

IDENTIFICATION  
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PRODUCT CODE:       MAINDEC-8E-DDDB-D  
PRODUCT NAME:       RANDOM AND TEST  
DATE CREATED:        JUNE 7, 1971  
MAINTAINER:         DIAGNOSTIC GROUP  
AUTHOR:             MICHAEL DAVIS

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1. ABSTRACT

THIS PROGRAM TESTS THE AND INSTRUCTING OF THE PDP-8E, THE AND INSTRUCTION, INSTRUCTION ADDRESS, OPERAND ADDRESS AND BOTH OPERANDS ARE PRODUCED BY RANDOM NUMBER GENERATORS,

2. REQUIREMENTS

2.1 EQUIPMENT

PDP-8E EQUIPPED WITH AT LEAST 4K OF MEMORY,

TELETYPE,

2.2 STORAGE

THE PROGRAM IS INITIALLY LOADED INTO LOCATIONS 0000 THRU 1177. THE INITIAL TEST AREA IS 1200-7777. WHEN THE PROGRAM RELOCATES, IT OCCUPIES 6600-7777, THE TEST AREA IS THEN 0000-6577.

2.3 PRELIMINARY PROGRAMS

MAINDEC-8E-DBAA, DBBA, DBCA

3. LOADING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING BINARY TAPES IS TO BE USED.

4. STARTING PROCEDURE

4.1 STARTING ADDRESS

0200

4.2 CONTROL SWITCH SETTINGS

SR00#1, SUPPRESS HALT ON ERROR  
SR01#1, HALT AT END OF PASS, RESTORE LOADERS  
SR02#1, SUPPRESS PROGRAM RELOCATION  
SR03#1, SUPPRESS END OF PASS TYPEOUT  
SR08#1, HOLD DATA 1 CONSTANT  
SR10#1, HOLD DATA 2 CONSTANT  
SR11#1, HOLD INSTRUCTION CONSTANT

4.3 OPERATOR ACTION  
-----

4.3.1 SET SR TO 0200  
-----

4.3.2 PRESS LOAD ADDRESS SWITCH  
-----

4.3.3 SET SR TO 0000  
-----

4.3.4 PRESS CLEAR AND CONTINUE SWITCHES  
-----

5. OPERATING PROCEDURE  
-----

SAME AS 4.

6. ERRORS  
-----

6.1 RELOCATION ERROR  
-----

IF AN ERROR OCCURS DURING PROGRAM RELOCATION, THE PROGRAM WILL HALT AT 234 OR 6634, DEPENDING UPON WHETHER THE PROGRAM IS LOCATED LOW OR HIGH.

6.2 DATA ERRORS  
-----

IF THE LINK IS SET AFTER COMPLETION OF THE AND INSTRUCTION, OR IF THE RESULTS OF THE AND INSTRUCTION ARE INCORRECT, THE PROGRAM WILL HALT AT 731(7331) WITH DATA1 IN THE AC.

DEPRESS CONTINUE TO DISPLAY DATA2 IN THE AC.  
DEPRESS CONTINUE TO DISPLAY AND INSTRUCTION IN AC.  
DEPRESS CONTINUE TO DISPLAY INSTRUCTION ADDRESS IN AC.  
DEPRESS CONTINUE TO DISPLAY DATA2 ADDRESS IN AC.  
DEPRESS CONTINUE TO DISPLAY INDIRECT POINTER (USED BY INDIRECT AND) IN AC.  
DEPRESS CONTINUE TO RESUME TEST

6.3 ERROR RECOVERY  
-----

6.3.1 RELOCATION ERROR  
-----

RELOAD PROGRAM

6.3.2 DATA ERROR  
-----

SEE 6.2

6.4 LOOPING  
-----

SET SR00=1 TO PREVENT HALT AFTER ERROR,

SET SR02=1 TO PREVENT RELOCATION,

SET SR03=1 TO SUPPRESS END OF PASS TYPEOUT,

SET SR09-SR11=1 TO HOLD INSTRUCTION AND DATA CONSTANT,

7. RESTRICTIONS  
-----

NONE

8. EXECUTION TIME  
-----

THE PROGRAM PERFORMS 4096 RANDOM TESTS IN APPROXIMATELY 2 SECONDS AND THEN RELOCATES. THE PROGRAM WILL TYPE "A" AFTER EACH 4096 RANDOM TESTS UNLESS SR03=1.

9. PROGRAM DESCRIPTION  
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THE PROGRAM IS INITIALLY LOADED INTO LOCATIONS 0288-1177, WITH TEMPORARY STORAGE LOCATIONS ON PAGE 0. AFTER INITIAL KEYSTART, THE PROGRAM WILL SAVE R1M AND 01N LOADERS IN PAGE 0 AND WILL THEN PROCEED TO USE LOCATIONS 1288-7777 AS A TEST AREA.

THE PROGRAM USES SEPARATE RANDOM NUMBER GENERATORS TO GENERATE THE AND INSTRUCTION, INSTRUCTION AND DATA ADDRESSES, AND THE TWO ARGUMENTS TO BE "AND'ED". THE INSTRUCTIONS AND DATA ARE STORED IN THEIR PREVIOUSLY GENERATED ADDRESSES. THE PROGRAM TRANSFERS TO THE LOCATION OF THE INSTRUCTION AND EXECUTES IT. THE PROGRAM THEN TRANSFERS TO A COMPARISON ROUTINE WHERE THE ACTUAL RESULT OF THE AND INSTRUCTION IS COMPARED TO A SIMULATED AND.

AFTER 4096 TESTS, THE PROGRAM TYPES "A", RELOCATES, AND CONTINUES TESTING.

/RANDOM AND TEST  
 /COPYRIGHT 1970, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754  
 /V 82 07552  
 /  
 /TEMPORARY TRANSFER LOCATIONS ON PAGE 0  
 /

0000	0000	*0	TTANDL, 0	
0001	0001		INSTL, JMP	
0002	0002		INADDL, 2	/STORAGE FOR AND INSTRUCTION
0003	0003		DATADL, 3	/STORAGE FOR AND INSTRUCTION ADDRESS
0004	0004		IFLAGL, 3	/STORAGE FOR DATA ADDRESS
0005	0005		PADDL, 0	/STORAGE FOR INSTRUCTION INDIRECT FLAG
0006	0006		LIML, 0	/STORAGE FOR DATA INDIRECT ADDRESS
0007	0007		PAGL, 0	

0010	0010	*10	PNTRL, 0	
6007	6007		CAF=6007	
7501	7501		HQA=7501	
7421	7421		HQL=7421	
0266	0266		CNTRL=LOHIL	

0020	0020	*20	TEMP3L, 0	
------	------	-----	-----------	--

/INITIALIZATION AND CONTROL ROUTINES  
 /

0200	0200	*200	STARTL, CAF	
6007	6007		TAD	.+3
1204	1204		DCA	.-1
3201	3201		JMS	SAVBNL
4205	4205		JMP	SETLKL
5274	5274		JMP	SETLKL

/TRANSFER RIM AND BIN LOADERS TO PAGE 0  
 /

0205	0205		SAVBNL, 0	
1374	1374		TAD	C7600L
3266	3266		DCA	CNTRL
1374	1374		TAD	C7600L
3202	3202		DCA	PNTRL
3203	3203		DCA	PNTRL
4225	4225		JMS	RELOL
5625	5625		JMP I	SAVBNL

```

RESBNL, 0
0215 0000 /
0216 1374 /SET AC=-200, NUMBER OF
0217 3266 /LOCATIONS TO BE TRANSFERRED
0220 3202 /FIRST "FROM" ADDRESS=0
0221 1374 /FIRST "TO"
0222 3203 /ADDRESS=7600
0223 4225 /PERFORM TRANSFER
0224 5615 /EXIT
/
C7600L
CNTR1L
PNTR1L
C7600L
PNTR2L
RELOL
RESBNL
/
DATA TRANSFER ROUTINE
/

```

```

RELOL, 0
0225 0000 /GET DATA
0226 1602 /TRANSFER
0227 3603 /GET DATA
0230 1602 /COMPARE
0231 7041 /TRANSFER ERROR
0232 1603 /NEXT "FROM" LOCATION
0233 7640 /NEXT "TO" LOCATION
0234 7402
0235 2202
0236 7000
0237 2203
0240 7000
0241 2266
0242 5226
0243 5625
/TRANSFER PROGRAM TO UPPER MEMORY
/

```

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REHL, 4215 /TRANSFER RIM AND BIN LOADERS
0245 1373 /SET AC=-1000, NUMBER OF
0246 3266 /LOCATIONS TO BE TRANSFERRED
0247 1365 /FIRST "FROM"
0250 3202 /ADDRESS=200
0251 1372 /FIRST "TO"
0252 3203 /ADDRESS=6600
0253 4225 /PERFORM TRANSFER
0254 5772 /GO TO PROGRAM START
/TRANSFER PROGRAM TO LOWER MEMORY
/

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RELL, 4205 /TRANSFER RIM AND BIN LOADERS
0255 4205 /SET AC=-1000, NUMBER OF
0256 1373 /LOCATIONS TO BE TRANSFERRED
0257 3266 /FIRST "FROM"
0260 1372 /ADDRESS=6600
0261 3202 /FIRST "TO"
0262 1365 /ADDRESS=200
0263 3203
/ PAL-10 17-JUN-71 7:23 PAGE 2-1
/
0264 4225 /TRANSFER RIM AND BIN LOADERS
0265 5765 /SET AC=-1000, NUMBER OF
/GO TO PROGRAM START
/ PAL-10 17-JUN-71 7:23 PAGE 3

```

```

/ DETERMINE IF PROGRAM IS IN LOWER OR UPPER MEMORY
/
LOHIL, 0000 /PC
0266 0000 /SET AC=4000
0267 7330 /ADD PC
0270 1266 /IS LINK=0
0271 7630 /NO, HIGH CORE
0272 1371 /RETURN
0273 5666
/ TRANSFER TO LINKAGE GENERATION
/
SETLKL, 0274 7300 /CLEAR PASS COUNTER
0275 3202 /DETERMINE IF PROGRAM IS HIGH OR LOW
0276 4266 /GO TO TEST WITH ADDRESS MODIFIER IN AC
0277 5377
/ SIMULATE LOGICAL AND WITH A AND B=NOT((NOTA)OR(NOTB))
/
SANDL, 0300 0000 /NOTA
0301 7040 /SAVE NOTA
0302 3204 /GET B
0303 7501 /NOTB
0304 7040 /SAVE NOTB
0305 7421 /GET NOTA
0306 1204 /OR WITH NOTB
0307 7501 /COMPLEMENT
0310 7040 /EXIT WITH RESULT IN AC
0311 5700
/ TEST SWITCHES
/
SWITCL, 0312 0000 /SAVE TEST BIT
0313 7421 /GET SWITCHES
0314 7604 /AND SWITCHES WITH TEST BIT
0315 4300 /IS SWITCH 0
0316 7650 /NO SKIP INSTRUCTION AFTER RETURN
0317 2312
0320 5712
PAL10 V141 17-JUN-71 7:23 PAGE 4
/ END OF PASS
/
EPASL, 0321 0000 /END OF PASS ?
0322 2202 /NO, RETURN
0323 5721 /SET AC=4000
0324 7332 /TEST SR03
0325 7012 /SUPPRESS END OF PASS TYPEOUT
0326 4312 /TYPE CARRIAGE RETURN
0327 5336 /TYPE LINEFEED
0330 1366 /TYPE
0331 4337
0332 1367
0333 4337
0334 1370
0335 4337

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0336 5345 JMP HALT /TEST FOR HALT, RELOCATION
/
/OUTPUT CHARACTER
0337 0000 TYPEL, 0
0340 6046 TLS
0341 6041 TSF
0342 5341 JMP *-1
0343 7200 CLA
0344 5737 JMP I TYPEL

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0345 7332 HALT, /CHECK FOR HALT
0346 4312 CLA CLL CML RTR /SET AC=2000
0347 7410 JMS RAR /TEST SR01
0350 5355 SKP SWITCH /SR01=1, HALT
0351 4266 JMP RRELL /CHECK FOR RELOCATION
0352 7650 JMS LOHIL /DETERMINE IF PROGRAM IS HIGH OR LOW
0353 4215 SNA CLA RESBNL /AC=0, PROGRAM LOW
0354 7402 HLT /PROGRAM LOW, RESTORE LOADERS

/CHECK FOR RELOCATION
0355 7332 RRELL, /CHECK FOR RELOCATION
0356 7010 CLA CLL CML RTR
0357 4312 RAR SWITCH /SET AC=1000
0360 5721 JMS I EPASL /TEST SR02
0361 4266 JMS LOHIL /SR02=1, DO NOT RELOCATE PROGRAM
0362 7650 SNA CLA REHL /DETERMINE IF PROGRAM IS HIGH OR LOW
0363 5244 JMP RELL /AC=0, PROGRAM LOW
0364 5255 JMP RELL /PROGRAM HIGH, RELOCATE TO LOW CORE
0366 0215 C200L, 200
0367 0212 C215L, 215
0370 0301 C212L, 212
0371 6400 A, 301
0372 6600 C6400L, 6400
0373 7000 C6600L, 6600
0374 7600 C7000L, 7000
C7600L, 7600

0377 0377 *377
0377 7000 GOSETL, NOP

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0400 0400 *400 /SET UP ADDRESS POINTERS AND CONSTANTS AND TRANSFER TO NEXT PAGE
0401 1242 SETAL, DCA /SAVE ADDRESS MODIFIER
0402 1257 TAD TAD /GET POINTER FOR TRANSFER
TAD TEMPL /MODIFY FOR LOW OR HIGH CORE

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0403 3010 DCA PNTRL /SET UP AUTO-INDEX REGISTER
0404 1243 LGENL /GET POINTER TO INSTRUCTION GENERATION
0405 1237 TEMPL /MODIFY FOR LOW OR HIGH CORE
0406 3410 DCA I /TRANSFER TO NEXT PAGE
0407 1245 TAD /GET POINTER TO AND SIMULATER
0410 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0411 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0412 1246 TAD LRETUL /GET POINTER FOR EXECUTION RETURN
0413 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0414 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0415 1247 TAD LSWITL /GET POINTER TO SWITCH SENSING
0416 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0417 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0420 1244 TAD LEPASL /GET POINTER TO END OF PASS
0421 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0422 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0423 1237 TAD TEMPL /GET ADDRESS MODIFIER
0424 7640 SZA CLA /IS TEST IN LOW CORE
0425 5233 JMP LHICOL /NO,SET UP FOR HIGH CORE
0426 1240 TAD L200L /SET PAGE 0 EXCLUSION BIT
0427 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0430 1250 TAD L6600L /GET LOW CORE ADDRESS LIMIT
0431 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0432 5377 JMP GOTSTL /GO TO TEST
0433 3410 DCA I PNTRL /CLERA PAGE 0 EXCLUSION BIT
0434 1251 TAD L1201L /GET HIGH CORE ADDRESS LIMIT
0435 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0436 5377 JMP GOTSTL /GO TO TEST

```

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```

0437 0000 /
0440 0200 TEMPL, 0
0441 7000 L200L, 200
0442 0753 L7000L, 7000
0443 1000 LISTL, TGENL-1
0444 0321 LGENL, GENL
0445 0300 LEPASL, EPASL
0446 0712 LSANGL, SANDL
0447 0312 LRETUL, TRETUL
0450 6600 LSWITL, SWITCL
0451 1201 L6600L, 6600
0577 0577 *577
0577 7000 GOTSTL, NOP

```

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/GENERATE TEST INSTRUCTION AND DATA

```

0600 0600 TESTIL, CLA CLL
0601 7300 TAD TANDL /GET POINTER TO SIMULATED AND
0602 1355 DCA TTANDL /PLACE IN TRANSFER LOCATION
0603 3000 IAC /SET
0604 7001 JMS I TSWITL /TEST
0604 4757

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0605 5224 JMP TDAT1L
0606 1362 TAD TLIML
0607 3026 DCA LIML
0610 1361 TAD TPAGBL
0611 3027 DCA PAGL
0612 4754 JMS I TGENL
0613 3365 DCA TIFLGL
0614 1001 TAD INSTL
0615 3363 DCA TINSTL
0616 1002 TAD INADDL
0617 3364 DCA TINADL
0620 1003 TAD DATADL
0621 3366 DCA TDATAL
0622 1005 TAD PADDL
0623 3367 DCA TPADDL
0624 7105 TADAT1L, CLL IAC RAL
0625 4757 JMS I TSWITL
0626 5234 JMP TDAT2L
0627 1370 TAD TDA1L
0630 7104 CLL RAL
0631 7430 SZL
0632 1374 TAD
0633 3370 DCA
0634 7307 TADAT2L, CLA CLL IAC RTL
0635 4757 JMS I TSWITL
0636 5244 JMP SETTL
0637 1371 TAD TDA2L
0640 7104 CLL RAL
0641 7430 SEL
0642 1374 TAD
0643 3371 DCA

```

```

/SR, DO NOT GENERATE INSTRUCTION
/NO T ADDRESS LIMIT
/SAVE
/GET PAGE EXCLUSION BIT
/GENERATE INSTRUCTION
/SAVE INDIRECT FLA
/GET INSTRUCTION
/SAVE IT
/GET INSTRUCTION ADDRESS
/SAVE IT
/GET DATA ADDRESS
/SAVE IT
/GET INDIRECT TO DATA
/SAVE IT
/SET AC=2
/TEST SR10
/SR10=1, DO NOT GENERATE DATA1
/GENERATE RANDOM NUMBER

```

```

/SET AC=4
/TEST SR09
/SR09=1, DO NOT GENERATE DATA2
/GENERATE RANDOM NUMBER

```

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```

0644 7300 SETTL, CLA CLL
0645 1363 TAD TINSTL
0646 3764 DCA I TINADL
0647 1365 TAD TIFLGL
0650 7650 SNA CLA
0651 5267 JMP DURL
0652 1366 TAD TDATAL
0653 1375 TAD T7760
0654 7630 SEL CLA
0655 5262 JMP .+5
0656 1366 TAD TDATAL
0657 1376 TAD T7770
0660 7630 SEL CLA
0661 7040 CMA
0662 1367 TAD TPADDL
0663 3766 DCA I TDATAL
0664 1370 TAD TDA1L
0665 3767 DCA I TPADDL
0666 5271 JMP DOTSTL
0667 1370 TAD TDA1L

```

```

/SET UP INSTRUCTION AND DATA AT TEST ADDRESS
/ALONG WITH RETURN TO THIS ROUTINE

```

```

/GET INSTRUCTION
/STORE IN TEST LOCATION
/GET INDIRECT FLAG
/IS INSTRUCTION INDIRECT
/NO, GET DATA
/INDIRECT, IS ADDRESS
/AUTO-INDEX REGISTER
/NO, USE POINTER AS IS

```

```

/ADDRESS IS AUTO-INDEX REGISTER
/GET INDIRECT ADDRESS
/STORE IN TEST LOCATION
/GET DATA
/STORE IN TEST LOCATION
/GET DATA

```

```

0670 3/66 DCA I TDATA1 /STORE IN TEST LOCATION
/
/SIMULATE "AND"
/
0671 7300 DOTSTL, CLA CLL /GET DATA1
0672 1370 TAD TDA1L /SAVE IN MQ
0673 7421 MQL /GET DATA2
0674 1371 TAD TDA2L /DO SIMULATION
0675 4755 JMS I TANL /SAVE ANSWER
0676 3372 DCA /
/GO TO TEST
/
0677 1356 DOANDL, TAD TRETLL /GET RETURN ADDRESS
0700 3000 DCA TTANDL /SAVE
0701 1364 TAD TINADL /GET INSTRUCTION ADDRESS
0702 7001 IAC /INCREMENT
0703 7450 SNA /IS IT 0
0704 5200 JMP /YES, GENERATE NEW INFORMATION
0705 3353 DCA /NO, SAVE
0706 1373 TAD /GET RETURN INSTRUCTION
0707 3753 DCA I /PUT IN TEST LOCATION
0710 1371 TAD TDA2L /GET DATA2
0711 5764 JMP I TINADL /EXECUTE "AND"
/
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```

```

/RETURN HERE AFTER EXECUTION
/SAVE AC
/IS LINK=1
/LINK=1, ERROR
/GET SIMULATION RESULT
/ADD REAL RESULT
/ARE THEY THE SAME
/NO, ERROR
/END OF PASS
/ERROR HANDLER
/
0724 0000 ERROR, /
0725 7330 CLA CLL CML RAR /SET AC=4000
0726 4757 JMS I TSWITL /TEST SR00
0727 5351 JMP TEXITL /SR00=1, DO NOT HALT ON ERROR
0730 1370 TAD TDA1L /DISPLAY DATA1 IN AC
0731 7402 HLT /
0732 7200 CLA TDA2L /DISPLAY DATA2 IN AC
0733 1371 TAD HLT /
0734 7402 HLT /
0735 7200 CLA INSTL /DISPLAY INSTRUCTION IN AC
0736 1001 TAD HLT /
0737 7402 HLT /
0740 7200 CLA TAD /DISPL INSTRUCTION ADDRESS IN AC
41

```



```

1015 4354 JMS AND17L /EXTRACT PAGE ADDRESS OF INSTRUCTION
1016 3020 DCA TEMP3L /SAVE PAGE ADDRESS OF INSTRUCTION
/GENERATE ADDRESS FOR INSTRUCTION
/
GANADL, TAD R2L /GENERATE RANDOM NUMBER
JMS RANDL /SAVE NUMBER
DCA R2L /SET UP TO TEST ADDRESS LIMITS
JMS CLIML
TAD R2L
SNL CLA /IS ADDRESS WITHIN LIMITS
JMP GANADL /NO, GENERATE NEW ADDRESS
TAD R2L
PØL
SNL CLA /IS ADDRESS ON PAGE 0
JMP PAGADL /NO
TAD TEMP3L /GET PAGE ADDRESS OF INSTRUCTION
CIA
TAD R2L /SUBTRACT ADDRESS
JMS ABSL /IS DIFFERENCE >2
SMA CLA /NO
JMP GANADL /GET PAGE ADDRESS OF INSTRUCTION
TAD TEMP3L /DOES INSTRUCTION REFERENCE LOCATION 0
SNA CLA GANDL /YES, GENERATE NEW INSTRUCTION
JMP R2L /YES, USE ADDRESS
DCA INADDL /GENERATE ADDRESS FOR DATA
JMP DAADL /GET INSTRUCTION
TAD INSTL /MASK CURRENT PAGE BIT
MQL K2ØØL /IS PAGE BIT SET
TAD TTANDL /NO, USE ADDRESS AS IS
JMS I
SNA CLA
JMP PAL
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PAL1Ø
1054 1372 TAD R2L
1055 4354 JMS AND17L
1056 7041 CIA
1057 1020 TAD TEMP3L
1060 5235 JMP PAGAL
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PAL1Ø
/GENERATE ADDRESS FOR DATA
/
DAADL, TAD INSTL /GET INSTRUCTION
MQL K2ØØL
TAD TTANDL /DOES INSTRUCTION REFERENCE PAGE 0
JMS I
SNA CLA PØAL /YES
JMP INADDL
TAD MQL
MQL TAD PØL
1061 1001
1062 7421
1063 1376
1064 4400
1065 7650
1066 5306
1067 1002
1070 7421
1071 1373

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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

/	PAL10	V141	17-JUN-71	7:23	PAGE 13-3
A	0370		PADDL	0005	TSIML 0772
ABSL	1161		PADL	1111	TSWITL 0757
ANDI7L	1154		PAGAOL	1046	TTANDL 0000
C200L	0365		PAGAL	1035	TYPEL 0337
C212L	0367		PAGL	0007	
C215L	0366		PAL	1040	
C6400L	0371		PNTR1L	0202	
C6600L	0372		PNTR2L	0203	
C7000L	0373		PNTRL	0010	
C7600L	0374		R1L	1167	
CAF	6007		R2L	1172	
CLIML	1145		R3L	1177	
CNTR1L	0266		RANDL	1140	
DAADL	1061		REHL	0244	
DATADL	0003		RELL	0255	
DIRL	0667		RELOL	0225	
DOANDL	0677		RESBNL	0215	
DOTSTL	0671		RRELL	0355	
EPASL	0321		SANDL	0300	
ERROR	0724		SAVBNL	0205	
GANADL	1017		SETAL	0400	
GENL	1001		SETLKL	0274	
GOSETL	0377		SETTL	0644	
GOTSTL	0577		STARTL	0200	
HALTL	0345		SWITCL	0312	
IFLAGL	0004		T3L	0774	
INADDL	0002		T5400L	0773	
INDIRL	1077		T7760	0775	
INSTL	0001		T7770	0776	
77L	1174		TANDL	0755	
77	1171		TDA1L	0770	
			TDA2L	0771	

KF 1176  
KL 1170  
K400L 1175  
L1201L 0451  
L200L 0440  
L6600L 0450  
L7000L 0441  
LEPASL 0444  
LGENL 0443  
LHICOL 0433  
LIML 0006  
LISTL 0442  
LOHIL 0266  
LRETUL 0446  
LSANDL 0445  
LSWITL 0447  
MGA 7501  
MQL 7421  
P0AL 1106  
P0L 1173

TDAT1L 0624  
TDAT2L 0634  
TDATAL 0766  
TEMP1L 0204  
TEMP2L 0753  
TEMP3L 0020  
TEMPL 0437  
TEPASL 0760  
TEST1L 0600  
TEXT1L 0751  
TGENL 0754  
TIFLGL 0765  
TINADL 0764  
TINSTL 0763  
TLIML 0762  
TPADDL 0767  
TPAG8L 0761  
TRACL 0777  
TRETTL 0756  
TRETUL 0712

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ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 5 SECONDS

2K CORE USED

