

IDENTIFICATION

PRODUCT CODE: MAINDEC-X8-DIKLA-A-D
PRODUCT NAME: DEC/X8 MODULE "MULTTY"
MULTIPLE (4) KLB/PT08 TTY EXERCISER
DATE CREATED: APRIL 3, 1972
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: LEONARD E. BEYERSDORFER

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MAYNARD, MASS, 01754

1. MODULE DESCRIPTION

"MULTTY" IS A DEC/X8 SOFTWARE MODULE WHICH EXERCISES UP TO FOUR TELETYPES OR EQUIVALENT DEVICES WHICH ARE INDIVIDUALLY CONTROLLED THROUGH INTERFACES TYPES KL8, PT08 OR EQUIVALENT.

TELEPRINTER EXERCISING IS ACCOMPLISHED VIA AN OUTPUT PATTERN WHICH DISPLAYS ONE FULL LINE OF EACH EXISTENT CHARACTER STARTING WITH CODE 040, THEN 041, ETC. THE TTY LEVEL (0-3) FOLLOWED BY A COLON IS PRINTED AT THE BEGINNING OF EACH LINE.

```
NI
NIIIII : : : : : IIII
NI" "" : : : : : " ""
NI### : : : : : ###
NI : : : : :
NI : : : : :
ETC.
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ANY CHARACTER INPUT VIA THE KEYBOARD OR READER IMMEDIATELY REPLACES THE CURRENT PATTERN CHARACTER, AND THE PATTERN CONTINUES THE SEQUENCE WITH THE NEW CHARACTER.

2. REQUIREMENTS

1. PROCESSORS: PDP-8, 8/I, 8/L, 8/E, 8/M AND PDP-12
2. OPTIONS: FROM ONE TO FOUR TELETYPES WITH INTERFACES TYPES KL8, PT08 OR EQUIVALENT.
3. SPECIAL: NONE

3. RESTRICTIONS

NONE

4. OPERATING INFORMATION

4.1 SPECIAL CONSIDERATIONS

NONE

4.2 BUILDING

1. JOB TYPE: INTERRUPT DRIVEN
2. PRIORITY: NON-CRITICAL
3. JOB SLOTS: ANY EXISTENT JOB SLOT; 2 PAGES REQUIRED.
4. STANDARD DEVICE CODES: NONE. ALL DEVICE CODES ARE INPUT VIA INITIALIZATION.

4,3

INITIALIZING

AFTER THE TTY LEVEL (0-3) IS PRINTED, TYPE THE FOLLOWING:

```
MULTTY
0 [AA] [BB]
1 [AA] [BB]
2 [AA] [BB]
3 [AA] [BB]
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WHERE "AA" IS THE KEYBOARD DEVICE CODE AND "BB" THE TELEPRINTER DEVICE CODE FOR THE TTY AT THE INDICATED LEVEL. TYPE "00" FOR ANY KEYBOARD OR TELEPRINTER LEVEL WHICH DOES NOT HAVE A DEVICE. LEVELS 0-3 MUST BE INITIALIZED.

IN ADDITION THE FOLLOWING LOCATIONS MAY BE CHANGED AS INDICATED USING RELATIVE +0. ANY CHANGES MADE APPLY TO ALL TELETYPES EXERCISED BY THIS MODULE.

1. CHANGE "FILLER" (0342) TO THE ONE'S COMPLEMENT OF THE NUMBER OF NULL FILLER CHARACTERS AFTER CR-LF, PRESET FOR 1 FILLER.
2. CHANGE "LENGTH" (0343) TO THE ONE'S COMPLEMENT OF THE NUMBER OF COLUMNS MINUS 2, PRESET FOR 72(10) COLUMNS.
3. CHANGE "CARNUM" (0344) TO THE TWO'S COMPLEMENT OF THE NUMBER OF PRINTABLE CHARACTERS, PRESET FOR 64(10) CHARACTERS.

4,4

DEVICE SETUP

ALL TELETYPES TO BE EXERCISED MUST BE ON LINE.

4,5

RUNNING

-
1. CNTR: UPDATED EACH TIME A LINE IS COMPLETED ON A TELEPRINTER.
 2. SR10: NO EFFECT
 3. SR11: NO EFFECT

5,

ERROR INFORMATION

ALL ERROR DETECTION IS VISUAL.

6,

LISTING (ATTACHED)

/DEC/X8 EXTERNAL SYMBOL TABLE "EXTSYH"
/FOR USE IN ASSEMBLING DEC/X8 SOFTWARE MODULES;
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
XLIST
PAUSE

/MAINDEC-X8-DIKLA-A-L "DEC/X8" MULTTY
/MULTIPLE (4) KLB/PT88 TTY EXERCISER FOR DEC/X8.
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS.
/THIS MODULE OPERATIONAL ON PDP-8, S/I, S/L, S/E, S/M AND PDP-12;
/PROG: LEN BEYERSDORFER (X2937)
/BUILDER INSTRUCTIONS:
/1, PRIORITY: NON-CRITICAL
/2, JOB SLOT: 2 PAGES REQUIRED; ANY EXISTENT JOB SLOT;
/INITIALIZER INSTRUCTIONS
/AFTER THE TTY LEVEL IS PRINTED (0 THROUGH 3), TYPE:
/ MULTTY
/ 0 [AA] [BB]
/WHERE AA IS THE KEYBOARD DEVICE CODE, AND BB IS THE
/TELEPRINTER DEVICE CODE FOR THE TTY AT THE INDICATED LEVEL.
/TYPE "00" FOR ANY LEVEL TTY OR TTY WHICH DOES NOT HAVE A
/DEVICE. DO THIS FOR LEVELS 0 THROUGH 3.
/SPECIAL USER MODIFICATIONS VIA *0:
/1, LOCATION "FILLER" MAY BE CHANGED TO SPECIFY THE NUMBER OF
/NULL FILLER CHARACTERS AFTER CR-LF;
/CHANGE "FILLER" TO THE 1'S COMPLEMENT OF THE 1# OF FILLERS; THIS NUMBER OF FILLERS
/WILL BE USED ON ALL TTY'S (PRESET FOR 1 FILLER)
/2, LOCATION "LENGTH" MAY BE CHANGED TO THE NUMBER
/OF COLUMNS TO BE USED ON ALL TTY'S (PRESET FOR 72 COLUMNS);
/CHANGE "LENGTH" TO THE 1'S COMPLEMENT OF THE 1# OF COLUMNS-2;
/3, LOCATION "CHARNUM" MAY BE CHANGED TO THE 2'S COMPLEMENT
/OF THE NUMBER OF CHARACTERS TO BE USED ON ALL TTY'S; (PRESET TO 64 CHARACTERS)

0200 *200
/MODULE INTERFACE TABLE
0200 0000 0
0201 1525 TEXTI, TEXT "MULTTY"
0202 1424
0203 2431
0204 0000
0205 0411 TEXT "DIKLA=A"
0206 1314
0207 0195
0210 0100
0211 0000 HOMEOP, 0
0212 7402 HLT
0213 5611 JMP I HOMEOP
0214 6202 INTACK, CIF 00

0215 4426 JMS I IHRET
 0216 7777 -1
 0217 7777 KILL, -1
 0220 7777 KILLED, -1
 0221 0000 CNTR, 0

/END OF MODULE INTERFACE TABLE
 /INTERRUPT SERVICE;

0222 0000 INT, 0
 0223 6214 ROP
 0224 1020 TAD E KCFDF /MAKE GIF ODF FOR EXIT TO
 0225 3231 DCA INT1 /MONITOR CHAIN;
 0226 1220 TAD KILLED
 0227 7650 SNA CLA /JOB KILLED?
 0230 5233 JMP
 0231 7402 INT1, HLT ;+3
 0232 5622 JMP I INT /YES, EXIT TO MONITOR CHAIN,
 0233 4211 JMS HOMEDF /NO, DF=IP;
 0234 5635 JMP I ;+1 /TO LOCAL TTY CHAIN
 0235 0405 INT1, SEGCHA

/TTY STEPPER

/CHECK KILL, UPDATE CNTR AND PRINT CN;

0236 0000 STEP1, 0
 0237 1217 TAD KILL /KILL SET?
 0240 7450 SNA
 0241 5251 JMP ;+10
 0242 2017 AUP, ISE AUTO /YES, LAST TTY?
 0243 7200 CLA /NO, DON'T SET KILLED;
 0244 3220 DCA KILLED /SET OR CLEAR KILLED.
 0245 1074 TAD E K5 /MOVE TO TSP;
 0246 1236 TAD STEP1
 0247 3236 DCA STEP1
 0250 5636 JMP I STEP1
 0251 2236 ISE STEP1 /EXIT TO CLEAR TTY;
 0252 2236 ISE STEP1 /NO, MOVE TO TLS;
 0253 2221 ISE STEP1
 0254 0000 TTYCNT, 0 /+1 TO COUNTER;
 0255 1112 TAD E K2I5 /RANGE IS 0-4 AND IS HARMLESS
 0256 4636 JMS I STEP1 /CR IN AC
 /PRINT;

/PRESET STEP 3 FILLER COUNTER, THEN LF;

0257 0000 STEP2, 0
 0260 1342 TAD FILLER /# OF FILLERS TO TTY COUNTER;
 0261 3637 DCA I STEP2
 0262 7126 STL RTL /MOVE TO TLS
 0263 1297 TAD STEP2
 0264 3267 DCA STEPS
 0265 1111 TAD E K2I2 /LF IN AC;

0266 4667 JMS I STEPS /PRINT;

/OUTPUT FILLERS

0267 0000 STEPS, 0
 0270 2667 ISE I STEPS /DONE ALL FILLERS?
 0271 7610 SKP CLA
 0272 5276 JMP STEP4 /YES, TO STEP 4;
 0273 2267 ISE STEPS /NO, MOVE TO TLS
 0274 2267 ISE STEPS /NULL IN AC.
 0275 5266 JMP STEPS-I /PRINT

/PRINT TTY NUMBER WHICH IS REALLY THE JMS #0+1 (AND) 3

0276 1267 STEP4, TAD STEPS
 0277 0072 AND E K3
 0300 1114 TAD E K240
 0301 2267 ISE STEPS /MOVE TO TLS
 0302 2267 ISE STEPS
 0303 4667 JMS I STEPS /PRINT

/PRESET LINE LENGTH COUNTER (2 LESS THAN ACTUAL WIDTH);
 /PRESET CHARACTER, PRINT "I"

0304 0000 STEPS, 0
 0305 1343 TAD LENGTH /LINE LENGTH TO COUNTER
 0306 3704 DCA I STEPS
 0307 2304 ISE STEPS
 0310 2704 ISE I STEPS /MOVE TO CHARACTER;
 0311 1704 TAD I STEPS /+1 TO CHARACTER;
 0312 1127 TAD E M240 /237 (9HAR(340))
 0313 7510 SPA
 0314 5320 JMP ;+4 /NO, SET TO 240
 0315 1344 TAD CARNUM
 0316 7710 SPA CLA
 0317 5323 JMP ;+4 /YES;
 0320 7200 CLA /NO, SET TO 240
 0321 1113 TAD E K240
 0322 3704 DCA I STEPS
 0323 1304 TAD STEPS /MOVE TO TLS;
 0324 7001 IAC
 0325 3330 DCA STEP6
 0326 1115 TAD E K272 /I IN AC
 0327 4730 JMS I STEP6 /PRINT

/PRINT LINE OF CURRENT CHARACTER;

0330 0000 STEP6, 0
 0331 2730 ISE I STEP6 /+1 TO LINE COUNT;
 0332 5336 JMP ;+4 /DO MORE;
 0333 1330 TAD STEP6 /DONE LINE, TO STEP 1;
 0334 3236 DCA STEP1 /
 0335 5237 JMP STEP1-I
 0336 2330 ISE STEP6 /MOVE TO CHARACTER;

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0337 1730 TAD I STEP6 /CHAR IN AC;
0340 2330 1SE STEP6 /MOVE TO TFS;
0341 5327 JMP STEP6-1 /PRINT;

0342 7776 FILLER, -2 /** /NULL FILLERS
0343 7671 LENGTH, -107 /** /LINE LENGTH
0344 7700 CARNUM, -100 /** /NUMBER OF CHARS
/**MAY BE CHANGED VIA *0.

0345 7776 TTITAB, -2
0346 0014 +14
0347 6001 KSP-30
0350 0016 +16
0351 6006 KRB-30
0352 7774 TTOTAB, -4
0353 0000 0
0354 6006 TFS-40
0355 0002 +2
0356 6001 TSP-40
0357 0010 +10
0360 6006 TFS-40
0361 0012 +12
0362 6002 TCF-40
0363 0412 TTY0, TTY0
0364 0433 TTY1, TTY1
0365 0236 STEP1, STEP1
/RUNNER

0366 3221 RUN, DCA CNTR /# TO COUNTER;
0367 1294 TAD TTYCNT /# OF TTY'S TO RILL COUNTER
0370 7041 CIA
0371 3017 AUG, DCA AUTO
0372 1365 TAD STEP1P
0373 3763 DCA I TTY0P
0374 1763 TAD I TTY0P
0375 3764 DCA I TTY1P
0376 1764 TAD I TTY1P
0377 6002 IOF
/ON TO NEXT PAGE = RUN CHAIN;

0235 0235 *INTI; SEGCHA
0405 0405
0365 0236 *STEP1P;STEP1
0363 0412 *TTY0P; TTY0
0364 0433 *TTY1P; TTY1

0400 *400

/RUNNER AND INTERRUPT CHAIN SEGMENTS

0400 3294 DCA TTY2
0401 1294 TAD TTY2

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0402 3275 DCA TTY3
0403 0403 RUNCON,
0405 0405 SEGCHA, +2 /RUN SEGMENT
/INTERRUPT SEGMENT
0403 7000 NOP/TLS /RUNNER SEGMENT TFS;
0404 5224 JMP ,+20 /JUMP TO NEXT RUNNER SEGMENT;
0405 7000 NOP/TSP /INTERRUPT SEGMENT; TTY?
0406 5217 JMP ,+11 /NO, CHECK TTY;
0407 4612 JMS I ,+3 /YES, GO TO TTY STEPPER
IFNRO ,+410 (OUCH! LOOK AT STEP4)

0410 0000 0 /COUNTER
0411 0000 0 /CHARACTER
0412 0236 TTY0, STEP1 /TTY STEP POINTER
0413 7000 NOP/TLS /OUTPUT NEXT CHARACTER
0414 5306 JMP TTYN /OUT
0415 7000 NOP/TCF /CLEAR TTY;
0416 5777/ JMP INTACK /ACKNOWLEDGE INTERRUPT;
0417 7000 NOP/KSP /TTI?
0420 5224 JMP ,+6 /NO, CHECK NEXT TTY (IF ANY);
0421 7000 NOP/KRB /YES, READ CHARACTER
0422 3211 DCA TTY0-1 /SAVE IN CHARACTER SLOT;
0423 5777/ JMP INTACK /ACKNOWLEDGE INTERRUPT;
0424 7000 NOP/TLS /RUNNER SEGMENT TFS;
0425 5245 JMP ,+20 /JUMP TO NEXT RUNNER SEGMENT;
0426 7000 NOP/TSP /INTERRUPT SEGMENT; TTY?
0427 5240 JMP ,+11 /NO, CHECK TTY;
0430 4633 JMS I ,+3 /YES, GO TO TTY STEPPER
0431 0000 0 /COUNTER
0432 0000 0 /CHARACTER
0433 0236 TTY1, STEP1 /TTY STEP POINTER
0434 7000 NOP/TLS /OUTPUT NEXT CHARACTER
0435 5306 JMP TTYN /OUT
0436 7000 NOP/TCF /CLEAR TTY;
0437 5777/ JMP INTACK /ACKNOWLEDGE INTERRUPT;
0440 7000 NOP/KSP /TTI?
0441 5247 JMP ,+6 /NO, CHECK NEXT TTY (IF ANY);
0442 7000 NOP/KRB /YES, READ CHARACTER
0443 3232 DCA TTY1-1 /SAVE IN CHARACTER SLOT;
0444 5777/ JMP INTACK /ACKNOWLEDGE INTERRUPT;
0445 7000 NOP/TLS /RUNNER SEGMENT TFS;
0446 5266 JMP ,+20 /JUMP TO NEXT RUNNER SEGMENT;
0447 7000 NOP/TSP /INTERRUPT SEGMENT; TTY?
0450 5261 JMP ,+11 /NO, CHECK TTY;
0451 4634 JMS I ,+3 /YES, GO TO TTY STEPPER
0452 0000 0 /COUNTER
0453 0000 0 /CHARACTER
0454 0236 TTY2, STEP1 /TTY STEP POINTER
0455 7000 NOP/TLS /OUTPUT NEXT CHARACTER
0456 5306 JMP TTYN /OUT
0457 7000 NOP/TCF /CLEAR TTY;
0460 5777/ JMP INTACK /ACKNOWLEDGE INTERRUPT;
0461 7000 NOP/KSP /TTI?
0462 5270 JMP ,+6 /NO, CHECK NEXT TTY (IF ANY);
0463 7000 NOP/KRB /YES, READ CHARACTER
0464 3233 DCA TTY2-1 /SAVE IN CHARACTER SLOT;
0465 5777/ JMP INTACK /ACKNOWLEDGE INTERRUPT;

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0466 7000 NOP/TL8
0467 5004 SERVEX /RUNNER SEGMENT
0470 7000 NOP/TSP /END OF RUN CHAIN = EXIT
0471 5302 JMP /INTERRUPT SEGMENT
0472 4675 JMS I ,+11
0473 0000 JMS I ,+3
0474 0000 0
0475 0236 TTY3, STEP1
0476 7000 NOP/TL8
0477 5306 JMP TTYN
0500 7000 NOP/TCP INTACK
0501 5777/ JMP
0502 7000 NOP/KSP (INT1
0503 5776 JMP I
0504 7000 NOP/KRB DCA TTY3=1
0505 3274 DCA
0506 0506 KCLAW; CLA
0506 7200 TTYN; CLA
0507 5777/ JMP INTACK

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/NO TTY OR TTI ACKNOWLEDGED

/AC CLEARED
/ACKNOWLEDGE INTERRUPT

/INITIALIZER

```

0510 4454 INITLP, CRLF
0511 4444 INIT, MESSAGE /PRINT TITLE
0512 0201 I1, TEXT1
0513 3775 DCA I (TTYCNT /0 TO TTY COUNTER
0514 1140 TAD E M4 /4 LEVELS,
0515 3211 DCA TEMP1
0516 1374 TAD (RUNCON-21 /CHAIN SEG POINTER =21;
0517 3232 DCA TEMP2
0520 1232 INITB, TAD TEMP2 /+22 TO POINTER
0521 1341 TAD K218
0522 3232 DCA TEMP2
0523 4434 CRLF
0524 1211 TAD TEMP1 /0
0525 1073 TAD E K4 /PRINT LEVEL
0526 4431 PRNT1
0527 4342 JMS INITA /SERVICE FOR T1;
0530 0344 I3, TTITAB=1
0531 4342 JMS INITA /SERVICE FOR T0;
0532 0391 I4, TTOTAB=1
0533 1210 TAD TTY0=2 /GET TO DC
0534 7640 SZA CLA
0535 2775 ISE I (TTYCNT /NON ZERO; +1 TO TTY COUNT;
0536 2211 ISE TEMP1 /DONE?
0537 5320 JMP INITB /NO;
0540 0200 INITEX /YES
0411 TEMP1=TTY0=1
0432 TEMP2=TTY1=1
0541 0221 K218, 21
0542 0000 INITA, 0 /SERVICE;
0543 4455 SPACE2 /2 SP;
0544 4441 TWOOCT /GET DC;
0545 5310 JMP INITLP /ERROR

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0546 3210 DCA TTY0=2 /SAVE DC
0547 1742 TAD I INITA /GET TABLE PTR;
0550 2342 ISE INITA /MOVE TO EXIT;

0551 3017 AUA, DCA AUTO /GET TALLY;
0552 1417 AUB, TAD I AUTO /SAVE;
0553 3253 DCA TEMP3 /GET BIAS
0554 1417 AUC, TAD I AUTO /ADD TO POINTER
0555 1232 TAD TEMP2 /SAVE
0556 3274 DCA TEMP4 /GET DC
0557 1210 TAD TTY0=2
0560 7450 SNA
0561 5371 JMP ,+10 /ZERO
0562 7106 CLL RTL /JUSTIFY
0563 7004 RAL
0564 1417 AUD, TAD I AUTO /ADD IOT
0565 3674 DCA I TEMP4 /STASH IN CHAIN;
0566 2253 ISE TEMP3 /DONE?
0567 5354 JMP AUC /NO;
0570 5742 JMP I INITA /YES, EXIT;
0571 1306 TAD KCLA /DC=00; INSERT "0LX"
0572 2017 AUE, ISE AUTO /UPDATE AUTOINDEX
0573 5365 JMP AUB+1 /BACK
0453 TEMP3=TTY2=1
0474 TEMP4=TTY3=1

0574 EOP2;
0412 *TTY0; STEP1
0433 *TTY1; STEP1
0433 0236 *TTY2; STEP1
0434 0454 *TTY3; STEP1
0494 0236 *I1; TEXT1
0495 0475 *I2;
0512 0201 *I3; TTITAB=1
0512 0201 *I4; TTOTAB=1
0530 0344 *EOP2
0532 0351
0574 0362
0575 0254
0576 0231
0577 0214

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0000
0100

0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0600
0700

1000
1100

1200
1300

1400
1500

1600
1700

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

ASBUFF	4460	K200	0114
ASRUFF	0060	K272	0115
AUA	0551	K277	0116
AUB	0552	K3	0072
AUC	0554	K30	0103
AUD	0564	K301	0117
AUE	0572	K32	0067
AUF	0242	K323	0120
AUG	0371	K4	0073
AUTO	0017	K40	0104
CARNUM	0344	K400	0121
CNTR	0221	K5	0074
CRLF	4454	K5200	0123
CRLFP	0054	K540	0124
EOP2	0574	K5402	0003
ERRP	0061	K64	0070
EXINIT	0020	K7	0075
EXSERV	0004	K70	0105
EXTMEM	0161	K7510	0125
FILLER	0342	K7520	0126
FOROCP	0043	K7540	0127
FOROCT	4443	K7600	0131
HOMEDF	0211	K77	0106
I1	0512	K7735	0132
I3	0530	K7740	0133
I4	0532	K7750	0134
IHRETP	0026	K7760	0135
INIT	0511	K7771	0136
INITA	0542	K7773	0137
INITB	0520	K7774	0140
INITEX	5020	K7775	0141
INITLP	0510	KCDF	0064
INT	0222	KCIF	0009
INT1	0231	KCIFDF	0020
INTACK	0214	KCLA	0506
INTI	0235	KILL	0217
IOFMSP	0056	KILLED	0220
K0	0066	KIOF	0004
K10	0076	LENGTH	0343
K100	0107	LISN	4440
K11	0077	LISNP	0040
K116	0071	M20	0135
K13	0100	M200	0131
K17	0101	M240	0127
K177	0130	M260	0126
K20	0102	M270	0125
K200	0110	M3	0141
K2000	0122	M30	0134
K212	0111	M4	0140
K215	0112	M40	0133
K21B	0541	M43	0132
K240	0113	M5	0137

M7	0136
MESSAGE	4474
MESSGP	0044
MUL26P	0065
ONEOCP	0042
ONEOCT	4422
PRNT1	4491
PRNT1P	0091
PRNT2	4492
PRNT2P	0092
PRNT4	4493
PRNT4P	0093
RLBUFF	4497
RLBUPP	0097
RUN	0346
RUNCON	0403
SECCHA	0405
SERVEX	5004
SPACE2	4495
SPACEP	0095
STEP1	0236
STEP1P	0345
STEP2	0237
STEP3	0247
STEP4	0276
STEP5	0304
STEP6	0330
TEMP1	0411
TEMP2	0432
TEMP3	0493
TEMP4	0474
TEXT1	0201
TTITAB	0349
TTOTAB	0392
TTY0	0412
TTY0P	0343
TTY1	0433
TTY1P	0344
TTY2	0454
TTY3	0475
TTYCNT	0204
TTYN	0506
TWOCCP	0041
TWOCT	4431
TYPE	4490
TYPEP	0000

ERRORS DETECTED: 0
LINKS GENERATED: 8
RUN-TIME: 4 SECONDS
2K CORE USED