

IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-D0FC-D
PRODUCT NAME: RANDOM ISZ TEST
DATE CREATED: JUNE 11, 1971
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: BRUCE HANSEN

COPYRIGHT © 1971
DIGITAL EQUIPMENT CORPORATION

1.

2.

3.

4.

1. ABSTRACT

THIS PROGRAM IS WRITTEN TO TEST THE ISZ INSTRUCTION OF THE PDP-8E. AN ISZ INSTRUCTION IS PLACED IN A FROM LOCATION, AND A TO LOCATION CONTAINS THE OPERAND. PART 1 OF THE PROGRAM SELECTS FROM, TO, AND OPERAND FROM A RANDOM NUMBER GENERATOR, WITH THE OPTION OF HOLDING ANY OR ALL CONSTANT. PART 2 USES A FIXED SET OF FROM, TO, AND OPERAND NUMBERS.

2. REQUIREMENTS

2.1 EQUIPMENT

ONE PDP-8E EQUIPPED WITH TELETYPE.

2.2 STORAGE

THIS PROGRAM USES LOCATIONS 0000-7600(8). THE BINARY LOADER MUST BE STORED IN THE LAST MEMORY PAGE.

2.3 PRELIMINARY PROGRAM

MAINDEC-8E-D0A(N), AND MAINDEC-8E-D0B(N) MUST HAVE RUN SUCCESSFULLY.

3. LOADING PROCEDURE

THE STANDARD BINARY LOADER IS USED.

4. STARTING PROCEDURE

4.1 SWITCH SETTINGS

SR0(0) = HALT ON ERROR
SR1(1) = ELIMINATE ERROR PRINTOUTS
SR3 = FIXED FROMS (1)
RANDOM FROMS (0)
SR4 = FIXED TOs (1)
RANDOM TOs (0)
SR5 = FIXED OPERAND (1)
RANDOM OPERAND (0)
SR9(0) = DO ONE ISZ ONLY
SR11(1) = DO TEST PART 2 SR3, 4, 5, MUST BE 0'S
SR11(0) = DO TEST PART 1

4.2 STARTING ADDRESS

4.3 OPERATOR ACTION

- A. SET SR (SWITCH REGISTER) TO 0200 AND PRESS LOAD ADDRESS.
- B. SET SR TO DESIRED MODE OF OPERATION; FOR MOST RUNS, SR9=0
ALLOWS THE MOST TESTING IN THE LEAST AMOUNT OF TIME.

FOR FIXED FROM, TO, OR OPERAND USAGE, THE FIXED NUMBER MAY
BE SELECTED AND ENTERED INTO THE MEMORY LOCATIONS SHOWN
BELOW:

FROM =0002
TO =0021
OPERAND =0022

- C. PRESS, CLEAR AND THEN CONTINUE.

5. OPERATING PROCEDURE

SAME AS PARAGRAPH 4.

6. ERRORS

6.1 ERROR HALTS AND DESCRIPTION

C(PC)	CAUSE
0002	PERIPHERAL INTERRUPT
0254	HALT ON ERROR, SR0=0

6.2 ERROR PRINTOUTS

F	XXXX	T	YYYY	R	NNNN	NS
0	ZZZZ	F	MMMM			

6.2.1 PRINTOUT EXPLANATION

(FROM)	F XXXX	-THE ISZ INSTRUCTION IN LOCATION XXXX FAILED.
(TO)	T YYYY	-THE OPERAND ADDRESS OF THE ISZ INSTRU- TION WAS YYYY.
(OPERAND)	0 ZZZZ	-THE STARTING COUNT IN THE ISZ LOOP WAS ZZZZ.
(FAILED)	F MMMM	-THE FAILURE OCCURRED TRYING TO ISZ THE NUMBER MMMM.
(RESULT)	R NNNN	-THE RESULT OF THIS ISZ WAS NNNN.
	NS	-NO SKIP OCCURRED
	S.	-INDICATES A SKIP.

6.2.2 EXAMPLES

A. THE FOLLOWING IS A TYPICAL ERROR PRINTOUT.

```
F 3003 T 5470
0 3705 F 4777 R 5000 S
```

LINE 1 OF THE PRINTOUT IS A STATEMENT OF THE PROBLEM. IT SAYS THAT LOCATED AT 3003 IS AN ISZ INSTRUCTION INCREMENTING AN OPERAND STORED IN LOCATION 5470. LINE 2 OF THE PRINTOUT GIVES INFORMATION FOR ERROR ANALYSIS. 3705 WAS THE INITIAL OPERAND, 4777 WAS THE OPERAND BEING INCREMENTED WHEN THE ERROR OCCURRED, AND 5000 IS THE OPERAND FOLLOWING THE FAILING INCREMENT. THE S INDICATES THAT THE INCREMENT RESULTED IN A SKIP. THE ERROR HERE IS OBVIOUSLY THAT THE SKIP SHOULD NOT HAVE OCCURRED.

B. THE FOLLOWING IS ANOTHER TYPICAL ERROR PRINTOUT.

```
F 3003 T 5470
0 3705 F 4777 R 5020 NS
```

THIS IS IDENTICAL TO EXAMPLE (A) EXCEPT THAT A DIFFERENT TYPE OF ERROR HAS OCCURRED. THE RESULT OF INCREMENTING 4777 SHOULD BE 5000, NOT 5020.

6.3 ERROR RECOVERY

THE PROGRAM CONTINUES ON, FOLLOWING AN ERROR PRINTOUT UNLESS SR0=0. AFTER A HALT ON ERROR, PUSH CONTINUE TO RESUME TESTING. WHEN ERRORS EXIST, A FAILING CONDITION CHOSEN FROM THOSE TYPED OUT MUST BE USED WITH THE SCOPE MODE. FOR THE SCOPE MODE, PERFORM THE FOLLOWING STEPS:

- A. STOP THE PROGRAM.
- B. INSERT CHOSEN FROM INTO LOCATION 0002.
- C. INSERT CHOSEN TO INTO LOCATION 0021.
- D. INSERT CHOSEN FAILING OPERAND INTO LOCATION 0022
- E. RESTART PROGRAM WITH CONTROL SWITCHES 1,3,4,5. SET TO 1 AND 9 SET TO A 0.

NOTE: BY SETTING SR0 TO A 0, THE PROGRAM HALTS FOLLOWING THE ERROR PRINTOUT. THE OPERATOR MAY AT THIS TIME SET SWITCHES 1, 3, 4, 5, TO A 1 AND 9 TO A 0 AND PUSH CONTINUE. THE PROGRAM ENTERS A SCOPE MODE USING THE FAILING CONDITIONS JUST PRINTED.