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TITLE   MDT - A MINI DEBUGGING TECHNIQUE

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SOURCE LANGUAGE   PAL III

MDT is a mini debugging package designed for installations with no high speed I/O device. It is designed to fit into the top page of core (7600-7777). The system contains a shortened BIN loader, and three routines which fit around the BIN loader. As a crude approximation, MDT gives the same facilities as the standard DEC ODT, however, the advantage of MDT is that it only takes 10 to 15 seconds to load a program when necessary.

There are two ways to use MDT.

1. The BIN loader and a dump program remain core resident. The user can dump core by simply starting at location 7600.

2. The BIN loader remains core resident. When needed, the proper debugging routine is loaded from teletype. The various routines dump core, modify core from the teletype, or punch a tape in BIN format.
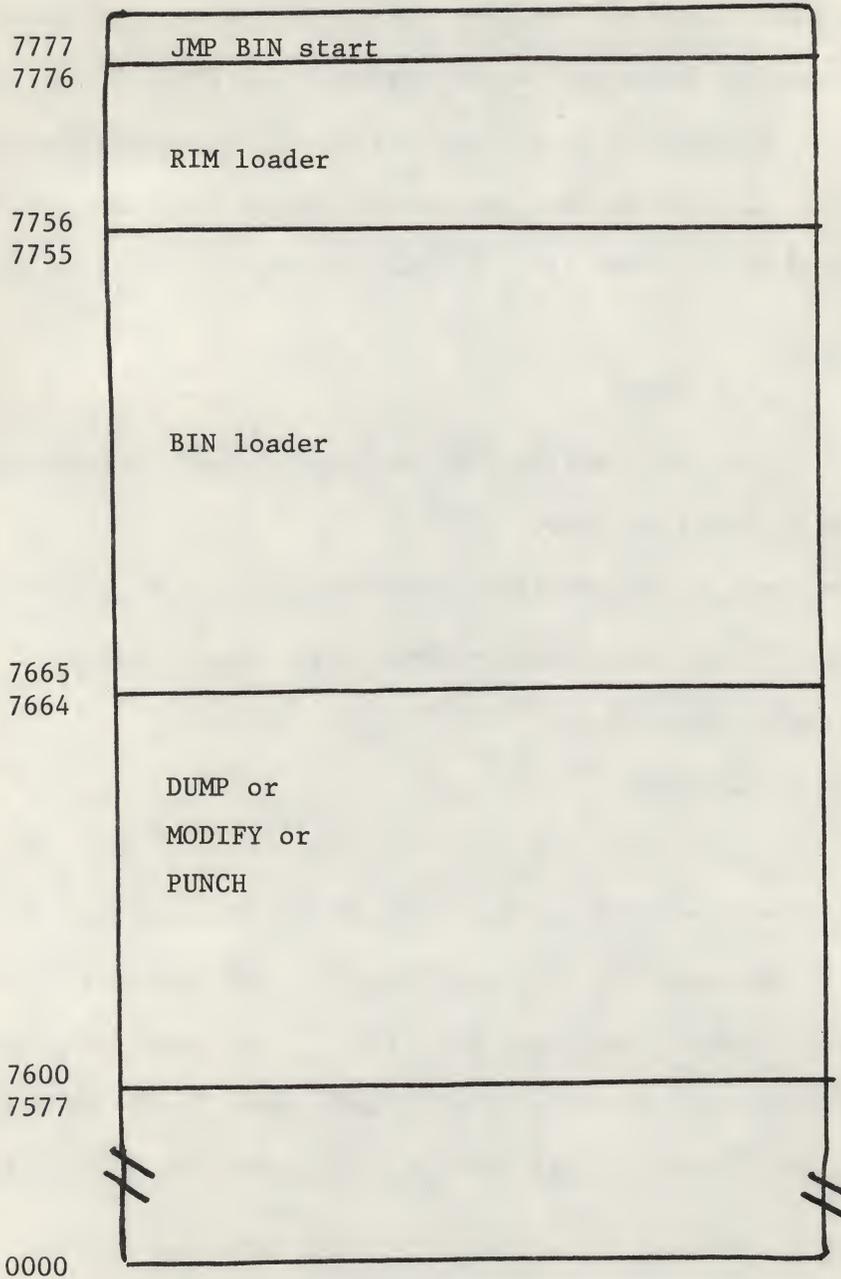
The four routines in MDT are:

1. BIN loader. A shortened form of the standard DEC BIN loader. This program has all of the operating characteristics of the standard BIN loader, but it is much smaller. It takes locations 7666-7755. It is loaded via the RIM loader, and its starting address is 7777. It will load tapes in the same format as tapes loaded by the BIN loader, except it will load from ASR 33 teletype only.

2. DUMP. A core dump program. After loading with the BIN loader (program 1 above), the starting address is set to 7600 (Set 7600 on switch registers and press LOAD ADDR.) The switch registers are then set to the first word to be dumped and START is pressed. An address and 8 octal words are printed on each line. The program must be stopped manually (by pressing STOP)

```
┌──────────────────────────────────┐
7777 │  JMP BIN start                   │
7776 ├──────────────────────────────────┤
     │                                  │
     │  RIM loader                      │
7756 ├──────────────────────────────────┤
7755 │                                  │
     │                                  │
     │                                  │
     │  BIN loader                      │
     │                                  │
     │                                  │
7665 ├──────────────────────────────────┤
7664 │                                  │
     │  DUMP or                         │
     │  MODIFY or                       │
     │  PUNCH                           │
     │                                  │
7600 ├──────────────────────────────────┤
7577 │                                  │
     │ //                            // │
0000 └──────────────────────────────────┘
```

Core allocation for MDT

when sufficient core has been dumped. The program will wrap around core (location 0000 will follow 7777.)

3. MODIFY. A teletype modify program.

After loading the program with the BIN loader, the program is started at location 7631. The teletype is then used to control execution of this program.

In order to display the contents of location xxxx type 'xxxx/'.

In order to change the contents of xxxx to yyyy, first display xxxx and then type 'yyyy cr'.

If no change is desired after displaying a location, type 'cr' .

After typing cr, a different location can be displayed by repeating the process.

4. PUNCH. PUNCH will punch a program in a format acceptable to the BIN loader for reloading at a later date.

After loading the program with the BIN loader, 7600 is set to the first word to be puched, and 7601 to the last word to be punched. (Set 7600 on switch registers and press LOAD ADDR. Set Switch registers to first address to punch and press DEP. Set Switch registers to last address to punch and press DEP.) Set 7602 as starting address and begin execution.

Header and trailer punches will appear before and after the program is punched. The program must be stopped manually after the trailer punches appear.

Each program can be restarted without reloading from paper tape.

Aknowledgments

Walter Christensen wrote the BIN loader, William Besore wrote the Octal Dump program, Leo Bourne wrote the modify program and John Dalton wrote the punch program. These programs resulted from a classroom exercise on a PDP-8L, Spring, 1972.