMF
0029 C  5243    91      DB      'RC'
002B C  0000    X      92      DW      RCF
002D C  00      93      DB      0
        94 PYNÜ1:
002F C  0000    X      95      DW      RDID
0030 C  0000    96      DW      0
0032 C  0000    X      97      DW      OIID
0034 C  0000    X      98      DW      CIID
        99 PYNÜ2:
0036 C  0000    100     DW      0
0038 C  0000    X      101     DW      WRID
003A C  0000    X      102     DW      OOID
003C C  0000    X      103     DW      COID
        104 PYNÜ3:
003E C  0000    X      105     DW      RDIB
0040 C  0000    106     DW      0
0042 C  0000    X      107     DW      OIIB
0044 C  0000    X      108     DW      CIIB
        109 PYNÜ4:
0046 C  0000    110     DW      0
0048 C  0000    X      111     DW      WRIB
004A C  0000    X      112     DW      OOIß
004C C  0000    X      113     DW      COIB
        114 PYNÜ5:
004E C  0000    X      115     DW      RDT C
0050 C  0000    116     DW      0
0052 C  0000    X      117     DW      OITC
0054 C  0000    X      118     DW      CITC

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119 PYNU6:
0056 C 0000      120      DW      0
0058 C 0000      X      121      DW      WRTC
005A C 0000      X      122      DW      COTC
005C C 0000      X      123      DW      COTC
124 PHYSUNIT:
005E C 2A00FF      125      LHLD      CI
0061 C CD09FD      126      CALL      INCHAR
0064 C D8          127      RC
128 PHYSX:
0065 C F5          129      PUSH      PSW
0066 C 3E01      130      MVI      A,INTEL
0068 C 320600      C      131      STA      DSTYP
006B C F1          132      POP      PSW
006C C 212E00      C      133      LXI      H,PYNU1
006F C 220700      C      134      SHLD      PYNU
0072 C 2A00FF      135      LHLD      CI
0075 C FE3A      136      CPI      ':'
0077 C C2AC00      C      137      JNZ      PHYS1
0079 C CD09FD      138      CALL      INCHAR
007D C D8          139      RC
007E C 2A00FF      140      LHLD      CI
0081 C CD0000      X      141      CALL      LDIG
0084 C DAB102      C      142      JC      PHYS2
0087 C CD0000      X      143      CALL      UPCHAR
008A C FE49      144      CPI      'I'
008C C CA5F01      C      145      JZ      PHY30
008F C FE41      146      CPI      'A'
0091 C CA5A01      C      147      JZ      PHY40
0094 C FE4D      148      CPI      'M'
0096 C CAB801      C      149      JZ      PHY50
0099 C FE46      150      CPI      'F'
009B C C2B102      C      151      JNZ      PHYS2
009E C CD0000      X      152      CALL      FN
00A1 C D8          153      RC
00A2 C 320000      C      154      STA      PUN
00A5 C CD09FD      155      CALL      INCHAR
00A8 C D8          156      RC
00A9 C C3C600      C      157      JMP      PHYS3
158 PHYS1:
00AC C FE28      159      CPI      '('
00AE C CA2702      C      160      JZ      PHYS4
00B1 C FE2F      161      CPI      '/'
00B3 C CA0602      C      162      JZ      PHYS8
00B6 C FE2C      163      CPI      ','
00B8 C CAFE01      C      164      JZ      PHYS9
00BB C FE0D      165      CPI      CR
00BD C CAFE01      C      166      JZ      PHYS9
00C0 C F5          167      PUSH      PSW
00C1 C 97          168      SUB      A
00C2 C 320000      C      169      STA      PUN
00C5 C F1          170      POP      PSW
171 PHYS3:
00C6 C 111227      172      LXI      D,FILNAM

```

10C9 C	CDCDFD	173	CALL	FILENAME	
10CC C	D8	174	RC		
		175 ;	*** FORM CTLBLK		
10CD C	F5	176	PUSH	PSW	
10CE C	212201	177	LXI	H,34+128+128	
10D1 C	CD36FD	178	CALL	BUFALLOC	
10D4 C	DAA801	179	JC	PHY21	
10D7 C	220100	180	SHLD	PPTR	
10DA C	112200	181	LXI	D,34	
10DD C	19	182	DAD	D	
10DE C	E5	183	PUSH	H	; DIRECTORY BUFFER
10DF C	118000	184	LXI	D,128	
10E2 C	19	185	DAD	D	; DATA BUFFER
		186	PHY31:		
10E3 C	E5	187	PUSH	H	
10E4 C	2A0100	188	LHLD	PPTR	
10E7 C	3605	189	MVI	M,5	
10E9 C	23	190	INX	H	
10EA C	E5	191	PUSH	H	
10EB C	3A0500	192	LDA	ECHO	
10EE C	A7	193	ANA	A	
10EF C	C20401	194	JNZ	PHY14	
10F2 C	3A0000	195	LDA	LDEV	
10F5 C	FE03	196	CPI	3	
10F7 C	CA1001	197	JZ	PHY12	
10FA C	FE06	198	CPI	6	
10FC C	CA1001	199	JZ	PHY12	
10FF C	FF01	200	CPI	1	
101 C	CA1001	201	JZ	PHY12	
		202	PHY14:		
104 C	3E22	203	MVI	A,AUTO+OUTBIT	
106 C	2A0700	204	LHLD	PYNU	
109 C	010800	205	LXI	B,8	
10C C	09	206	DAD	B	
10D C	C31501	207	JMP	PHY13	
		208	PHY12:		
110 C	3E21	209	MVI	A,AUTO+INBIT	
112 C	2A0700	210	LHLD	PYNU	
		211	PHY13:		
115 C	44	212	MOV	B,H	
116 C	4D	213	MOV	C,L	
117 C	E1	214	POP	H	
118 C	77	215	MOV	M,A	
119 C	23	216	INX	H	
11A C	3600	217	MVI	M,0	
11C C	23	218	INX	H	
11D C	3600	219	MVI	M,0	
11F C	23	220	INX	H	
120 C	3680	221	MVI	M,128	
122 C	23	222	INX	H	
123 C	3600	223	MVI	M,0	
125 C	23	224	INX	H	
126 C	D1	225	POP	D	
127 C	73	226	MOV	M,E	

0128 C	23	227	INX	H	
0129 C	72	228	MOV	M,D	
012A C	23	229	INX	H	
012B C	1608	230	MVI	D,8	
		231	PHY17:		
012D C	0A	232	LDAX	B	
012E C	77	233	MOV	M,A	
012F C	03	234	INX	B	
0130 C	23	235	INX	H	
0131 C	15	236	DCR	D	
0132 C	C22D01	237	JNZ	PHY17	
0135 C	3600	238	MVI	M,0	
0137 C	23	239	INX	H	
0138 C	3A0000	240	LDA	PUN	
013B C	77	241	MOV	M,A	
013C C	23	242	INX	H	
013D C	011227	243	LXI	B,FILNAM	
0140 C	1609	244	MVI	D,9	
		245	PHY15:		
0142 C	0A	246	LDAX	B	
0143 C	77	247	MOV	M,A	
0144 C	03	248	INX	B	
0145 C	23	249	INX	H	
0146 C	15	250	DCR	D	
0147 C	C24201	251	JNZ	PHY15	
014A C	3A0600	252	LDA	DSTYP	
014D C	77	253	MOV	M,A	
		254 ;			NEXT INSTRS NOT NEC FOR IBM
014E C	110500	255	LXI	D,5	
0151 C	19	256	DAD	D	
0152 C	D1	257	POP	D	
0153 C	73	258	MOV	M,E	
0154 C	23	259	INX	H	
0155 C	72	260	MOV	M,D	
0156 C	F1	261	POP	PSW	
0157 C	C33702	262	JMP	PHY11	
		263	PHY40:		
015A C	3E02	264	MVI	A,IBM	
015C C	C37501	265	JMP	PHY41	
		266	PHY30:		
015F C	2A7E27	267	LHLD	ASCII	
0162 C	7C	268	MOV	A,H	
0163 C	85	269	ORA	L	
0164 C	3E82	270	MVI	A,IBM+EB0BIT	
0166 C	C27501	271	JNZ	PHY41	
0169 C	3E12	272	MVI	A,SEC12	; CONVERSION TABLE MISSING
016B C	37	273	STC		
		274	PREL:		
016C C	F5	275	PUSH	PSW	
016D C	2A0100	276	LHLD	PPTR	
0170 C	CD0000	277	CALL	RUFDEALLOC	
0173 C	F1	278	POP	PSW	
0174 C	C9	279	RET		
		280	PHY41:		

1175 C	320600	C	281	STA	DSTYP
1178 C	213E00	C	282	LXI	H,PYNU3
117B C	220700	C	283	SHLD	PYNU
117E C	CD0000	X	284	CALL	FN
1181 C	D8		285	RC	
1182 C	320000	C	286	STA	PUN
1185 C	2A00FF		287	LHLD	CI
1188 C	CD09FD		288	CALL	INCHAR
118B C	D8		289	RC	
118C C	111227		290	LXI	D,FILNAM
118F C	CD00FD		291	CALL	IBFIL
1192 C	D8		292	RC	
1193 C	F5		293	PUSH	PSW
1194 C	21A300		294	LXI	H,35+128
1197 C	CD36FD		295	CALL	BUFALLOC
119A C	DAA801	C	296	JC	PHY21
119D C	220100	C	297	SHLD	PPTR
11A0 C	112300		298	LXI	D,35
11A3 C	19		299	DAD	D
11A5 C	E5		300	PUSH	H
11A5 C	C3E300	C	301	JMP	PHY31
			302	PHY21:	
11A8 C	E1		303	POP	H
11A9 C	F5		304	PUSH	PSW
11AA C	E5		305	PUSH	H
11AB C	F1		306	POP	PSW
11AC C	CD0000	X	307	CALL	SCNOFF
11AF C	F1		308	POP	PSW
11B0 C	C9		309	RET	
			310	PHYE1:	
11B1 C	CD0000	X	311	CALL	SCNOFF
11B4 C	3F2D		312	MVI	A,SEC2D
			313	;	** ERROR 2D **
11B6 C	37		314	STC	
11B7 C	C9		315	RET	
			316	PHY50:	
11B8 C	CD0000	X	317	CALL	FN
11BB C	D8		318	RC	
11BC C	320000	C	319	STA	PUN
11BF C	CD09FD		320	CALL	INCHAR
11C2 C	D8		321	RC	
11C3 C	111227		322	LXI	D,FILNAM
11C6 C	CD00FD		323	CALL	FILENAME
11C9 C	D8		324	RC	
11CA C	F5		325	PUSH	PSW
11CB C	21B500		326	LXI	H,51+128+2
11CE C	CD36FD		327	CALL	BUFALLOC
11D1 C	DAA801	C	328	JC	PHY21
11D4 C	220100	C	329	SHLD	PPTR
11D7 C	214E00	C	330	LXI	H,PYNU5
11DA C	220700	C	331	SHLD	PYNU
11DD C	113300		332	LXI	D,51
11E0 C	2A0100	C	333	LHLD	PPTR
11E3 C	19		334	DAD	D

01E4 C	E5		335	PUSH	H
01E5 C	111C00		336	LXI	D,28
01E8 C	2A0100	C	337	LHLD	PPTR
01EB C	19		338	DAD	D
01EC C	EB		339	XCHG	
01ED C	E1		340	POP	H
01EE C	E5		341	PUSH	H
01EF C	C5		342	PUSH	B
01F0 C	018000		343	LXI	B,80H
01F3 C	09		344	DAD	B
01F4 C	C1		345	POP	B
01F5 C	EB		346	XCHG	
01F6 C	73		347	MOV	M,E
01F7 C	23		348	INX	H
01F8 C	72		349	MOV	M,D
01F9 C	E1		350	POP	H
01FA C	E5		351	PUSH	H
01FB C	C3E300	C	352	JMP	PHY31
			353	PHYS9:	
01F_ C	210000		354	LXI	H,0
201 C	220100	C	355	SHLD	PPTR
204 C	A7		356	ANA	A
205 C	C9		357	RET	
			358	PHYS8:	
206 C	CD0000	X	359	CALL	LOGNAM
209 C	D8		360	RC	
20A C	A7		361	ANA	A
20B C	CA2202	C	362	JZ	PHYE3
20E C	D601		363	SUI	1
210 C	4F		364	MOV	C,A
211 C	0600		365	MVI	B,0
213 C	2100FF		366	LXI	H,DEV TAB
216 C	09		367	DAD	B
217 C	09		368	DAD	B
218 C	5E		369	MOV	E,M
219 C	23		370	INX	H
21A C	56		371	MOV	D,M
21B C	EB		372	XCHG	
21C C	220100	C	373	SHLD	PPTR
21F C	C33002	C	374	JMP	PHYS7
			375	PHYE3:	
222 C	3E24		376	MVI	A,'\$'
224 C	C3B101	C	377	JMP	PHYE1
			378	PHYS4:	
227 C	CD5E00	C	379	CALL	PHYSUNIT
22A C	D8		380	RC	
22B C	FE29		381	CPI	'>'
22D C	C23902	C	382	JNZ	PHYS5
			383	PHYS7:	
230 C	2A00FF		384	LHLD	CI
233 C	CD09FD		385	CALL	INCHAR
236 C	D8		386	RC	
			387	PHY11:	
237 C	A7		388	ANA	A

1238	C	C9	389	RET
			390	PHYS5:
1239	C	FE2F	391	CPI '/'
123B	C	C28302	392	JNZ PHYS6
123E	C	3E01	393	MVI A,1
1240	C	320500	394	STA ECHO
1243	C	2A0100	395	LHLD PPTR
1246	C	E5	396	PUSH H
1247	C	CD5E00	397	CALL PHYSUNIT
124A	C	E1	398	POP H
124B	C	D8	399	RC
124C	C	FE29	400	CPI ')
124E	C	C2B101	401	JNZ PHYE1
			402	; *** FORM CTLBLK (PPTR/HL)
1251	C	F5	403	PUSH PSW
1252	C	97	404	SUB A
1253	C	320500	405	STA ECHO
1256	C	220300	406	SHLD PPTR0
1259	C	210600	407	LXI H,6
125C	C	CD36FD	408	CALL BUFALLOC
125F	C	DAA801	409	JC PHY21
1262	C	F1	410	POP PSW
1263	C	E5	411	PUSH H
1264	C	3603	412	MVI M,3
1266	C	23	413	INX H
1267	C	3621	414	MVI M,AUTO+INBIT
			415	PHY16:
1269	C	23	416	INX H
126A	C	EB	417	XCHG
126B	C	2A0300	418	LHLD PPTR0
126E	C	EB	419	XCHG
126F	C	73	420	MOV M,E
1270	C	23	421	INX H
1271	C	72	422	MOV M,D
1272	C	23	423	INX H
1273	C	EB	424	XCHG
1274	C	2A0100	425	LHLD PPTR
1277	C	EB	426	XCHG
1278	C	73	427	MOV M,E
1279	C	23	428	INX H
127A	C	72	429	MOV M,D
127B	C	23	430	INX H
127C	C	E1	431	POP H
127D	C	220100	432	SHLD PPTR
1280	C	C33002	433	JMP PHYS7
			434	PHYS6:
1283	C	FE2C	435	CPI ','
1285	C	C2B101	436	JNZ PHYE1
1288	C	2A0100	437	LHLD PPTR
128B	C	E5	438	PUSH H
128C	C	CD5E00	439	CALL PHYSUNIT
128F	C	E1	440	POP H
1290	C	D8	441	RC
1291	C	FE29	442	CPI ')

0293 C	C2B101	C	443	JNZ	PHYE1
			444 ;	*** FORM CTLBLK (PPTR,HL)	
0296 C	F5		445	PUSH	PSW
0297 C	220300	C	446	SHLD	PPTR0
029A C	EB		447	XCHG	
029B C	13		448	INX	D
029C C	210600		449	LXI	H,6
029F C	CD36FD		450	CALL	BUFALLOC
02A2 C	DAA801	C	451	JC	PHY21
02A5 C	F1		452	POP	PSW
02A6 C	E5		453	PUSH	H
02A7 C	3606		454	MVI	M,6
02A9 C	23		455	INX	H
02AA C	1A		456	LDAX	D
02AB C	F620		457	ORI	AUTO
02AD C	77		458	MOV	M,A
02AE C	C36902	C	459	JMP	PHY16
			460	PHYS2:	
02B1 C	FE24		461	CPI	'\$'
02B1 C	CAB101	C	462	JZ	PHYE1
02B6 C	FE0D		463	CPI	CR
02B8 C	CAB101	C	464	JZ	PHYE1
02BB C	47		465	MOV	B,A
02BC C	CD09FD		466	CALL	INCHAR
02BF C	D8		467	RC	
02C0 C	CD0000	X	468	CALL	LDIG
02C3 C	DAB101	C	469	JC	PHYE1
02C6 C	CD0000	X	470	CALL	UPCHAR
02C9 C	4F		471	MOV	C,A
02CA C	210900	C	472	LXI	H,PHYTAB
			473	PHY18:	
02CD C	7E		474	MOV	A,M
02CE C	A7		475	ANA	A
02CF C	CA0D02	C	476	JZ	PHYE2
02D2 C	B8		477	CMP	B
02D3 C	CAE102	C	478	JZ	PHY20
02D6 C	110400		479	LXI	D,4
02D9 C	19		480	DAD	D
02DA C	C3CD02	C	481	JMP	PHY18
			482	PHYE2:	
02DD C	79		483	MOV	A,C
02DE C	C3B101	C	484	JMP	PHYE1
			485	PHY20:	
02E1 C	23		486	INX	H
02E2 C	7E		487	MOV	A,M
02E3 C	23		488	INX	H
02E4 C	B9		489	CMP	C
02E5 C	CAED02	C	490	JZ	PHY19
02E8 C	23		491	INX	H
02E9 C	23		492	INX	H
02EA C	C3CD02	C	493	JMP	PHY18
			494	PHY19:	
02ED C	5E		495	MOV	E,M
02EE C	23		496	INX	H

```
02EF C 56 497
02F0 C EB 498
02F1 C 220100 C 499
02F4 C 2A00FF 500
02F7 C CD09FD 501
02FA C D8 502
02FB C FE3A 503
02FD C C2B101 C 504
0300 C C33002 C 505
506 ;
507 ;
508 ;
509
```

NO ERROR MESSAGES

```
MOV D,M
XCHG
SHLD PPTR
LHLD CI
CALL INCHAR
RC
CPI ':'
JNZ PHYE1
JMP PHY S7
```

END

277E	ASCII	0020	AUTO	X	BUCKET	FD36	BUFALL	X	EUFDEA
	X CEFIL	FF00	CI	X	CIF2		X CIIB	X	CIID
	X CITC		X COFILE	X	COIB		X COID	X	COTC
000D	CR	FF00	DEVTAB	0006	C DSTYP	0080	EBCBIT	0005	C*ECHO
FD0D	FILENA	2712	FILNAM		X FN	FDD0	IBFIL	0002	IBM
0001	INBIT	FD09	INCHAR	0001	INTEL		X LDEV		X LDIG
	X LOGNAM		X NULLFI		X OIIB		X OIID		X OITC
	X OOIB		X OOID		X OOTC	0002	OUTBIT	0237	C PHY11
0110	C PHY12	0115	C PHY13	0104	C PHY14	0142	C PHY15	0269	C PHY16
012D	C PHY17	02CD	C PHY18	02ED	C PHY19	02E1	C PHY20	01A8	C PHY21
015F	C PHY30	00E3	C PHY31	015A	C PHY40	0175	C PHY41	01B8	C PHY50
01B1	C PHYE1	02DD	C PHYE2	0222	C PHYE3	00AC	C PHYS1	02B1	C PHYS2
00C6	C PHYS3	0227	C PHYS4	0239	C PHYS5	0283	C PHYS6	0230	C PHYS7
0206	C PHYS8	01FE	C PHYS9	005E	C PHYSUN	0065	C*PHYSX	0009	C PHYTAB
0001	C*PPTP	0003	C PPTRO	016C	C*PREL		X PRINTE	0000	C FUN
0007	C PYNU	002E	C PYNU1	0036	C PYNU2	003E	C PYNU3	0046	C PYNU4
004E	C PYNU5	0056	C PYNU6		X RCF		X RDIB		X RDID
	X RDTC		X REFILE		X SCNOFF	0012	SEC12	002D	SEC2D
	X UPCHAR		X WRIB		X WRID		X WRTC		X XMF

```
1 ;*****
2 ;
3 ;      TOS21 - BUFR
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - BUFR MODULE
12          $PW      110
13          $PL      64
14          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
002B 22 SEC2B      EQU      2BH
002C 23 SEC2C      EQU      2CH
24          ;
25          ;
26          ;
27          ;
002E 28 BUFLIM     EQU      272EH
29          ;
30          ;
31          ;
32          EXTRN   START
33          PUBLIC  BUFALLOC,BUFDEALLOC
34          ;
35          ;
36          ;
37          CSEG
38          ;
39          ;   ALLOCATE A DYNAMIC BUFFER
40          ;
41          ;   HL - DESIRED LENGTH (ON ENTRY)
42          ;           ALLOCATED ADDRESS (ON EXIT)
43          ;
44          ;   CARRY SET ON RETURN INDICATES THAT AN ERROR
45          ;   OCCURED. A CONTAINS THEN ERROR CODE
46          ;
47  BUFALLOC:
48          PUSH    B
49          PUSH    D
50          PUSH    H          ; DESIRED SIZE
003 C 210200      X 51          LXI      H,START+2
52  BUFA3:
53          MOV     A,M
006 C 7E          54          CPI      80H
007 C FE80        55          JZ       BUFA1          ; END OF CHAIN
009 C CA2F00      C 56          ANA     A
00C C A7          57          JZ       BUFA2
00D C CA2700      C 58          CPI     0FFH
010 C FEF F       59          JZ       BUFA2
012 C CA2700      C 60  BUFA5:
015 C 3E2B        61          MVI     A,SEC2B
62          ;          * ERROR 2B *
017 C 37          63          STC
018 C 210200      X 64          LXI     H,START+2

```

001B C	3680	65	MVI	M,80H	
001D C	2B	66	DCX	H	
001E C	3600	67	MVI	M,0	
0020 C	2B	68	DCX	H	
0021 C	3600	69	MVI	M,0	
		70	BUFA4:		
0023 C	E1	71	POP	H	
0024 C	D1	72	POP	D	
0025 C	C1	73	POP	B	
0026 C	C9	74	RET		
		75	BUFA2:		
0027 C	2B	76	DCX	H	
0028 C	56	77	MOV	D,M	
0029 C	2B	78	DCX	H	
002A C	5E	79	MOV	E,M	
002B C	EB	80	XCHG		
002C C	C30600 C	81	JMP	BUFA3	
		82	BUFA1:		
002F C	3600	83	MVI	M,0	
003. C	2B	84	DCX	H	
0032 C	C1	85	POP	B	; DESIRED LENGTH
0033 C	E5	86	PUSH	H	
0034 C	2B	87	DCX	H	
0035 C	2B	88	DCX	H	
0036 C	78	89	MOV	A,B	
0037 C	EEFF	90	XRI	OFFH	
0039 C	47	91	MOV	B,A	
003A C	79	92	MOV	A,C	
003B C	EEFF	93	XRI	OFFH	
003D C	4F	94	MOV	C,A	
003E C	03	95	INX	B	
003F C	09	96	DAD	B	
0040 C	D1	97	POP	D	
0041 C	E5	98	PUSH	H	
0042 C	2B	99	DCX	H	
0043 C	EB	100	XCHG		
0044 C	72	101	MOV	M,D	
004F C	2B	102	DCX	H	
004C C	73	103	MOV	M,E	
0047 C	EB	104	XCHG		
0048 C	3680	105	MVI	M,80H	
004A C	2B	106	DCX	H	
004B C	3600	107	MVI	M,0	
004D C	2B	108	DCX	H	
004E C	3600	109	MVI	M,0	
0050 C	2B	110	DCX	H	
0051 C	222E27	111	SHLD	BUFLIM	
0054 C	A7	112	ANA	A	
0055 C	C32300 C	113	JMP	BUFA4	
		114	;		
		115	;		
		116	;		
		117	;		
		118	;		

DEALLOCATE BUFFER

HL - ADDRESS OF BUFFER

```

119 BUFDEALLOC:
0058 C C5      120      PUSH      B
0059 C D5      121      PUSH      D
005A C E5      122      PUSH      H
005B C 2B      123      DCX       H
005C C 7E      124      MOV       A,M
005D C A7      125      ANA       A
005E C CA6D00   C      126      JZ       BUFD1
0061 C FE80     127      CPI       80H
0063 C CA7300   C      128      JZ       BUFD3
129 BUFD5:
0066 C 3E2C     130      MVI       A,SEC2C
131 ;
0068 C 37      132      STC
133 BUFD2:
0069 C E1      134      POP       H
006A C D1      135      POP       D
006B C C1      136      POP       B
006C C C9      137      RET
138 BUFD1:
006D C 36FF     139      MVI       M,OFFH
006F C A7      140      ANA       A
0070 C C36900   C      141      JMP       BUFD2
142 BUFD3:
0073 C 210200   X      143      LXI       H,START+2
0076 C 010200   X      144      LXI       B,START+2
145 BUFD6:
0079 C 7E      146      MOV       A,M
007A C A7      147      ANA       A
007B C C28800   C      148      JNZ       BUFD4
007E C 44      149      MOV       B,H
007F C 4D      150      MOV       C,L
151 BUFD7:
0080 C 2B      152      DCX       H
0081 C 56      153      MOV       D,M
0082 C 2B      154      DCX       H
0083 C 5E      155      MOV       E,M
0084 C EB      156      XCHG
0085 C C37900   C      157      JMP       BUFD6
158 BUFD4:
0088 C FEFF     159      CPI       OFFH
008A C CA8000   C      160      JZ       BUFD7
008D C FE80     161      CPI       80H
008F C C21500   C      162      JNZ       BUFA5
0092 C 60      163      MOV       H,B
0093 C 69      164      MOV       L,C
0094 C 3680     165      MVI       M,80H
0096 C 2B      166      DCX       H
0097 C 3600     167      MVI       M,0
0099 C 2B      168      DCX       H
009A C 3600     169      MVI       M,0
009C C 2B      170      DCX       H
009D C 222E27   171      SHLD      BUFLIM
00A0 C A7      172      ANA       A

```

* ERROR 2C *

SIEMENS 610 ASSEMBLER V2.2

TOS21 - BUFR MODULE

PAGE 5

00A1 C C36900 C 173
174 ;
175 ;
176 ;
177

JMP BUFD2

END

NO ERROR MESSAGES

002F C BUFA1	0027 C BUFA2	0006 C BUFA3	0023 C BUFA4	0015 C BUFA5
0000 C*BUFALL	0060 C BUFD1	0069 C BUFD2	0073 C BUFD3	0088 C BUFD4
0066 C BUFD5	0079 C BUFD6	0080 C BUFD7	0058 C*BUFDEA	272E BUFLIM
002B SEC2B	002C SEC2C	X START		

```
1 ;*****
2 ;
3 ;      TOS21 - CART
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE  TOS21 - CART MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
0031 20 SEC31      EQU      31H
0048 21 SEC48      EQU      48H
003C 22 SEC3C      EQU      3CH
0057 23 SEC57      EQU      57H
003E 24 SEC3E      EQU      3EH
003D 25 SEC3D      EQU      3DH
005A 26 SEC5A      EQU      5AH
27          ;
28          ;
29          ;
00C1 30 CLOC DIR   EQU      0C1H
0091 31 CCAL       EQU      91H
00BB 32 CBSFW      EQU      0BBH
00CD 33 RD32       EQU      0CDH
00B5 34 CBBSW      EQU      0B5H
00D0 35 VERIFY     EQU      0D0H
00B2 36 CBWRW      EQU      0B2H
00B8 37 CBTMW      EQU      0B8H
00AF 38 CBRDW      EQU      0AFH
39          ;
40          ;
41          ;
0710 42 CTLBLK     EQU      2710H
730  43 UNIT       EQU      2730H
600  44 BUF2       EQU      2600H
45          ;
46          ;
47          ;
024  48 WRITE      EQU      0FD24H
49          ;
50          ;
51          ;
004  52 LBBIT      EQU      4
080  53 EOFBIT     EQU      80H
54          ;
55          ;
56          ;
57          PUBLIC  OITC,RDTC,CITC,OOTC,WRTC,COTC
58          EXTRN   OITX,CIID,PART3,CHKDEV
59          ;
60          ;
61          ;
62          CSEG
63          ;
64          ;          OPEN INPUT CARTRIDGE
```

```

        65 ;
        66 OITC:
0000 C  CD0000      X      67      CALL      OITX
0003 C  D8          68      RC
0004 C  F5          69      PUSH     PSW
0005 C  C5          70      PUSH     B
0006 C  D5          71      PUSH     D
0007 C  7F          72      MOV      A,M      ; UNIT
0008 C  23          73      INX      H
0009 C  CD0100      74      CALL     CLOC DIR
000C C  DA6A00      C      75      JC      XITE
000F C  7E          76      MOV      A,M
0010 C  A7          77      ANA      A
0011 C  CA1900      C      78      JZ      OITC2
0014 C  3E31        79      MVI      A,SEC31
0016 C  C36A00      C      80      JMP      XITE
        81 OITC2:
0019 C  3A3027      82      LDA      UNIT
001  C  CD9100      83      CALL     CCAL
001, C  DA6A00      C      84      JC      XITE
0022 C  110A00      85      LXI      D,10      ; TRACK NO ADDRESS
0025 C  19          86      DAD      D
0026 C  EB          87      XCHG
0027 C  2A0000      X      88      LHLD     PART3
002A C  1A          89      LDAX     D      ; TRACK NO
002B C  77          90      MOV      M,A      ; SET IN CTRL BLK
002C C  47          91      MOV      B,A
002D C  13          92      INX      D
002E C  1A          93      LDAX     D
002F C  3D          94      DCR      A
0030 C  CA4300      C      95      JZ      OITC3
0033 C  87          96      ADD      A
0034 C  4F          97      MOV      C,A      ; NO OF TAPEMARKS
0035 C  3A3027      98      LDA      UNIT
0038 C  CDBB00      99      CALL     CBSFW      ; SEARCH FOR BLOCK
003B C  D24300      C     100      JNC      OITC3
003E C  FE48        101      CPI      SEC48
004  C  C26A00      C     102      JNZ      XITE
        103 OITC3:
0043 C  13          104      INX      D
0044 C  13          105      INX      D
0045 C  13          106      INX      D
0046 C  23          107      INX      H
0047 C  1A          108      LDAX     D
0048 C  77          109      MOV      M,A
0049 C  13          110      INX      D
004A C  23          111      INX      H
004B C  1A          112      LDAX     D
004C C  77          113      MOV      M,A      ; NO OF BLOCKS
004D C  23          114      INX      H
004E C  3600        115      MVI      M,0      ; CURRENT SEG NO
0050 C  23          116      INX      H
0051 C  13          117      INX      D
0052 C  1A          118      LDAX     D

```

```

0053 C 77          119      MOV      M,A
0054 C 23          120      INX      H
0055 C 13          121      INX      D
0056 C 1A          122      LDAX    D
0057 C 77          123      MOV      M,A      ; BYTES LAST BLOCK
0058 C 2A0000      X      124      LHLD    PART3
0059 C 46          125      MOV      B,M      ; TRACK NO
005C C C0C000      126      CALL    RD32
005F C DA6A00      C      127      JC      XITE
0062 C 3E28        128      MVI     A,'C'
0064 C C0D000      129      CALL    VERIFY
0067 C D27300      C      130      JNC     XIT
                        131      XITE:
006A C 37          132      STC
006B C D1          133      POP     D
006C C C1          134      POP     B
006D C 33          135      INX     SP
006E C 33          136      INX     SP
006F C 2A1027      137      LHLD    CTLBLK
0072 C C9          138      RET
                        139      XIT:
0073 C D1          140      POP     D
0074 C C1          141      POP     B
0075 C F1          142      POP     PSW
0076 C 2A1027      143      LHLD    CTLBLK
0079 C A7          144      ANA     A
007A C C9          145      RET
                        146      ;
                        147      ;      CLOSE INPUT TAPE CARTRIDGE
                        148      ;
                        149      CIRC:
007B C C00000      X      150      CALL    CHKDEV
007E C D8          151      RC
007F C F5          152      PUSH    PSW
0080 C D5          153      PUSH    D
0081 C 221027      154      SHLD    CTLBLK
0084 C 111100      155      LXI     D,17
0087 C 19          156      DAD     D
008C C 7E          157      MOV     A,M
0089 C C09100      158      CALL    CCAL
008C C DA9700      C      159      JC      CIRC1
008F C D1          160      POP     D
0090 C F1          161      POP     PSW
0091 C 2A1027      162      LHLD    CTLBLK
0094 C C30000      X      163      JMP     CIID
                        164      CIRC1:
0097 C D1          165      POP     D
0098 C 33          166      INX     SP
0099 C 33          167      INX     SP
009A C C9          168      RET
                        169      ;
                        170      ;      OPEN OUTPUT TAPE CARTRIDGE
                        171      ;
009B C              172      OOFN:  DS      1

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0090 C          173 00TRK: DS      2
          174 00TC:
009E C  CD0000    X    175      CALL    OITX
00A1 C  D8        176      RC
00A2 C  F5        177      PUSH   PSW
00A3 C  C5        178      PUSH   B
00A4 C  D5        179      PUSH   D
00A5 C  7E        180      MOV    A,M      ; UNIT
00A6 C  23        181      INX     H
00A7 C  CD0100    182      CALL   CLOC DIR
00AA C  DA6A00    C    183      JC     XITE
00AD C  3A3027    184      LDA     UNIT
00B0 C  CD9100    185      CALL   CCAL
00B3 C  DA6A00    C    186      JC     XITE
00B6 C  7E        187      MOV    A,M
00B7 C  A7        188      ANA     A
00B8 C  C2C000    C    189      JNZ   00TC1
          190 00TC2:
00B9 C  3E3C      191      MVI     A,SEC3C
00BL C  C36A00    C    192      JMP    XITE
          193 00TC1:
00C0 C  FE7F      194      CPI     7FH
00C2 C  C2BB00    C    195      JNZ   00TC2
00C5 C  23        196      INX     H
00C6 C  EB        197      XCHG
00C7 C  2A1027    198      LHLD   CTLBLK
00CA C  012400    199      LXI     B,36
00CD C  09        200      DAD     B
00CE C  229C00    C    201      SHLD   00TRK      ; SAVE TEMP
00D1 C  060F      202      MVI     B,15
          203 00TC3:
00D3 C  1A        204      LDAX   D      ; MOVE TRACK USAGE INFO
00D4 C  77        205      MOV     M,A
00D5 C  23        206      INX     H
00D6 C  13        207      INX     D
00D7 C  05        208      DCR     B
00D8 C  C2D300    C    209      JNZ   00TC3
00D9 C  2A9C00    C    210      LHLD   00TRK
00DE C  0601      211      MVI     B,1      ; DECIDE WHICH TRACK TO USE
00E0 C  0E00      212      MVI     C,0
00E2 C  167F      213      MVI     D,7FH
          214 00TC5:
00E4 C  7E        215      MOV     A,M      ; TRACK FULL INDICATOR
00E5 C  A7        216      ANA     A
00E6 C  CAFF00    C    217      JZ     00TC4
00E9 C  23        218      INX     H
          219 00TC8:
00EA C  23        220      INX     H
          221 00TC7:
00ED C  23        222      INX     H
00EC C  23        223      INX     H
00ED C  23        224      INX     H
00EE C  04        225      INR     B
00EF C  78        226      MOV     A,B

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00F0 C	FE04		227	CPI	4	
00F2 C	C2E400	C	228	JNZ	00TC5	
00F5 C	79		229	MOV	A,C	
00F6 C	A7		230	ANA	A	
00F7 C	C21601	C	231	JNZ	00TC6	
00FA C	3E3D		232	MVI	A,SEC3D ; NO ROOM ON CARTRIDGE	
00FC C	C36A00	C	233	JMP	XITE	
			234	00TC4:		
00FF C	23		235	INX	H	
0100 C	23		236	INX	H	
0101 C	7E		237	MOV	A,M	
0102 C	BA		238	CMP	D	
0103 C	F2EB00	C	239	JP	00TC7	
0106 C	23		240	INX	H	
0107 C	7E		241	MOV	A,M	
0108 C	329B00	C	242	STA	00FN	
010B C	229C00	C	243	SHLD	00TRK	
010E C	2B		244	DCX	H	
010F C	48		245	MOV	C,B	
0110 C	56		246	MOV	D,M	
0111 C	2B		247	DCX	H	
0112 C	5E		248	MOV	E,M	
0113 C	C3EA00	C	249	JMP	00TC8	
			250	00TC6:		
0116 C	2A9C00	C	251	LHLD	00TRK	
0119 C	3A9B00	C	252	LDA	00FN	
011C C	3C		253	INR	A	
011D C	77		254	MOV	M,A	
011E C	112300		255	LXI	D,35	
0121 C	2A1027		256	LHLD	CTLBLK	
0124 C	19		257	DAD	D	
0125 C	77		258	MOV	M,A ; FILE NUMBER	
0126 C	2B		259	DCX	H	
0127 C	71		260	MOV	M,C ; TRACK NUMBER	
0128 C	229C00	C	261	SHLD	00TRK	
012B C	2A0000	X	262	LHLD	PART3	
012E C	71		263	MOV	M,C	
012F C	23		264	INX	H	
0130 C	3600		265	MVI	M,0	
0132 C	23		266	INX	H	
0133 C	3600		267	MVI	M,0	
0135 C	41		268	MOV	B,C	
0136 C	3D		269	DCR	A	
0137 C	CA4A01	C	270	JZ	00TCA	
013A C	87		271	ADD	A	
013B C	4F		272	MOV	C,A	
013C C	3A3027		273	LDA	UNIT	
013F C	CDBB00		274	CALL	CBSFW	
0142 C	D24A01	C	275	JNC	00TCA	
0145 C	FE48		276	CPI	SEC48	
0147 C	C26A00	C	277	JNZ	XITE	
			278	00TCA:		
014A C	CDCD00		279	CALL	RD32	
014D C	DA6A00	C	280	JC	XITE	


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0150 C 3A0026      281    LDA      BUF2
0153 C FE2F        282    CPI      '/'
0155 C C29901      C      283    JNZ      OOTCE
0158 C 3A3027      284    LDA      UNIT
015B C 2A9C00      C      285    LHLD     OOTRK
015E C 46          286    MOV      B,M
015F C CDB500      287    CALL     CBBSW
0162 C DA6A00      C      288    JC       XITE
0165 C 2A1027      289    LHLD     CTLBLK
0168 C 111200      290    LXI      D,18
016B C 19          291    DAD      D
016C C 119F01      C      292    LXI      D,OFHBN
016F C 0609        293    MVI      B,9
                   294 OOTCD:
0171 C 7E          295    MOV      A,M      ; MOVE NAME
0172 C 12          296    STAX     D
0173 C 13          297    INX      D
0174 C 23          298    INX      H
0177 C 05          299    DCR      B
0176 C C27101      C      300    JNZ      OOTCD
0179 C 2A9C00      C      301    LHLD     OOTRK
017C C 46          302    MOV      B,M
017D C 112000      303    LXI      D,32
0180 C 219E01      C      304    LXI      H,OFHB
0183 C 3A3027      305    LDA      UNIT
0186 C CDB200      306    CALL     CBWRW
0189 C DA6A00      C      307    JC       XITE
                   308 OOTCF:
018C C 2A1027      309    LHLD     CTLBLK
018F C 23          310    INX      H
0190 C 23          311    INX      H
0191 C 3600        312    MVI      M,0
0193 C 23          313    INX      H
0194 C 3600        314    MVI      M,0
0196 C C37300      C      315    JMP      XIT
                   316 OOTCE:
0199 C 3E5A        317    MVI      A,SEC5A
019C C C36A00      C      318    JMP      XITE
019E C 28          319 OFHB:    DB      'C'
019F C             320 OFHBN:  DS      9
01A8 C 00          321    DB      0
01A9 C 8000        322    DW      128
01AB C 00000000    323    DB      0,0,0,0
01AF C 00000000    324    DB      0,0,0,0,0
01B4 C 00000000    325    DB      0,0,0,0,0
01B9 C 00000000    326    DB      0,0,0,0,0
                   327 ;
                   328 ;      CLOSE OUTPUT TAPE CARTRIDGE
                   329 ;
                   330 COTC:
01BE C CD0000      X      331    CALL     OITX
01C1 C D8          332    RC
01C2 C F5          333    PUSH     PSW
01C3 C C5          334    PUSH     B

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01C4	C	D5		335	PUSH	D
01C5	C	23		336	INX	H
01C6	C	0609		337	MVI	B,9
01C8	C	11DF02	C	338	LXI	D,COFBN
				339	COTC1:	
01CB	C	7E		340	MOV	A,M
01CC	C	12		341	STAX	D
01CD	C	13		342	INX	D
01CE	C	23		343	INX	H
01CF	C	05		344	DCR	B
01D0	C	C2CB01	C	345	JNZ	COTC1
01D3	C	2A1027		346	LHLD	CTLBLK
01D6	C	23		347	INX	H
01D7	C	23		348	INX	H
01D8	C	5E		349	MOV	E,M
01D9	C	23		350	INX	H
01DA	C	56		351	MOV	D,M
01DB	C	23		352	INX	H
01DC	C	7A		353	MOV	A,D
01DD	C	B3		354	ORA	E
01DE	C	CAED01	C	355	JZ	COTC2
01E1	C	73		356	MOV	M,E
01E2	C	23		357	INX	H
01E3	C	72		358	MOV	M,D
01E4	C	2A1027		359	LHLD	CTLBLK
01E7	C	CD24FD		360	CALL	WRITE
01EA	C	DA6A00	C	361	JC	XITE
				362	COTC2:	
01ED	C	3A3027		363	LDA	UNIT
01F0	C	2A0000	X	364	LHLD	PART3
01F3	C	46		365	MOV	B,M
01F4	C	CDB800		366	CALL	CBTMW
01F7	C	D2FF01	C	367	JNC	COTC3
01FA	C	FE48		368	CPI	SEC48
01FC	C	C26A00	C	369	JNZ	XITE
				370	COTC3:	
01FF	C	21DE02	C	371	LXI	H,COFHB
202	C	112000		372	LXI	D,32
205	C	3A3027		373	LDA	UNIT
208	C	CDB200		374	CALL	CBWRW
20B	C	DA6A00	C	375	JC	XITE
20E	C	3A3027		376	LDA	UNIT
211	C	CDB800		377	CALL	CBTMW
214	C	D21C02	C	378	JNC	COTC4
217	C	FE48		379	CPI	SEC48
219	C	C26A00	C	380	JNZ	XITE
				381	COTC4:	
21C	C	210303	C	382	LXI	H,COTEB
21F	C	3A3027		383	LDA	UNIT
222	C	CDB200		384	CALL	CBWRW
225	C	DA6A00	C	385	JC	XITE
228	C	3A3027		386	LDA	UNIT
22B	C	CD9100		387	CALL	CCAL
22E	C	DA6A00	C	388	JC	XITE

0231	C	2A1027	389	LHLD	CTLBLK	
0234	C	111200	390	LXI	D,18	
0237	C	19	391	DAD	D	
0238	C	3A3027	392	LDA	UNIT	
023B	C	CDC100	393	CALL	CLOC DIR	
023E	C	DA6A00	C 394	JC	XITE	
0241	C	7E	395	MOV	A,M	
0242	C	FE7F	396	CPI	7FH	
0244	C	C2BR00	C 397	JNZ	OOTC2	
0247	C	3A3027	398	LDA	UNIT	
024A	C	0600	399	MVI	B,0	
024C	C	CDB500	400	CALL	CRBSW	
024F	C	DA6A00	C 401	JC	XITE	
0252	C	222303	C 402	SHLD	COCUP	
0255	C	EB	403	XCHG		
0256	C	2A1027	404	LHLD	CTLBLK	
0259	C	012400	405	LXI	B,36	
025C	C	09	406	DAD	B	
0257	C	060F	407	MVI	B,15	
0251	C	13	408	INX	D	
			409	COTC5:		
0260	C	7E	410	MOV	A,M	
0261	C	12	411	STAX	D	
0262	C	23	412	INX	H	
0263	C	13	413	INX	D	
0264	C	05	414	DCR	B	
0265	C	C26002	C 415	JNZ	COTC5	
0268	C	2A1027	416	LHLD	CTLBLK	
026B	C	111200	417	LXI	D,18	
026E	C	19	418	DAD	D	
026F	C	112603	C 419	LXI	D,CODBN	
0272	C	0609	420	MVI	B,9	
			421	COTC6:		
0274	C	7E	422	MOV	A,M	
0275	C	12	423	STAX	D	
0276	C	23	424	INX	H	
0277	C	13	425	INX	D	
0277	C	05	426	DCR	B	
0277	C	C27402	C 427	JNZ	COTC6	
027C	C	2A1027	428	LHLD	CTLBLK	
027F	C	012200	429	LXI	B,34	
0282	C	09	430	DAD	B	
0283	C	7E	431	MOV	A,M	
0284	C	12	432	STAX	D	; TRACK NO
0285	C	13	433	INX	D	
0286	C	23	434	INX	H	
0287	C	7E	435	MOV	A,M	
0288	C	12	436	STAX	D	; FILE NUMBER
0289	C	13	437	INX	D	
028A	C	13	438	INX	D	
028F	C	13	439	INX	D	
028C	C	2A0000	X 440	LHLD	PART3	
028F	C	23	441	INX	H	
0290	C	7E	442	MOV	A,M	; BLOCK COUNT

0291 C	12		443	STAX	D	
0292 C	13		444	INX	D	
0293 C	23		445	INX	H	
0294 C	7E		446	MOV	A,M	
0295 C	12		447	STAX	D	
0296 C	13		448	INX	D	
0297 C	2A1027		449	LHLD	CTLBLK	
029A C	010400		450	LXI	B,4	
029D C	09		451	DAD	B	
029E C	7E		452	MOV	A,M	
029F C	12		453	STAX	D	
02A0 C	23		454	INX	H	
02A1 C	13		455	INX	D	
02A2 C	7E		456	MOV	A,M	
02A3 C	12		457	STAX	D	
02A4 C	13		458	INX	D	
02A5 C	97		459	SUB	A	
02A6 C	12		460	STAX	D	
02A7 C	212503	C	461	LXI	H,CODIR	; ATTRIBUTE BYTE
02A8 C	112000		462	LXI	D,32	
02AD C	0600		463	MVI	B,0	
02AF C	3A3027		464	LDA	UNIT	
02B2 C	CDB200		465	CALL	CBWRW	
02B5 C	DA6A00	C	466	JC	XITE	
02B8 C	2A2303	C	467	LHLD	COCUP	
02BB C	3A3027		468	LDA	UNIT	
02BE C	CDB200		469	CALL	CBWRW	
02C1 C	DA6A00	C	470	JC	XITE	
02C4 C	3A3027		471	LDA	UNIT	
02C7 C	CDB800		472	CALL	CBTMW	
02CA C	D2D202	C	473	JNC	COTC7	
02CD C	FE48		474	CPI	SEC48	
02CF C	C26A00	C	475	JNZ	XITE	
			476	COTC7:		
02D2 C	3A3027		477	LDA	UNIT	
02D5 C	CD9100		478	CALL	CCAL	
02D8 C	DA6A00	C	479	JC	XITE	
02DB C	C30000	X	480	JMP	CIID	
02DE C	29		481	COFHB:	DB	') '
02DF C			482	COFBN:	DS	9
02E8 C	00000000		483	DB	0,0,0,0,0	
02ED C	00000000		484	DB	0,0,0,0,0	
02F2 C	00000000		485	DB	0,0,0,0,0	
02F7 C	00000000		486	DB	0,0,0,0,0	
02FC C	00000000		487	DB	0,0,0,0,0	
0301 C	0000		488	DB	0,0	
0303 C	2F		489	COTEB:	DB	' / '
0304 C	000000		490	DB	0,0,0	
0307 C	00000000		491	DB	0,0,0,0	
030B C	00000000		492	DB	0,0,0,0	
030F C	00000000		493	DB	0,0,0,0	
0313 C	00000000		494	DB	0,0,0,0	
0317 C	00000000		495	DB	0,0,0,0	
031B C	00000000		496	DB	0,0,0,0	

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031F C 00000000      497      DB      0,0,0,0
0323 C                498 COCUP: DS      2
0325 C 00            499 CODIR: DB      0
0326 C                500 CODBN: DS      9
032F C                501      DS      1
0330 C                502      DS      1
0331 C 8000          503      DW     128
0333 C                504      DS      2
0335 C                505      DS      2
0337 C 00000000      506      DB     0,0,0,0,0
033C C 00000000      507      DB     0,0,0,0,0
0341 C 00000000      508      DB     0,0,0,0,0
                    509 ;
                    510 ;      WRITE CARTRIDGE
                    511 ;
                    512 WRTC:
0346 C 000000      X      513      CALL     OITX
0349 C 08          514      RC
034C C F5          515      PUSH    PSW
034E C 05          516      PUSH    B
034C C 05          517      PUSH    D
034D C 2A0000      X      518      LHLD    PART3
0350 C 46          519      MOV     B,M      ; TRACK NO
0351 C 23          520      INX     H
0352 C 5E          521      MOV     E,M
0353 C 23          522      INX     H
0354 C 56          523      MOV     D,M
0355 C 13          524      INX     D
0356 C 72          525      MOV     M,D
0357 C 2B          526      DCX     H
0358 C 73          527      MOV     M,E      ; BLOCK COUNT INCREMENTED
0359 C 2A1027      528      LHLD    CTLBLK
035C C 112500      529      LXI     D,37
035F C 19          530      DAD     D
0360 C 78          531      MOV     A,B
                    532 WRTC2:
0361 C 3D          533      DCR     A
036C C CA6C03      C      534      JZ      WRTC1
036D C 110500      535      LXI     D,5
0368 C 19          536      DAD     D
0369 C C36103      C      537      JMP     WRTC2
                    538 WRTC1:
036C C 5E          539      MOV     E,M
036D C 23          540      INX     H
036E C 56          541      MOV     D,M
036F C 13          542      INX     D
0370 C 72          543      MOV     M,D
0371 C 2B          544      DCX     H
0372 C 73          545      MOV     M,E
0373 C 2A1027      546      LHLD    CTLBLK
0376 C 23          547      INX     H
0377 C 23          548      INX     H
0378 C 3600        549      MVI     M,0
037A C 23          550      INX     H

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03D2	C	56	605	MOV	D,M	
03D3	C	EB	606	XCHG		
03D4	C	3A3027	607	LDA	UNIT	
03D7	C	CDAF00	608	CALL	CBRDW	
03DA	C	DA6A00	609	JC	XITE	; *** TEMPORARY ***
03DD	C	2A1027	610	LHLD	CTLBLK	
03E0	C	111C00	611	LXI	D,28	
03E3	C	19	612	DAD	D	
03E4	C	5E	613	MOV	E,M	
03E5	C	23	614	INX	H	
03E6	C	56	615	MOV	D,M	
03E7	C	1A	616	LDAX	D	
03E8	C	FEAA	617	CPI	OAAH	; CHECK OVERRUN
03EA	C	C21F04	618	JNZ	RDTCT2	
03ED	C	13	619	INX	D	
03EE	C	1A	620	LDAX	D	
03EF	C	FEAA	621	CPI	OAAH	
03F1	C	C21F04	622	JNZ	RDTCT2	
03F4	C	23	623	INX	H	
03F5	C	23	624	INX	H	
03F6	C	5E	625	MOV	E,M	
03F7	C	23	626	INX	H	
03F8	C	56	627	MOV	D,M	
03F9	C	1B	628	DCX	D	
03FA	C	72	629	MOV	M,D	
03FB	C	2B	630	DCX	H	
03FC	C	73	631	MOV	M,E	
03FD	C	7A	632	MOV	A,D	
03FE	C	B3	633	ORA	E	
03FF	C	C28C01	634	JNZ	OOTCF	
0402	C	2A1027	635	LHLD	CTLBLK	
0405	C	23	636	INX	H	
0406	C	7E	637	MOV	A,M	
0407	C	F604	638	ORI	LEBIT	
0409	C	77	639	MOV	M,A	
040A	C	2B	640	DCX	H	
040B	C	112200	641	LXI	D,34	
040C	C	19	642	DAD	D	
040F	C	5E	643	MOV	E,M	; CHAR LAST BLK
0410	C	23	644	INX	H	
0411	C	56	645	MOV	D,M	
0412	C	010400	646	LXI	B,4	
0415	C	2A1027	647	LHLD	CTLBLK	
0418	C	09	648	DAD	B	
0419	C	73	649	MOV	M,E	
041A	C	23	650	INX	H	
041B	C	72	651	MOV	M,D	
041C	C	C38C01	652	JMP	OOTCF	
			653	RDTCT2:		
041F	C	3E3E	654	MVI	A,SEC3E	; OVERRUN ERROR
0421	C	C36A00	655	JMP	XITE	
			656	RDTCT1:		
0424	C	2A0000	657	LHLD	PART3	
0427	C	46	658	MOV	B,M	

0428	C	3A3027	659	LDA	UNIT
042B	C	2A1027	660	LHLD	CTLBLK
042E	C	110600	661	LXI	D,6
0431	C	19	662	DAD	D
0432	C	5E	663	MOV	E,M
0433	C	23	664	INX	H
0434	C	56	665	MOV	D,M
0435	C	EB	666	XCHG	
0436	C	CD AF00	667	CALL	CB RDW
0439	C	D24E04	668	JNC	RDT04
043C	C	FE48	669	CPI	SEC48
043E	C	C26A00	670	JNZ	XITE
0441	C	2A1027	671	LHLD	CTLBLK
0444	C	23	672	INX	H
0445	C	7E	673	MOV	A,M
0446	C	F680	674	ORI	EOF BIT ;
0448	C	77	675	MOV	M,A
0449	C	97	676	SUB	A
044A	C	37	677	STC	
044C	C	C36A00	678	JMP	XITE
			679	RDT04:	
044E	C	3E57	680	MVI	A,SEC57
0450	C	C36A00	681	JMP	XITE
			682	;	
			683	;	
			684	;	
			685	END	

TO ERROR MESSAGES

0000	BUF2	00B5	CBBSW	00AF	CBRDW	00BB	CBSFW	00B8	CBTMW
00B2	CBWRW	0091	CCAL		X CHKDEV		X CIID	007B	C*CITC
0097	C CITC1	00C1	CLOCDI	0323	C COCUP	0326	C CODBN	0325	C CODIR
02DF	C COFBN	02DE	C COFHB	01BE	C*COTC	01CB	C COTC1	01ED	C COTC2
01FF	C COTC3	021C	C COTC4	0260	C COTC5	0274	C COTC6	02D2	C COTC7
0303	C COTEB	2710	CTLRLK	0080	EOFBIT	0004	LBBIT	019E	C OFHB
019F	C OFHBN	0000	C*OITC	0019	C OITC2	0043	C OITC3		X OITX
009B	C OOFN	009E	C*OOTC	00C0	C OOTC1	00BB	C OOTC2	00D3	C OOTC3
00FF	C OOTC4	00E4	C OOTC5	0116	C OOTC6	00EB	C OOTC7	00EA	C OOTC8
014A	C OOTCA	0171	C OOTCD	0199	C OOTCE	018C	C OOTCF	009C	C OOTRK
	X PART3	00CD	RD32	03A7	C*RDTC	0424	C RDTC1	041F	C RDTC2
044E	C RDTC4	0031	SEC31	003C	SEC3C	003D	SEC3D	003E	SEC3E
0048	SEC48	0057	SEC57	005A	SEC5A	2730	UNIT	00D0	VERIFY
0D24	WRITE	0346	C*WRTC	036C	C WRTC1	0361	C WRTC2	0073	C XIT
006A	C XITE								

```
1 ;*****
2 ;
3 ;      TOS21 - COMI
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - COMI MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;          3
21          ;
001F      22 SEC1F      EQU      1FH
0009      23 SEC09      EQU      09H
000B      24 SEC0B      EQU      0BH
001D      25 SEC1D      EQU      1DH
26          ;
27          ;
28          ;
29          29 CI          EQU      0FF00H
2720      30 PSTART      EQU      2720H
272D      31 DEBSW       EQU      272DH
2722      32 PRGNAM      EQU      2722H
33          ;
34          ;
35          ;
2D09      36 INCHAR      EQU      0FD09H
2D0D      37 FILENAME     EQU      0FDCDH
2D06      38 LOAD          EQU      0FD06H
0043      39 TTO          EQU      43H
40          ;
41          ;
42          ;
000D      43 CR          EQU      0DH
0007      44 BEL          EQU      07
45          ;
46          ;
47          ;
48          PUBLIC COMINT
49          EXTRN  UPCHAR,FN,SCNOFF,ASSIO,UPCASE
50          ;
51          ;
52          ;
53          CSEG
54          ;
55          ; COMMAND INTERPRETER
56          ;
0000 C 00      57 PUNIT:   DB      0
0001 C 00      58 COMD:   DB      0
59 COMINT:
0002 C 97      60          SUB      A
0003 C 320000    C      61          STA      PUNIT
0006 C 2A00FF    C      62          LHL D      CI
0009 C C009FD    C      63          CALL     INCHAR
000C C D8        64          RC

```

000D	C	FE20		65	CPI	' '
000F	C	CA0200	C	66	JZ	COMINT
0012	C	FE0D		67	CPI	CR
0014	C	CA0200	C	68	JZ	COMINT
0017	C	FE3A		69	CPI	'.'
0019	C	C24400	C	70	JNZ	COMI1
001C	C	CD09FD		71	CALL	INCHAR
001F	C	D8		72	RC	
0020	C	CD0000	X	73	CALL	UPCHAR
0023	C	FE4D		74	CPI	'M'
0025	C	C23400	C	75	JNZ	COMI9
0028	C	CD0000	X	76	CALL	FN
002B	C	D8		77	RC	
002C	C	C604		78	ADI	4
002E	C	320000	C	79	STA	PUNIT
0031	C	C34000	C	80	JMP	COMIA
				81	COMI9:	
0034	C	FE46		82	CPI	'F'
0036	C	C2D900	C	83	JNZ	COMI1
003	C	CD0000	X	84	CALL	FN
003C	C	D8		85	RC	
003D	C	320000	C	86	STA	PUNIT
				87	COMIA:	
0040	C	CD09FD		88	CALL	INCHAR
0043	C	D8		89	RC	
				90	COMI1:	
0044	C	112227		91	LXI	D,PRGNAM
0047	C	CD09FD		92	CALL	FILENAME
004A	C	D8		93	RC	
004B	C	320100	C	94	STA	COMD
004E	C	212227		95	LXI	H,PRGNAM
0051	C	3A0000	C	96	LDA	PUNIT
0054	C	CD06FD		97	CALL	LOAD
0057	C	DA9E00	C	98	JC	COMI5
				99	COMI3:	
005A	C	3A0100	C	100	LDA	COMD
				101	COMI8:	
005D	C	FE2F		102	CPI	'/'
005	C	CAC500	C	103	JZ	COMI7
0062	C	FE0D		104	CPI	CR
0064	C	CA7F00	C	105	JZ	COMI2
0067	C	FE24		106	CPI	'\$'
0069	C	CA7F00	C	107	JZ	COMI2
006C	C	FE20		108	CPI	' '
006E	C	CA7800	C	109	JZ	COMI4
0071	C	CD0000	X	110	CALL	SCNOFF
0074	C	3E1F		111	MVI	A,SEC1F
				112	;	
0076	C	37		113	STC	
0077	C	C9		114	RET	
				115	COMI4:	
0078	C	CD0000	X	116	CALL	ASSIO
007B	C	D8		117	RC	
007C	C	C35D00	C	118	JMP	COMI8

* ERROR 1F *

```

119 COMI2:
120 LHL D PSTART
121 LDA DEBSW
122 ANA A
123 JNZ COMIB
124 PCHL
125 COMIB:
126 CPI 1 ; DEBUG?
127 JNZ COMIC ; NO
128 SUB A
129 STA DEBSW
130 PUSH H ; SIMULATE RST 0
131 JMP 0
132 COMIC:
133 SUB A
134 STA DEBSW ; LOAD
135 JMP COMINT
136 COMI5:
137 CPI SEC09
138 JZ COMI6
139 CPI SEC0B
140 JZ COMI6
141 STC
142 RET
143 COMI6:
144 LXI H, PRGNAM
145 MVI B, 9
146 CALL UPCASE
147 RC
148 LDA PUNIT
149 CALL LOAD
150 JNC COMI3
151 PUSH PSW
152 LDA COMD
153 CALL SCNOFF
154 POP PSW
155 RET
156 COMI7:
157 MVI A, BEL
158 CALL TTO
159 LHL D CI
160 CALL INCHAR
161 RC
162 CPI CR
163 JNZ COMI7
164 JMP COMI4
165 COME1:
166 CALL SCNOFF
167 MVI A, SEC1D
168 ; * ERROR 1D *
169 STC
170 RET
171 ;
172 ;

```

173 ;
174

END

NO ERROR MESSAGES

	X ASSIO	0007	BEL	FF00	CI	0001	C	COMD	00D9	C	COME1	
0044	C	COMI1	007F	C	COMI2	005A	C	COMI3	0078	C	COMI4	
00AA	C	COMI6	00C5	C	COMI7	005D	C	COMI8	0034	C	COMI9	
008A	C	COMIB	0097	C	COMIC	0002	C*	COMINT	000D		CR	
FD0D		FILENA		X	FN	FD09		INCHAR	FD06		LOAD	
2720		PSTART	0000	C	PUNIT		X	SCNOFF	0009		SEC09	
001D		SEC1D	001F		SEC1F	0043		TTO		X	UPCASE	
											X	UPCHAR

```
1 ;*****
2 ;
3 ;      TOS21 - EDIT
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```



```

11          $TITLE TOS21 - EDIT MODULE
12          $PW      110
13          $PL      64
14          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
22 SEC15     EQU      15H
23          ;
24          ;
25          ;
26          PUBLIC EDBH,EDWH,EDHB,EDHW,LDIG,UPCHAR,UPCASE
27          ;
28          CSEG
29          ;
30          ; EDIT FOUR BITS
31          ;
32 EDNH:
33          ANI      0FH
34          ADI      90H
35          DAA
36          ACI      40H
37          DAA
38          MOV      M,A
39          INX      H
40          RET
41          ;
42          ; EDIT ONE BYTE
43          ;
44 EDBH:
45          PUSH     PSW
46          RRC
47          RRC
48          RRC
49          RRC
50          CALL     EDNH
51          POP      PSW
52          PUSH     PSW
53          CALL     EDNH
54          POP      PSW
55          ANA      A
56          RET
57          ;
58          ; EDIT ONE WORD
59          ;
60 EDWH:
61          PUSH     PSW
62          MOV      A,D
63          CALL     EDBH
64          MOV      A,E

```

0015

0000 C E60F
0002 C C690
0004 C 27
0005 C CE40
0007 C 27
0008 C 77
0009 C 23
000A C C9

000B C F5
000C C 0F
000D C 0F
000E C 0F
000F C 0F
0010 C CD0000 C
0013 C F1
0014 C F5
0015 C CD0000 C
0018 C F1
0019 C A7
001A C C9

001B C F5
001C C 7A
001D C CD0B00 C
0020 C 7B

```

0021 C  C00B00  C    65      CALL  EDH H
0024 C  F1        66      POP   PSW
0025 C  A7        67      ANA   A
0026 C  C9        68      RET
        69 ;
        70 ;      DE-EDIT ONE HEX CHAR
        71 ;
        72 NIBBLE:
0027 C  7E        73      MOV   A,M
0028 C  23        74      INX   H
0029 C  FE30      75      CPI   '0'
002B C  FA4300  C    76      JM    NIB1
002E C  FE47      77      CPI   'F'+1
0030 C  F24300  C    78      JP    NIB1
0033 C  FE3A      79      CPI   '9'+1
0035 C  FA4000  C    80      JM    NIB2
0038 C  FE41      81      CPI   'A'
003A C  FA4300  C    82      JM    NIB1
003D C  D637      83      SUI   'A'-10
003F C  C9        84      RET
        85 NIB2:
0040 C  D630      86      SUI   '0'
0042 C  C9        87      RET
        88 NIB1:
0043 C  3E15      89      MVI   A,SEC15
        90 ;      * ERROR 15 *
0045 C  37        91      STC
0046 C  C9        92      RET
        93 ;
        94 ;      DE-EDIT ONE BYTE
        95 ;
        96 EDHB:
0047 C  CD2700  C    97      CALL  NIBBLE
004A C  D8        98      RC
004B C  07        99      RLC
004C C  07       100      RLC
004D C  07       101      RLC
004E C  07       102      RLC
004F C  F6F0     103      ANI   0F0H
0051 C  C5       104      PUSH  B
0052 C  47       105      MOV   B,A
0053 C  CD2700  C    106      CALL  NIBBLE
0056 C  DA5A00  C    107      JC    EDHB1
0059 C  B0       108      ORA   B
        109 EDHB1:
005A C  C1       110      POP   B
005B C  C9       111      RET
        112 ;
        113 ;      DE-EDIT ONE WORD
        114 ;
        115 EDHW:
005C C  F5       116      PUSH  PSW
005D C  CD4700  C    117      CALL  EDHB
0060 C  DA6E00  C    118      JC    EDHW1

```

```

0063 C 57          119      MOV      D,A
0064 C CD4700      C      120      CALL    EDHE
0067 C DA6E00      C      121      JC      EDHW1
006A C 5F          122      MOV      E,A
006B C F1          123      POP      PSW
006C C A7          124      ANA      A
006D C C9          125      RET
                   126 EDHW1:
006E C 33          127      INX      SP
006F C 33          128      INX      SP
0070 C C9          129      RET
                   130 ;
                   131 ;      UTILITY - CHECK IF LETTER OR DIGIT
                   132 ;
                   133 LDIG:
0071 C FE30        134      CPI      '0'
0073 C FA9100      C      135      JM      LDIG1
0076 C FE3A        136      CPI      '9'+1
0077 C FA8F00      C      137      JM      LDIG2
0078 C FE41        138      CPI      'A'
007D C FA9100      C      139      JM      LDIG1
0080 C FE5B        140      CPI      'Z'+1
0082 C FA8F00      C      141      JM      LDIG2
0085 C FE61        142      CPI      61H      ; SMALL A
0087 C FA9100      C      143      JM      LDIG1
008A C FE7B        144      CPI      7BH      ; SMALL Z+1
008C C F29100      C      145      JP      LDIG1
                   146 LDIG2:
008F C A7          147      ANA      A
0090 C C9          148      RET
                   149 LDIG1:
0091 C 37          150      STC
0092 C C9          151      RET
                   152 ;
                   153 ;      MAKE TEXT UPPER CASE
                   154 ;
                   155 ;      HL - ADDRESS
                   156 ;      B  - LENGTH
                   157 ;
                   158 UPCASE:
0093 C F5          159      PUSH    PSW
0094 C C5          160      PUSH    B
0095 C E5          161      PUSH    H
0096 C 0E00        162      MVI      C,0
                   163 UPC2:
0098 C 7E          164      MOV      A,M
0099 C FE61        165      CPI      61H
009B C FAA700      C      166      JM      UPC1      ; NOT LOWER CASE LETTER
009E C FE7B        167      CPI      7BH
00A0 C F2A700      C      168      JP      UPC1      ; NOT LOWER CASE LETTER
00A3 C E6DF        169      ANI      0DFH      ; MAKE UPPER CASE
00A5 C 77          170      MOV      M,A
00A6 C 0C          171      INR      C      ; COUNT
                   172 UPC1:

```

```
00A7 C 23 173 INX H
00A8 C 05 174 DCR B
00A9 C C29800 C 175 JNZ UPC2
00AC C E1 176 POP H
00AD C 79 177 MOV A,C
00AE C C1 178 POP B
00AF C A7 179 ANA A
00B0 C CAB600 C 180 JZ UPC3 ; NO CONVERTED
00B3 C F1 181 POP PSW
00B4 C A7 182 ANA A
00B5 C C9 183 RET
184 UPC3:
00B6 C F1 185 POP PSW
00B7 C 37 186 STC ; SET CARRY IF NONE CONVERTED
00B8 C C9 187 RET
188 UPCHAR:
00B9 C FE61 189 CPI 61H
00BF C F8 190 RM
00BC C FE7B 191 CPI 7BH
00E1 C F0 192 RP
00EF C E6DF 193 ANI 0DFH
00C1 C C9 194 RET
195 ;
196 ;
197 ;
198 END
```

10 ERROR MESSAGES

000B C*EDBH	0047 C*EDHB	005A C EDHB1	005C C*EDHW	006E C EDHW1
0000 C EDNH	001B C*EDWH	0071 C*LDIG	0091 C LDIG1	008F C LDIG2
0043 C NIB1	0040 C NIB2	0027 C NIBBLE	0015 SEC15	00A7 C UPC1
0098 C UPC2	00B6 C UPC3	0093 C*UPCASE	00B9 C*UPCHAR	

```
1 ;*****
2 ;
3 ;      TOS21 - IBM
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - IBM MODULE
12          $PW      110
13          $PL      64
14 ;          -          1,11,18,27
15 ;
16 ;*****
17 ;
18 ;
19 ;
000A 20 SECOA EQU 0AH
000C 21 SECOC EQU 0CH
0020 22 SEC20 EQU 20H
23 ;
24 ;
25 ;
0073 26 DSRDW EQU 73H
007C 27 DSRW EQU 7CH
0076 28 DSWRW EQU 76H
0077 29 DSWAW EQU 7FH
0070 30 DCALW EQU 70H
31 ;
32 ;
33 ;
2733 34 NAME EQU 2733H
2710 35 CTLBLK EQU 2710H
2730 36 UNIT EQU 2730H
2680 37 BUF1 EQU 2680H
38 ;
39 ;
40 ;
0080 41 EBCBIT EQU 80H
0001 42 INBIT EQU 1
0004 43 LBBIT EQU 4
0080 44 EOFBIT EQU 80H
45 ;
46 ;
47 ;
0020 48 WRITE EQU 0FD24H
49 ;
50 ;
51 ;
52          PUBLIC OIIB,RDIB,CIIB,OOIB,WRIB,COIB
53          EXTRN OITX,PART3,CIID
54 ;
55 ;
56 ;
57          CSEG
58 ;
59 ;
60 ;          *****
61 ;          IBM FORMAT DISKETTE HANDLING
62 ;          *****
63 ;
64 ;
```

```

        65 ED2:
0000 C  C5                66          PUSH    B
0001 C  0600             67          MVI     D,0
        68 ED21:
0003 C  FE0A             69          CPI     10
0005 C  FA0E00    C      70          JM      ED22
0008 C  D60A             71          SUI     10
000A C  04              72          INR     B
000B C  C30300    C      73          JMP     ED21
        74 ED22:
000E C  4F              75          MOV     C,A
000F C  78              76          MOV     A,B
0010 C  C630             77          ADI     '0'
0012 C  12              78          STAX    D
0013 C  13              79          INX     D
0014 C  79              80          MOV     A,C
0015 C  C630             81          ADI     '0'
0017 C  12              82          STAX    D
0018 C  13              83          INX     D
0019 C  C1              84          POP     B
001A C  C9              85          RET
        86 DEC2:
001B C  C5                87          PUSH    B
001C C  CD2F00    C      88          CALL   DEC20
001F C  DA2D00    C      89          JC      DEC22
0022 C  87              90          ADD     A
0023 C  47              91          MOV     B,A
0024 C  87              92          ADD     A
0025 C  87              93          ADD     A
0026 C  80              94          ADD     B
0027 C  47              95          MOV     B,A
0028 C  CD2F00    C      96          CALL   DEC20
002B C  80              97          ADD     B
002C C  A7              98          ANA     A
        99 DEC22:
002D C  C1              100         POP     B
002E C  C9              101         RET
        102 DEC20:
002F C  1A              103         LDAX    D
0030 C  13              104         INX     D
0031 C  FE20             105         CPI     ' '
0033 C  C23800    C      106         JNZ     DEC21
0036 C  3E30             107         MVI     A,'0'
        108 DEC21:
0038 C  FE30             109         CPI     '0'
003A C  FA4500    C      110         JM      DEC2E
003D C  FE3A             111         CPI     '9'+1
003F C  F24500    C      112         JP      DEC2E
0042 C  D630             113         SUI     '0'
0044 C  C9              114         RET
        115 DEC2E:
0045 C  3E0C             116         MVI     A,SECO C ;** ERROR OC **
0047 C  37              117         STC
0048 C  C9              118         RET

```



```

119 DEC3:
0049 C C5 120 PUSH D
004A C CD1B00 C 121 CALL DEC2
004B C DA2D00 C 122 JC DEC22
0050 C E5 123 PUSH H
0051 C 6F 124 MOV L,A
0052 C 2600 125 MVI H,0
0054 C 29 126 DAD H
0055 C E5 127 PUSH H
0056 C C1 128 POP B
0057 C 29 129 DAD H
0058 C 29 130 DAD H
0059 C 09 131 DAD B
005A C CD2F00 C 132 CALL DEC20
005B C DA6900 C 133 JC DEC23
0060 C 4F 134 MOV C,A
0061 C 0600 135 MVI B,0
0063 C 09 136 DAD B
0064 C EB 137 XCHG
0065 C E1 138 POP H
0066 C C1 139 POP B
0067 C A7 140 ANA A
0068 C C9 141 RET
142 DEC23:
0069 C E1 143 POP H
006A C C1 144 POP B
006B C C9 145 RET
006C C 00 146 HDRSECT:DB 0
006D C 0000 147 ERRTRK:DW 0
148 ;
149 ; UTILITY USED BY OPEN
150 ;
151 RIBM:
006F C E5 152 PUSH H
0070 C 2A1027 153 LHLD CTLBLK
0073 C D5 154 PUSH D
0074 C 111B00 155 LXI D,27
0077 C 19 156 DAD D
0078 C D1 157 POP D
0079 C 7E 158 MOV A,M
007A C E1 159 POP H
007B C E680 160 ANI EBCBIT
007D C 3A3027 161 LDA UNIT
0080 C C28700 C 162 JNZ RIBM1
0083 C CD7300 163 CALL DSRDW
0086 C C9 164 RET
165 RIBM1:
0087 C CD7C00 166 CALL DSRDW
008A C C9 167 RET
168 WIBM:
008B C E5 169 PUSH H
008C C 2A1027 170 LHLD CTLBLK
008F C 23 171 INX H
0090 C 7E 172 MOV A,M

```

0091 C	E1	173	POP	H	
0092 C	E680	174	ANI	EBCBIT	
0094 C	3A3027	175	LDA	UNIT	
0097 C	C29E00	176	JNZ	WIBM1	
009A C	CD7600	177	CALL	DSWRW	
009D C	C9	178	RET		
		179	WIBM1:		
009E C	CD7F00	180	CALL	DSWAW	
00A1 C	C9	181	RET		
		182	LOCIBM:		
00A2 C	223327	183	SHLD	NAME	
00A5 C	323027	184	STA	UNIT	
00A8 C	CD7000	185	CALL	DCALW	
00AB C	D8	186	RC		
00AC C	010500	187	LXI	B,5	
00AF C	218026	188	LXI	H,BUF1	
00B2 C	CD6F00	189	CALL	RIBM	
00B5 C	D8	190	RC		
00B7 C	118626	191	LXI	D,BUF1+6	
00B9 C	CD1900	192	CALL	DEC2	
00BC C	D8	193	RC		
00BD C	326D00	194	STA	ERRTRK	
00C0 C	118A26	195	LXI	D,BUF1+10	
00C3 C	CD1B00	196	CALL	DEC2	
00C6 C	D8	197	RC		
00C7 C	326E00	198	STA	ERRTRK+1	
00CA C	010800	199	LXI	B,8	
		200	LOC14:		
00CD C	218026	201	LXI	H,BUF1	
00D0 C	CD6F00	202	CALL	RIBM	
00D3 C	DAFC00	203	JC	LOC16	
00D6 C	118526	204	LXI	D,BUF1+5	
00D9 C	2A3327	205	LHLD	NAME	
00DC C	0608	206	MVI	B,8	
		207	LOC13:		
00DE C	1A	208	LDAX	D	
00DF C	BE	209	CMP	M	
00E0 C	C2EF00	210	JNZ	LOC12	
00E3 C	13	211	INX	D	
00E4 C	23	212	INX	H	
00E5 C	05	213	DCR	B	
00E6 C	C2DE00	214	JNZ	LOC13	
00E9 C	79	215	MOV	A,C	
00EA C	326C00	216	STA	HDRSECT	
00ED C	A7	217	ANA	A	
00EE C	C9	218	RET		
		219	LOC12:		
00EF C	0600	220	MVI	B,0	
		221	LOC15:		
00F1 C	0C	222	INR	C	
00F2 C	79	223	MOV	A,C	
00F3 C	FE1B	224	CPI	27	
00F5 C	C2CD00	225	JNZ	LOC14	
00F8 C	3E0A	226	MVI	A,SECOA	*** ERROR 0A **

```

00FA C 37          227      STC
00FB C C9          228      RET
                        229 LOC16:
00FC C FE20        230      CPI      SEC20
00FE C CAF100      C      231      JZ      LOC15
0101 C 37          232      STC
0102 C C9          233      RET
                        234 ;
                        235 ;      ** OPEN INPUT IBM DISKETTE **
                        236 ;
                        237 ;      ONE MORE OPEN UTILITY FIRST
                        238 ;
                        239 OIIBX:
0103 C CD0000      X      240      CALL    OITX
0106 C D8          241      RC
0107 C F5          242      PUSH   PSW
0108 C C5          243      PUSH   B
0109 C D5          244      PUSH   D
010A C 7E          245      MOV    A,M
010B C 23          246      INX     H
010C C CDA200      C      247      CALL    LOCIBM
                        248 XITY:
010F C DA1A01      C      249      JC      XITE
                        250 XIT:
0112 C D1          251      POP    D
0113 C C1          252      POP    B
0114 C F1          253      POP    PSW
0115 C A7          254      ANA     A
0116 C 2A1027      255      LHLD   CTLBLK
0119 C C9          256      RET
                        257 XITE:
011A C 37          258      STC
011B C D1          259      POP    D
011C C C1          260      POP    B
011D C 33          261      INX     SP
011E C 33          262      INX     SP
011F C 2A1027      263      LHLD   CTLBLK
0120 C C9          264      RET
                        265 ;
                        266 ;      ** OPEN INPUT IBM DISKETTE **
                        267 ;
                        268 OIIB:
0123 C CD0301      C      269      CALL    OIIBX
0126 C D8          270      RC
0127 C F5          271      PUSH   PSW
0128 C C5          272      PUSH   B
0129 C D5          273      PUSH   D
012A C 119826      274      LXI     D,BUF1+24
012B C CD4900      C      275      CALL    DEC3      ; BLOCK LENGTH TO DE
0130 C DA1A01      C      276      JC      XITE
0133 C 2A1027      277      LHLD   CTLBLK
0136 C 010400      278      LXI     B,4
0139 C 09          279      DAD     B
013A C 73          280      MOV     M,E

```

013B C	23		281	INX	H	
013C C	72		282	MOV	M,D	
013D C	2A0000	X	283	LHLD	PART3	
0140 C	2B		284	DCX	H	
0141 C	119C26		285	LXI	D,BUF1+28	
0144 C	CD1B00	C	286	CALL	DEC2	
0147 C	DA1A01	C	287	JC	XITE	
014A C	77		288	MOV	M,A	;BOE TRK
014B C	2B		289	DCX	H	
014C C	13		290	INX	D	
014D C	CD1B00	C	291	CALL	DEC2	
0150 C	DA1A01	C	292	JC	XITE	
0153 C	77		293	MOV	M,A	;BOE SEC
0154 C	23		294	INX	H	
0155 C	23		295	INX	H	
0156 C	23		296	INX	H	
0157 C	11CA26		297	LXI	D,BUF1+74	
015A C	E5		298	PUSH	H	
015F C	2A1027		299	LHLD	CTLBLK	
015E C	23		300	INX	H	
015F C	7E		301	MOV	A,M	
0160 C	E1		302	POP	H	
0161 C	F601		303	ANI	INBIT	
0163 C	C26901	C	304	JNZ	OIIB2	
0166 C	11A226		305	LXI	D,BUF1+34	
			306	OIIB2:		
0169 C	CD1B00	C	307	CALL	DEC2	; EOD/EOE
016C C	DA1A01	C	308	JC	XITE	
016F C	77		309	MOV	M,A	
0170 C	2B		310	DCX	H	
0171 C	13		311	INX	D	
0172 C	CD1B00	C	312	CALL	DEC2	
0175 C	DA1A01	C	313	JC	XITE	
0178 C	77		314	MOV	M,A	
0179 C	23		315	INX	H	
017A C	23		316	INX	H	
017P C	EB		317	XCHG		
017C C	2A6D00	C	318	LHLD	ERRTRK	
017F C	EB		319	XCHG		
0180 C	73		320	MOV	M,E	
0181 C	23		321	INX	H	
0182 C	72		322	MOV	M,D	
0183 C	23		323	INX	H	
0184 C	3A6C00	C	324	LDA	HDRSECT	
0187 C	77		325	MOV	M,A	
0188 C	C31201	C	326	JMP	XIT	
			327	;		
			328	;		
			329	;		
			330	OIIB:		
18B C	C32301	C	331	JMP	OIIB	
			332	;		
			333	;		
			334	;		
					READ/WRITE UTILITY	

```

335 RWIB:
018E C 2A0000 X 336 LHLD PART3
0191 C 2F 337 DCX H
0192 C 2B 338 DCX H
0193 C 4E 339 MOV C,M
0194 C 23 340 INX H
0195 C 46 341 MOV E,M
0196 C 23 342 INX H
0197 C 7E 343 MOV A,M
0198 C 23 344 INX H
0199 C B9 345 CMP C
019A C C2A001 C 346 JNZ RDIB2
019D C 7E 347 MOV A,M
019E C B8 348 CMP E
019F C C2A001 C 349 JNZ RDIB2
01A2 C E5 350 PUSH H
01A3 C 2A1027 351 LHLD CTLBLK
01A6 C 23 352 INX H
01A7 C 7E 353 MOV A,M
01A8 C F604 354 ORI LBBIT
01AA C 77 355 MOV M,A
01AB C E1 356 POP H
357 RDIB2:
01AC C C5 358 PUSH B
01AD C 2B 359 DCX H
01AE C 2B 360 DCX H
01AF C 0C 361 INR C
01B0 C 79 362 MOV A,C
01B1 C FE1B 363 CPI 27
01B3 C C2B901 C 364 JNZ RDIB5
01B6 C 0E01 365 MVI C,1
01B8 C 04 366 INR B
367 RDIB5:
01B9 C 70 368 MOV M,B
01BA C 2B 369 DCX H
01BB C 71 370 MOV M,C
01BC C 23 371 INX H
01B C 23 372 INX H
01BE C C1 373 POP B
01BF C 23 374 INX H
01C0 C 23 375 INX H
01C1 C 7E 376 MOV A,M
01C2 C B8 377 CMP B
01C3 C C2CB01 C 378 JNZ RDIB3
01C6 C 064B 379 MVI B,75
01C8 C C3D301 C 380 JMP RDIB4
381 RDIB3:
01CB C 23 382 INX H
01CC C 7E 383 MOV A,M
01CD C B8 384 CMP B
01CE C C2D301 C 385 JNZ RDIB4
01D1 C 064C 386 MVI B,76
387 RDIB4:
01D3 C 2A1027 388 LHLD CTLBLK

```

```

01D6 C 110600      389      LXI      D,6
01D9 C 19          390      DAD      D
01DA C 5E          391      MOV      E,M
01DB C 23          392      INX      H
01DC C 56          393      MOV      D,M
01DD C EB          394      XCHG
01DE C C9          395      RET
                    396 ;
                    397 ;      ** READ IBM DISKETTE **
                    398 ;
                    399 RDIB:
01DF C CD0000      X      400      CALL    OITX
01E2 C D8          401      RC
01E3 C F5          402      PUSH   PSW
01E4 C C5          403      PUSH   B
01E5 C D5          404      PUSH   D
01E6 C 2A1027      405      LHLD    CTLBLK
01E9 C 23          406      INX      H
01EA C 7E          407      MOV      A,M
01EB C 23          408      INX      H
01EC C 3600        409      MVI      M,0
01EE C 23          410      INX      H
01EF C 3600        411      MVI      M,0
01F1 C E604        412      ANI      LBBIT
01F3 C CA0302      C      413      JZ      RDIB1
                    414 RDIB6:
01F6 C 2A1027      415      LHLD    CTLBLK
01F9 C 23          416      INX      H
01FA C 7E          417      MOV      A,M
01FB C F680        418      ORI      EOFBIT
01FD C 77          419      MOV      M,A
01FE C 97          420      SUB     A
01FF C 37          421      STC
0200 C C31A01      C      422      JMP     XITE
                    423 RDIB1:
0203 C CD8E01      C      424      CALL    RWIB
0206 C CD6F00      C      425      CALL    RIBM
0209 C C30F01      C      426      JMP     XITY
                    427 ;
                    428 ;      ** WRITE IBM DISKETTE **
                    429 ;
                    430 WRIB:
020C C CD0000      X      431      CALL    OITX
020F C D8          432      RC
0210 C F5          433      PUSH   PSW
0211 C C5          434      PUSH   B
0212 C D5          435      PUSH   D
0213 C 2A1027      436      LHLD    CTLBLK
0216 C 23          437      INX      H
0217 C 7E          438      MOV      A,M
0218 C 23          439      INX      H
0219 C 3600        440      MVI      M,0
021B C E604        441      ANI      LBBIT
021D C C2F601      C      442      JNZ     RDIB6

```

0220 C	CD8E01	C	443	CALL	RWIB
0223 C	CD8B00	C	444	CALL	WIEM
0226 C	C30F01	C	445	JMP	XITY
			446 ;		
			447 ;	** CLOSE INPUT IBM DISKETTE **	
			448 ;		
			449 CIIB:		
0229 C	C30000	X	450	JMP	CIID
			451 ;		
			452 ;	** CLOSE OUTPUT IBM DISKETTE **	
			453 ;		
			454 COIB:		
0220 C	CD0000	X	455	CALL	OITX
022F C	D8		456	RC	
0230 C	F5		457	PUSH	PSW
0231 C	C5		458	PUSH	B
0232 C	D5		459	PUSH	D
0233 C	2A1027		460	LHLD	CTLBLK
0234 C	23		461	INX	H
0235 C	23		462	INX	H
0238 C	7E		463	MOV	A,M
0239 C	23		464	INX	H
023A C	B6		465	ORA	M
023B C	CA4702	C	466	JZ	COIB1
023E C	2A1027		467	LHLD	CTLBLK
0241 C	CD24FD		468	CALL	WRITE
0244 C	DC1A01	C	469	CC	XITE
			470 COIB1:		
0247 C	2A1027		471	LHLD	CTLBLK
024A C	112200		472	LXI	D,34
024D C	19		473	DAD	D
024E C	4E		474	MOV	C,M
024F C	79		475	MOV	A,C
0250 C	326000	C	476	STA	HDRSECT
0253 C	0600		477	MVI	B,0
0255 C	218026		478	LXI	H,BUF1
0258 C	CD6F00	C	479	CALL	RIBM
0259 C	DA1A01	C	480	JC	XITE
025E C	2A1027		481	LHLD	CTLBLK
0261 C	111000		482	LXI	D,28
0264 C	19		483	DAD	D
0265 C	5E		484	MOV	E,M
0266 C	23		485	INX	H
0267 C	56		486	MOV	D,M
0268 C	EB		487	XCHG	
0269 C	7C		488	MOV	A,H
026A C	11CA26		489	LXI	D,BUF1+74
026D C	CD0000	C	490	CALL	ED2
0270 C	3E30		491	MVI	A,'0'
0272 C	12		492	STAX	D
0273 C	13		493	INX	D
0274 C	7D		494	MOV	A,L
0275 C	CD0000	C	495	CALL	ED2
0278 C	3A6000	C	496	LDA	HDRSECT

```
027B C 4F 497
027C C 0600 498
027E C 218026 499
0281 C CD8B00 C 500
0284 C DA1A01 C 501
0287 C D1 502
0288 C C1 503
0289 C F1 504
028A C 2A1027 505
028D C C30000 X 506
507 ;
508 ;
509 ;
510
```

NO ERROR MESSAGES

```
MOV C,A
MVI B,0
LXI H,BUF1
CALL WIBM
JC XITE
POP D
POP B
POP PSW
LHLD CTLBLK
JMP CIID
```

END

2680	BUF1	0229	C*CIIB	X	CIID	022C	C*COIB	0247	C	COIB1				
2710	CTLRLK	0070	DCALW	001B	C	DEC2	002F	C	DEC20	0038	C	DEC21		
0020	C	DEC22	0069	C	DEC23	0045	C	DEC2E	0049	C	DEC3	007C	DSRAW	
0073	DSRDW	007F	DSWAW	0076	DSWRW	0080	EBCBIT	0000	C	ED2				
0003	C	ED21	000E	C	ED22	0080	EOFBIT	0060	C	ERRTRK	006C	C	HDRSEC	
0001	INBIT	0004	LBBIT	00EF	C	LOC12	00DE	C	LOC13	00CD	C	LOC14		
00F1	C	LOC15	00FC	C	LOC16	00A2	C	LOC1BM	2733	NAME	0123	C*OIIB		
0169	C	OIIB2	0103	C	OIIBX	X	OITX	018B	C*OOIB	X	PART3			
01DF	C*RDIB	0203	C	RDIB1	01AC	C	RDIB2	01CB	C	RDIB3	01D3	C	RDIB4	
01B9	C	RDIB5	01F6	C	RDIB6	006F	C	RIBM	0087	C	RIBM1	018E	C	RWIB
000A	SECOA	000C	SECOC	0020	SEC20	2730	UNIT	008B	C	WIBM				
009E	C	WIBM1	020C	C*WRIB	FD24	WRITE	0112	C	XIT	011A	C	XITE		
010F	C	XITY												

```
1 ;*****
2 ;
3 ;      TOS21 - INT L
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE  TOS21 - INTEL MODULE
12          $PW      110
13          $PL      64
14 ;          -          1,11,18,27
15 ;
16 ;*****
17 ;
18 ;
19 ;
20 ;
21 ;
22 MAP1      EQU      2739H
23 MAP2      EQU      273BH
24 BUF1      EQU      2680H
25 BUF2      EQU      2600H
26 UNIT      EQU      2730H
27 CTLBLK    EQU      2710H
28 TRK       EQU      2731H
29 UNAM      EQU      273EH
30 ;
31 ;
32 ;
33 SEC0F      EQU      0FH
34 SEC2F      EQU      2FH
35 SEC31      EQU      31H
36 SEC32      EQU      32H
37 SEC33      EQU      33H
38 ;
39 ;
40 ;
41 AUTO       EQU      20H
42 SFLAG      EQU      4
43 LBBIT      EQU      10H
44 EOFBIT     EQU      80H
45 ;
46 ;
47 ;
48 LOCDIR     EQU      85H
49 DSRDW      EQU      73H
50 DSWRW      EQU      76H
51 ;
52 ;
53 ;
54 BUFDEALLOC EQU      0FD39H
55 WRITE      EQU      0FD24H
56 ;
57 ;
58 ;
59          PUBLIC  RELBLK,RELN,GETBLK,OIID,RDID
60          PUBLIC  CIID,OOID,WRID,COID,OITX,PART3
61          PUBLIC  GETN
62          EXTRN   CHKDEV
63 ;
64 ;
```

```

        65 ;
        66 ; CSEG
        67 ;
        68 ; *****
        69 ; INTEL FORMAT DISKETTE HANDLING
        70 ; *****
        71 ;
        72 ; UTILITY ROUTINES FOR MAP HANDLING
        73 ;
        74 ;
        75 ; REGISTERS NOT SAVED AND RESTORED
        76 ;
        77 ; ** READ MAP **
        78 ;
        79 MAPRD:
0000 C 2A3927 80 LHL D MAP1
0003 C 44 81 MOV B,H
0004 C 4D 82 MOV C,L
0005 C 210026 83 LXI H,BUF2
0006 C 3A3027 84 LDA UNIT
0008 C CD7300 85 CALL DSRDW
000E C D8 86 RC
000F C 2A3B27 87 LHL D MAP2
0012 C 44 88 MOV B,H
0013 C 4D 89 MOV C,L
0014 C 218026 90 LXI H,BUF1
0017 C 3A3027 91 LDA UNIT
001A C CD7300 92 CALL DSRDW
001D C C9 93 RET
        94 ;
        95 ; ** WRITE MAP **
        96 ;
        97 MAPWR:
001E C 2A3927 98 LHL D MAP1
0021 C 44 99 MOV B,H
0022 C 4D 100 MOV C,L
0023 C 210026 101 LXI H,BUF2
0024 C 3A3027 102 LDA UNIT
0025 C CD7600 103 CALL DSWRW
002C C D8 104 RC
002D C 2A3B27 105 LHL D MAP2
0030 C 44 106 MOV B,H
0031 C 4D 107 MOV C,L
0032 C 218026 108 LXI H,BUF1
0035 C 3A3027 109 LDA UNIT
0038 C CD7600 110 CALL DSWRW
003E C C9 111 RET
        112 ;
        113 ; ** LOCATE MAPBIT **
        114 ;
        115 ; ENTRY: BC - TRACK/SECTOR
        116 ;
        117 ; EXIT: A - BIT HL - MAP ADDRESS
        118 ;

```

```

119 MAPBIT:
003C C 2600      120      MVI      H,0
003E C 68        121      MOV      L,B
003F C 29        122      DAD      H
0040 C E5        123      PUSH     H          ; 2T
0041 C 29        124      DAD      H
0042 C 29        125      DAD      H
0043 C E5        126      PUSH     H          ; 8T
0044 C 29        127      DAD      H          ; 16 T
0045 C D1        128      POP      D
0046 C 19        129      DAD      D          ; 24T
0047 C D1        130      POP      D
0048 C 19        131      DAD      D          ; 26T
0049 C 110000    132      LXI      D,0
004C C 59        133      MOV      E,C
004D C 19        134      DAD      D          ; 26T+S
004E C 2B        135      DCX      H          ; 26T+S-1
004F C 7D        136      MOV      A,L
0050 C E607      137      ANI      7
0052 C 4F        138      MOV      C,A          ; WITHIN BYTE CODE
0053 C 7C        139      MOV      A,H
0054 C 07        140      RLC
0055 C 07        141      RLC
0056 C 07        142      RLC
0057 C 07        143      RLC
0058 C 07        144      RLC
0059 C E6E0      145      ANI      0EOH
005B C 47        146      MOV      B,A          ; BITS TO LOWER
005C C 7D        147      MOV      A,L
005D C 0F        148      RRC
005E C 0F        149      RRC
005F C 0F        150      RRC
0060 C E61F      151      ANI      1FH
0062 C B0        152      ORA      B
0063 C 6F        153      MOV      L,A
0064 C 7C        154      MOV      A,H
0065 C 0F        155      RRC
0067 C 0F        156      RRC
0067 C 0F        157      RRC
0068 C E61F      158      ANI      1FH
006A C 67        159      MOV      H,A
006B C 110026    160      LXI      D,BUF2
006E C 19        161      DAD      D
006F C 0C        162      INR      C
0070 C 3E80      163      MVI      A,80H
164 MB1:
0072 C 0D        165      DCR      C
0073 C C8        166      RZ
0074 C 0F        167      RRC
0075 C E67F      168      ANI      7FH
0077 C C37200    169      JMP      MB1
170 ;
171 ;          ** RELEASE A DISKETTE BLOCK **
172 ;

```

```

173 ;          REGISTERS SAVED AND RESTORED
174 ;
175 ;          BC - TRACK/SECTOR
176 ;
177 RELBLK:
007A C  F5      178      PUSH    PSW
007B C  F5      179      PUSH    H
007C C  D5      180      PUSH    D
007D C  C5      181      PUSH    B
007E C  CD0000  C    182      CALL    MAPRD
0081 C  DA9800  C    183      JC      RELB1
0084 C  C1      184      POP     B
0085 C  C5      185      PUSH    B
0086 C  CD3C00  C    186      CALL    MAPBIT
0089 C  A6      187      ANA     M
008A C  AE      188      XRA     M
008B C  77      189      MOV     M,A
008C C  CD1E00  C    190      CALL    MAPWR
008D C  DA9800  C    191      JC      RELB1
192 RELP2:
0092 C  C1      193      POP     B
0093 C  D1      194      POP     D
0094 C  E1      195      POP     H
0095 C  F1      196      POP     PSW
0096 C  A7      197      ANA     A
0097 C  C9      198      RET
199 RELB1:
0098 C  C1      200      POP     B
0099 C  D1      201      POP     D
009A C  E1      202      POP     H
009B C  33      203      INX     SP
009C C  33      204      INX     SP
009D C  C9      205      RET
206 ;
207 ;          ** RELEASE A NUMBER OF BLOCKS **
208 ;
209 ;          REGISTERS SAVED AND RESTORED
210 ;
211 ;          A - COUNT  HL - ADDRESS OF FIRST ENTRY
212 ;
009E C  00      213 RCNT:   DB      0
009F C  0000    214 RELNH:  DW      0
215 RELN:
00A1 C  F5      216      PUSH    PSW
00A2 C  E5      217      PUSH    H
00A3 C  D5      218      PUSH    D
00A4 C  C5      219      PUSH    B
00A5 C  229F00  C    220      SHLD    RELNH
00A8 C  329E00  C    221      STA     RCNT
00AB C  CD0000  C    222      CALL    MAPRD
00AE C  DA9800  C    223      JC      RELB1
224 RELN3:
00B1 C  2A9F00  C    225      LHLD    RELNH
00B4 C  4E      226      MOV     C,M

```

```

00B5 C 3600      227      MVI      M,O
00B7 C 23        228      INX      H
00B8 C 46        229      MOV      B,M
00B9 C 3600      230      MVI      M,O
00BB C 23        231      INX      H
00BC C 229F00    C      232      SHLD   RELNH
00BF C 78        233      MOV      A,B
00C0 C B1        234      ORA      C
00C1 C CAD700    C      235      JZ      RELN2
00C4 C CD3C00    C      236      CALL   MAPBIT
00C7 C A6        237      ANA      M
00C8 C AE        238      XRA      M
00C9 C 77        239      MOV      M,A
00CA C 2A9F00    C      240      LHLD   RELNH
00CD C 3A9E00    C      241      LDA      RCNT
00D0 C 3D        242      DCR      A
00D1 C 329E00    C      243      STA      RCNT
00D4 C C2B100    C      244      JNZ     RELN3
                        245      RELN2:
00D7 C CD1E00    C      246      CALL   MAPWR
00DA C D29200    C      247      JNC     RELB2
00DD C C39800    C      248      JMP     RELB1
                        249      ;
                        250      ;      ** LOCATE THE FIRST FREE BLOCK **
                        251      ;
                        252      ;      REGISTERS NOT SAVED AND RESTORED
                        253      ;
                        254      ;      RETURNS: DE - TRACK/SECTOR HL - MAP ADDRESS A
                        255      ;
00E0 C 0000      256      MAPSCAN:DW      0
00E2 C 00        257      MAPBYTE:DB      0
00E3 C 00        258      MAPMASK:DB      0
00E4 C 0000      259      MAPTS:  DW      0
                        260      MAPLOC:
00E6 C 210026    261      LXI      H,BUF2
00E9 C 110100    262      LXI      D,1
                        263      ML1:
00F0 C 7E        264      MOV      A,M
00F1 C FEFF      265      CPI      OFFH
00F2 C C20A01    C      266      JNZ     ML2
00F3 C 23        267      INX      H
00F4 C 7B        268      MOV      A,E
00F6 C C608      269      ADI      8
00F7 C 5F        270      MOV      E,A
00F8 C FE1B      271      CPI      27
00F9 C FAEC00    C      272      JM      ML1
00FC C D61A      273      SUI      26
00FE C 5F        274      MOV      E,A
00FF C 14        275      INR      D
0100 C 7A        276      MOV      A,D
0101 C FE4D      277      CPI      77
0103 C FAEC00    C      278      JM      ML1
                        279      ML7:
0106 C 3E2F      280      MVI      A,SEC2F

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281 ;
0108 C 37 282 STC
0109 C C9 283 RET
284 ML2:
010A C 22E000 C 285 SHLD MAPSCAN
010B C 32E200 C 286 STA MAPBYTE
0110 C 0680 287 MVI B,80H
288 ML5:
0112 C A0 289 ANA B
0113 C CA3401 C 290 JZ ML3
291 ML8:
0116 C 1C 292 INR E
0117 C 7B 293 MOV A,E
0118 C FE1B 294 CPI 27
011A C C22601 C 295 JNZ ML6
011B C 1E01 296 MVI E,1
011F C 14 297 INR D
0120 C 7A 298 MOV A,D
0121 C FE4D 299 CPI 77
0123 C F20601 C 300 JP ML7
301 ML6:
0126 C 78 302 MOV A,B
0127 C 0F 303 RRC
0128 C E67F 304 ANI 7FH
012A C CA4201 C 305 JZ ML4
012B C 47 306 MOV B,A
012E C 3AE200 C 307 LDA MAPBYTE
0131 C C31201 C 308 JMP ML5
309 ML3:
0134 C EB 310 XCHG
0135 C 22E400 C 311 SHLD MAPTS
0138 C EB 312 XCHG
0139 C 2AE000 C 313 LHLD MAPSCAN
013C C 78 314 MOV A,B
013D C 32E300 C 315 STA MAPMASK
0140 C A7 316 ANA A
0141 C C9 317 RET
318 ML4:
0142 C 2AE000 C 319 LHLD MAPSCAN
0145 C 23 320 INX H
0146 C C3EC00 C 321 JMP ML1
322 ;
323 ; ** LOCATE NEXT FREE BLOCK
324 ;
325 ; RETURNS AS MAPLOC
326 ;
327 MAPNEXT:
0149 C 2AE400 C 328 LHLD MAPTS
014C C EB 329 XCHG
014D C 2AE000 C 330 LHLD MAPSCAN
0150 C 3AE300 C 331 LDA MAPMASK
0153 C 47 332 MOV B,A
0154 C C31601 C 333 JMP ML8
334 ;

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335 ;      ** ALLOCATE A DISKETTE BLOCK **
336 ;
337 ;      REGISTERS SAVED AND RESTORED
338 ;
339 ;      RETURNS BC - TRACK/SECTOR
340 ;
341 GETBLK:
0157 C  F5      342      PUSH      PSW
0158 C  E5      343      PUSH      H
0159 C  D5      344      PUSH      D
015A C  C5      345      PUSH      B
015B C  CD0000  C  346      CALL      MAPRD
015E C  DA9800  C  347      JC       RELB1
0161 C  CDE600  C  348      CALL      MAPLOC
0164 C  DA9800  C  349      JC       RELB1
0167 C  B6      350      ORA       M
0168 C  77      351      MOV      M,A
0169 C  D5      352      PUSH      D
016  C  CD1E00  C  353      CALL      MAPWR
016D C  C1      354      POP       B
016E C  DA9800  C  355      JC       RELB1
0171 C  D1      356      POP       D
0172 C  D1      357      POP       D
0173 C  E1      358      POP       H
0174 C  F1      359      POP       PSW
0175 C  A7      360      ANA       A
0176 C  C9      361      RET
362 ;
363 ;      ** ALLOCATE A NUMBER OF BLOCKS **
364 ;
365 ;      REGISTERS ARE SAVED AND RESTORED
366 ;
367 ;      A - COUNT  HL - ADDRESS OF FIRST ENTRY
368 ;
369 GETN:
0177 C  F5      370      PUSH      PSW
0178 C  E5      371      PUSH      H
017  C  D5      372      PUSH      D
017A C  C5      373      PUSH      B
017B C  229F00  C  374      SHLD      RELNH
017E C  329E00  C  375      STA       RCNT
0181 C  CD0000  C  376      CALL      MAPRD
0184 C  DA9800  C  377      JC       RELB1
0187 C  CDE600  C  378      CALL      MAPLOC
018A C  DA9800  C  379      JC       RELB1
380 GETN2:
018D C  B6      381      ORA       M
018E C  77      382      MOV      M,A
018F C  2A9F00  C  383      LHLD      RELNH
0192 C  73      384      MOV      M,E
0193 C  23      385      INX       H
0194 C  72      386      MOV      M,D
0195 C  23      387      INX       H
0196 C  229F00  C  388      SHLD      RELNH

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0199	C	3A9E00	C	389	LDA	RCNT	
019C	C	3D		390	DCR	A	
019D	C	329E00	C	391	STA	RCNT	
01A0	C	CAC201	C	392	JZ	GETN5	
01A3	C	CD4901	C	393	CALL	MAPNEXT	
01A6	C	D28D01	C	394	JNC	GETN2	
01A9	C	FE2F		395	CPI	SEC2F	
01AB	C	CAB201	C	396	JZ	GETN3	
01AE	C	37		397	STC		
01AF	C	C39800	C	398	JMP	RELB1	
				399	GETN3:		
01B2	C	3A9E00	C	400	LDA	RCNT	
01B5	C	2A9F00	C	401	LHLD	RELNH	
				402	GETN4:		
01B8	C	3600		403	MVI	M,0	
01BA	C	23		404	INX	H	
01BB	C	3600		405	MVI	M,0	
01BD	C	23		406	INX	H	
01B1	C	3D		407	DCR	A	
01B4	C	C2B801	C	408	JNZ	GETN4	
				409	GETN5:		
01C2	C	CD1E00	C	410	CALL	MAPWR	
01C5	C	DA9800	C	411	JC	RELB1	
01C8	C	C39200	C	412	JMP	RELB2	
				413	;		
				414	;		
				415	;		
				416	OITX:		
01CB	C	CD0000	X	417	CALL	CHKDEV	
01CE	C	D8		418	RC		
01CF	C	221027		419	SHLD	CTLBLK	
01D2	C	F5		420	PUSH	PSW	
01D3	C	D5		421	PUSH	D	
01D4	C	111100		422	LXI	D,17	
01D7	C	19		423	DAD	D	
01D8	C	E5		424	PUSH	H	
01D9	C	110D00		425	LXI	D,13	; REALLY 17+13=30
01D	C	19		426	DAD	D	
01DD	C	224E02	C	427	SHLD	PART3	
01E0	C	E1		428	POP	H	
01E1	C	7E		429	MOV	A,M	
01E2	C	323027		430	STA	UNIT	
01E5	C	D1		431	POP	D	
01E6	C	F1		432	POP	PSW	
01E7	C	A7		433	ANA	A	
01E8	C	C9		434	RET		
				435	;		
				436	;		
				437	;		
				438	OIIX:		
01E9	C	CDCB01	C	439	CALL	OITX	
01EC	C	D8		440	RC		
01ED	C	F5		441	PUSH	PSW	
01EE	C	7E		442	MOV	A,M	; UNIT

OITX - UTILITY USED BY MOST I/O ROUTINES

OIIX - UTILITY USED BY OIID AND OOID

01EF	C	23	443	INX	H
01F0	C	CD5105	C	444	CALL LOCUSER
01F3	C	DAFF01	C	445	JC OIIX1
01F6	C	F1	446	POP	PSW
01F7	C	A7	447	ANA	A
01F8	C	C9	448	RET	
			449	XITY:	
01F9	C	D24602	C	450	JNC XIT
			451	XITE:	
01FC	C	37	452	STC	
01FD	C	D1	453	POP	D
01FE	C	C1	454	POP	B
			455	OIIX1:	
01FF	C	33	456	INX	SP
0200	C	33	457	INX	SP
0201	C	2A1027	458	LHLD	CTLBLK
0204	C	C9	459	RET	
			460	;	
			461	;	** OIID - OPEN INPUT INTEL DISKETTE **
			462	;	
			463	OIID:	
0205	C	CDE901	C	464	CALL OIIX
0208	C	D8	465	RC	
0209	C	F5	466	PUSH	PSW
020A	C	C5	467	PUSH	B
020B	C	D5	468	PUSH	D
020C	C	7E	469	MOV	A,M
020D	C	A7	470	ANA	A
020E	C	CA1702	C	471	JZ OIID1
0211	C	3E31	472	MVI	A,SEC31 ;* ERROR 31 *
0213	C	37	473	STC	
0214	C	C3FC01	C	474	JMP XITE
			475	OIID1:	
0217	C	110B00	476	LXI	D,11
021A	C	19	477	DAD	D
021B	C	7E	478	MOV	A,M
021C	C	23	479	INX	H
021	C	23	480	INX	H
021E	C	23	481	INX	H
021F	C	4E	482	MOV	C,M
0220	C	23	483	INX	H
0221	C	46	484	MOV	B,M ; DIRECTORY TRACK
0222	C	2A4E02	C	485	LHLD PART3
0225	C	77	486	MOV	M,A
0226	C	23	487	INX	H
0227	C	3604	488	MVI	M,4
0229	C	23	489	INX	H
022A	C	5E	490	MOV	E,M
022B	C	23	491	INX	H
022C	C	56	492	MOV	D,M
022D	C	EB	493	XCHG	
022E	C	3A3027	494	LDA	UNIT
0231	C	CD7300	495	CALL	DSRDW
0234	C	DAFC01	C	496	JC XITE

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0237 C 2A1027      497      LHLD      CTLBLK
023A C 110500      498      LXI       D,5
023D C 19          499      DAD       D
023E C 56          500      MOV       D,M
023F C 2B          501      DCX       H
0240 C 5E          502      MOV       E,M
0241 C 2B          503      DCX       H
0242 C 13          504      INX       D
0243 C 72          505      MOV       M,D
0244 C 2B          506      DCX       H
0245 C 73          507      MOV       M,E
                   508      XIT:
0246 C D1          509      POP       D
0247 C C1          510      POP       B
0248 C F1          511      POP       PSW
0249 C 2A1027      512      LHLD      CTLBLK
024C C A7          513      ANA       A
024D C C9          514      RET
                   515      ;
                   516      ;      ** RDID - READ INPUT INTEL DISKETTE **
                   517      ;
024E C 0000        518      PART3:  DW      0
0250 C 0000        519      RDIR:   DW      0
0252 C 0000        520      RDTMP:  DW      0
                   521      RDID:
0254 C CDCB01      C 522      CALL      OITX
0257 C D8          523      RC
0258 C F5          524      PUSH     PSW
0259 C C5          525      PUSH     B
025A C D5          526      PUSH     D
025B C 2A1027      527      LHLD      CTLBLK
025E C 23          528      INX       H
025F C 7E          529      MOV       A,M
0260 C E610        530      ANI       LBBIT
0262 C CA7202      C 531      JZ       RDID1
                   532      RDID2:
0265 C 2A1027      533      LHLD      CTLBLK
0267 C 23          534      INX       H
0269 C 7E          535      MOV       A,M
026A C F680        536      ORI       EOFBIT
026C C 77          537      MOV       M,A
026D C 97          538      SUB      A
026F C 37          539      STC
026F C C3FC01      C 540      JMP      XITE
                   541      RDID1:
0272 C 2A4E02      C 542      LHLD      PART3
0275 C 23          543      INX       H
0276 C 4E          544      MOV       C,M
0277 C 0600        545      MVI      B,0
0279 C 23          546      INX       H
027A C 5E          547      MOV       E,M
027B C 23          548      INX       H
027C C 56          549      MOV       D,M
027D C EB          550      XCHG

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027E	C	225002	C	551	SHLD	RDIR	
0281	C	09		552	DAD	B	
0282	C	5E		553	MOV	E,M	
0283	C	23		554	INX	H	
0284	C	56		555	MOV	D,M	; TRACK/SECTOR
0285	C	23		556	INX	H	
0286	C	225202	C	557	SHLD	RDTMP	
0289	C	7A		558	MOV	A,D	
028A	C	B3		559	ORA	E	
028E	C	CA6502	C	560	JZ	RDID2	; EOF
028E	C	2A4E02	C	561	LHLD	PART3	
0291	C	23		562	INX	H	
0292	C	7E		563	MOV	A,M	
0293	C	3C		564	INR	A	
0294	C	3C		565	INR	A	
0295	C	77		566	MOV	M,A	
0296	C	E680		567	ANI	80H	
0298	C	CAD702	C	568	JZ	RDID3	
029	C	2A5002	C	569	LHLD	RDIR	
029L	C	23		570	INX	H	
029F	C	23		571	INX	H	
02A0	C	4E		572	MOV	C,M	
02A1	C	23		573	INX	H	
02A2	C	46		574	MOV	E,M	; NEXT DIR
02A3	C	78		575	MOV	A,B	
02A4	C	B1		576	ORA	C	
02A5	C	CABD02	C	577	JZ	RDID4	
02A8	C	3A3027		578	LDA	UNIT	
02AB	C	2A5002	C	579	LHLD	RDIR	
02AE	C	CD7300		580	CALL	DSRDW	
02B1	C	DAFC01	C	581	JC	XITE	
02B4	C	2A4E02	C	582	LHLD	PART3	
02B7	C	23		583	INX	H	
02B8	C	3604		584	MVI	M,4	
02BA	C	C3E002	C	585	JMP	RDID6	
				586	RDID4:		
02BD	C	2A4E02	C	587	LHLD	PART3	
02C	C	7E		588	MOV	A,M	
02C1	C	2A1027		589	LHLD	CTLBLK	
02C4	C	010400		590	LXI	B,4	
02C7	C	09		591	DAD	B	
02C8	C	77		592	MOV	M,A	
02C9	C	23		593	INX	H	
02CA	C	3600		594	MVI	M,0	
02CC	C	2A1027		595	LHLD	CTLBLK	
02CF	C	23		596	INX	H	
02D0	C	7E		597	MOV	A,M	
02D1	C	F610		598	ORI	LBBIT	
02D3	C	77		599	MOV	M,A	
02D4	C	C3E002	C	600	JMP	RDID6	
				601	RDID3:		
02D7	C	2A5202	C	602	LHLD	RDTMP	
02DA	C	7E		603	MOV	A,M	
02DB	C	23		604	INX	H	

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02DC C B6 605 ORA M
02DD C CABD02 C 606 JZ RDID4
607 RDID6:
02E0 C 2A1027 608 LHLD CTLBLK
02E3 C 23 609 INX H
02E4 C 23 610 INX H
02E5 C 3600 611 MVI M,0
02E7 C 23 612 INX H
02E8 C 3600 613 MVI M,0
02EA C 23 614 INX H
02EB C 23 615 INX H
02EC C 23 616 INX H
02ED C 42 617 MOV B,D
02EE C 4B 618 MOV C,E
02EF C 5E 619 MOV E,M
02F0 C 23 620 INX H
02F1 C 56 621 MOV D,M
02F2 C EB 622 XCHG
02F3 C 3A3027 623 LDA UNIT
02F4 C CD7300 624 CALL DSRDW
02F9 C C3F901 C 625 JMP XITY
626 ;
627 ; ** CIID - CLOSE INPUT INTEL DISKETTE **
628 ;
629 CIID:
02FC C CD0000 X 630 CALL CHKDEV
02FF C D8 631 RC
632 CIID2:
0300 C F5 633 PUSH PSW
0301 C 23 634 INX H
0302 C 7E 635 MOV A,M
0303 C E620 636 ANI AUTO
0305 C 77 637 MOV M,A
0306 C 2B 638 DCX H
0307 C C20D03 C 639 JNZ CIID1
030A C F1 640 POP PSW
030B C A7 641 ANA A
030C C C9 642 RET
643 CIID1:
030D C F1 644 POP PSW
030E C CD39FD 645 CALL BUFDEALLOC
0311 C C9 646 RET
647 ;
648 ; ** OPEN OUTPUT INTEL DISKETTE **
649 ;
650 OOID:
0312 C CDE901 C 651 CALL OIIX
0315 C D8 652 RC
0316 C F5 653 PUSH PSW
0317 C C5 654 PUSH B
0318 C D5 655 PUSH D
0319 C 7E 656 MOV A,M
031A C A7 657 ANA A
031B C C22403 C 658 JNZ OOID1

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        659 00ID2:
031F C 3E32      660      MVI      A,SEC32 ;** ERROR 32 *
0320 C 37        661      STC
0321 C 03FC01    C      662      JMP      XITE
        663 00ID1:
0324 C 2A4E02    C      664      LHLD     PART3
0327 C 2B        665      DCX      H
0328 C 3600      666      MVI      M,0
032A C 2B        667      DCX      H
032B C 3600      668      MVI      M,0
032D C 23        669      INX      H
032E C 23        670      INX      H
032F C 23        671      INX      H
0330 C 3604      672      MVI      M,4
0332 C 23        673      INX      H
0333 C 5E        674      MOV      E,M
0334 C 23        675      INX      H
0335 C 56        676      MOV      D,M
033  C EB        677      XCHG
0337 C 225002    C      678      SHLD     RDIR
033A C 3E80      679      MVI      A,128
        680 00ID4:
033C C 3600      681      MVI      M,0
033E C 23        682      INX      H
033F C 3D        683      DCR      A
0340 C 023C03    C      684      JNZ      00ID4
0343 C 2A5002    C      685      LHLD     RDIR
0346 C 0D5701    C      686      CALL    GETBLK
0349 C 0AFC01    C      687      JC      XITE
034C C 2A1027    C      688      LHLD     CTLBLK
034F C 111C00    C      689      LXI      D,28
0352 C 19        690      DAD      D
0353 C 71        691      MOV      M,C
0354 C 23        692      INX      H
0355 C 70        693      MOV      M,B
0356 C 2A5002    C      694      LHLD     RDIR
0359 C 97        695      SUB      A
035  C 77        696      MOV      M,A
035B C 23        697      INX      H
035C C 77        698      MOV      M,A
035D C 23        699      INX      H
035E C 77        700      MOV      M,A
035F C 23        701      INX      H
0360 C 77        702      MOV      M,A
0361 C 23        703      INX      H
0362 C 3E3E      704      MVI      A,62
0364 C 0D7701    C      705      CALL    GETN
0367 C 0DFC01    C      706      CALL    XITE
        707 00ID3:
036A C 2A1027    C      708      LHLD     CTLBLK
036D C 23        709      INX      H
036E C 23        710      INX      H
036F C 3600      711      MVI      M,0
0371 C 23        712      INX      H

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0372	C	3600		713	MVI	M,0
0374	C	C34602	C	714	JMP	XIT
				715	;	
				716	;	
				717	;	
				718	WRID:	
0377	C	CDCB01	C	719	CALL	OITX
037A	C	D8		720	RC	
037B	C	F5		721	PUSH	PSW
037C	C	C5		722	PUSH	B
037D	C	D5		723	PUSH	D
037E	C	2A4E02	C	724	LHLD	PART3
0381	C	23		725	INX	H
0382	C	7E		726	MOV	A,M
0383	C	23		727	INX	H
0384	C	5E		728	MOV	E,M
0385	C	23		729	INX	H
0386	C	56		730	MOV	D,M
038	C	EB		731	XCHG	
038C	C	225002	C	732	SHLD	RDIR
038D	C	47		733	MOV	B,A
038E	C	E680		734	ANI	80H
038E	C	78		735	MOV	A,B
038F	C	CAE003	C	736	JZ	WRID1
0392	C	3A3027		737	LDA	UNIT
0395	C	CD6205	C	738	CALL	LOCISIS
0398	C	DAFC01	C	739	JC	XITE
039B	C	CD5701	C	740	CALL	GETBLK
039E	C	DAFC01	C	741	JC	XITE
03A1	C	2A5002	C	742	LHLD	RDIR
03A4	C	23		743	INX	H
03A5	C	23		744	INX	H
03A6	C	71		745	MOV	M,C
03A7	C	23		746	INX	H
03A8	C	70		747	MOV	M,B
03A9	C	59		748	MOV	E,C
03AA	C	50		749	MOV	D,B
037	C	2A4E02	C	750	LHLD	PART3
03AE	C	2B		751	DCX	H
03AF	C	46		752	MOV	B,M
03B0	C	2B		753	DCX	H
03B1	C	4E		754	MOV	C,M
03B2	C	3A3027		755	LDA	UNIT
03B5	C	2A5002	C	756	LHLD	RDIR
03B8	C	CD7600		757	CALL	DSWRW
03BB	C	DAFC01	C	758	JC	XITE
03BE	C	2A5002	C	759	LHLD	RDIR
03C1	C	71		760	MOV	M,C
03C2	C	23		761	INX	H
03C3	C	70		762	MOV	M,B
03C4	C	23		763	INX	H
03C5	C	3600		764	MVI	M,0
03C7	C	23		765	INX	H
03C8	C	3600		766	MVI	M,0

03CA	C	23	767	INX	H
03CB	C	3E3E	768	MVI	A,62
03CD	C	CD7701	769	CALL	GETN
03DD	C	DAFC01	770	JC	XITE
03D3	C	2A4E02	771	LHLD	PART3
03D6	C	23	772	INX	H
03D7	C	3604	773	MVI	M,4
03D9	C	2B	774	DCX	H
03DA	C	2B	775	DCX	H
03DB	C	72	776	MOV	M,D
03DC	C	2B	777	DCX	H
03DD	C	73	778	MOV	M,E
03DE	C	3E04	779	MVI	A,4
			780	WRID1:	
03E0	C	2A5002	781	LHLD	RD IR
03E3	C	5F	782	MOV	E,A
03E4	C	1600	783	MVI	D,0
03E6	C	19	784	DAD	D
03E	C	4E	785	MOV	C,M
03E8	C	23	786	INX	H
03E9	C	46	787	MOV	B,M
03EA	C	2A1027	788	LHLD	CTLBLK
03ED	C	23	789	INX	H
03EE	C	23	790	INX	H
03EF	C	3600	791	MVI	M,0
03F1	C	23	792	INX	H
03F2	C	3600	793	MVI	M,0
03F4	C	23	794	INX	H
03F5	C	23	795	INX	H
03F6	C	23	796	INX	H
03F7	C	5E	797	MOV	E,M
03F8	C	23	798	INX	H
03F9	C	56	799	MOV	D,M
03FA	C	EB	800	XCHG	
03FB	C	78	801	MOV	A,B
03FC	C	B1	802	ORA	C
03FD	C	CA1204	803	JZ	WRID2
040	C	3A3027	804	LDA	UNIT
0405	C	CD7600	805	CALL	DSWRW
0406	C	DAFC01	806	JC	XITE
0409	C	2A4E02	807	LHLD	PART3
040C	C	23	808	INX	H
040D	C	34	809	INR	M
040E	C	34	810	INR	M
040F	C	C34602	811	JMP	XIT
			812	WRID2:	
0412	C	3E33	813	MVI	A,SEC33 ;* ERROR 33*
0414	C	C3FC01	814	JMP	XITE
			815	;	
			816	;	
			817	;	
			818	DICENT: DW 0	
0417	C	0000	819	TRKENT: DW 0	
0419	C	0000	820	RELSTART: DW 0	
041B	C	0000			

** COID - CLOSE OUTPUT INTEL DISKETTE **

```

041D C 0000      821 BLKCOUNT:DW      0
041F C 0000      822 FIRDIR: DW      0
      823 COID:
0421 C CDE901    C      824      CALL      OIIX
0424 C D8        825      RC
0425 C F5        826      PUSH     PSW
0426 C C5        827      PUSH     B
0427 C D5        828      PUSH     D
0428 C 7E        829      MOV      A,M
0429 C A7        830      ANA      A
042A C CA1E03    C      831      JZ      COID2
042D C 221704    C      832      SHLD     DICENT
0430 C 2A4E02    C      833      LHLD     PART3
0433 C 2B        834      DCX      H
0434 C 7E        835      MOV      A,M
0435 C 2B        836      DCX      H
0436 C B6        837      ORA      M
0437 C CA4602    C      838      JZ      XIT
043  C 2A3127    839      LHLD     TRK
043L C 2B        840      DCX      H
043E C 56        841      MOV      D,M
043F C 2B        842      DCX      H
0440 C 5E        843      MOV      E,M
0441 C EB        844      XCHG
0442 C 221904    C      845      SHLD     TRKENT
0445 C 2A1027    846      LHLD     CTLBLK
0448 C 23        847      INX      H
0449 C 23        848      INX      H
044A C 5E        849      MOV      E,M
044B C 23        850      INX      H
044C C 56        851      MOV      D,M
044D C 23        852      INX      H
044E C 7A        853      MOV      A,D
044F C B3        854      ORA      E
0450 C CA5F04    C      855      JZ      COID1      ; EMPTY BUFFER
0453 C 73        856      MOV      M,E
0454 C 23        857      INX      H
045  C 72        858      MOV      M,D      ; EXTENT SET TO BYTES LAST BLK
0456 C 2A1027    859      LHLD     CTLBLK
0459 C CD24FD    860      CALL     WRITE      ; WRITE LAST BLOCK
045C C DAFC01    C      861      JC      XITE
      862 COID1:
045F C 2A4E02    C      863      LHLD     PART3
0462 C 23        864      INX      H
0463 C 5E        865      MOV      E,M
0464 C 1600      866      MVI      D,0      ; POINTER INTO DS DIR BLK
0466 C 23        867      INX      H
0467 C 7E        868      MOV      A,M
0468 C 23        869      INX      H
0469 C 66        870      MOV      H,M
046A C 6F        871      MOV      L,A
046B C 225002    C      872      SHLD     RDIR      ; START OF DS DIR BUFR
046E C 19        873      DAD      D
046F C 221B04    C      874      SHLD     RELSTART ; ADDRESS IN DIR BUFR

```

```

      875 COID3:
0472 C 7E      876      MOV      A,M
0473 C 23      877      INX      H
0474 C 23      878      INX      H
0475 C A7      879      ANA      A
0476 C CA8304   C      880      JZ      COID2
0479 C 14      881      INR      D
047A C 7B      882      MOV      A,E
047B C C602     883      ADI      2
047D C 5F      884      MOV      E,A
047E C E680     885      ANI      80H
0480 C CA7204   C      886      JZ      COID3
      887 COID2:
0483 C 7A      888      MOV      A,D
0484 C 2A1B04   C      889      LHLD     RELSTART
0487 C CDA100   C      890      CALL    RELN
048A C DAFC01   C      891      JC      XITE
048D C 2A1027   892      LHLD     CTLBLK
049  C 111C00   893      LXI      D,28
0493 C 19      894      DAD      D
0494 C 4E      895      MOV      C,M
0495 C 23      896      INX      H
0496 C 46      897      MOV      B,M
0497 C 23      898      INX      H
0498 C 23      899      INX      H
0499 C 7E      900      MOV      A,M
049A C D604     901      SUI      4
049C C 0F      902      RRC
049D C E67F     903      ANI      7FH
049F C 3C      904      INR      A
04A0 C 321D04   C      905      STA      BLKCOUNT ; NR OF DATA BLKS THIS DIR
04A3 C 97      906      SUB      A
04A4 C 321E04   C      907      STA      BLKCOUNT+1
04A7 C 2A5002   C      908      LHLD     RDIR
04AA C 3A3027   909      LDA      UNIT
04AD C CD7600   910      CALL    DSWRW ; WRITE DS DIR BLK
04B0 C DAFC01   C      911      JC      XITE
      912 COID5:
04B3 C 5E      913      MOV      E,M
04B4 C 23      914      INX      H
04B5 C 56      915      MOV      D,M
04B6 C 7B      916      MOV      A,E
04B7 C B2      917      ORA      D
04B8 C CAD904   C      918      JZ      COID4 ; FIRST DIR FOUND
04BB C 42      919      MOV      B,D
04BC C 4B      920      MOV      C,E
04BD C 3A3027   921      LDA      UNIT
04C0 C 2A5002   C      922      LHLD     RDIR
04C3 C CD7300   923      CALL    DSRDW ; READ PREVIOUS DIR
04C6 C DAFC01   C      924      JC      XITE
04C9 C 2A1D04   C      925      LHLD     BLKCOUNT
04CC C 113E00   926      LXI      D,62
04CF C 19      927      DAD      D
04D0 C 221D04   C      928      SHLD     BLKCOUNT

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04D3 C 2A5002 C 929 LHL D RDIR
04D6 C C3B304 C 930 JMP C0ID5
          931 C0ID4:
          932 ;
          933 ;
04D9 C 60 934 MOV H,B
04DA C 69 935 MOV L,C
04DB C 221F04 C 936 SHLD FIRDIR
04DE C 2A1904 C 937 LHL D TRKENT
04E1 C 44 938 MOV B,H
04E2 C 4D 939 MOV C,L
04E3 C 210026 940 LXI H,BUF2
04E6 C 3A3027 941 LDA UNIT
04E9 C CD7300 942 CALL DSRDW ; READ BLK OF DISK DIR
04EC C DAF001 C 943 JC XITE
04EF C 2A1704 C 944 LHL D DICENT
04F2 C EB 945 XCHG
04F3 C 97 946 SUB A
04F4 C 12 947 STAX D
04F5 C 13 948 INX D
04F6 C 011200 949 LXI B,18
04F9 C 2A1027 950 LHL D CTLBLK
04FC C 09 951 DAD B
04FD C 0609 952 MVI B,9 ; MOVE DSNAME
          953 C0ID6:
04FF C 7E 954 MOV A,M
0500 C 12 955 STAX D
0501 C 23 956 INX H
0502 C 13 957 INX D
0503 C 05 958 DCR B
0504 C C2FF04 C 959 JNZ C0ID6
0507 C 2A1027 960 LHL D CTLBLK
050A C 011800 961 LXI B,27
050D C 09 962 DAD B
050E C 7E 963 MOV A,M
050F C E604 964 ANI SFLAG
0511 C CA1905 C 965 JZ C0ID7
0514 C 3E07 966 MVI A,7 ; W+S+I FLAG
0516 C C31A05 C 967 JMP C0ID8
          968 C0ID7:
0519 C 97 969 SUB A
          970 C0ID8:
051A C 12 971 STAX D
051B C 13 972 INX D
051C C 2A1027 973 LHL D CTLBLK
051F C 010400 974 LXI B,4
0522 C 09 975 DAD B
0523 C 7E 976 MOV A,M
0524 C 12 977 STAX D ; BYTES LAST BLK
0525 C 13 978 INX D
0526 C 2A1D04 C 979 LHL D BLKCOUNT
0529 C 2B 980 DCX H
052A C EB 981 XCHG
052B C 73 982 MOV M,E

```

```

0520 C 23          983      INX      H
0520 C 72          984      MOV      M,D      ; NBLKS-1
052E C 23          985      INX      H
052F C EB          986      XCHG
0530 C 2A1F04      C 987      LHLD      FIRDIR
0533 C EB          988      XCHG
0534 C 73          989      MOV      M,E
0535 C 23          990      INX      H
0536 C 72          991      MOV      M,D      ; LOC FIRST DS DIR BLK
0537 C 2A1904      C 992      LHLD      TRKENT
053A C 44          993      MOV      B,H
053B C 40          994      MOV      C,L
053C C 210026      995      LXI      H,BUF2
053F C 3A3027      996      LDA      UNIT
0542 C CD7600      997      CALL     DSWRW
0545 C DAFCD1      C 998      JC      XITE
          999      C0ID9:
0548 C 2A1027      1000     LHLD      CTLBLK
0549 C CD0003      C 1001     CALL     CIID2
054A C C3F901      C 1002     JMP      XITY
          1003 ;
          1004 ;      LOCATE A USER DATASET ON INTEL DISKETTE
          1005 ;
          1006 ;      A - UNIT
          1007 ;      HL - ADDRESS OF NAME (9 CHARS)
          1008 ;
          1009 LOCUSER:
0551 C 223E27      1010     SHLD     UNAM
0554 C CD6205      C 1011     CALL     LOCISIS
0557 C D8          1012     RC
0558 C 2A3E27      1013     LHLD     UNAM
055B C 3A3027      1014     LDA      UNIT
055E C CD8500      1015     CALL     LOCDIR
0561 C C9          1016     RET
          1017 ;
          1018 ;      LOCATE ISIS MAP
          1019 ;
          1020 LOCISIS:
0562 C 219305      C 1021     LXI      H,NAM1
0565 C CD8500      1022     CALL     LOCDIR
0568 C D8          1023     RC
0569 C 7E          1024     MOV      A,M
056A C A7          1025     ANA      A
056B C CA7205      C 1026     JZ      LOC11
056E C 3E0F        1027     MVI      A,SECOF
          1028 ;      * ERROR OF *
0570 C 37          1029     STC
0571 C C9          1030     RET
          1031 LOC11:
0572 C 110E00      1032     LXI      D,14
0575 C 19          1033     DAD      D
0576 C C5          1034     PUSH     B
0577 C 4E          1035     MOV      C,M
0578 C 23          1036     INX      H

```

0579 C	46	1037	MOV	B,M
057A C	210026	1038	LXI	H,BUF2
057D C	3A3027	1039	LDA	UNIT
0580 C	0D7300	1040	CALL	DSRDW
0583 C	C1	1041	POP	B
0584 C	D8	1042	RC	
0585 C	2A0426	1043	LHLD	BUF2+4
0588 C	223927	1044	SHLD	MAP1
058B C	2A0626	1045	LHLD	BUF2+6
058E C	223B27	1046	SHLD	MAP2
0591 C	A7	1047	ANA	A
0592 C	C9	1048	RET	
0593 C	49534953	1049	DB	'ISIS',0,0,'MAP'
		1050	;	
		1051	;	
		1052	;	
		1053	END	

NO ERROR MESSAGES

0020	AUTO	0410	C BLKCOU	2680	BUF1	2600	BUF2	FD39	BUFDEA
	X CHKDEV	02FC	C*CIID	0300	C CIID1	0300	C CIID2	0421	C*COID
045F	C COID1	0483	C COID2	0472	C COID3	0409	C COID4	04B3	C COID5
04FF	C COID6	0519	C COID7	051A	C COID8	0548	C COID9	2710	CTLBLK
0417	C DICENT	0073	DSRDW	0076	DSWRW	0080	EOFBIT	041F	C FIRDIR
0157	C*GETBLK	0177	C*GETN	0180	C GETN2	01B2	C GETN3	01B8	C GETN4
0102	C GETN5	0010	LBBIT	0085	LOC DIR	0572	C LOC11	0562	C LOCISI
0551	C LOCUSE	2739	MAP1	273B	MAP2	003C	C MAPBIT	00E2	C MAPBYT
00E6	C MAPLOC	00E3	C MAPMAS	0149	C MAPNEX	0000	C MAPRD	00E0	C MAPSCA
00E4	C MAPTS	001E	C MAPWR	0072	C MB1	00EC	C ML1	010A	C ML2
0134	C ML3	0142	C ML4	0112	C ML5	0126	C ML6	0106	C ML7
0116	C ML8	0593	C NAM1	0205	C*OIID	0217	C OIID1	01E9	C OIIX
01FF	C OIIX1	01CB	C*OITX	0312	C*OIID	0324	C OOID1	031E	C OOID2
036A	C OOID3	033C	C OOID4	024E	C*PART3	009E	C RCNT	0254	C*RDID
0272	C RDID1	0265	C RDID2	0207	C RDID3	02BD	C RDID4	02E0	C RDID6
0250	C RDIR	0252	C RDTMP	0098	C RELB1	0092	C RELB2	007A	C*RELBLK
00A1	C*RELN	0007	C RELN2	00B1	C RELN3	009F	C RELNH	041B	C RELSTA
000F	SEC0F	002F	SEC2F	0031	SEC31	0032	SEC32	0033	SEC33
0001	SFLAG	2731	TRK	0419	C TRKENT	273E	UNAM	2730	UNIT
0371	C*WRID	03E0	C WRID1	0412	C WRID2	FD24	WRITE	0246	C XIT
01FC	C XITE	01F9	C XITY						

```
1 ;*****
2 ;
3 ;      TOS21 - IO
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```



```
11          $TITLE TOS21 - IO MODULE
12          $PW      110
13          $PL      64
14 ;          -          1,11,18,27
15 ;
16 ;*****
17 ;
18 ;
19 ;
20 ;
21 ;
0019 22 SEC19 EQU 19H
001A 23 SEC1A EQU 1AH
24 ;
25 ;
26 ;
27          PUBLIC CHKDEV
28 ;
29 ;
30 ;
31          CSEG
32 ;
33 ;          CHECK FOR NO DEVICE OR IMPROPER TYPE CODE
34 ;
35 CHKDEV:
0000 C F5          36          PUSH PSW
0001 C 7C          37          MOV A,H
0002 C B5          38          ORA L
0003 C CA1400 C    39          JZ CHKD1
0006 C 7E          40          MOV A,M
0007 C FE07        41          CPI 7
0009 C D21900 C    42          JNC CHKD2
000C C FE02        43          CPI 2
000E C DA1900 C    44          JC CHKD2
0011 C F1          45          POP PSW
0012 C A7          46          ANA A
0013 C C9          47          RET
0014 C 3E19        48 CHKD1:
0016 C C31B00 C    49          MVI A,SEC19
0019 C 3E1A        50 ;
001B C 33          51          JMP CHKD3
001C C 33          52 CHKD2:
001D C 37          53          MVI A,SEC1A
001E C C9          54 ;
001F C 33          55 CHKD3:
0020 C 33          56          INX SP
0021 C 37          57          INX SP
0022 C C9          58          STC
0023 C 33          59          RET
0024 C 33          60 ;
0025 C 37          61 ;
0026 C C9          62 ;
0027 C 33          63          END
```

NO ERROR MESSAGES

SIEMENS 610 ASSEMBLER V2.2

TOS21 - IO MODULE

PAGE 3

0014 C CHKD1 0019 C CHKD2
001A SEC1A

001B C CHKD3 0000 C*CHKDEV 0019 SEC19

```
1 ;*****
2 ;
3 ;      TOS21 - JTAB
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - JTAB MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
22          EXTRN  OITC,OOTC,RDTC,WRTC,CITC,COTC
23          EXTRN  OIIB,OOIB,RDIB,WRIB,CIIB,COIB
24          EXTRN  OIID,OOID,RDID,WRID,CIID,COID
25          EXTRN  OPEN,READ,WRITE,CLOSE,INCHAR
26          EXTRN  OUTCHAR,GET,PUT,PUTSTR,GETBIN
27          EXTRN  PUTBIN,EDBH,EDHW,EDHB,EDWH
28          EXTRN  BUFALLOC,BUFDEALLOC,STIMER
29          EXTRN  FILENAME,IBFIL,RELN,RELBLK
30          EXTRN  GETN,GETBLK
31          EXTRN  MON,ERROR
32          EXTRN  CIFILE,COFILE
33          EXTRN  PRINTER,NULLFILE,BUCKET,XMF,RCF
34          ;
35          ;
36          ;
37          CSEG
38          ;
39          ; I/O CONTROL PACKAGES
40          ;
41          TABTC:
42              JMP      OITC
43              JMP      OOTC
44              JMP      RDTC
45              JMP      WRTC
46              JMP      CITC
47              JMP      COTC
48          TABIB:
49              JMP      OIIB
50              JMP      OOIB
51              JMP      RDIB
52              JMP      WRIB
53              JMP      CIIB
54              JMP      COIB
55          TABIN:
56              JMP      OIID
57              JMP      OOID
58              JMP      RDID
59              JMP      WRID
60              JMP      CIID
61              JMP      COID
62          LOADX:
63              CPI      4
64              JM       LOADD
0000 C  C30000  X
0003 C  C30000  X
0006 C  C30000  X
0009 C  C30000  X
000C C  C30000  X
000F C  C30000  X
0012 C  C30000  X
0015 C  C30000  X
0018 C  C30000  X
001B C  C30000  X
001E C  C30000  X
0021 C  C30000  X
0024 C  C30000  X
0027 C  C30000  X
002A C  C30000  X
002D C  C30000  X
0030 C  C30000  X
0033 C  C30000  X
0036 C  FE04
0038 C  FA88FD

```

003B C	D604	65	SUI	4
003D C	C3C4FD	66	JMP	CLOAD
		67 ;		
		68 \$E		

```

        69 ;
        70 ;
        71 ;
FD00    72          ORG      OFD00H
        73 ;
        74 SYSJMP:
FD00    C30000      X       75          JMP      MON
FD03    C30000      X       76          JMP      ERROR
FD06    C33600      C       77 LOAD:   JMP      LOADX
FD09    C30000      X       78          JMP      INCHAR
FD0C    C30000      X       79          JMP      OUTCHAR
FD0F    C30000      X       80          JMP      GET
FD12    C30000      X       81          JMP      PUT
FD15    C30000      X       82          JMP      PUTSTR
FD18    C30000      X       83          JMP      GETBIN
FD1B    C30000      X       84          JMP      PUTBIN
FD1E    C30000      X       85          JMP      OPEN
FD21    C30000      X       86          JMP      READ
FD24    C30000      X       87          JMP      WRITE
FD27    C30000      X       88          JMP      CLOSE
FD2A    C30000      X       89          JMP      EDBH
FD2D    C30000      X       90          JMP      EDWH
FD30    C30000      X       91          JMP      EDHB
FD33    C30000      X       92          JMP      EDHW
FD36    C30000      X       93          JMP      BUFALLOC
FD39    C30000      X       94          JMP      BUFDEALLOC
FD3C    C30000      X       95          JMP      STIMER
        96 ;
        97 $E
```

```

          98 ;
          99 ;
FD40      100          ORG      0FD40H
          101 ;
FD40      C34000      102 TTI:      JMP      40H
FD43      C34300      103 TTO:      JMP      43H
FD46      C34600      104 TTQNC:   JMP      46H
FD49      C34900      105 CURSOR:  JMP      49H
FD4C      C34C00      106 XMON:    JMP      4CH
FD4F      C34F00      107 XERR:    JMP      4FH
FD52      C35200      108 PRNT:    JMP      52H
FD55      C35500      109 DTST:    JMP      55H
FD58      C35800      110 DCAL:    JMP      58H
FD5B      C35B00      111 DSRD:    JMP      5BH
FD5E      C35E00      112 DSWR:    JMP      5EH
FD61      C36100      113 DSDL:    JMP      61H
FD64      C36400      114 DSRDA:   JMP      64H
FD67      C36700      115 DSWRA:   JMP      67H
FD6A      C36A00      116 INDISP:  JMP      6AH
FD6D      C36D00      117 DSWT:    JMP      6DH
FD70      C37000      118 DCALW:   JMP      70H
FD73      C37300      119 DSRDW:   JMP      73H
FD76      C37600      120 DSWRW:   JMP      76H
FD79      C37900      121 DSDLW:   JMP      79H
FD7C      C37C00      122 DSRW:    JMP      7CH
FD7F      C37F00      123 DSWAW:   JMP      7FH
FD82      C38200      124 RCVI:    JMP      82H
FD85      C38500      125 LOCDIR:  JMP      85H
FD88      C38800      126 LOADD:   JMP      88H
FD8B      C38B00      127 LINKD:   JMP      8BH
FD8E      C38E00      128 CTST:    JMP      8EH
FD91      C39100      129 CCAL:    JMP      91H
FD94      C39400      130 CBRD:    JMP      94H
FD97      C39700      131 CRWR:    JMP      97H
FD9A      C39A00      132 CBBS:    JMP      9AH
FD9D      C39D00      133 CBTM:    JMP      9DH
FDA0      C3A000      134 CBSF:    JMP      0A0H
FDA3      C3A300      135 CBSB:    JMP      0A3H
FDA6      C3A600      136 CUN:     JMP      0A6H
FDA9      C3A900      137 CRW:     JMP      0A9H
FDAQ      C3AC00      138 CWT:     JMP      0ACH
DAF      C3AF00      139 CBRDW:   JMP      0AFH
FDB2      C3B200      140 CBWRW:   JMP      0B2H
FDB5      C3B500      141 CBBSW:   JMP      0B5H
FDB8      C3B800      142 CBTMW:   JMP      0B8H
FDBB      C3BB00      143 CBSFW:   JMP      0BBH
FDBE      C3BE00      144 CBSBW:   JMP      0BEH
FDC1      C3C100      145 CLOCD:   JMP      0C1H
FDC4      C3C400      146 CLOAD:   JMP      0C4H
FDC7      C3C700      147 CLINK:   JMP      0C7H
FDCA      C3CA00      148 XMIO:    JMP      0CAH
FDCD      C3CD00      X      149          JMP      FILENAME
FDD0      C3D000      X      150          JMP      IBFIL
FDD3      C3D000      X      151          JMP      RELN

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FDD6	C30000	X	152	JMP	RELBLK
FDD9	C30000	X	153	JMP	GETN
FDDC	C30000	X	154	JMP	GETBLK
			155 ;		
			156 \$E		


```

                                157 ;
                                158 ;
FDE6                            159      ORG      GFDE6H
                                160 ;
FDE6      0000      C      161      DW      TABTC
FDE8      1200      C      162      DW      TABIB
FDEA      2400      C      163      DW      TABIN
FDEC      0000      164      DEVRD:  DW      0
FDEE      0000      X      165      DEVPR: DW      PRINTER
FDF0      0000      X      166      DEVNF: DW      NULLFILE
FDF2      0000      X      167      DEVBB: DW      BUCKET
FDF4      0000      X      168      DEVCO: DW      COFILE
FDF6      0000      X      169      DEVCI: DW      CIFILE
FDF8      0000      X      170      DW      XMF
FDFA      0000      X      171      DW      RCF
                                172 ;
FF00                            173      ORG      OFF00H
                                174 ;
FF00      0000      X      175      CI:   DW      CIFILE
FF02      0000      X      176      CO:   DW      COFILE
FF04      0000      177      SI:   DW      0
FF06      0000      178      SO:   DW      0
FF08      0000      179      SL:   DW      0
FF0A      0000      180      AI:   DW      0
FF0C      0000      181      AO:   DW      0
FF0E      0000      182      AL:   DW      0
                                183 ;
                                184 ;
                                185 ;
                                186      END
```

NO ERROR MESSAGES

FF0A	AI	FF0E	AL	FF0C	AO	X	BUCKET	X	BUFALL
	X BUFDEA	FD9A	CBBB	FDB5	CBBSW	FD94	CBRD	FDAF	CBRDW
FDA3	CBSB	FDBE	CBSDW	FDA0	CBSF	FDBB	CBSFW	FD9D	CBTM
FDB8	CBTMW	FD97	CRWR	FDB2	CBWRW	FD91	CCAL	FF00	CI
	X CIFILE		X CIIB		X CIID	X	CITC	FDC7	CLINK
FDC4	CLOAD	FDC1	CLOCD		X CLOSE	FF02	CO		X COFILE
	X COIB		X COID		X COTC	FDA9	CRW	FD8E	CTST
FDA6	CUN	FD49	CURSOR	FDA0	CWT	FD58	DCAL	FD70	DCALW
FDF2	DEVBR	FDF6	DEVCI	FDF4	DEVCO	FDF0	DEVNF	FDEE	DEVPR
FDEC	DEVRD	FD61	DSDL	FD79	DSDLW	FD7C	DSRAW	FD5B	DSRD
FD64	DSRDA	FD73	DSRDW	FD7F	DSWAW	FD5E	DSWR	FD67	DSWRA
FD76	DSWRW	FD6D	DSWT	FD55	DTST		X EDBH		X EDHB
	X EDHW		X EDWH		X ERROR		X FILENA		X GET
	X GETBIN		X GETBLK		X GETN		X IBFIL		X INCHAR
FD6A	INDISP	FD8B	LINKD	FD06	LOAD	FD88	LOADD	0036	C LOADX
FD85	LOC DIR		X MON		X NULLFI		X OIIB		X OIID
	X OITC		X OOIB		X OOID		X OOTC		X OPEN
	X OUTCHA		X PRINTE	FD52	PRNT		X PUT		X PUTBIN
	X PUTSTR		X RCF	FD82	RCVI		X RDIB		X RDID
	X RDTC		X READ		X RELBLK		X RELN	FF04	SI
FF08	SL	FF06	SO		X STIMER	FD00	SYSJMP	0012	C TABIB
0024	C TABIN	0000	C TABTC	FD40	TTI	FD43	TTO	FD46	TTONC
	X WRIB		X WRID		X WRITE		X WRTC	FD4F	XERR
	X XMF	FDCA	XMIO	FD4C	XMON				

```
1 ;*****
2 ;
3 ;   TOS21 - MAIN
4 ;
5 ;   C           1977/78 - T           R           A/S
6 ;
7 ;   R           2 - F           1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - MAIN MODULE
12          $PW      110
13          $PL      64
14          ;
15          ;          -          1,11,18,27
16          ;
17          ;*****
18          ;
19          ;
20          ;
21          ;
22          ;
2700        23 TIMAD      EQU      27B0H
272E        24 BUFLIM    EQU      272EH
271F        25 ROLLSW    EQU      271FH
277C        26 EBCD      EQU      277CH
277E        27 ASCI      EQU      277EH
272D        28 DEBSW     EQU      272DH
25P"        29 STACK     EQU      25BEH
268-        30 BUF1      EQU      2680H
31          ;
32          ;
33          ;
0049        34 CURSOR    EQU      49H
0043        35 TTO       EQU      43H
006A        36 INDISP    EQU      6AH
0073        37 DSRDW     EQU      73H
38          ;
39          ;
40          ;
000D        41 CR         EQU      0DH
000A        42 LF         EQU      0AH
001D        43 HOME      EQU      1DH
44          ;
45          ;
46          ;
0020        47 AUTO      EQU      20H
0080        48 EOFBIT    EQU      80H
0040        49 DONTCLOSE EQU      40H
50          ;
51          ;
52          ;
FD27        53 CLOSE     EQU      0FD27H
FD12        54 PUT       EQU      0FD12H
FD0C        55 OUTCHAR   EQU      0FD0CH
FD15        56 PUTSTR    EQU      0FD15H
FD1B        57 PUTBIN    EQU      0FD1BH
FD2A        58 EDBH      EQU      0FD2AH
59          ;
60          ;
61          ;
FF00        62 CI        EQU      0FF00H
FF02        63 CO        EQU      0FF02H
FF04        64 SI        EQU      0FF04H
```

```

FF06          65 SO      EQU      OFF06H
FF08          66 SL      EQU      OFF08H
FF0A          67 AI      EQU      OFF0AH
FF0C          68 AO      EQU      OFF0CH
FF0E          69 AL      EQU      OFF0EH
              70 ;
              71 ;
              72 ;
              73          PUBLIC START,MON,ERROR
              74          EXTRN  EBCDIC,ASCII,COMINT,CIFILE,SCN01,COFILE
              75 ;
              76 ;
              77 ;
              78          CSEG
              79 ;
0000 C 210000      80          LXI      H,0
0003 C 22B027      81          SHLD     TIMAD
0006 C 214100      C 82          LXI      H,START
0009 C 222E27      83          SHLD     BUFLIM
000C C 214F18      84          LXI      H,184FH
000F C CD4900      85          CALL     CURSOR
0012 C 3E41        86          MVI      A,'A'          ; DETERMINE IF ROLL IS
0014 C CD4300      87          CALL     TTO          ; AUTOMATIC
0017 C CD4900      88          CALL     CURSOR
001A C 3E20        89          MVI      A,' '
001C C CD6A00      90          CALL     INDISP
001F C FE41        91          CPI      'A'
0021 C CA2500      C 92          JZ       STAR1
0024 C 97          93          SUB      A
              94          STAR1:
0025 C 321F27      95          STA      ROLLSW
0028 C 3E1D        96          MVI      A,HOME
002A C CD4300      97          CALL     TTO
002D C 3E19        98          MVI      A,19H
002F C CD4300      99          CALL     TTO
0032 C 210000      X 100         LXI      H,EBCDIC
0035 C 227C27      101         SHLD     EBCD
0038 C 210000      X 102         LXI      H,ASCII
003B C 227E27      103         SHLD     ASCII
003E C C37C00      C 104         JMP      MON
              105          START:
0041 C 0000        106         DW       0
0043 C 80          107         DB       80H          ;
              108 ;
              109 ;          BASIC MONITOR LOOP
              110 ;
0044 C 4552524F    111          MTEXT: DB      'ERROR '
004A C 0000        112          MDATA: DW      0
004C C 0D          113          DB      CR
004D C 544F5332    114          MIDENT: DB     'TOS21 VER. 1.4',CR
005C C 00          115          ERRXX: DB      0
              116          CLOUT:
005D C 5E          117          MOV      E,M
005E C 23          118          INX      H

```

005F	C	56	119	MOV	D,M
0060	C	7A	120	MOV	A,D
0061	C	B3	121	ORA	E
0062	C	C8	122	RZ	
0063	C	13	123	INX	D
0064	C	1A	124	LDAX	D
0065	C	E660	125	ANI	AUTO+DONTCLOSE
0067	C	FE60	126	CPI	AUTO+DONTCLOSE
0069	C	C8	127	RZ	
006A	C	3600	128	MVI	M,0
006C	C	2B	129	DCX	H
006D	C	3600	130	MVI	M,0
006F	C	EB	131	XCHG	
0070	C	7E	132	MOV	A,M
0071	C	E620	133	ANI	AUTO
0073	C	C8	134	RZ	
0074	C	2B	135	DCX	H
0075	C	CD27FD	136	CALL	CLOSE
0077	C	DCF300	137	CC	ERROR
0078	C	C9	138	RET	
			139	MON:	
007C	C	97	140	SUB	A
007D	C	322D27	141	STA	DEBSW
0080	C	31BE25	142	LXI	SP,STACK
0083	C	2A02FF	143	LHLD	CO
0086	C	114D00	144	LXI	D,MIDENT
0089	C	CD12FD	145	CALL	PUT
008C	C	DC7001	146	CC	ERR1
008F	C	2A02FF	147	LHLD	CO
0092	C	3E2A	148	MVI	A,'*'
0094	C	CD0CFD	149	CALL	OUTCHAR
0097	C	DC7001	150	CC	ERR1
			151	MON4:	
009A	C	CD0000	152	CALL	COMINT
009D	C	D2C500	153	JNC	MON1
			154	;	
			155	;	
			156	;	
			157	ANA	A
00A0	C	A7	157	ANA	A
00A1	C	C2BE00	158	JNZ	MON2
00A4	C	2A00FF	159	LHLD	CI
00A7	C	23	160	INX	H
00A8	C	7E	161	MOV	A,M
00A9	C	E680	162	ANI	EOFBIT
00AB	C	CABD00	163	JZ	MON3
00AE	C	2100FF	164	LXI	H,CI
00B1	C	CD5D00	165	CALL	CLOUT
00B4	C	210000	166	LXI	H,CIFILE
00B7	C	2200FF	167	SHLD	CI
00BA	C	C3C500	168	JMP	MON1
			169	MON3:	
00BD	C	97	170	SUB	A
			171	MON2:	
00BE	C	37	172	STC	

00BF	C	CD F300	C	173	CALL	ERROR
00C2	C	C3 C000	C	174	JMP	MON5
				175	MON1:	
00C5	C	3A2D27		176	LDA	DEBSW
00C8	C	A7		177	ANA	A
00C9	C	C29A00	C	178	JNZ	MON4
				179	MON5:	
00CC	C	2104FF		180	LXI	H,S1
00CF	C	CD5D00	C	181	CALL	CLOUT
00D2	C	2106FF		182	LXI	H,S0
00D5	C	CD5D00	C	183	CALL	CLOUT
00D8	C	2108FF		184	LXI	H,SL
00DB	C	CD5D00	C	185	CALL	CLOUT
00DE	C	210AFF		186	LXI	H,AI
00E1	C	CD5D00	C	187	CALL	CLOUT
00E4	C	210CFF		188	LXI	H,A0
00E7	C	CD5D00	C	189	CALL	CLOUT
00EA	C	210EFF		190	LXI	H,AL
00E	C	CD5D00	C	191	CALL	CLOUT
00F0	C	C37C00	C	192	JMP	MON
				193	ERROR:	
00F3	C	325C00	C	194	STA	ERRXX
00F6	C	FE5C		195	CPI	92
00F8	C	F25A01	C	196	JP	ERR12
00FB	C	0F		197	RRC	
00FC	C	0F		198	RRC	
00FD	C	3C		199	INR	A
00FE	C	E63F		200	ANI	3FH
0100	C	4F		201	MOV	C,A
0101	C	97		202	SUB	A
0102	C	47		203	MOV	B,A
0103	C	218026		204	LXI	H,BUF1
0106	C	CD7300		205	CALL	DSRDW
0109	C	DA5A01	C	206	JC	ERR12
010C	C	3A8026		207	LDA	BUF1
010F	C	FE85		208	CPI	85H
0111	C	C25A01	C	209	JNZ	ERR12
011	C	3A5C00	C	210	LDA	ERRXX
0117	C	E603		211	ANI	3
0119	C	07		212	RLC	
011A	C	07		213	RLC	
011B	C	07		214	RLC	
011C	C	07		215	RLC	
011D	C	07		216	RLC	
011E	C	E6E0		217	ANI	0E0H
0120	C	4F		218	MOV	C,A
0121	C	0600		219	MVI	B,0
0123	C	218026		220	LXI	H,BUF1
0126	C	09		221	DAD	B
0127	C	23		222	INX	H
0128	C	EB		223	XCHG	
0129	C	3A5C00	C	224	LDA	ERRXX
012C	C	214A00	C	225	LXI	H,M DATA
012F	C	CD2AFD		226	CALL	EDBH

0132	C	2A02FF		227	LHLD	CO
0135	C	D5		228	PUSH	D
0136	C	114400	C	229	LXI	D,MTEXT
0139	C	CD15FD		230	CALL	PUTSTR
013C	C	D1		231	POP	D
013D	C	DA7001	C	232	JC	ERR1
0140	C	3E20		233	MVI	A,' '
0142	C	CD0CFD		234	CALL	OUTCHAR
0145	C	DA7001	C	235	JC	ERR1
0148	C	061F		236	MVI	B,31
014A	C	CD1BFD		237	CALL	PUTBIN
014D	C	DA7001	C	238	JC	ERR1
0150	C	114C00	C	239	LXI	D,MDATA+2
0153	C	CD12FD		240	CALL	PUT
0156	C	DA7001	C	241	JC	ERR1
0159	C	C9		242	RET	
				243	ERR12:	
015A	C	3A5C00	C	244	LDA	ERRXX
015F	C	214A00	C	245	LXI	H,MDATA
0162	C	CD2AFD		246	CALL	EDBH
0163	C	2A02FF		247	LHLD	CO
0166	C	114400	C	248	LXI	D,MTEXT
0169	C	CD12FD		249	CALL	PUT
016C	C	DA7001	C	250	JC	ERR1
016F	C	C9		251	RET	
				252	ERR1:	
0170	C	214400	C	253	LXI	H,MTEXT
				254	ERR11:	
0173	C	7E		255	MOV	A,M
0174	C	23		256	INX	H
0175	C	CD4300		257	CALL	TTO
0178	C	FE0D		258	CPI	CR
017A	C	C27301	C	259	JNZ	ERR11
017D	C	3E0A		260	MVI	A,LF
017F	C	CD4300		261	CALL	TTO
0182	C	210000	X	262	LXI	H,COFILE
0185	C	2202FF		263	SHLD	CO
018F	C	C9		264	RET	
				265	;	
				266	;	
				267	;	
				268	END	

NO ERROR MESSAGES

FF0A	AI	FF0E	AL	FF0C	AO	277E	ASCI	X	ASCII
0020	AUTO	2680	BUF1	272E	BUFLIM	FF00	CI	X	CIFILE
FD27	CLOSE	005D	C CLOUT	FF02	CO		X COFILE	X	COMINT
000D	CR	0049	CURSOR	272D	DEBSW	0040	DONTCL	0073	DSRDW
277C	EBCD		X EBCDIC	FD2A	EDBH	0080	EOFBIT	0170	C ERR1
0173	C ERR11	015A	C ERR12	00F3	C*ERROR	005C	C ERRXX	001D	HOME
006A	INDISP	000A	LF	004A	C MDATA	004D	C MIDENT	007C	C*MON
00C5	C MON1	00BE	C MON2	00BD	C MON3	009A	C MON4	00CC	C MON5
0044	C MTEXT	FD0C	OUTCHA	FD12	PUT	FD1B	PUTBIN	FD15	PUTSTR
271F	ROLLSW		X SCN01	FF04	SI	FF08	SL	FF06	SO
25BE	STACK	0025	C STAR1	0041	C*START	27B0	TIMAD	0043	TTO

```
1 ;*****
2 ;
3 ;      TOS21 - OPEN
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - OPEN MODULE
12          $PW      110
13          $PL      64
14 ;          -          1,11,18,27
15 ;
16 ;*****
17 ;
18 ;
19 ;
20 ;
21 ;
0027 22 SEC27 EQU 27H
0028 23 SEC28 EQU 28H
24 ;
25 ;
26 ;
0020 27 AUTO EQU 20H
0040 28 DONTCLOSE EQU 40H
0080 29 EOFBIT EQU 80H
0010 30 LRBIT EQU 10H
0001 31 INBIT EQU 1
0002 32 OUTBIT EQU 2
0004 33 LFBIT EQU 4
34 ;
35 ;
36 ;
37          EXTRN  CHKDEV
38          PUBLIC OPEN
39 ;
40 ;
41 ;
42          CSEG
43 ;
44 ;          OPEN A FILE
45 ;          A - TYPE OF OPEN
46 ;          HL - CONTROL BLOCK ADDRESS
47 ;
000  C  00          48 OTYP: DB 0
49 OPEN:
0001 C  320000 C     50          STA OTYP
0004 C  F5          51          PUSH PSW
0005 C  000000 X     52          CALL CHKDEV
0008 C  002600 C     53          CC OPENB
000B C  23          54          INX H
000C C  7E          55          MOV A,M
000D C  E620        56          ANI AUTO
000F C  C23000 C    57          JNZ OPENC
0012 C  7E          58          MOV A,M
0013 C  2B          59          DCX H
0014 C  E640        60          ANI DONTCLOSE
0016 C  C22600 C    61          JNZ OPENB
0019 C  23          62          INX H
001A C  7E          63          MOV A,M
001B C  2B          64          DCX H

```

```

0010 C E693          65      ANI      EOFBIT+LBBIT+INBIT+OUTBIT
001E C CA2900      C      66      JZ      OPEN1
0021 C F1          67      POP      PSW
0022 C 3E27        68      MVI      A,SEC27
                                69 ;
                                * ERROR 27 *
0024 C 37          70      STC
0025 C C9          71      RET
                                72 OPENB:
0026 C 33          73      INX      SP
0027 C 33          74      INX      SP
0028 C C9          75      RET
                                76 OPEN1:
0029 C 23          77      INX      H
002A C F1          78      POP      PSW
002B C B6          79      ORA      M
002C C 77          80      MOV      M,A
002D C C33200      C      81      JMP      OPENI
                                82 OPENC:
0030 C 33          83      INX      SP
0031 C 33          84      INX      SP
                                85 OPENI:
0032 C 2B          86      DCX      H
0033 C 7E          87      MOV      A,M
0034 C FE02        88      CPI      2
0036 C C8          89      RZ
0037 C D5          90      PUSH     D
0038 C E5          91      PUSH     H
0039 C C34000      C      92      JMP      OPEN2
                                93 OPEN4:
003C C E1          94      POP      H
                                95 OPEN8:
003D C D1          96      POP      D
003E C A7          97      ANA      A
003F C C9          98      RET
                                99 OPEN2:
0040 C FE03        100     CPI      3
0042 C C25E00      C      101     JNZ      OPEN5
                                102 ;
                                103 ;
                                104 ;
0045 C 23          105     INX      H
0046 C 23          106     INX      H
0047 C 5E          107     MOV      E,M
0048 C 23          108     INX      H
0049 C 56          109     MOV      D,M
004A C E5          110     PUSH     H
004B C EB          111     XCHG
004C C 3E01        112     MVI      A,INBIT
004E C CD0100      C      113     CALL     OPEN
0051 C D27A00      C      114     JNC      OPEN3
0054 C FE27        115     CPI      SEC27
0056 C CA7A00      C      116     JZ      OPEN3
                                117 OPENF:
0059 C E1          118     POP      H

```

005A C	E1	119	POP	H	
005B C	D1	120	POP	D	
005C C	37	121	STC		
005D C	C9	122	RET		
		123	OPEN5:		
005E C	FE04	124	CPI	4	
0060 C	C29700	125	JNZ	OPEN9	
		126	;		
		127	;		
		128	;		
0063 C	110C00	129	LXI	D,12	
0066 C	19	130	DAD	D	
0067 C	5E	131	MOV	E,M	
0068 C	23	132	INX	H	
0069 C	56	133	MOV	D,M	
006A C	7B	134	MOV	A,E	
006B C	B2	135	ORA	D	
006C C	CA9100	136	JZ	OPEN7	
006E C	217500	137	LXI	H,OPEN6	
0072 C	E3	138	XTHL		
0073 C	D5	139	PUSH	D	
0074 C	C9	140	RET		; REALLY A CALL
		141	OPEN6:		
0075 C	D23D00	142	JNC	OPEN8	
0078 C	D1	143	POP	D	
0079 C	C9	144	RET		
		145	;		
		146	;		
		147	;		
		148	OPEN3:		
007A C	E1	149	POP	H	
007B C	23	150	INX	H	
007C C	5E	151	MOV	E,M	
007D C	23	152	INX	H	
007E C	56	153	MOV	D,M	
007F C	EB	154	XCHG		
0080 C	3E02	155	MVI	A,OUTBIT	
		156	OPENG:		
0082 C	CD0100	157	CALL	OPEN	
0085 C	D23C00	158	JNC	OPEN4	
0088 C	FE27	159	CPI	SEC27	
008A C	CA3C00	160	JZ	OPEN4	
		161	OPENA:		
008D C	E1	162	POP	H	
008E C	D1	163	POP	D	
008F C	37	164	STC		
0090 C	C9	165	RET		
		166	OPEN7:		
0091 C	3E28	167	MVI	A,SEC28	
		168	;		
		169	* ERROR 28 *		
0093 C	E1	169	POP	H	
0094 C	D1	170	POP	D	
0095 C	37	171	STC		
0096 C	C9	172	RET		

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173 OPEN9:
174 ;
175 ;      DOUBLE DEVICE
176 ;
0097 C  FE06      177      CFI      6
0099 C  C2DB00    C  178      JNZ      OPEND
009C C  23        179      INX      H
009D C  7E        180      MOV      A,M
009E C  E603      181      ANI      INBIT+OUTBIT
00A0 C  F5        182      PUSH     PSW
00A1 C  7E        183      MOV      A,M
00A2 C  E604      184      ANI      LFBIT
00A4 C  23        185      INX      H
00A5 C  5E        186      MOV      E,M
00A6 C  23        187      INX      H
00A7 C  56        188      MOV      D,M
00A8 C  EB        189      XCHG
00A9 C  23        190      INX      H
00AA C  B6        191      ORA      M
00AB C  77        192      MOV      M,A
00AC C  2B        193      DCX      H
00AD C  EB        194      XCHG
00AE C  F1        195      POP      PSW
00AF C  E5        196      PUSH     H
00B0 C  F5        197      PUSH     PSW
00B1 C  EB        198      XCHG
00B2 C  CD0100    C  199      CALL     OPEN
00B5 C  D2C200    C  200      JNC      OPENE
00B8 C  FE27      201      CPI      SEC27
00BA C  CAC200    C  202      JZ       OPENE
00BD C  33        203      INX      SP
00BE C  33        204      INX      SP
00BF C  C35900    C  205      JMP      OPENF
206 OPENE:
00C2 C  F1        207      POP      PSW
00C3 C  E1        208      POP      H
00C4 C  F5        209      PUSH     PSW
00C7 C  2B        210      DCX      H
00C6 C  2B        211      DCX      H
00C7 C  7E        212      MOV      A,M
00C8 C  23        213      INX      H
00C9 C  23        214      INX      H
00CA C  E604      215      ANI      LFBIT
00CC C  23        216      INX      H
00CD C  5E        217      MOV      E,M
00CE C  23        218      INX      H
00CF C  56        219      MOV      D,M
00D0 C  EB        220      XCHG
00D1 C  23        221      INX      H
00D2 C  B6        222      ORA      M
00D3 C  77        223      MOV      M,A
00D4 C  2B        224      DCX      H
00D5 C  EB        225      XCHG
00D6 C  F1        226      POP      PSW

```

```

00D7 C EB 227 XCHG
00D8 C C38200 C 228 JMP OPENG
229 ;
230 ; BLOCK ORIENTED DEVICE
231 ;
232 OPEND:
00DB C E5 233 PUSH H
00DC C 23 234 INX H
00DD C 7E 235 MOV A,M
00DE C 23 236 INX H
00DF C 3600 237 MVI M,0
00E1 C 23 238 INX H
00E2 C 3600 239 MVI M,0
00E4 C E1 240 POP H
00E5 C E5 241 PUSH H
00E6 C 110C00 242 LXI D,12
00E9 C 19 243 DAD D
00EA C 5E 244 MOV E,M
00EB C 23 245 INX H
00EC C 56 246 MOV D,M
00ED C 21F300 C 247 LXI H,OPENH
00F0 C E3 248 XTHL
00F1 C D5 249 PUSH D
00F2 C C9 250 RET ; REALLY A CALL
251 OPENH:
00F3 C DC0F01 C 252 CC OPENK
00F6 C 3A0000 C 253 LDA OTYP
00F9 C E601 254 ANI INBIT
00FB C CA0F01 C 255 JZ OPENK
00FE C E5 256 PUSH H
00FF C 110800 257 LXI D,8
0102 C 19 258 DAD D
0103 C 5E 259 MOV E,M
0104 C 23 260 INX H
0105 C 56 261 MOV D,M
0106 C 210C01 C 262 LXI H,OPENJ
0109 C E3 263 XTHL
010A C D5 264 PUSH D
010B C C9 265 RET
266 OPENJ:
010C C D23C00 C 267 JNC OPEN4
268 OPENK:
010F C E1 269 POP H
0110 C D1 270 POP D
0111 C C9 271 RET
272 ;
273 ;
274 ;
275 END

```

NO ERROR MESSAGES

0020	AUTO		X	CHKDEV	0040	DONTCL	0080	EOFBIT	0001	INBIT
0010	LBBIT	0004		LFBIT	0001	C*OPEN	0029	C OPEN1	0040	C OPEN2
007A	C OPEN3	003C	C	OPEN4	005E	C OPEN5	0075	C OPEN6	0091	C OPEN7
003D	C OPEN8	0097	C	OPEN9	008D	C OPENA	0026	C OPENB	0030	C OPENC
00DB	C OPEND	00C2	C	OPENE	0059	C OPENF	0082	C OPENG	00F3	C OPENH
0032	C OPENI	010C	C	OPENJ	010F	C OPENK	0000	C OTYP	0002	OUTBIT
0027	SEC27	0028		SEC28						


```
1 ;*****
2 ;
3 ;      TOS21 - PUT
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11      $TITLE TOS21 - PUT MODULE
12      $PW      110
13      $PL      64
14      ;
15      ;
16      ;
17      ;
18      ;
0018    19 SEC18      EQU      18H
20      ;
21      ;
22      ;
000A    23 LF          EQU      0AH
000D    24 CR          EQU      0DH
25      ;
26      ;
27      ;
0002    28 OUTBIT     EQU      2
29      ;
30      ;
31      ;
FD24    32 WRITE      EQU      OFD24H
33      ;
34      ;
35      ;
36      EXTRN      CHKDEV
37      PUBLIC     OUTCHAR,PUTSTR,PUTBIN,PUT
38      ;
39      ;
40      ;
41      CSEG
42      ;
43      ;
44      ;      OUTPUT CHARACTER ROUTINE (GENERAL)
45      ;
46      ;
47      OUTCHAR:
48          CALL     CHKDEV
49          RC
50          PUSH     PSW
51          INX      H
52          MOV      A,M
53          DCX      H
54          ANI      OUTBIT
55          JNZ      OUTC1
56          MOV      A,M
57          CPI      3      ; ECHO FILE
58          JZ       OUTC1
59          INX      SP
60          INX      SP
61          MVI      A,SEC18
62      ;
63          STC
64          RET
0017    37
0018    C9
```

* ERROR 13 *

```

        65 OUTC1:
0019 C  F1          66      POP      PSW
001A C  E5          67      PUSH     H
001B C  D5          68      PUSH     D
001C C  C5          69      PUSH     B
001D C  F5          70      PUSH     PSW
001E C  7E          71      MOV      A,M
001F C  FE05        72      CPI      5
0021 C  CA5100      C      73      JZ      OUTC8
0024 C  23          74      INX      H
0025 C  23          75      INX      H
0026 C  FE06        76      CPI      6
0028 C  CA8700      C      77      JZ      OUTCB
002B C  FE02        78      CPI      2
002D C  CA4000      C      79      JZ      OUTC2
0030 C  FE03        80      CPI      3
0032 C  CA4C00      C      81      JZ      OUTC4
0035 C  3EFF        82      MVI      A,0FFH      ; ** NOT IMPLEMENTED **
0037 C  37          83      STC
003B C  C33C00      C      84      JMP      OUTCA
        85 OUTC6:
003B C  A7          86      ANA      A
        87 OUTCA:
003C C  C1          88      POP      B
003D C  D1          89      POP      D
003E C  E1          90      POP      H
003F C  C9          91      RET
        92 ;
        93 ;      DEMAND DEVICE
        94 ;
        95 OUTC2:
0040 C  23          96      INX      H
0041 C  23          97      INX      H
0042 C  5E          98      MOV      E,M
0043 C  23          99      INX      H
0044 C  56         100      MOV      D,M
0045 C  F1         101      POP      PSW
0047 C  213C00      C      102      LXI      H,OUTCA
0048 C  E5         103      PUSH     H
004A C  D5         104      PUSH     D
004B C  C9         105      RET      ; REALLY A CALL
        106 ;
        107 ;      ECHO DEVICE
        108 ;
        109 OUTC4:
004C C  23         110      INX      H
004D C  23         111      INX      H
004E C  C39600      C      112      JMP      OUTC7
        113 ;
        114 ;      BLOCK DEVICE
        115 ;
        116 OUTC8:
0051 C  E5         117      PUSH     H
0052 C  23         118      INX      H

```

```

0053 C 23          119      INX      H
0054 C 4E          120      MOV      C,M
0055 C 23          121      INX      H
0056 C 46          122      MOV      B,M
0057 C 23          123      INX      H
0058 C 5E          124      MOV      E,M
0059 C 23          125      INX      H
005A C 56          126      MOV      D,M      ; EXTENT
005B C 23          127      INX      H
005C C 79          128      MOV      A,C
005D C BB          129      CMP      E
005E C C27200      C      130      JNZ      OUTC9
0061 C 78          131      MOV      A,B
0062 C BA          132      CMP      D
0063 C C27200      C      133      JNZ      OUTC9
0066 C E1          134      POP      H
0067 C CD24FD      135      CALL    WRITE
006A C D25100      C      136      JNC      OUTC8
006' C 33          137      INX      SP
006_ C 33          138      INX      SP
006F C C33C00      C      139      JMP      OUTCA
                                140 OUTC9:
0072 C 5E          141      MOV      E,M
0073 C 23          142      INX      H
0074 C 56          143      MOV      D,M      ; BUFR ADR
0075 C EB          144      XCHG
0076 C 09          145      DAD      B
0077 C D1          146      POP      D
0078 C F1          147      POP      PSW
0079 C 77          148      MOV      M,A
007A C EB          149      XCHG
007B C 23          150      INX      H
007C C 23          151      INX      H
007D C 5E          152      MOV      E,M
007E C 23          153      INX      H
007F C 56          154      MOV      D,M
0080 C 13          155      INX      D
008' C 72          156      MOV      M,D
008_ C 2B          157      DCX      H
0083 C 73          158      MOV      M,E
0084 C C33B00      C      159      JMP      OUTC6
                                160 ;
                                161 ;      DOUBLE DEVICE
                                162 ;
                                163 OUTCB:
0087 C 5E          164      MOV      E,M
0088 C 23          165      INX      H
0089 C 56          166      MOV      D,M
008A C 23          167      INX      H
008B C F1          168      POP      PSW
008C C F5          169      PUSH    PSW
008D C E5          170      PUSH    H
008E C EB          171      XCHG
008F C CD0000      C      172      CALL    OUTCHAR

```

```

0092 C E1 173 POP H
0093 C DAA100 C 174 JC OUTCC
175 OUTC7:
0096 C 5E 176 MOV E,M
0097 C 23 177 INX H
0098 C 56 178 MOV D,M
0099 C EB 179 XCHG
009A C F1 180 POP PSW
009B C CD0000 C 181 CALL OUTCHAR
009E C C33C00 C 182 JMP OUTCA
183 OUTCC:
00A1 C 33 184 INX SP
00A2 C 33 185 INX SP
00A3 C C33C00 C 186 JMP OUTCA
187 ;
188 ; OUTPUT A STRING
189 ;
190 PUTSTR:
00A C 1A 191 LDAX D
00A C FE0D 192 CPI CR
00A9 C C8 193 RZ
00AA C CD0000 C 194 CALL OUTCHAR
00AD C D8 195 RC
00AE C 13 196 INX D
00AF C C3A600 C 197 JMP PUTSTR
198 ;
199 ; OUTPUT A STRING (TRANSPARENT)
200 ;
201 PUTBIN:
00B2 C 1A 202 LDAX D
00B3 C CD0000 C 203 CALL OUTCHAR
00B6 C D8 204 RC
00B7 C 13 205 INX D
00B8 C 05 206 DCR B
00B9 C C2B200 C 207 JNZ PUTBIN
00BC C A7 208 ANA A
00BD C C9 209 RET
210 ;
211 ; OUTPUT A STRING WITH CR LF
212 ;
213 PUT:
00BE C CDA600 C 214 CALL PUTSTR
00C1 C D8 215 RC
00C2 C 3E0D 216 MVI A,CR
00C4 C CD0000 C 217 CALL OUTCHAR
00C7 C D8 218 RC
00C8 C 3E0A 219 MVI A,LF
00CA C CD0000 C 220 CALL OUTCHAR
00CD C C9 221 RET
222 ;
223 ;
224 ;
225 END

```

NO ERROR MESSAGES

X CHKDEV	000D CR	000A LF	0002 OUTBIT	0019 C OUTC1
0040 C OUTC2	004C C OUTC4	003B C OUTC6	0096 C OUTC7	0051 C OUTC8
0072 C OUTC9	003C C OUTCA	0087 C OUTCB	00A1 C OUTCC	0000 C*OUTCHA
00BE C*PUT	00B2 C*PUTBIN	00A6 C*PUTSTR	0018 SEC18	FD24 WRITE

```
1 ;*****
2 ;
3 ;      TOS21 - READ
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - READ MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
0025 22 SEC25      EQU      25H
0024 23 SEC24      EQU      24H
24          ;
25          ;
26          ;
0009 27 HT          EQU      9
007F 28 RUBOUT     EQU      7FH
0000 29 BSP        EQU      8
0000 30 CR          EQU      0DH
000A 31 LF          EQU      0AH
0004 32 ERSLIN     EQU      4
33          ;
34          ;
35          ;
FD09 36 INCHAR     EQU      0FD09H
FD0C 37 OUTCHAR    EQU      0FD0CH
38          ;
39          ;
40          ;
41          EXTRN   CHKDEV,WRRD
42          PUBLIC  READ
43          ;
44          ;
45          ;
46          CSEG
47          ;
48          ;      READ A BLOCK
49          ;      HL - CONTROL BLOCK ADDRESS
50          ;
51 READ:
52          CALL    CHKDEV
53          RC
54          MOV     A,M
55          CPI     4
56          JM      RDER1
57          JZ      READ1
58          PUSH    D
59          LXI     D,8
0011 60          JMP     WRRD
61 READ1:
62          PUSH    B
63          PUSH    D
0014 64 RD10:

```



```

0016 C E5 65 PUSH H
0017 C 23 66 INX H
0018 C 23 67 INX H
0019 C 3600 68 MVI M,0
001B C 23 69 INX H
001C C 3600 70 MVI M,0
001E C 23 71 INX H
001F C 4E 72 MOV C,M
0020 C 23 73 INX H
0021 C 46 74 MOV D,M ; EXTENT
0022 C 23 75 INX H
0023 C 5E 76 MOV E,M
0024 C 23 77 INX H
0025 C 56 78 MOV D,M ; BUFR ADR
0026 C 23 79 INX H
0027 C 7E 80 MOV A,M
0028 C 23 81 INX H
0029 C 66 82 MOV H,M
002 C 6F 83 MOV L,A ; DEVICE PTR
      84 READ6:
002B C CD09FD 85 CALL INCHAR
002E C DA4F00 C 86 JC RDER2
0031 C FE0D 87 CPI CR
0033 C CA5800 C 88 JZ READ2
0036 C FE08 89 CPI BSP
0038 C CAAF00 C 90 JZ READ3
003B C FE7F 91 CPI RUBOUT
003D C CA7E00 C 92 JZ READ5
0040 C FE09 93 CPI HT
0042 C CA9400 C 94 JZ RD15
0045 C 12 95 STAX D
0046 C 13 96 INX D
0047 C 0B 97 DCX B
0048 C 78 98 MOV A,B
0049 C B1 99 ORA C
004A C C22B00 C 100 JNZ READ6
      101 READ7:
004 C 3E25 102 MVI A,SEC25
      103 ; * ERROR 25 *
      104 RDER2:
004F C E1 105 POP H
0050 C D1 106 POP D
0051 C C1 107 POP B
0052 C 37 108 STC
0053 C C9 109 RET
      110 RDER1:
0054 C 3E24 111 MVI A,SEC24
      112 ; * ERROR 24 *
0056 C 37 113 STC
0057 C C9 114 RET
      115 READ2:
0058 C 12 116 STAX D
0059 C 13 117 INX D
005A C 0B 118 DCX B

```

005B C	78	119	MOV	A,B	
005C C	B1	120	ORA	C	
005D C	CA4D00 C	121	JZ	READ7	
0060 C	3E0A	122	MVI	A,LF	
0062 C	12	123	STAX	D	
0063 C	7E	124	MOV	A,M	
0064 C	FE03	125	CPI	3	
0066 C	CA6E00 C	126	JZ	RD12	
		127 RD13:			
0069 C	A7	128	ANA	A	
		129 RD11:			
006A C	F1	130	POP	H	
006B C	D1	131	POP	D	
006C C	C1	132	POP	B	
006D C	C9	133	RET		
		134 RD12:			
006E C	23	135	INX	H	
006F C	23	136	INX	H	
0070 C	23	137	INX	H	
0071 C	23	138	INX	H	
0072 C	5E	139	MOV	E,M	
0073 C	23	140	INX	H	
0074 C	56	141	MOV	D,M	
0075 C	EB	142	XCHG		
0076 C	3E0A	143	MVI	A,LF	
0078 C	CD0CFD	144	CALL	OUTCHAR	
007B C	C36A00 C	145	JMP	RD11	
		146 READ5:			
007E C	7E	147	MOV	A,M	
007F C	FE03	148	CPI	3	
0081 C	CA8800 C	149	JZ	READ9 ; ECHO DEVICE	
0084 C	E1	150	POP	H ; NO	
0085 C	C31600 C	151	JMP	RD10	
		152 READ9:			
0088 C	3E04	153	MVI	A,ERSLIN	
008A C	CD0CFD	154	CALL	OUTCHAR	
008D C	DA6A00 C	155	JC	RD11	
0090 C	E1	156	POP	H	
0091 C	C31600 C	157	JMP	RD10	
		158 RD15:			
0094 C	3E20	159	MVI	A,' '	
		160 ;	CALL	OUTCHAR	
		161 ;	JC	RD11	
		162 RD16:			
0096 C	12	163	STAX	D	
0097 C	13	164	INX	D	
0098 C	0B	165	DCX	B	
0099 C	78	166	MOV	A,B	
009A C	B1	167	ORA	C	
009B C	CA4D00 C	168	JZ	READ7	
009E C	79	169	MOV	A,C	
009F C	E607	170	ANI	7	
00A1 C	CA2B00 C	171	JZ	READ6	
00A4 C	3E20	172	MVI	A,' '	

00A6	C	CDDCFD	173	CALL	OUTCHAR
00A9	C	DA6A00	174	JC	RD11
00AC	C	C39600	175	JMP	RD16
			176	READ3:	
00AF	C	1B	177	DCX	D
00B0	C	1A	178	LDAX	D
00B1	C	FEFF	179	CPI	OFFH
00B3	C	C2BA00	180	JNZ	READA
00B6	C	13	181	INX	D
00B7	C	C32B00	182	JMP	READ6
			183	READA:	
00BA	C	03	184	INX	B
00BB	C	7E	185	MOV	A,M
00BC	C	FE03	186	CPI	3
00BE	C	C22B00	187	JNZ	READ6
00C1	C	3E20	188	MVI	A,' '
00C3	C	CDDCFD	189	CALL	OUTCHAR
00C6	C	DA6A00	190	JC	RD11
00C7	C	3E08	191	MVI	A,BSP
00CB	C	CDDCFD	192	CALL	OUTCHAR
00CE	C	DA6A00	193	JC	RD11
00D1	C	C32B00	194	JMP	READ6
			195	;	
			196	;	
			197	;	
			198	END	

NO ERROR MESSAGES

0008	BSP		X	CHKDEV	000D	CR	0004	ERSLIN	0009	HT
FD09	INCHAR	000A		LF	FDOC	OUTCHA	0016	C RD10	006A	C RD11
006E	C RD12	0069	C	RD13	0094	C RD15	0096	C RD16	0054	C RDER1
004F	C RDER2	0000	C*	READ	0014	C READ1	0058	C READ2	00AF	C READ3
007E	C READ5	002B	C	READ6	004D	C READ7	0088	C READ9	00BA	C READA
007F	RUBOUT	0024		SEC24	0025	SEC25		X WRRD		

```
1 ;*****
2 ;
3 ;      TOS21 - TIME
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - TIME MODULE
12          $PW      110
13          $PL      64
14          -                1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
22          PUBLIC STIMER
23          ;
24          ;
25          ;
26 TIMAD EQU 27B0H
27 TIMER EQU 27BDH
28          ;
29          ;
30          ;
31          CSEG
32          ;
33          ; SET TIMER ROUTINE
34          ;
35          ; DE - DESIRED TIME (UNIT=20MS)
36          ; HL - INTERRUPT ADDRESS ON TIMEOUT
37          ;
38 STIMER:
39          DI
40          SHLD  TIMAD
41          XCHG
42          SHLD  TIMER
43          XCHG
44          EI
45          RET
46          ;
47          ;
48          ;
49          END
```

NO ERROR MESSAGES

SIEMENS 610 ASSEMBLER V2.2

TOS21 - TIME MODULE

PAGE 3

0000 C*STIMER 27B0 TIMAD 27B0 TIMER

```
1 ;*****
2 ;
3 ;      TOS21 - WRIT
4 ;
5 ;      C          1977/78 - T          R          A/S
6 ;
7 ;      R          2 - F          1978
8 ;
9 ;*****
10 ;
```



```

11          $TITLE TOS21 - WRIT MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
0022 22 SEC22 EQU 22H
0023 23 SEC23 EQU 23H
24          ;
25          ;
26          ;
0080 27 E0FBIT EQU 80H
28          ;
29          ;
30          ;
31          EXTRN  CHKDEV
32          PUBLIC WRITE,WRRD
33          ;
34          ;
35          ;
36          CSEG
37          ;
38          ; WRITE A BLOCK
39          ;
40 WRITE:
0000 C CD0000 X 41          CALL  CHKDEV
0003 C D8 42          RC
0004 C 7E 43          MOV    A,M
0005 C FE05 44          CPI    5
0007 C C22D00 C 45          JNZ    WRER1
000A C D5 46          PUSH   D
000B C 110A00 47          LXI    D,10
48 WRRD:
000C C E5 49          PUSH   H
000F C 19 50          DAD    D
0010 C 5E 51          MOV    E,M
0011 C 23 52          INX    H
0012 C 56 53          MOV    D,M
0013 C 7A 54          MOV    A,D
0014 C B3 55          ORA    E
0015 C CA3100 C 56          JZ    WRER2
0018 C 211E00 C 57          LXI    H,WRIT1
001B C E3 58          XTHL
001C C D5 59          PUSH   D
001D C C9 60          RET          ; REALLY A CALL
61 WRIT1:
001E C DA3700 C 62          JC    WRER3
0021 C E5 63          PUSH   H
0022 C 23 64          INX    H

```

```
0023 C 23          65      INX      H
0024 C 3600        66      MVI      M,0
0026 C 23          67      INX      H
0027 C 3600        68      MVI      M,0
0029 C E1          69      POP      H
002A C D1          70      POP      D
002B C A7          71      ANA      A
002C C C9          72      RET
002D C 3E22        73 WRER1:
002D C 3E22        74      MVI      A,SEC22
002F C 37          75      ;
0030 C C9          76      STC
0030 C C9          77      RET
0031 C E1          78 WRER2:
0032 C D1          79      POP      H
0033 C 3E23        80      POP      D
0033 C 3E23        81      MVI      A,SEC23
0035 C 37          82      ;
0035 C 37          83      STC
0036 C C9          84      RET
0037 C D1          85 WRER3:
0038 C A7          86      POP      D
0039 C C24300      87      ANA      A
0039 C C24300      88      JNZ      WRER4
003C C 23          89      INX      H
003D C 7E          90      MOV      A,M
003E C F680        91      ORI      EOFBIT
0040 C 77          92      MOV      M,A
0041 C 2B          93      DCX      H
0042 C 97          94      SUB      A
0043 C 37          95 WRER4:
0044 C C9          96      STC
0044 C C9          97      RET
0044 C C9          98      ;
0044 C C9          99      ;
0044 C C9          100     ;
0044 C C9          101     END
```

NO ERROR MESSAGES

X CHKDEV	0080	EOFBIT	0022	SEC22	0023	SEC23	002D	C WRER1
0031 C WRER2	0037 C WRER3		0043 C WRER4		001E C WRIT1		0000	C*WRITE
000E C*WRRD								

```
1 ;*****
2 ;
3 ;      TOS21 - CLOS
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - CLOS MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
0029 22 SEC29 EQU 29H
002A 23 SEC2A EQU 2AH
24          ;
25          ;
26          ;
0040 27 DONTCLOSE EQU 40H
0020 28 AUTO EQU 20H
29          ;
30          ;
31          ;
FD39 32 BUFDEALLOC EQU OFD39H
33          ;
34          ;
35          ;
36          EXTRN  CHKDEV
37          PUBLIC CLOSE
38          ;
39          ;
40          ;
41          CSEG
42          ;
43          ;
44          ;
45          ;
46          CLOSE:
0000 47          CALL  CHKDEV
0007 48          RC
0008 49          INX  H
0005 50          MOV  A,M
0006 51          DCX  H
0007 52          CPI  0
0009 53          JNZ  CLOS1
000C 54          MVI  A,SEC29
55          ;
000E 56          STC
000F 57          RET
58          CLOS1:
0010 59          ANI  DONTCLOSE
0012 60          RNZ
0013 61          INX  H
0014 62          MOV  A,M
0015 63          ANI  AUTO
0017 64          MOV  M,A
          ;
          * ERROR 29 *
```

0018	C	2B		65	DCX	H
0019	C	7E		66	MOV	A,M
001A	C	FE02		67	CPI	2
001C	C	C8		68	RZ	
001D	C	D5		69	PUSH	D
001E	C	E5		70	PUSH	H
001F	C	FE03		71	CPI	3
0021	C	C25000	C	72	JNZ	CLOS3
				73		
				74		
				75		
					ECHO DEVICE	
0024	C	23		76	INX	H
0025	C	23		77	INX	H
0026	C	5E		78	MOV	E,M
0027	C	23		79	INX	H
0028	C	56		80	MOV	D,M
0029	C	E5		81	PUSH	H
002A	C	EB		82	XCHG	
002B	C	CD0000	C	83	CALL	CLOSE
002C	C	D23B00	C	84	JNC	CLOS4
0031	C	FE29		85	CPI	SEC29
0033	C	CA3B00	C	86	JZ	CLOS4
0036	C	E1		87	POP	H
0037	C	E1		88	POP	H
0038	C	D1		89	POP	D
0039	C	37		90	STC	
003A	C	C9		91	RET	
				92	CLOS4:	
003B	C	E1		93	POP	H
003C	C	23		94	INX	H
003D	C	5E		95	MOV	E,M
003E	C	23		96	INX	H
003F	C	56		97	MOV	D,M
0040	C	EB		98	XCHG	
0041	C	CD0000	C	99	CALL	CLOSE
0044	C	D26300	C	100	JNC	CLOSC
0047	C	FE29		101	CPI	SEC29
0048	C	CA6300	C	102	JZ	CLOSC
0049	C	E1		103	POP	H
004D	C	D1		104	POP	D
004E	C	37		105	STC	
004F	C	C9		106	RET	
				107	CLOS3:	
0050	C	FE04		108	CPI	4
0052	C	C26700	C	109	JNZ	CLOS5
				110		
				111		
				112		
					LINE ORIENTED DEVICE	
0055	C	110800		113	LXI	D,8
0058	C	19		114	DAD	D
0059	C	5E		115	MOV	E,M
005A	C	23		116	INX	H
005B	C	56		117	MOV	D,M
005C	C	EB		118	XCHG	

005D	C	CD0000	C	119	CALL	CLOSE	
0060	C	DA6400	C	120	JC	CLOS2	
				121	CLOSC:		
0063	C	A7		122	ANA	A	
				123	CLOS2:		
0064	C	E1		124	POP	H	
0065	C	D1		125	POP	D	
0066	C	C9		126	RET		
				127	CLOS5:		
0067	C	FE05		128	CPI	5	
0069	C	C28400	C	129	JNZ	CLOS7	
				130	;		
				131	;	BLOCK ORIENTED DEVICE	
				132	;		
006C	C	110E00		133	LXI	D,14	
006F	C	19		134	DAD	D	
0070	C	5E		135	MOV	E,M	
0071	C	23		136	INX	H	
0072	C	56		137	MOV	D,M	
0073	C	7B		138	MOV	A,E	
0074	C	B2		139	ORA	D	
0075	C	CAB000	C	140	JZ	CLOS6	
0078	C	217E00	C	141	LXI	H,CLOSA	
007B	C	E3		142	XTHL		
007C	C	D5		143	PUSH	D	
007D	C	C9		144	RET		; REALLY A CALL
				145	CLOSA:		
007E	C	DA8200	C	146	JC	CLOSB	
0081	C	A7		147	ANA	A	
				148	CLOSB:		
0082	C	D1		149	POP	D	
0083	C	C9		150	RET		
				151	CLOS7:		
				152	;		
				153	;	DOUBLE FILE	
				154	;		
0084	C	23		155	INX	H	
0085	C	23		156	INX	H	
0086	C	5E		157	MOV	E,M	
0087	C	23		158	INX	H	
0088	C	56		159	MOV	D,M	
0089	C	23		160	INX	H	
008A	C	E5		161	PUSH	H	
008B	C	EB		162	XCHG		
008C	C	CD0000	C	163	CALL	CLOSE	
008F	C	E1		164	POP	H	
0090	C	F5		165	PUSH	PSW	
0091	C	5E		166	MOV	E,M	
0092	C	23		167	INX	H	
0093	C	56		168	MOV	D,M	
0094	C	EB		169	XCHG		
0095	C	CD0000	C	170	CALL	CLOSE	
0098	C	DAAB00	C	171	JC	CLOS8	
009B	C	F1		172	POP	PSW	

```
009C C E1 173 POP H
009D C 23 174 INX H
009E C 7E 175 MOV A,M
009F C 2B 176 DCX H
00A0 C E620 177 ANI AUTO
00A2 C CA7E00 C 178 JZ CLOSA
00A5 C CD39FD 179 CALL BUFDEALLOC
00A8 C C37E00 C 180 JNP CLOSA
181 CLOS8:
00AB C 33 182 INX SP
00AC C 33 183 INX SP
00AD C C3B200 C 184 JMP CLOS9
185 CLOS6:
00B0 C 3E2A 186 MVI A,SEC2A
187 ; * ERROR 2A *
188 CLOS9:
00B2 C E1 189 POP H
00B3 C D1 190 POP D
00B4 C 37 191 STC
00E C C9 192 RET
193 ;
194 ;
195 ;
196 END
```

NO ERROR MESSAGES

0020	AUTO	FD39	BUFDEA	X	CHKDEV	0010	C	CLOS1	0064	C	CLOS2
0050	C	CLOS3	003B	C	CLOS4	0067	C	CLOS5	006D	C	CLOS6
00AB	C	CLOS8	00B2	C	CLOS9	007E	C	CLOSA	0082	C	CLOSB
0000	C*CLOSE	0040	DONTCL	0029	SEC29	002A		SEC2A	0063	C	CLOSC

```
1 ;*****
2 ;
3 ;      TOS21 - CTAB
4 ;
5 ;      C      1977/78 - T      R      A/S
6 ;
7 ;      R      2 - F      1978
8 ;
9 ;*****
10 ;
```

```

11          $TITLE TOS21 - CTAB MODULE
12          $PW      110
13          $PL      64
14          ;          -          1,11,18,27
15          ;
16          ;*****
17          ;
18          ;
19          ;
20          ;
21          ;
22          PUBLIC EBCDIC,ASCII
23          ;
24          ;
25          ;
26          CSEG
27          ;
28          ;          CONVERSION TABLE FROM ASCII TO EBCDIC
29          ;
30          EBCDIC:
0000 C 00010203      31          DB          0,1,2,3
0004 C 37202E2F      32          DB          55,45,46,47
0008 C 1605250B      33          DB          22,5,37,11
000C C 0C0D0E0F      34          DB          12,13,14,15
0010 C 10111213      35          DB          16,17,18,19
0014 C 3C3D3226      36          DB          60,61,50,38
0018 C 18193F27      37          DB          24,25,63,39
001C C 1C1D1E1F      38          DB          28,29,30,31
0020 C 405A7F7B      39          DB          64,90,127,123
0024 C 5B6C507D      40          DB          91,108,80,125
0028 C 4D5D5C4E      41          DB          77,93,92,78
002C C 6B604B61      42          DB          107,96,75,97
0030 C F0F1F2F3      43          DB          240,241,242,243
0034 C F4F5F6F7      44          DB          244,245,246,247
0038 C F8F97A5E      45          DB          248,249,122,94
003C C 4C7E6E6F      46          DB          76,126,110,111
0040 C 7CC1C2C3      47          DB          124,193,194,195
0044 C C4C5C6C7      48          DB          196,197,198,199
0048 C C8C9D1D2      49          DB          200,201,209,210
004C C D3D4D5D6      50          DB          211,212,213,214
0050 C D7D8D9E2      51          DB          215,216,217,226
0054 C E3E4E5E6      52          DB          227,228,229,230
0058 C E7E8E9EA      53          DB          231,232,233,234
005C C EBEC5F6D      54          DB          235,236,95,109
0060 C 79818283      55          DB          121,129,130,131
0064 C 84858687      56          DB          132,133,134,135
0068 C 88899192      57          DB          136,137,145,146
006C C 93949596      58          DB          147,148,149,150
0070 C 979899A2      59          DB          151,152,153,162
0074 C A3A4A5A6      60          DB          163,164,165,166
0078 C A7A8A9AA      61          DB          167,168,169,170
007C C ABAC4F07      62          DB          171,172,79,7
0080 C 04060809      63          DB          4,6,8,9
0084 C 0A141517      64          DB          10,20,21,23
```

0088 C	1A1B2021	65	DB	26,27,32,33
008C C	22232428	66	DB	34,35,36,40
0090 C	292A2B2C	67	DB	41,42,43,44
0094 C	30313334	68	DB	48,49,51,52
0098 C	35363839	69	DB	53,54,56,57
009C C	3A3B3E41	70	DB	58,59,62,65
00A0 C	42434445	71	DB	66,67,68,69
00A4 C	46474849	72	DB	70,71,72,73
00A8 C	51525354	73	DB	81,82,83,84
00AC C	55565758	74	DB	85,86,87,88
00B0 C	59626364	75	DB	89,98,99,100
00B4 C	65666768	76	DB	101,102,103,104
00B8 C	696A7071	77	DB	105,106,112,113
00BC C	72737475	78	DB	114,115,116,117
00C0 C	7677784A	79	DB	118,119,120,74
00C4 C	808A8B8C	80	DB	128,138,139,140
00C8 C	8D8E8F90	81	DB	141,142,143,144
00CC C	9A9B9C9D	82	DB	154,155,156,157
00D0 C	9E9FA0A1	83	DB	158,159,160,161
00D4 C	ADAFAFB0	84	DB	173,174,175,176
00D8 C	B1B2B3B4	85	DB	177,178,179,180
00DC C	B5B6B7B8	86	DB	181,182,183,184
00E0 C	B9BABBBC	87	DB	185,186,187,188
00E4 C	BDDEBFCD	88	DB	189,190,191,192
00E8 C	CACBCCCD	89	DB	202,203,204,205
00EC C	CECFDDDA	90	DB	206,207,208,218
00F0 C	DBDCDDDE	91	DB	219,220,221,222
00F4 C	DFE0E1ED	92	DB	223,224,225,237
00F8 C	EEEEFAFB	93	DB	238,239,250,251
00FC C	FCFDFEFF	94	DB	252,253,254,255

95 ;

96 ;

97 ;

98 ASCII:

CONVERSION TABLE FOR EBCDIC TO ASCII

0100 C	00010203	99	DB	0,1,2,3
0104 C	8009817F	100	DB	128,9,129,127
0108 C	8283840B	101	DB	130,131,132,11
010C C	0C0D0E0F	102	DB	12,13,14,15
0110 C	10111213	103	DB	16,17,18,19
0114 C	85860887	104	DB	133,134,8,135
0118 C	18198889	105	DB	24,25,136,137
011C C	1C1D1E1F	106	DB	28,29,30,31
0120 C	8A8B8C8D	107	DB	138,139,140,141
0124 C	8E0A171B	108	DB	142,10,23,27
0128 C	8F909192	109	DB	143,144,145,146
012C C	93050607	110	DB	147,5,6,7
0130 C	94951696	111	DB	148,149,22,150
0134 C	97989904	112	DB	151,152,153,4
0138 C	9A9B9C9D	113	DB	154,155,156,157
013C C	14159E1A	114	DB	20,21,158,26
0140 C	209FA0A1	115	DB	32,159,160,161
0144 C	A2A3A4A5	116	DB	162,163,164,165
0148 C	A6A7C32E	117	DB	166,167,195,46
014C C	3C282B7E	118	DB	60,40,43,126

0150	C	26A8A9AA	119	DB	38,168,169,170
0154	C	ABACADAE	120	DB	171,172,173,174
0158	C	AFB02124	121	DB	175,176,33,36
015C	C	2A293B5E	122	DB	42,41,59,94
0160	C	2D2FB1B2	123	DB	45,47,177,178
0164	C	B3B4B5B6	124	DB	179,180,181,182
0168	C	B7B8B92C	125	DB	183,184,185,44
016C	C	255F3E3F	126	DB	37,95,62,63
0170	C	BARBBBCBD	127	DB	186,187,188,189
0174	C	BEBFC0C1	128	DB	190,191,192,193
0178	C	C2603A23	129	DB	194,96,58,35
017C	C	40273D22	130	DB	64,39,61,34
0180	C	C4616263	131	DB	196,97,98,99
0184	C	64656667	132	DB	100,101,102,103
0188	C	6869C5C6	133	DB	104,105,197,198
018C	C	C7C8C9CA	134	DB	199,200,201,202
0190	C	CB6A6B6C	135	DB	203,106,107,108
0194	C	6D6E6F70	136	DB	109,110,111,112
0198	C	7172CCCCD	137	DB	113,114,204,205
019C	C	CECFD0D1	138	DB	206,207,208,209
01A0	C	D2D37374	139	DB	210,211,115,116
01A4	C	75767778	140	DB	117,118,119,120
01A8	C	797A7B7C	141	DB	121,122,123,124
01AC	C	7DD4D5D6	142	DB	125,212,213,214
01B0	C	D7D8D9DA	143	DB	215,216,217,218
01B4	C	DBDCDDDE	144	DB	219,220,221,222
01B8	C	DFE0E1E2	145	DB	223,224,225,226
01BC	C	E3E4E5E6	146	DB	227,228,229,230
01C0	C	E7414243	147	DB	231,65,66,67
01C4	C	44454647	148	DB	68,69,70,71
01C8	C	4849E8E9	149	DB	72,73,232,233
01CC	C	EAEBECED	150	DB	234,235,236,237
01D0	C	EE4A4B4C	151	DB	238,74,75,76
01D4	C	4D4E4F50	152	DB	77,78,79,80
01D8	C	5152EFF0	153	DB	81,82,239,240
01DC	C	F1F2F3F4	154	DB	241,242,243,244
01E0	C	F5F65354	155	DB	245,246,83,84
01E4	C	55565758	156	DB	85,86,87,88
01E8	C	595A5B5C	157	DB	89,90,91,92
01EC	C	5DF7F8F9	158	DB	93,247,248,249
01F0	C	30313233	159	DB	48,49,50,51
01F4	C	34353637	160	DB	52,53,54,55
01F8	C	3839FAFB	161	DB	56,57,250,251
01FC	C	FCFDFEFF	162	DB	252,253,254,255
			163		;
			164		;
			165		;
			166		

END

NO ERROR MESSAGES