

START

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C000      0010 *** VECTOR ONE MONITOR - VERSION 2.0
C000      0020 * R. S. HARP 10/15/77
C000      0030 * OPTION C FOR BITSTREAMER I/O
C000      0040 *
C000      0050 * SYSTEM EQUATES
C000      0060 CONS EQU 3          CONSOLE STAT PORT
C000      0070 COND EQU 2        CONSOLE DATA PORT
C000      0072 TBE EQU 1         TRANS BUFF EMPTY
C000      0074 RDA EQU 2         REC DATA AVAIL
C000      0076 STPOL EQU 0       STATUS POLARITY
C000      0080 CASD EQU 6FH      CASS DATA PORT
C000      0090 CASC EQU 6EH      CASS STAT PORT
C000      0100 SPTR EQU 0CFD0H   STACK POINTER
C000      0110 BOOT EQU 0E900H  DISK BOOT LOADER
C000      0120 DOS EQU 02028H   DOS RESTART
C000      0130 *
C000      0140 ***** COMMAND FORMAT *****
C000      0150 * A SSSS FFFF ASCII DUMP
C000      0160 * B JUMP TO BOOTSTRAP LOADER
C000      0170 * C SSSS FFFF CCCC COMPARE BLOCKS
C000      0180 * D SSSS FFFF DUMP IN HEX
C000      0185 * E JUMP TO EXTENSION PROM
C000      0187 * F SSSS FFFF DD DD TWO BYTE SEARCH
C000      0190 * G SSSS GO TO AND EXECUTE
C000      0195 * I PP INPUT FROM PORT
C000      0200 * J JUMP TO DOS
C000      0210 * K JUMP TO 0000
C000      0220 * L SSSS FFFF LOAD AND GO
C000      0230 * M SSSS FFFF DDDD MOVE BLOCK
C000      0240 * N NON DESTRUCTIVE MEMORY TEST
C000      0245 * O PP DD OUTPUT TO PORT
C000      0250 * P LLLL PROGRAM MEMORY
C000      0260 * Q SSSS FFFF COMPUTE CHECKSUM
C000      0270 * R SSSS FFFF READ CASSETTE
C000      0280 * S SSSS FFFF DD SEARCH FOR SINGLE BYTE
C000      0290 * T SSSS FFFF TEST MEMORY
C000      0300 * U GENERATES TARBELL SYNC
C000      0310 * V SSSS FFFF VERIFY TAPE
C000      0320 * W SSSS FFFF WRITE TAPE
C000      0325 * X SSSS FFFF DDDD EXCHANGE BLOCK
C000      0327 * Y SSSS FFFF RELOCATING LOADER
C000      0330 * Z SSSS FFFF DD ZERO OR FILL MEMORY
C000      0340 *****
C000      0350 *
C000 C3 03 C0 0360 MONIT JMP INIT
C003 3E CE 0370 INIT MVI A,OCEH
C005 D3 03 0372 OUT CONS
C007 3E 27 0374 MVI A,27H
C009 D3 03 0375 OUT CONS
C00B 31 D0 CF 0380 START LXI SP,SPTR
C00E CD A6 CO 0390 CALL CRLF
C011 3E 2A 0400 MVI A,'*' PRINT "*"
C013 CD 98 CO 0410 CALL PTCN
C016 CD BD CO 0420 CALL RDCN READ KEYBOARD

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|------|----|-------|------|-----------------|------------------------------------|-----------------|------------------|
| C019 | E6 | 5F | 0430 | ANI | 5FH | UPPER AND LOWER | |
| C01B | F5 | | 0440 | PUSH | PSW | SAVE INPUT | |
| C01C | CD | 96 CO | 0450 | CALL | SPCE | | |
| C01F | F1 | | 0460 | POP | PSW | SAVE INPUT | |
| C020 | 21 | 0B CO | 0470 | LXI | H, START | | |
| C023 | E5 | | 0480 | PUSH | H | | |
| C024 | FE | 41 | 0490 | CPI | 'A' | | |
| C026 | D8 | | 0500 | RC | | TOO SMALL | |
| C027 | FE | 5B | 0510 | CPI | 05BH | | |
| C029 | D0 | | 0520 | RNC | | TOO LARGE | |
| C02A | 21 | B5 CO | 0530 | LXI | H, CMDTB+7EH | | |
| C02D | F5 | | 0540 | PUSH | PSW | | |
| C02E | 87 | | 0545 | ADD | A | | |
| C02F | 85 | | 0550 | ADD | L | | |
| C030 | 6F | | 0560 | MOV | L, A | | |
| C031 | 5E | | 0570 | MOV | E, M | | |
| C032 | 23 | | 0580 | INX | H | | |
| C033 | 56 | | 0590 | MOV | D, M | | |
| C034 | EB | | 0600 | XCHG | | | |
| C035 | F1 | | 0605 | POP | PSW | | |
| C036 | E9 | | 0610 | PCHL | | AWAY WE GO | |
| C037 | | | 0620 | * COMMAND TABLE | | | |
| C037 | EE | C1 | 0630 | CMDTB | DW | DISP | A |
| C039 | 00 | E9 | 0640 | | DW | BOOT | B |
| C03B | AC | C2 | 0650 | | DW | COMPR | C |
| C03D | EE | C1 | 0660 | | DW | DISP | D |
| C03F | 00 | C4 | 0670 | | DW | MONIT+0400H | E |
| C041 | C5 | C2 | 0680 | | DW | SRCH | F |
| C043 | 6B | CO | 0690 | | DW | EXEC | G |
| C045 | 0B | CO | 0700 | | DW | START | H |
| C047 | 21 | C3 | 0710 | | DW | PINPT | I |
| C049 | 28 | 20 | 0720 | | DW | DOS | J |
| C04B | 00 | 00 | 0730 | | DW | 0 | K |
| C04D | 28 | C1 | 0740 | | DW | CINR | L |
| C04F | 71 | C2 | 0750 | | DW | MOVEB | M |
| C051 | 93 | C2 | 0760 | | DW | NDMT | N |
| C053 | 0A | C3 | 0770 | | DW | POUTP | O |
| C055 | 23 | C2 | 0780 | | DW | PGM | P |
| C057 | ED | CO | 0790 | | DW | COUTR | Q |
| C059 | 28 | C1 | 0800 | | DW | CINR | R |
| C05B | C5 | C2 | 0810 | | DW | SRCH | S |
| C05D | 76 | C1 | 0820 | | DW | TMEM | T |
| C05F | 36 | C3 | 0830 | | DW | SYNC | U |
| C061 | 28 | C1 | 0840 | | DW | CINR | V |
| C063 | ED | CO | 0850 | | DW | COUTR | W |
| C065 | 71 | C2 | 0860 | | DW | MOVEB | X |
| C067 | 42 | C3 | 0870 | | DW | RLODR | Y |
| C069 | 5D | C2 | 0880 | | DW | ZEROM | Z |
| C06B | | | 0890 | * | | | |
| C06B | | | 0900 | *** | EXECUTE THE PROGRAM AT THE ADDRESS | *** | |
| C06B | | | 0910 | * | | | |
| C06B | CD | 70 CO | 0920 | EXEC | CALL | AHEX | READ ADD FROM KB |
| C06E | EB | | 0930 | | XCHG | | |
| C06F | E9 | | 0960 | | PCHL | | JUMP TO IT |
| C070 | | | 0970 | * | | | |
| C070 | | | 0980 | *** | CONVERT UP TO 4 HEX DIGITS TO BIN | | |

| | | | | | | | |
|------|----|-------|------|-------|----------------------------|-------|-------------------|
| C070 | | | 0990 | * | | | |
| C070 | 0E | 04 | 1000 | AHEX | MVI | C,4 | COUNT OF 4 DIGITS |
| C072 | 21 | 00 00 | 1010 | AHE0 | LXI | H,0 | 16 BIT ZERO |
| C075 | CD | BD CO | 1020 | AHE1 | CALL | RDCN | READ A BYTE |
| C078 | FE | 30 | 1021 | | CPI | 30H | |
| C07A | DA | 0B CO | 1022 | | JC | START | |
| C07D | FE | 3A | 1023 | | CPI | ':' | |
| C07F | D4 | B0 CO | 1024 | | CNC | ALPH | |
| C082 | 29 | | 1030 | | DAD | H | SHIFT 4 LEFT |
| C083 | 29 | | 1040 | | DAD | H | |
| C084 | 29 | | 1050 | | DAD | H | |
| C085 | 29 | | 1060 | | DAD | H | |
| C086 | D6 | 30 | 1070 | | SUI | 48 | ASCII BIAS |
| C088 | FE | 0A | 1080 | | CPI | 10 | DIGIT 0-10 |
| C08A | DA | 8F CO | 1090 | | JC | ALF | |
| C08D | D6 | 07 | 1100 | | SUI | 7 | ALPHA BIAS |
| C08F | 85 | | 1110 | ALF | ADD | L | |
| C090 | 6F | | 1120 | | MOV | L,A | |
| C091 | 0D | | 1130 | | DCR | C | 4 DIGITS? |
| C092 | C2 | 75 CO | 1140 | | JNZ | AHE1 | KEEP READING |
| C095 | EB | | 1150 | | XCHG | | |
| C096 | 3E | 20 | 1160 | SPCE | MVI | A,20H | PRINT SPACE |
| C098 | F5 | | 1170 | PTCN | PUSH | PSW | |
| C099 | DB | 03 | 1180 | PTLOP | IN | CONS | |
| C09B | EE | 00 | 1181 | | XRI | STPOL | |
| C09D | E6 | 01 | 1182 | | ANI | TBE | |
| C09F | CA | 99 CO | 1200 | | JZ | PTLOP | |
| COA2 | F1 | | 1210 | | POP | PSW | THEN RECOVER A |
| COA3 | D3 | 02 | 1220 | | OUT | COND | AND PRINT IT |
| COA5 | C9 | | 1230 | | RET | | RETURN FROM PTCN |
| COA6 | 3E | 0D | 1240 | CRLF | MVI | A,0DH | PRINT CR |
| COA8 | CD | 98 CO | 1250 | | CALL | PTCN | |
| COAB | 3E | 0A | 1260 | | MVI | A,0AH | |
| COAD | C3 | 98 CO | 1270 | | JMP | PTCN | |
| COB0 | FE | 41 | 1271 | ALPH | CPI | 'A' | |
| COB2 | DA | 0B CO | 1272 | | JC | START | |
| COB5 | E6 | 5F | 1273 | | ANI | 5FH | |
| COB7 | FE | 47 | 1274 | | CPI | 'G' | |
| COB9 | D2 | 0B CO | 1275 | | JNC | START | |
| COBC | C9 | | 1276 | | RET | | |
| COBD | | | 1280 | * | | | |
| COBD | | | 1290 | *** | READ FROM CONSOLE TO REG A | *** | |
| COBD | | | 1300 | * | | | |
| COBD | DB | 03 | 1310 | RDCN | IN | CONS | READ KB STAT |
| COBF | EE | 00 | 1315 | | XRI | STPOL | |
| COC1 | E6 | 02 | 1320 | | ANI | RDA | |
| COC3 | CA | BD CO | 1330 | | JZ | RDCN | |
| COC6 | DB | 02 | 1340 | | IN | COND | READ FROM KB |
| COC8 | E6 | 7F | 1350 | | ANI | 7FH | STRIP OFF MSB |
| COCA | C3 | 98 CO | 1360 | | JMP | PTCN | ECHO ONTO PRINTER |
| COCD | CD | DC CO | 1361 | PAUSE | CALL | CNTLC | |
| COD0 | FE | 20 | 1362 | | CPI | 20H | |
| COD2 | C0 | | 1363 | | RNZ | | |
| COD3 | CD | DC CO | 1364 | PLOOP | CALL | CNTLC | |
| COD6 | FE | 20 | 1365 | | CPI | 20H | |
| COD8 | C2 | D3 CO | 1366 | | JNZ | PLOOP | |

| | | | | | | | |
|------|----|----|------|--------------|-----------|---------|--------------------|
| CODB | C9 | | 1367 | | RET | | |
| CODC | DB | 03 | 1368 | CNTLC | IN | CONS | |
| CODE | EE | 00 | 1369 | | XRI | STPOL | |
| COE0 | E6 | 02 | 1370 | | ANI | RDA | |
| COE2 | C8 | | 1371 | | RZ | | |
| COE3 | DB | 02 | 1372 | | IN | COND | |
| COE5 | E6 | 7F | 1373 | | ANI | 7FH | |
| COE7 | FE | 03 | 1374 | | CPI | 03 | |
| COE9 | CA | 0B | 1375 | | JZ | START | |
| COEC | C9 | | 1376 | | RET | | |
| COED | | | 1380 | *** CASSETTE | INTERFACE | OUTPUT | ROUTINE *** |
| COED | | | 1390 | * | | | |
| COED | F5 | | 1400 | COUTR | PUSH | PSW | SAVE CONTROL |
| COEE | CD | 03 | 1410 | | CALL | TAHEX | |
| COF1 | 06 | 00 | 1420 | | MVI | B,0 | START CHECKSUM = 0 |
| COF3 | F1 | | 1425 | | POP | PSW | |
| COF4 | 4F | | 1426 | | MOV | C,A | |
| COF5 | CD | 16 | 1430 | | CALL | COUT | START BYTE OUT |
| COF8 | 3E | E6 | 1440 | | MVI | A,0E6H | SEND SYNC BYTE |
| COFA | CD | 16 | 1450 | | CALL | COUT | TO CASSETTE |
| COFD | 7E | | 1460 | COLOP | MOV | A,M | GET DATA FROM MEM |
| COFE | CD | 16 | 1470 | | CALL | COUT | SEND TO CASSETTE |
| C101 | 80 | | 1480 | | ADD | B | ADD TO CHECKSUM |
| C102 | 47 | | 1490 | | MOV | B,A | |
| C103 | CD | CD | 1492 | | CALL | PAUSE | |
| C106 | CD | 54 | 1500 | | CALL | BMP | |
| C109 | C2 | FD | 1510 | | JNZ | COLOP | REPEAT LOOP |
| C10C | 78 | | 1520 | | MOV | A,B | GET CHECKSUM |
| C10D | CD | 16 | 1530 | | CALL | COUT | OUTPUT IT |
| C110 | CD | D4 | 1540 | | CALL | PT2 | PRINT CHECKSUM |
| C113 | C3 | 0B | 1550 | | JMP | START | GET ANOTH COMMND |
| C116 | F5 | | 1560 | COUT | PUSH | PSW | SAVE A AND FLAGS |
| C117 | 79 | | 1562 | | MOV | A,C | |
| C118 | FE | 51 | 1564 | | CPI | 'Q' | |
| C11A | CA | 24 | 1566 | | JZ | CHKSM | |
| C11D | DB | 6E | 1570 | CLOP | IN | CASC | READ CASS STATUS |
| C11F | E6 | 20 | 1580 | | ANI | 20H | LOOK AT BIT 5 |
| C121 | C2 | 1D | 1590 | | JNZ | CLOP | TRY AGAIN? |
| C124 | F1 | | 1600 | CHKSM | POP | PSW | |
| C125 | D3 | 6F | 1610 | | OUT | CASD | SEND DATA TO CASS |
| C127 | C9 | | 1620 | | RET | RETURN | FROM COUT |
| C128 | | | 1630 | * | | | |
| C128 | | | 1640 | *** CASSETTE | INPUT | ROUTINE | *** |
| C128 | | | 1650 | * | | | |
| C128 | F5 | | 1660 | CINR | PUSH | PSW | SAVE CONTROL CHAR |
| C129 | 3E | 10 | 1670 | | MVI | A,10H | USE BIT 4 IN REG A |
| C12B | D3 | 6E | 1680 | | OUT | CASC | TO RESET CASS INT |
| C12D | CD | 03 | 1690 | | CALL | TAHEX | READ ADDRESSES |
| C130 | F1 | | 1710 | | POP | PSW | GET CONTROL CHAR |
| C131 | E5 | | 1720 | | PUSH | H | SAVE START ADD |
| C132 | F5 | | 1730 | | PUSH | PSW | UNDER CONTROL CHAR |
| C133 | 06 | 00 | 1740 | | MVI | B,0 | SET CHECKSUM = 0 |
| C135 | CD | 6C | 1750 | CILOP | CALL | CIN | READ FM CONS |
| C138 | 4F | | 1760 | | MOV | C,A | SAVE IT IN REG C |
| C139 | F1 | | 1770 | | POP | PSW | GET CONTROL CHAR |
| C13A | F5 | | 1780 | | PUSH | PSW | SAVE IT BACK |

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|------|----|----|----|------|------|---------------------|---------|--------------------|
| C13B | FE | 56 | | 1790 | | CPI | 'V' | IS IT A V? |
| C13D | 79 | | | 1800 | | MOV | A,C | GET BACK DATA BYTE |
| C13E | CA | 42 | C1 | 1810 | | JZ | CINO | IF C, DON'T STORE |
| C141 | 77 | | | 1820 | | MOV | M,A | IF NOT , STORE |
| C142 | 80 | | | 1830 | CINO | ADD | B | ADD TO CHECKSUM |
| C143 | 47 | | | 1840 | | MOV | B,A | |
| C144 | CD | CD | C0 | 1845 | | CALL | PAUSE | |
| C147 | CD | 54 | C2 | 1850 | | CALL | BMP | |
| C14A | C2 | 35 | C1 | 1860 | | JNZ | CILOP | READ MORE |
| C14D | CD | 6C | C1 | 1870 | | CALL | CIN | READ LAST BYTE |
| C150 | F5 | | | 1880 | | PUSH | PSW | |
| C151 | CD | D4 | C1 | 1890 | | CALL | PT2 | PRINT CHECKSUM |
| C154 | CD | 96 | C0 | 1900 | | CALL | SPCE | SPACE OVER |
| C157 | F1 | | | 1910 | | POP | PSW | |
| C158 | B8 | | | 1920 | | CMP | B | COMP TO CHKSUM |
| C159 | 3E | 45 | | 1930 | | MVI | A,'E' | PRINT E FOR ERROR |
| C15B | C2 | 66 | C1 | 1940 | | JNZ | CERR | PRINT NOW IF ERROR |
| C15E | F1 | | | 1950 | | POP | PSW | RECOVER CTL CHAR |
| C15F | FE | 4C | | 1960 | | CPI | 'L' | IF NOT L |
| C161 | C2 | 66 | C1 | 1970 | | JNZ | CERR | DON'T EXECUTE |
| C164 | E1 | | | 1980 | | POP | H | OTHERWISE, EXECJTE |
| C165 | E9 | | | 1990 | | PCHL | AT | STARTING ADDRESS |
| C166 | CD | 98 | C0 | 2000 | CERR | CALL | PTCN | PRINT V,E, OR R |
| C169 | C3 | 0B | C0 | 2010 | | JMP | START | |
| C16C | DB | 6E | | 2020 | CIN | IN | CASC | READ STATUS |
| C16E | E6 | 10 | | 2030 | | ANI | 10H | LOOK AT BIT 4 |
| C170 | C2 | 6C | C1 | 2040 | | JNZ | CIN | WAIT UNTIL LOW |
| C173 | DB | 6F | | 2050 | | IN | CASD | READ DATA FM CASS |
| C175 | C9 | | | 2060 | | RET | RETURN | FROM CIN |
| C176 | | | | 2070 | * | | | |
| C176 | | | | 2080 | *** | MEMORY TEST ROUTINE | *** | |
| C176 | | | | 2090 | * | | | |
| C176 | CD | 03 | C3 | 2100 | TMEM | CALL | TAHEX | READ ADDRESSES |
| C179 | 01 | 5A | 5A | 2120 | | LXI | B,5A5AH | INI B,C |
| C17C | CD | A7 | C1 | 2130 | CYCL | CALL | RNDM | |
| C17F | C5 | | | 2140 | | PUSH | B | KEEP ALL REGS |
| C180 | E5 | | | 2150 | | PUSH | H | |
| C181 | D5 | | | 2160 | | PUSH | D | |
| C182 | CD | A7 | C1 | 2170 | TLOP | CALL | RNDM | |
| C185 | 70 | | | 2180 | | MOV | M,B | WRITE IN MEM |
| C186 | CD | 54 | C2 | 2190 | | CALL | BMP | |
| C189 | C2 | 82 | C1 | 2200 | | JNZ | TLOP | REPEAT LOOP |
| C18C | D1 | | | 2210 | | POP | D | |
| C18D | E1 | | | 2220 | | POP | H | RESTORE ORIG |
| C18E | C1 | | | 2230 | | POP | B | VALUES OF |
| C18F | E5 | | | 2240 | | PUSH | H | |
| C190 | D5 | | | 2250 | | PUSH | D | |
| C191 | CD | A7 | C1 | 2260 | RLOP | CALL | RNDM | GEN NEW SEQ |
| C194 | 7E | | | 2270 | | MOV | A,M | READ MEM |
| C195 | B8 | | | 2280 | | CMP | B | COMP MEM |
| C196 | C4 | C8 | C1 | 2290 | | CNZ | ERR | CALL ERROR ROUT |
| C199 | CD | 54 | C2 | 2300 | | CALL | BMP | |
| C19C | C2 | 91 | C1 | 2310 | | JNZ | RLOP | |
| C19F | D1 | | | 2320 | | POP | D | |
| C1A0 | E1 | | | 2330 | | POP | H | |
| C1A1 | CD | CD | C0 | 2335 | | CALL | PAUSE | |

| | | | | | | | | |
|------|----|----|----|------|------|-------------------------|----------------|------------------|
| C1A4 | C3 | 7C | C1 | 2340 | JMP | CYCL | | |
| C1A7 | | | | 2350 | *** | THIS ROUTINE GENERATES | RANDOM NOS *** | |
| C1A7 | 78 | | | 2360 | RNDM | MOV | A,B | LOOK AT B |
| C1A8 | E6 | B4 | | 2370 | | ANI | OB4H | MASK BITS |
| C1AA | A7 | | | 2380 | | ANA | A | CLEAR CY |
| C1AB | EA | AF | C1 | 2390 | | JPE | PEVE | JUMP IF EVEN |
| C1AE | 37 | | | 2400 | | STC | | |
| C1AF | 79 | | | 2410 | PEVE | MOV | A,C | LOOK AT C |
| C1B0 | 17 | | | 2420 | | RAL | | ROTATE CY IN |
| C1B1 | 4F | | | 2430 | | MOV | C,A | RESTORE C |
| C1B2 | 78 | | | 2440 | | MOV | A,B | LOOK AT B |
| C1B3 | 17 | | | 2450 | | RAL | | ROTATE CY IN |
| C1B4 | 47 | | | 2460 | | MOV | B,A | RESTORE B |
| C1B5 | C9 | | | 2470 | | RET | | RETURN W NEW B,C |
| C1B6 | | | | 2480 | * | | | |
| C1B6 | | | | 2490 | *** | ERROR PRINT OUT ROUTINE | | |
| C1B6 | | | | 2500 | * | | | |
| C1B6 | CD | A6 | C0 | 2510 | PTAD | CALL | CRLF | PRINT CR,LF |
| C1B9 | CD | CD | C0 | 2515 | | CALL | PAUSE | |
| C1BC | 7C | | | 2520 | | MOV | A,H | PRINT |
| C1BD | CD | D4 | C1 | 2530 | | CALL | PT2 | ASCII |
| C1C0 | 7D | | | 2540 | | MOV | A,L | CODES |
| C1C1 | CD | D4 | C1 | 2550 | | CALL | PT2 | FOR |
| C1C4 | CD | 96 | C0 | 2560 | | CALL | SPCE | ADDRESS |
| C1C7 | C9 | | | 2570 | | RET | | |
| C1C8 | F5 | | | 2580 | ERR | PUSH | PSW | SAVE ACC |
| C1C9 | CD | B6 | C1 | 2590 | | CALL | PTAD | PRINT ADD. |
| C1CC | 78 | | | 2600 | | MOV | A,B | DATA |
| C1CD | CD | D4 | C1 | 2610 | | CALL | PT2 | WRITTEN |
| C1D0 | CD | 96 | C0 | 2620 | | CALL | SPCE | |
| C1D3 | F1 | | | 2630 | | POP | PSW | DATA READ |
| C1D4 | F5 | | | 2640 | PT2 | PUSH | PSW | |
| C1D5 | CD | DC | C1 | 2650 | | CALL | BINH | |
| C1D8 | F1 | | | 2660 | | POP | PSW | |
| C1D9 | C3 | E0 | C1 | 2670 | | JMP | BINL | |
| C1DC | 1F | | | 2680 | BINH | RAR | | |
| C1DD | 1F | | | 2690 | | RAR | | |
| C1DE | 1F | | | 2700 | | RAR | | |
| C1DF | 1F | | | 2710 | | RAR | | |
| C1E0 | E6 | 0F | | 2720 | BINL | ANI | 0FH | LOW 4 BITS |
| C1E2 | C6 | 30 | | 2730 | | ADI | 48 | ASCII BIAS |
| C1E4 | FE | 3A | | 2740 | | CPI | 58 | DIGIT 0-9 |
| C1E6 | DA | 98 | C0 | 2750 | | JC | PTCN | |
| C1E9 | C6 | 07 | | 2760 | | ADI | 7 | DIGIT A-F |
| C1EB | C3 | 98 | C0 | 2770 | | JMP | PTCN | |
| C1EE | | | | 2780 | * | | | |
| C1EE | | | | 2790 | *** | DISPLAY MEMORY CONTENTS | *** | |
| C1EE | | | | 2800 | * | | | |
| C1EE | 47 | | | 2810 | DISP | MOV | B,A | SAVE CONTROL |
| C1EF | CD | 03 | C3 | 2820 | | CALL | TAHEX | READ ADDRESSES |
| C1F2 | 0E | 10 | | 2840 | ENT1 | MVI | C,16 | LOC/LINE |
| C1F4 | CD | B6 | C1 | 2850 | | CALL | PTAD | |
| C1F7 | 78 | | | 2860 | LP2 | MOV | A,B | |
| C1F8 | FE | 41 | | 2870 | | CPI | 'A' | IS IT "A"? |
| C1FA | 7E | | | 2880 | | MOV | A,M | |
| C1FB | CA | 0F | C2 | 2890 | | JZ | ASCD | DUMP ASCII |

| | | | | | | | |
|------|----|----|----|------|---------------|-------------------------|---------------------|
| C26A | CD | 54 | C2 | 3470 | CALL | BMP | COMP ADD, INCREMENT |
| C26D | C8 | | | 3480 | RZ | | RETURN IF DONE |
| C26E | C3 | 69 | C2 | 3490 | JMP | ZLOOP | CONTINUE TIL DONE |
| C271 | | | | 3500 | * MOVE | A BLOCK OF MEMORY | |
| C271 | 47 | | | 3510 | MOVEB | MOV B,A | |
| C272 | CD | 03 | C3 | 3520 | CALL | TAHEX | READ ADDRESSES |
| C275 | E5 | | | 3530 | PUSH | H | |
| C276 | CD | 70 | C0 | 3540 | CALL | AHEX | |
| C279 | EB | | | 3550 | XCHG | | |
| C27A | E3 | | | 3560 | XTHL | | BACK TO NORMAL |
| C27B | 4E | | | 3570 | MLOOP | MOV C,M | |
| C27C | E3 | | | 3580 | XTHL | | |
| C27D | 78 | | | 3581 | MOV | A,B | |
| C27E | FE | 4D | | 3582 | CPI | 'M' | |
| C280 | CA | 87 | C2 | 3583 | JZ | NEXCH | |
| C283 | 7E | | | 3584 | MOV | A,M | |
| C284 | E3 | | | 3585 | XTHL | | |
| C285 | 77 | | | 3586 | MOV | M,A | |
| C286 | E3 | | | 3587 | XTHL | | |
| C287 | 71 | | | 3590 | NEXCH | MOV M,C | |
| C288 | 23 | | | 3600 | INX | H | |
| C289 | E3 | | | 3610 | XTHL | | |
| C28A | CD | 54 | C2 | 3620 | CALL | BMP | |
| C28D | CA | 0B | C0 | 3630 | JZ | START | |
| C290 | C3 | 7B | C2 | 3640 | JMP | MLOOP | |
| C293 | | | | 3860 | * NON | DESTRUCTIVE MEMORY TEST | |
| C293 | 21 | 00 | 00 | 3870 | NDMT | LXI H,0 | START AT ZERO |
| C296 | 4E | | | 3890 | NDLOP | MOV C,M | |
| C297 | 06 | FF | | 3900 | MVI | B,OFFH | |
| C299 | 70 | | | 3910 | MOV | M,B | |
| C29A | 7E | | | 3920 | MOV | A,M | |
| C29B | B8 | | | 3930 | CMP | B | |
| C29C | C2 | C8 | C1 | 3940 | JNZ | ERR | PRINT ERROR |
| C29F | 06 | 00 | | 3941 | MVI | B,0 | |
| C2A1 | 70 | | | 3942 | MOV | M,B | |
| C2A2 | 7E | | | 3943 | MOV | A,M | |
| C2A3 | B8 | | | 3944 | CMP | B | |
| C2A4 | C2 | C8 | C1 | 3945 | JNZ | ERR | |
| C2A7 | 71 | | | 3950 | MOV | M,C | |
| C2A8 | 23 | | | 3960 | INX | H | |
| C2A9 | C3 | 96 | C2 | 3980 | JMP | NDLOP | |
| C2AC | | | | 3990 | * COMPARE TWO | BLOCKS OF MEMORY | |
| C2AC | CD | 03 | C3 | 4000 | COMPR | CALL TAHEX | |
| C2AF | E5 | | | 4020 | PUSH | H | |
| C2B0 | CD | 70 | C0 | 4030 | CALL | AHEX | |
| C2B3 | EB | | | 4040 | XCHG | | |
| C2B4 | 7E | | | 4050 | VMLOP | MOV A,M | |
| C2B5 | 23 | | | 4060 | INX | H | |
| C2B6 | E3 | | | 4070 | XTHL | | |
| C2B7 | BE | | | 4080 | CMP | M | |
| C2B8 | 46 | | | 4090 | MOV | B,M | |
| C2B9 | C4 | C8 | C1 | 4100 | CNZ | ERR | |
| C2BC | CD | 54 | C2 | 4110 | CALL | BMP | |
| C2BF | E3 | | | 4130 | XTHL | | |
| C2C0 | C2 | B4 | C2 | 4140 | JNZ | VMLOP | |
| C2C3 | F1 | | | 4141 | POP | PSW | |

| | | | | | |
|------|----------|------|--------------------|----------------|------------|
| C2C4 | C9 | 4142 | RET | | |
| C2C5 | | 4160 | * SEARCH FOR | SPECIFIC CODES | |
| C2C5 | F5 | 4170 | SRCH | PUSH | PSW |
| C2C6 | CD 03 C3 | 4180 | | CALL | TAHEX |
| C2C9 | E5 | 4190 | | PUSH | H |
| C2CA | 0E 02 | 4210 | | MVI | C,2 |
| C2CC | CD 72 C0 | 4220 | | CALL | AHEO |
| C2CF | EB | 4230 | | XCHG | |
| C2D0 | 45 | 4240 | | MOV | B,L |
| C2D1 | E1 | 4250 | | POP | H |
| C2D2 | F1 | 4251 | | POP | PSW |
| C2D3 | FE 53 | 4252 | | CPI | 'S' |
| C2D5 | F5 | 4253 | | PUSH | PSW |
| C2D6 | CA E2 C2 | 4254 | | JZ | CONT |
| C2D9 | E5 | 4255 | | PUSH | H |
| C2DA | 0E 02 | 4256 | | MVI | C,2 |
| C2DC | CD 72 C0 | 4257 | | CALL | AHEO |
| C2DF | EB | 4258 | | XCHG | |
| C2E0 | 4D | 4259 | | MOV | C,L |
| C2E1 | E1 | 4260 | | POP | H |
| C2E2 | 7E | 4261 | CONT | MOV | A,M |
| C2E3 | B8 | 4270 | | CMP | B |
| C2E4 | C2 FB C2 | 4280 | | JNZ | SKP |
| C2E7 | F1 | 4281 | | POP | PSW |
| C2E8 | FE 53 | 4282 | | CPI | 'S' |
| C2EA | F5 | 4283 | | PUSH | PSW |
| C2EB | CA F5 C2 | 4284 | | JZ | OBCP |
| C2EE | 23 | 4285 | | INX | H |
| C2EF | 7E | 4286 | | MOV | A,M |
| C2F0 | 2B | 4287 | | DCX | H |
| C2F1 | B9 | 4288 | | CMP | C |
| C2F2 | C2 FB C2 | 4289 | | JNZ | SKP |
| C2F5 | 23 | 4290 | OBCP | INX | H |
| C2F6 | 7E | 4300 | | MOV | A,M |
| C2F7 | 2B | 4310 | | DCX | H |
| C2F8 | CD C8 C1 | 4320 | | CALL | ERR |
| C2FB | CD 54 C2 | 4330 | SKP | CALL | BMP |
| C2FE | C2 E2 C2 | 4340 | | JNZ | CONT |
| C301 | F1 | 4345 | | POP | PSW |
| C302 | C9 | 4350 | | RET | |
| C303 | | 4355 | * SHORT ROUTINE TO | SAVE CODE | |
| C303 | CD 70 C0 | 4360 | TAHEX | CALL | AHEX |
| C306 | CD 70 C0 | 4370 | | CALL | AHEX |
| C309 | C9 | 4380 | | RET | |
| C30A | | 4389 | * OUTPUT DATA TO | A PORT | |
| C30A | 0E 02 | 4390 | POUTP | MVI | C,2 |
| C30C | CD 72 C0 | 4400 | | CALL | AHEO |
| C30F | 0E 02 | 4410 | | MVI | C,2 |
| C311 | CD 72 C0 | 4420 | | CALL | AHEO |
| C314 | 55 | 4430 | | MOV | D,L |
| C315 | 21 A0 CF | 4440 | | LXI | H,SPTR-30H |
| C318 | 36 C9 | 4450 | | MVI | M,0C9H |
| C31A | 2B | 4460 | | DCX | H |
| C31B | 72 | 4470 | | MOV | M,D |
| C31C | 2B | 4480 | | DCX | H |
| C31D | 36 D3 | 4490 | | MVI | M,0D3H |

SAVE H
COUNT OF 2
READ 2 DIGITS
H=CODE,D=F
PUT CODE IN B
RESTORE H

READ MEMORY
COMPARE TO CODE
SKIP IF NO COMP
FETCH CONTROL

READ NEXT BYTE
DECR ADDRESS
PRINT CODES
CHECK IF DONE
BACK FOR MORE

PORT NO IN E

PORT TO L DATA E

| | | | | | | | |
|------|----|----|----|------|---------------------------|-------------|------------------|
| C31F | 7B | | | 4500 | MOV | A,E | |
| C320 | E9 | | | 4510 | PCHL | | |
| C321 | | | | 4519 | * INPUT DATA | FROM A PORT | |
| C321 | 0E | 02 | | 4520 | PINPT MVI | C,2 | |
| C323 | CD | 72 | C0 | 4530 | CALL | AHEO | PORT NO TO E |
| C326 | 21 | A0 | CF | 4540 | LXI | H,SPTR-30H | |
| C329 | 36 | C9 | | 4550 | MVI | M,0C9H | RETURN |
| C32B | 2B | | | 4560 | DCX | H | |
| C32C | 73 | | | 4570 | MOV | M,E | PORT NO |
| C32D | 2B | | | 4580 | DCX | H | |
| C32E | 36 | DB | | 4590 | MVI | M,0DBH | |
| C330 | CD | 9E | CF | 4600 | CALL | SPTR-32H | |
| C333 | C3 | D4 | C1 | 4610 | JMP | PT2 | |
| C336 | | | | 4620 | * OUTPUT TARBELL SYNC | | |
| C336 | 3E | E6 | | 4630 | SYNC MVI | A,0E6H | SYNC BYTE |
| C338 | 4F | | | 4635 | MOV | C,A | |
| C339 | CD | 16 | C1 | 4640 | CALL | COUT | OUTPUT TO CASS |
| C33C | CD | DC | C0 | 4650 | CALL | CNTLC | |
| C33F | C3 | 36 | C3 | 4660 | JMP | SYNC | |
| C342 | | | | 5400 | * THE VECTOR 1 RELOCATING | LOADER | |
| C342 | 3E | 10 | | 5460 | RLODR MVI | A,10H | RESET CASS. INT. |
| C344 | D3 | 6E | | 5520 | OUT | CASC | |
| C346 | CD | 03 | C3 | 5640 | CALL | TAHEX | |
| C349 | E5 | | | 5700 | PUSH | H | SAVE START ADD. |
| C34A | 06 | 00 | | 5760 | MVI | B,0 | ZERO CHECKSUM |
| C34C | CD | 6C | C1 | 5820 | PASS1 CALL | CIN | READ CASS. |
| C34F | 77 | | | 5880 | MOV | M,A | WRITE IN MEMORY |
| C350 | BE | | | 5940 | CMP | M | CHECK IF THERE |
| C351 | C2 | A8 | C3 | 6000 | JNZ | MERR | MEMORY ERROR |
| C354 | 80 | | | 6060 | ADD | B | ADD TO CHECKSUM |
| C355 | 47 | | | 6120 | MOV | B,A | PUT IT BACK |
| C356 | CD | 54 | C2 | 6180 | CALL | BMP | ALL DONE |
| C359 | C2 | 4C | C3 | 6240 | JNZ | PASS1 | LOOP IF NOT |
| C35C | CD | 6C | C1 | 6300 | CALL | CIN | READ LAST BYTE |
| C35F | B8 | | | 6360 | CMP | B | CHECKSUM AGREE? |
| C360 | C2 | A2 | C3 | 6420 | JNZ | LDERR | |
| C363 | 3E | 10 | | 6480 | PASS2 MVI | A,10H | |
| C365 | D3 | 6E | | 6540 | OUT | CASC | RESET CASS. |
| C367 | E1 | | | 6600 | POP | H | GET START ADD. |
| C368 | E5 | | | 6660 | PUSH | H | SAVE IT BACK |
| C369 | 06 | 00 | | 6720 | MVI | B,0 | ZERO CHECKSUM |
| C36B | CD | 6C | C1 | 6780 | L2LP CALL | CIN | READ CASS. |
| C36E | F5 | | | 6840 | PUSH | PSW | |
| C36F | 80 | | | 6900 | ADD | B | ADD TO CHECKSUM |
| C370 | 47 | | | 6960 | MOV | B,A | PUT IT BACK |
| C371 | F1 | | | 7020 | POP | PSW | |
| C372 | BE | | | 7080 | CMP | M | |
| C373 | CA | 8F | C3 | 7140 | JZ | OK | |
| C376 | 96 | | | 7200 | SUB | M | |
| C377 | FE | 17 | | 7260 | CPI | 17H | IS IT LSB? |
| C379 | C2 | 8A | C3 | 7320 | JNZ | HIBYT | JUMP IF NOT |
| C37C | E3 | | | 7380 | XTHL | | |
| C37D | 7D | | | 7440 | MOV | A,L | LO BYTE OF START |
| C37E | E3 | | | 7500 | XTHL | | |
| C37F | 86 | | | 7560 | ADD | M | |
| C380 | 77 | | | 7620 | MOV | M,A | REPLACE NEW ADD. |

