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PROGRAM

Selfloading Bootstrap and Binary Loader

TAPES

Special Format: 091-000041 for Supernova

Special Format: 091-000036 for Nova 1200/800

ABSTRACT

Selfload tapes are used in conjunction with the program load feature of the Supernova or of the Nova 1200/800 with selfload option to place an absolute binary loader in the highest locations of alterable storage.

1.0 REQUIREMENTS

1.1 Supernova with 2K or larger alterable memory.

Nova 1200/800 with selfload option and 2K or larger alterable memory.

1.2 Equipment

ASR Teletype or paper tape reader.

1.3 External Subroutines

None.

1.4 Other

None.

2.0 OPERATING PROCEDURE

2.1 Calling Sequence

The Selfloading Bootstrap and Binary Loader is used in conjunction with the PROGRAM LOAD feature of the Supernova or the Nova 1200/800 with selfload option. The Binary Loader image is placed in the highest locations of alterable memory.

2.1.1 Supernova Calling Sequence

Selfloading tape, 091-000041, is placed in the chosen input device, and the device code for that device is entered in the rightmost six console switches (bits 10-15). RESET is pressed, followed by PROGRAM LOAD. The tape is read in and the Supernova will halt at location 00121 in alterable storage. The Binary Loader is now in memory. Execution of the Binary Loader may now be initiated by pressing CONTINUE, or putting xx777 in the switches and pressing START. Switch value varies with memory as follows:

2K	-	03777
4K	-	07777
6K	-	13777
8K	-	17777
10K	-	23777
		⋮
		⋮
		⋮

2.1.2 Nova 1200/800 Calling Sequence

Binary loader tape, 091-000036, is placed in the chosen input device, and the device code for that device is entered in the rightmost six console switches (bits 10-15). Bit 0 of the console switches must be set to 0. RESET is pressed, followed by PROGRAM LOAD. The tape is read in and the Nova 1200/800 will halt at location 00121 in alterable storage. The Binary Loader is now in memory. Execution of the Binary Loader may now be initiated by pressing CONTINUE, or putting xx777 in the switches and pressing START (xx777 is the same as for the Supernova).

2.2 Input Format

2.2.1 Supernova Input Format

The bootstrap portion of the tape is formatted to meet the requirements of the PROGRAM LOAD hardware. While the hardware inputs only 41_8 words, the attached Binary Loader is formatted in the same manner as the bootstrap itself.

Blank frames are ignored until the first nonblank frame is reached. That and subsequent frames are accepted and placed in consecutive locations of storage beginning with location 0. The first full frame of each pair is stored in the left half of a word, the second is in the right, until location 40_8 is loaded. The last instruction is executed. The hardware program is now complete.

2.2.2 Nova 1200/800 Input Format

The bootstrap program is in hardware. Pressing PROGRAM LOAD deposits the contents of the LSI chip containing the bootstrap in locations 0- 37_8 and then begins normal operation at location 0.

For both Supernova and Nova 1200/800, once the bootstrap is complete, the bootstrap sizes memory, interprets the device code, and reads in the Binary Loader.

2.3 Output Format

The Selfloading Bootstrap and Binary Loader produce no output.

2.4 Error Returns

There are no indications of error other than disfunction; the loaded tape should halt after the last punched frame has been read with the address lights containing 00121.

Errors occurring during the use of the Binary Loader segment of the tape are covered by document number 093-000003.

2.5 State of Active Registers Upon Exit

Address lights contain 00121.

2.6 Cautions to User

None.

3.0 DISCUSSION

3.1 Algorithms

The device code is appended to the input instructions by reading the console switches, masking all but the rightmost six bits, and using the result as a count in a loop which increments the input instructions which are loaded with a device code of zero.

Determination of the highest location in core is accomplished by writing and reading locations at 1K increments until the information read back is the same as that written. Loading is begun at the highest location minus the length of the loader. Load completion is detected by exhaustion of a count, which leads to a halt at 00121.

3.2 Limitations and Accuracy

None.

3.3 Size and Timing

The selfload portion of the Supernova loader is 41₈ locations long. Execution is faster than the input rate of all tape readers.

The hardware selfload of the Nova 1200/800 is 37₈ locations long.

If any delay is perceived for either selfload, the loader is not being properly executed.

3.4 References

See 093-000003 for a discussion of the Binary Loader.

See "How to Use the Nova Computers", Automatic Program Loading.

3.5 Flow Diagrams

None.

4.0 EXAMPLES AND APPLICATIONS

Not pertinent.

5.0 PROGRAM LISTING

A program listing for the Supernova selfload follows. The Nova 1200/800 selfload is identical, except for deletion of the JMP 0 instruction that terminates the Supernova listing.

For a binary loader listing, see 093-000003.

