PDP-X Technical Memorandum # 33

Title: Additions to PDP-X Instruction Simulator

Author(s):   H. Burkhardt

Index Keys: Instruction Set
                  Simulator

Distribution
        Keys: A,B,C

Obsolete: None

Revision: Technical Memorandum # 18

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Several additional features have been incorporated into the PDP-X Instruction Simulator that is described in PDP-X Technical Memorandum #18.

1. The simulator has been altered to conform to the PDP-X description contained in Technical Memorandum #29.

2. All IOD instructions have been simulated with the exception of:

    a. RCS   Read Console Switches

    b. The instructions pertaining to the protection option.

3. The Multiplexor Channel has not been simulated.

4. The simulator has been modified to use the Type 647 Line Printer as follows:

    If the processor is stopped as a result of:

    a. Disable Memory (ACS 14)

    b. Address Stop (ACS 13)

    c. Single Instruction (ACS 17)

    d. Execution of a HLT instruction

    and the LPT Enable switch (ACS 12) is up, the cause of the stop, the PC, RG, CC and the accumulator group (locations 0, 2-7) will be printed on the line printer. If Repeat is on (ACS 15) and the processor was stopped because of b. or c. above, the processor will continue. If repeat was off or if the processor was stopped because of a. or d. above, the console teletype will type a carriage-return/line-feed. This feature allows:

    a. single-step trace through a program

    b. selective trace by using Address Stop

5. To allow debugging of Model I software, the EOP class instructions may be disabled by setting ACS 11 to a one. This will cause all EOP's to trap.

6. The simulator has been modified to take advantage of the total core memory available on a PDP-9. When run on a PDP-7, the simulator will only use 8k.

Summary

(Alt Mode)	Continue
XXXXX (Alt Mode)	Start at location XXXXX
/	Open last opened register
XXXXX/	Open location XXXXX and print its value in octal
:	Retype opened value in instruction format
X,X,X,X	Value in instruction format
Carriage Return	Close opened register
Line Feed	Close opened register, open next register
A	Open address stop register
I	IO reset
R	Readin

ACS 17	Single Instruction
ACS 16	Hard Stop
ACS 15	Repeat
ACS 14	Memory Disable
ACS 12	LPT Enable
ACS 11	EOP Disable (Model I compatible)

Operation

The simulator is loaded as follows:

a. Place Tape in high-speed reader

b. Set Address Switches to 17720 (PDP-9)

c. Press Readin (PDP-9)

d. The simulator will load and self-start

Restarting

a. The simulator may be restarted at location 22.
    This does a PDP-X IO Reset.

b. The simulator may be restarted at location 23.
    This will cause the PC, CC and RG to be printed.
    The PDP-X is not reset. (This is the only way
    to stop a loop of the sort

```
        LDA    4, @100
   100/    @100)
```