

TEXT LISTING

068-000422-02

PROGRAM

MICRONOVA SC-MEMORY TEST

TEXT TAPE

097-000422-02

ABSTRACT

THE SC-MEMORY TEST CONSISTES OF A SERIES OF SC-MEMORY TESTS AND A SIMPLE SUPERVISER PROGRAM, THE DIAGNOSOTIC LINKER.

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MICRO-NOVA SC-MEMORY TEST
ABSTRACT
1.
THE SC-MEMORY TEST CONSISTS OF A SERIES
OF SC-MEMORY TESTS AND A SIMPLE
SUPERVISOR PROGRAM, (THE DIAGNOSTIC LINKER)

THE DIAGNOSTIC LINKER IS A PROGRAM
DESIGNED TO "LINK" THE VARIETY OF
SC MEMORY TESTS.

MACHINE REQUIREMENTS
MICRO-NOVA PROCESSOR WITH 4 TO 32K OF
READ/WRITE MEMORY
(ALLOWS FOR EXPANSION IN 1K INCREMENTS
BUT MEMORY MUST BE CONTIGUOUS)

PREREQUISITES
SOFTWARE PREREQUISITES
THE MICRO-NOVA LOGIC TEST SHOULD HAVE
BEEN RUN BEFORE ATTEMPTING THIS TEST.

SWITCH SETTINGS
AUTO-SIZE AND GO START AND MANUAL SELECT/DELETE
OF TESTS OPTIONS ARE BOTH LOADED AT 200.

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*****
? NAME: MNSMT.TX          PART NUMBER: 097-000422
? DESCRIPTION: MICRONOVA SC-MEMORY TEST
? REVISION HISTORY
? REVISION          DATE
? *****
? 00          12/03/76
? 01          06/24/77
? 02          08/31/79 CHANGES WERE MADE TO TEXT
*****

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ANY LICENSE TO MAKE, USE, OR SELL EQUIPMENT OR
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01      ;6.0 PROGRAM INITIALIZE
02      ; THE DIAGNOSTIC LINKER INITIALIZES ITSELF
03      ; AND INDIVIDUAL TESTS IN THE FOLLOWING
04      ; SEQUENCE:
05      ; 1. SYSTEM IS RESET.
06      ; 2. ANY OTHER NECESSARY CONSTANTS
07      ; ARE INITIALIZED.
08      ; 3. MEMORY IS SIZED IN 1K INCREMENTS
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        ERROR DESCRIPTION
        MOST ERRORS DETECTED BY EITHER
        BY THE INDIVIDUAL TESTS OR
        BY THE DIAGNOSTIC LINKER WILL
        RESULT IN AN ERROR TYPEDOUT. SOME
        SMALL NUMBER OF HIGHLY IMPROBABLE
        ERRORS MAY RESULT IN A PROGRAM HALT
        IF THEY ARE OF A NATURE THAT THE LINKER
        CAN'T RECOVER FROM AND LOGICALLY PROCEED,

        ERROR FORMAT
        EACH TEST WILL OUTPUT AN UNIQUE ERROR
        TYPEDOUT INCLUDING TEST NAME, DATA ASSOCIATED
        WITH ERROR, ERROR LOCATIONS, SCRATCH LIMITS
        USED FOR THIS PASS OF THE TEST, AND THE
        MEMORY LIMITS SELECTED TO BE EXERCISED
        BY EITHER THE OPERATOR OR THE PROGRAM.

        DEFINITION OF ERROR PRINTOUT TERMS:
        C(X) = CONTENTS OF LOCATION X
        LOC(X) = ADDRESS OF LOCATION X (LOGICAL OR PHYSICAL)
        C/(X) = COMPLEMENT OF THE CONTENTS OF LOCATION X
        SCRLO/HI= (LOGICAL OR PHYSICAL)
        TSLO/HI= SCRATCH LIMITS EXPRESSED IN DECIMAL 1K'S
        PHSLO/HI= ENTERED,OR PROGRAM SELECTED,MEMORY LIMITS
        TO BE EXERCISED IN DECIMAL 1K'S.

        EXAMPLES:
        ERROR TYPE OUT
        *****
        GALPAT C(X) LOC(Y)
        C(Y) 000100 016010 017345
        SCRLO/HI 7 31
        TSLO/HI 7 31
        PHSLO/HI 3 31 TYPE ANY KEY

        IF SW6E1 THE
        TEST WILL HALT WAITING FOR
        THE OPERATOR TO PRESS A KEY
        ON THE CONSOLE

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        6.0 PROGRAM INITIALIZE
        THE DIAGNOSTIC LINKER INITIALIZES ITSELF
        AND INDIVIDUAL TESTS IN THE FOLLOWING
        SEQUENCE:
        1. SYSTEM IS RESET.
        2. ANY OTHER NECESSARY CONSTANTS
        ARE INITIALIZED.
        3. MEMORY IS SIZED IN 1K INCREMENTS
        FROM 0 TO 32K
        4. LINKER THEN TYPES THE PROGRAM
        NAME AND REVISION LEVEL,SYSTEM SIZE,
        THE PROGRAM RUN LIST (AND WILL ALLOW THE
        OPERATOR TO SELECT OR DELETE SPECIFIC TESTS
        IF START WAS 206
        6.1 OPTION SELECTION
        IF THE PROGRAM WAS NOT AUTOSTARTED
        (NOT LOC 200) THE LINKER WILL PRINT
        "OPTIONS?" AND WAIT FOR A CARRIAGE RETURN
        TO START EXECUTING THE TESTS.
        THIS ALLOWS THE OPERATOR TO SET UP
        THE KEY ENTRY OPTIONS INCLUDING
        KEY "T" WHICH ALLOWS SETTING OF MEMORY
        TEST AREA LIMITS.
        6.2 PROGRAM EXECUTION
        ONCE THE LINKER HAS COMPLETED ALL
        INITIALIZATION THE FOLLOWING SERIES
        OF OPERATIONS IS LOOPED THROUGH
        1. LINKER SEARCHES THRU LIST OF TESTS
        UNTIL IT FINDS ONE WHICH IS
        NOT DELETED.
        2. LINKER THEN SETS UP SEGMENT SIZE
        BASED ON THE VALUE IN THE
        PARAMETER TABLE FOR EACH TEST.
        3. THE LINKER THEN SETS SCALO AS THE
        BEGINNING OF THE SEGMENT TO BE TESTED
        AND SCRHI AS THE END OF THE SEGMENT.
        4. THE LINKER RE-ENTERS THE TEST WITH
        EACH SEGMENT UNTIL THE AREA SELECTED
        HAS BEEN EXERCISED. AFTER COMPLETION
        THE LINKER SEARCHES FOR ANOTHER TEST
        IN THE SERIES.
        5. AFTER SEVERAL PASSES OF EACH TEST
        SELECTED THE LINKER WILL PRINT
        "PASS XX" IF SWREG BIT 4 HAS NOT
        BEEN SET.
        6. IF PROGRAM WAS LOADED FROM DTOS WITH
        EITHER CAT OR KITTEN IT WILL START
        CAT/KITTEN AFTER FIRST "PASS".

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7.0 TEST DESCRIPTIONS
THIS TEST WRITES THE ADDRESS OF EACH LOCATION INTO EACH LOCATION AS DATA
7.1 DATA EQUALS ADDRESS TEST
IT THEN READS BACK ALL LOCATIONS AND CHECKS THE VALUE READ AGAINST THE ADDRESS.
7.2 ISZ INSTRUCTION TEST
7.2.1 FORWARD ISZ TEST
THIS TEST FILLS ALL SCRATCH WITH A MINUS ONE PATTERN, THEN PERFORMS A ISZ INSTR. FOLLOWED BY A READ OF THE LOC. TO VERIFY IT CONTAINS A ZERO. THIS IS DONE AT EACH LOCATION FROM SCRLO TO SCRHI.
7.2.2 REVERSE ISZ TEST
THIS TEST IS IDENTICAL TO THE ABOVE TEST EXCEPT THAT THE MEMORY ADDRESSES ARE SCANNED FROM SCRHI TO SCRLO.
7.3 MARCH
THIS TEST FUNCTIONALLY CHECKS EACH BIT IN THE MEMORY AND THE ADDRESSING .
THIS TEST USES EITHER RANDOM DATA (KEY OPTION "0"=0) OR ALL ONES DATA (OPTION "0"= 1).
A TEST PATTERN IS WRITTEN INTO THE BACKGROUND STARTING AT SCRLO AND ENDING AT SCRHI. ADDRESSING IS THEN SCANNED ACROSS THIS RANGE AND AT EACH ADDRESS THE TEST WORD IS READ AND A COMPLEMENTED TEST WORD IS WRITTEN BACK INTO THE SAME LOCATION.
THE DATA IS THEN COMPLEMENTED AND THE ABOVE SEQUENCE REPEATED.
THE PROCESS IS THEN REPEATED STARTING AT SCRHI AND PROCEEDING TO SCRLO .

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7.4 MASEST (SEGMENT MAX. = 2)
CHECKS FOR DESTRUCTION OF STORED DATA THAT MAY RESULT FROM MULTIPLE SELECTION OF ADDRESSES INTERNAL TO THE MEMORY CAUSED BY FAULTY DECODERS OR LOGICAL SWITCHING HAZARDS.
ALTERNATE ALL ONE'S, ALL ZERO'S ARE WRITTEN IN ASCENDING LOCATIONS. EACH LOCATION IS THEN READ AND VERIFIED WHILE GOING THRU THE ADDRESS SEQUENCE OF ADDRESS, COMPLEMENT OF ADDRESS, ADDRESS PLUS ONE, COMPLEMENT OF ADDRESS PLUS ONE, ETC. . MEMORY IS THEN READ SEQUENTIALLY AND THE ALTERNATE ONE'S ZERO'S PATTERN VERIFIED.
7.5 SDIAB (SEGMENT MAX = 1)
THIS TEST IS NOT SELECTED IF THE PROGRAM IS STARTED AT LOC 200.
THIS TEST FILLS THE BACKGROUND WITH ALL 0'S PATTERN AND THEN WRITES A DIAGONAL PATTERN USING THE COMPLEMENT OF THE BACKGROUND.
THE ARRAY IS THEN VERIFIED READING DOWN EACH COLUMN INSTEAD OF ACROSS EACH ROW.
IF NO ERRORS ARE FOUND THE PROCES IS REPEATED WITH THE DIAGONAL SHIFTED ONE POSITION UNTIL ALL POSITIONS ARE USED.
NEXT THE BACKGROUND IS COMPLEMENTED AND THE TEST REPEATED.

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**00000 TOTAL ERRORS, 00000 FIRST PASS ERRORS

7.6 GALPAT (SEGMENT MAX = 1)
THIS TEST DOESN'T RUN ON AN AUTOSTART.
THIS TEST CHECKS ADDRESSING, INTERACTION
BETWEEN BITS, AND PATTERN AND SEQUENCE
DEPENDENCY FOR TRANSIENT PERFORMANCE.
THIS TEST EITHER USES RANDOM DATA OR ALL ONES
(SEE KEY OPTION "0")
A BACKGROUND PATTERN IS WRITTEN THRU-OUT
MEMORY. THEN STARTING AT THE FIRST LOCATION,
A TEST WORD IS WRITTEN(COMPLEMENT OF
BACKGROUND)
MEMORY IS THEN READ IN ALL LOCATIONS IN THE
FOLLOWING SEQUENCE: BACKGROUND, TEST WORD
NEXT BACKGROUND, TEST WORD, NEXT
BACKGROUND, ETC.
AFTER COMPLETION OF A PASS FROM SCRLO TO
SCRHI , THE TEST WORD IS MOVED TO THE
NEXT SEQUENTIAL LOCATION AND THE
PROCESS OF READING REPEATED.
THIS CONTINUES UNTIL THE TEST WORD HAS
BEEN LOCATED IN EVERY MEMORY LOCATION
FROM SCRLO TO SCRHI.
AT COMPLETION,THE ABOVE SEQUENCE IS
REPEATED USING A COMPLEMENTED PATTERN.
FOR SAKE OF TYPEOUTS:
LOC(X) = TEST WORD LOCATION
LOC(Y) = BACKGROUND LOCATION

7.7 GALWREC (SEGMENT MAX = 1)
THIS TEST DOESN'T RUN ON AN AUTOSTART.
THIS TEST CHECKS ALL POSSIBLE WRITES
FOLLOWED BY READS AT DIFFERENT LOCATIONS
(SEE KEY OPTION "0")
A BACKGROUND PATTERN(B) IS WRITTEN THRU-
OUT MEMORY. EVERY PAIR OF ADDRESSES ARE
THEN CHECKED IN THE FOLLOWING MANNER,
STARTING WITH THE FIRST LOCATION,LOC(X):
WRITE T(INVERTED B) IN LOC(Y)=(X+1),READ
B IN LOC(X),WRITE B IN LOC(Y),
READ B IN LOC(X),WRITE T IN LOC(Y)=(Y+1)
READ B IN LOC(X),ETC.
AFTER ALL LOC. HAVE BEEN CHECKED IN
RELATION TO LOCATION ONE(X),THE SEQUENCE IS
REPEATED WITH RESPECT TO LOC(X)=(X+1), ETC.
AT COMPLETION , THE ABOVE SEQUENCE IS
REPEATED USING A COMPLEMENTED PATTERN.

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