

TEXT LISTING

068-000225-03

PROGRAM

EXERCISER FOR ECLIPSE
PART 9

TEXT TAPE

097-000225-03

ABSTRACT

'ECLIPSE32' IS AN EXERCISER PROGRAM USED TO TEST THE RELIABILITY OF THE CENTRAL PROCESSOR INSTRUCTIONS OF THE ECLIPSE COMPUTER. 'ECLIPSE32' EXERCISES THE DOUBLE WORD INSTRUCTIONS OF THE ECLIPSE EXTENSIVELY AND ASSURES OF ITS RELIABLE OPERATION.

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0001 ECL32          MACRO REV 06.30          08:09:19 05/16/79          10002 ECL32
01
02          ;TTL ECL32
03          ;ECLIPSE32
04          ;ECLIPSE32 - CONTINUATION OF ECLIPSE31
05          ;
06          ;PART 9 OF EXERCISER FOR ECLIPSE
07          ;
08          ;*****
09          ; NAME: ECLIPSE32.TX          PART NUMBER: 097-000225
10          ;
11          ; DESCRIPTION: ECLIPSE EXERCISER, PART 9
12          ;
13          ;
14          ; REVISION HISTORY:
15          ;
16          ; REV.          DATE
17          ;
18          ; 00          12/20/74
19          ; 01          08/06/76
20          ; 02          10/06/78
21          ; 03          11/17/78
22          ;
23          ;
24          ; COPYRIGHT © DATA GENERAL CORPORATION, 1974, 1976, 1978
25          ; ALL RIGHTS RESERVED.
26          ;*****
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02          ; U.0 REVISION HISTORY
03          ;
04          ; REV. 02 WAS CREATED TO
05          ; IMPLEMENT THE STANDARDS PROVIDED
06          ; BY DLTB.
07          ; THIS HAS NOT CHANGED THE PHILOSOPHY
08          ; OR TEST PROCEDURES IN THIS PROGRAM.
09          ; ALL UNNECESSARY "TJORS" HAVE BEEN
10          ; DELETED FROM THIS FILE.
11          ;
12          ; REV. 03 WAS CREATED TO CORRECT THE MPPU1 SIZING
13          ; PROBLEM WITH MAPS > 256K.
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10003 ECL32

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EXERCISER FOR ECLIPSE: PART 9 .

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PROGRAM NAME
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ECLIPSE32
GENERAL DESCRIPTION
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' ECLIPSE32 ' IS AN EXERCISER PROGRAM USED TO TEST THE
RELIABILITY OF THE CENTRAL PROCESSOR INSTRUCTIONS OF
THE ECLIPSE COMPUTER. ' ECLIPSE32 ' EXERCISES THE DOUBLE
WORD INSTRUCTIONS OF THE ECLIPSE EXTENSIVELY AND ASSURES
OF ITS RELIABLE OPERATION.

2.2 THE INSTRUCTIONS EXERCISED ARE AS FOLLOWS:

EISZ,EDSZ AND DSPA

2.3
LOCATIONS 200 TO 205 IN PAGE 0 ARE FIXED FOR ECLIPSE32
PROGRAM.
LOCATION 203 KEEPS TRACK OF NUMBER OF PASSES RUN
THROUGH ECLIPSE32 PROGRAM.
LOCATION 201 KEEPS TRACK OF THE TEST RUNNING AT
PRESENT AND IS USEFUL FOR DEBUG WHEN LOOPING
OCCURS IN THE PROGRAM.
LOCATION 202 CONTAINS THE STARTING ADDRESS OF
ECLIPSE32 PROGRAM.
LOCATION 200 IS USED BY DTOS.
LOCATION 204 KEEPS TRACK OF INTERNAL PASS COUNT
WHICH IS FIXED BY LOCATION 205.

2.4 FIRST PASS THROUGH ECLIPSE32 TEST WILL RUN SUPERFAST.
NEXT PASSES WILL RUN SLOWER AS EACH TEST IS RUN SEVERAL
TIMES TO RUN ALL RANDOM NUMBER COMBINATIONS.

3. MACHINE REQUIREMENTS
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ECLIPSE PROCESSOR
3.2 8K READ-WRITE MEMORY
3.3 CONSOLE EQUIPMENT

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10004 ECL32

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?MPPD 4

SWITCH SETTINGS

LOCATION "SWREG" IS USED TO SELECT THE PROGRAM OPTIONS (NOT SYSTEM CONFIGURATION). WHILE RUNNING UNDER DTOS, THIS LOCATION WILL BE LOADED BY THE MONITOR. HOWEVER UNDER STAND ALONE AND PROGRAM LOAD MODES THIS LOCATION WILL BE SET ACCORDING TO THE ANSWERS SUPPLIED BY THE OPERATOR. IN ANY CASE THE OPTIONS CAN BE CHANGED OR VERIFIED BY USING ONE OF THE COMMANDS GIVEN IN SEC. 4.2

SWITCH OPTIONS
DIFFERENT BITS AND THEIR INTERPRETATION AT LOCATION "SWREG" IS AS FOLLOWS:

| BIT | OCTAL VALUE | BINARY INERPRETATION |
|-----|-------------|-------------------------------------------------------|
| 1 | 40000 | 1 LOOP ON ERROR |
| | | 1 SKIP LOOPING ON ERROR |
| 2 | 20000 | 0 PRINT TO CONSOLE |
| | | 1 ABORT PRINT OUT TO CONSOLE |
| 3 | 10000 | 0 DO NOT PRINT % FAILURE |
| | | 1 PRINT % FAILURE |
| 4 | 04000 | 0 ALLOW END OF PASS PRINT OUT |
| | | 1 SUPPRESS END OF PASS PRINT OUT |
| 5 | 02000 | 0 DO NOT PRINT ON THE LINE PRINTER |
| | | 1 PRINT ON THE LINE PRINTER |
| 6 | 01000 | 0 DO NOT HALT ON ERROR |
| | | 1 HALT ON ERROR |
| 7 | | 0 DO NOT PRINT SUMMARY AND/OR PASSING OF EACH SUBTEST |
| | | 1 PRINT SUMMARY AND/OR PASSING OF EACH SUBTEST |
| 8 | 00200 | 0 PRINT ONLY THE FIRST ERROR |
| | | 1 PRINT EVERY ERROR |

SWITCH COMMANDS

4.2 ONCE THE PROGRAM STARTS EXECUTING THE STATE OF ANY OF THE BITS CAN BE CHANGED BY HITTING KEYS 1-9. A-F. THE PROGRAM WILL CONTINUE RUNNING AFTER UPDATING THE OPTIONS. EACH KEY WILL COMPLETE THE STATE OF THE BIT AFFILIATED WITH IT. THUS BIT 4 CAN BE ALTERED BY HITTING KEY 4. SETTING OF ANY BIT OF LOCATION "SWREG" WILL SET BIT 0. DEFAULT MODE IS DEFINED AS ALL BITS OF SWREG SET TO 0. THE PROGRAM CAN BE LOCKED INTO SWITCH MODIFICATION MODE BY TYPING A 0, IN WHICH CASE MORE THAN ONE BIT CAN BE CHANGED BEFORE CONTROL IS ALLOWED TO RETURN TO THE MAIN PROGRAM.

0005 ECL32

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01 :4.2.1 OTHER COMMANDS
02 ?
03 ?
04 ?
05 ?
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23 ?
24 :4.3 STAND ALONE STARTING ADDRESS = 200
25 ? IF 'CAT' OR 'KITTEN' WAS LOADED FROM DTOS AND RESTRT
26 ? WAS NEEDED, THEN USE AS FOLLOWS:
27 ? STARTING ADDR = 170 (FOR START WITH NO 'CAT')
28 ? STARTING ADDR = 171 (FOR START WITH 'CAT')
29 ?
30 :4.4 MONITOR LOCATION 203 TO CHECK THE CURRENT PASS COUNT
31 ?
32 ?
33 :4.5 MONITOR LOCATION X6000 TO MAKE SURE THAT 'CAT' OR
34 ? 'KITTEN' IS RUNNING. IN CASES WHERE PROGRAM IS
35 ? STARTED WITH 'CAT' OR 'KITTEN' LOCATION X6000 WILL SHOW
36 ? A PATTERN CHANGING FROM ZEROS; TO ALL ONES
37 ? TO AN INC/SWAP PATTERN.
38 ?
39 ? (= THE NUMBER OF THE HIGHEST MEMORY MODULE IN THE
40 ? SYSTEM AND MAY BE A VALUE 0 - 7)
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10006 ECL32

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01 ?
02 :5.
03 ?
04 ?
05 :5.1
06 ?
07 :5.2
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10 ?
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12 ?
13 :5.4
14 ?
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16 ?
17 :5.6
18 ?
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20 ?
21 :5.1
22 ?
23 :5.2
24 ?
25 ?
26 :5.3
27 ?
28 :5.4
29 ?
30 :5.5
31 ?
32 ?
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OPERATING PROCEDURE/OPERATOR INPUT

LOAD THE PROGRAM VIA THE BINARY LOADER OR INSERT A
PRELOADED MEMORY MODULE.
SET SWITCHES TO 200.
PRESS START.
PROGRAM WILL HALT AFTER PRINTING THE MESSAGE
'SET DATA SWITCHES AND PRESS CONTINUE'.
SET REQUIRED SWITCH SETTINGS AND PRESS CONTINUE.
THE PROGRAM WILL RUN UNTIL MANUALLY STOPPED. IN CASE
OF MALFUNCTIONING, THE PROGRAM WILL PRINT ERROR
MESSAGE AND TAKE APPROPRIATE ACTION AS PER THE SW
SETTINGS.
PROGRAM OUTPUT/ERROR DESCRIPTION

FOR ANY ERRORS DETECTED, THE PROGRAM WILL PRINT ERROR
REPORT OR X FAILURES DEPENDING UPON THE SW SETTINGS.
ERROR REPORT CONSISTS OF ALL ACCUMULATORS,CARRY,
RELOCATED PROGRAM COUNTER OF THE TEST THAT IS FAILING
AND PC IN THE LISTING AT THE TIME OF FAILURE.
THE PROGRAM WILL LOOP IN THE TEST THAT IS FAILING IF
SW"1" IS 0.
THE PRINTING OF ERROR REPORT CAN BE ABORTED BY SETTING
SW"2" TO 1.
IF LOOPING OCCURS IN THE PROGRAM, STOP THE COMPUTER
AND CHECK LOCATION 201 TO FIND OUT THE TEST THAT WAS
RUNNING BEFORE THE LOOPING OCCURRED.

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PROGRAM DESCRIPTION/THEORY OF OPERATION
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EACH TEST IS COMPLETE IN ITSELF, SO THE PROGRAM CAN
BE STARTED FROM ANY TEST WITHOUT CAUSING ANY
INITIALIZATION ERRORS.
WHEN "ECLIPSE32" IS STARTED AT LOCATION 200 OR BY
DTUS, IT WILL SIZE UP THE MEMORY AND WILL PRINT
THE TOP OF THE MEMORY.
AFTER SETTING UP THE SWITCHES AND PRESSING CONTINUE,
THE EXERCISER WILL RUN THE FIRST PASS VERY FAST. IN
THE FIRST PASS EACH TEST IS RUN ONLY ONCE. ALL OTHER
PASSES WILL TAKE MORE TIME AS EACH TEST IS RUN
ACCORDING TO THE TEST COUNT SPECIFIED IN EACH TEST.
AFTER THE 1ST PASS, ECLIPSE32 IS RELOCATED IN THE
AVAILABLE MEMORY FOR ALL NEXT PASSES AND THE AREA
BELOW AND ABOVE THE RELOCATED PROGRAM IS USED
FOR SCATCH BUFFER AREA. REFER TO THE LISTING TO
FIND OUT THE INFORMATION ABOUT EACH TEST.

RESTRICTIONS/MISC
*****
CERTAIN INSTRUCTIONS LIKE BLM, XCT, BAW, ETC.,
DO ALLOW INTERRUPTS TO OCCUR DURING THEIR
EXECUTION. THIS FEATURE OF THOSE INSTRUCTIONS IS
NOT CHECKED IN THIS TEST.

O?D?D 9
OCTAL DEBUG TOOL (ODT)

THE DIAGNOSTIC IS EQUIPPED WITH A BUILT IN ODT WHICH CAN
BE ACCESSED BY HITTING CONTROL 0 (O) AT ANY TIME DURING
THE EXECUTION OF THE PROGRAM (AFTER SETTING THE PARA-
METERS).
ON ENTERING ODT THE ADDRESS OF THE LOCATION HAVING THE
NEXT INSTRUCTION TO BE EXECUTED WILL BE TYPED-OUT.

CONVENTIONS AND SYMBOLS
?
THE FOLLOWING CONVENTIONS ARE USED BY THE ODT:
?
POND WITH A "P".
@
ODT IS READY AND AT YOUR SERVICE.

COMMAND STRUCTURE
AN ODT COMMAND HAS THE FOLLOWING FORMAT:
[ARGUMENT] [COMMAND]
AN ARGUMENT MAY BE ONE OF THE FOLLOWING:
"EXP" AN OCTAL EXPRESSION CONSISTING OF OCTAL NUMBERS
SEPARATED BY PLUS (+) OR MINUS (-) SIGNS. LEAD-
ING ZEROS NEED NOT BE TYPED.
"ADR" AN ADDRESS IS THE SAME AS AN EXPRESSION EXCEPT
THAT BIT 0 IS NEGLECTED.
A COMMAND IS A SINGLE TELETYPE CHARACTER

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ODT COMMANDS
THE LOCATIONS THAT CAN BE EXAMINED AND MODIFIED BY THE
USER ARE CALLED CELLS. THESE CELLS ARE OF TWO TYPES:
INTERNAL CPU CELLS AND MEMORY LOCATIONS.

19.3.1 OPENING INTERNAL CELLS
THE COMMAND TO OPEN ONE OF THE INTERNAL REGISTERS IS OF
THE FORM "NA" WHERE N IS ANY OCTAL EXPRESSION BETWEEN
0 AND 7
0-3 FOR ACCUMULATORS 0-3
4 FOR PC OF THE NEXT INSTRUCTION TO BE EXECUTED IN
THE EVENT OF A "P" COMMAND.
5 CPU AND I/O STATUS
BIT INTERPRETATION
15 STATUS OF I/O DONE FLAG
14 STATUS OF INTERRUPTS (ION FLAG)
13 STATUS OF CARRY BIT
6 ADDRESS OF THE LOCATION HAVING THE BREAK POINT (IF
ANY)
7 INSTRUCTION AT THE BREAK POINT LOCATION

OTHER COMMANDS TO OPEN CELLS ARE:
"ADR"/ OPEN THE CELL AND PRINT ITS CONTENTS
./ OPEN THE CELL CURRENTLY POINTED TO BY THE POINTER
AND PRINT ITS CONTENTS.
* "ADR"/ ADD "ADR" TO THE POINTER, OPEN THE CELL
* "ADR"/ AND PRINT ITS CONTENTS.
SUBTRACT "ADR" FROM THE POINTER, OPEN
THE CELL AND PRINT ITS CONTENTS.
"CR" THE RETURN KEY IS USED TO CLOSE THE OPEN CELL
WITH OR WITHOUT MODIFICATION.
"LF" LINE FEED IS USED TO CLOSE THE OPEN CELL WITH OR
WITHOUT MODIFICATION AND TO OPEN THE SUCCEEDING
CELL
* CLOSE THE OPEN CELL WITH OR WITHOUT MODIFICATION
AND OPEN THE PRECEDING CELL
/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
OPEN THE CELL POINTED TO BY ITS CONTENTS.
+ "ADR"/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
OPEN THE CELL POINTED TO BY ITS CONTENTS + "ADR".
- "ADR"/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
OPEN THE CELL POINTED TO BY ITS CONTENTS - "ADR".

19.3.2 MODIFICATION OF A CELL
ONCE A CELL HAS BEEN OPENED ITS CONTENTS CAN BE MODIFIED
BY TYPING THE NEW VALUE THE CELL IS TO CONTAIN IN THE
FORM OF AN OCTAL EXPRESSION FOLLOWED BY "CR" OR "LF".
IF A + OR - IS TYPED AS THE FIRST CHARACTER OF THE EX-
PRESSION THEN THE VALUE OF THE EXPRESSION IS ADDED TO OR
SUBTRACTED FROM THE OLD CONTENTS OF THE CELL. THE
ADDRESS ITSELF OR AN EXPRESSION RELATIVE TO THE ADDRESS
CAN BE DEPOSITED BY TYPING A "." OR "+/-OCTAL EXPRESS-
ION". A RUBOUT COMMAND GIVEN RIGHT AFTER OPENING A CELL
ALLOWS THE MODIFICATION OF ITS CONTENTS AS IF THEY WERE
TYPED IN JUST BEFORE THE COMMAND WAS ISSUED.

19.3.3 OTHER ODT COMMANDS
RUBOUT THIS KEY IS USED TO DELETE ERRONEOUSLY TYPED
DIGITS. EACH TIME THE KEY IS PRESSED THE RIGHT MOST

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0010 ECL32

**00000 TOTAL ERRORS, 00000 PASS 1 ERRORS

;
 ; DIGIT IS DELETED AND ECHOED ON THE TERMINAL. IF
 ; THE RUBOUT KEY IS PRESSED RIGHT AFTER OPENING A
 ; CELL THEN IT DELETES THE RIGHT MOST DIGIT OF THE CELLS
 ; CONTENTS. THIS ALLOWS THE MODIFICATION OF THE CELL
 ; AS IF ITS CONTENTS WERE TYPED IN JUST BEFORE THE
 ; KEY WAS PRESSED.
 ; "ADR"B INSERT A BREAK POINT AT LOCATION "ADR".
 ; ONLY ONE BREAK POINT CAN BE INSERTED AND ANY
 ; ENTRY TO ODT AFTER EXECUTING A BREAK POINT WILL
 ; CAUSE IT TO BE DELETED.
 ; DELETE THE BREAK POINT IF ANY.
 ; D RESTART THE EXECUTION OF THE PROGRAM AT LOCATION
 ; P POINTED BY 4A.
 ; "ADR"R START EXECUTING THE PROGRAM AT "ADR" AFTER AN
 ; IO-RESET.
 ; K KILL THE STRING TYPED SO FAR. THE ODT RESPONDS
 ; WITH A "2" AND THE OPEN CELL IS CLOSED WITHOUT
 ; MODIFICATION.
 ; = PRINT THE OCTAL VALUE OF THE INPUT ONLY.
 ; THIS WILL CLOSE ANY OPEN CELLS WITHOUT
 ; MODIFICATION AND WILL NOT OPEN A CELL

"ADR"B

D

P

"ADR"R

K

=

NOTE:

IN PROGRAMS WHICH RELOCATE THEMSELVES THE
 THE USER SHOULD PLACE BREAK POINTS ONLY IN THE
 THE ORIGINAL PROGRAM AREA. IF A BREAK POINT IS
 PLACED OUTSIDE THIS AREA THE RESULTS WILL
 BE UNPREDICTABLE.

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0011 ECL32

02DTD 000524 MC 7/33
S?WPU 000050 MC 4/01