

DEC-08-LBAA-D

IDENTIFICATION

Product Code: DEC-08-LBAA-D
Product Name: Binary Loader
Date Created: May 10, 1967
Maintainer: Software Services Group

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1. ABSTRACT

The Binary Loader is a short routine for reading and storing information contained in binary-coded tapes, using the ASR 33 Perforated-Tape Reader or the Type 750 High-Speed Perforated Tape Reader.

The Binary Loader accepts tapes prepared by the use of PAL (Program Assembly Language) or MACRO-8. Diagnostic messages may be included on tapes produced when using either PAL or MACRO. The Binary Loader will ignore all diagnostic messages.

2. PRELIMINARY REQUIREMENTSStorage

This program occupies 94 (decimal) core locations.

Equipment

The Binary Loader may be used with a system consisting of the PDP-8 and associated Teletype ASR 33 only. On the other hand, the same program operates with systems including the 750 High-Speed Tape Reader and/or the Memory Extension Control Type 183. This loader is compatible with the 552 DECTape Library System and the TC01 DECTape Library System.

3. LOADING OR CALLING PROCEDURE

The Binary Loader is brought into memory by the RIM or Read-In-Mode Loader. This requires that the Binary Loader tape itself be in RIM format. See Read-In-Mode Loader Manual for a thorough discussion of the RIM Loader and RIM format.

NOTE: 183 Memory Extension users; refer to Special Requirements section.

Proceed as follows:

- a. Place the Binary Loader tape in the ASR 33 reader.
- b. Make sure that the ASR 33 is on-line.
- c. Place the starting address of the RIM Loader (7756) in the SWITCH REGISTER.
- d. Press the LOAD ADDRESS key.
- e. Press the START key.
- f. Move the READER CONTROL switch to the START position.

Switch Setting

NOTE: 183 Memory Extension users see "Special Requirements" section.

4. USING THE PROGRAM OR ROUTINE

- a. Place the tape to be loaded (which must be in binary format) in either the ASR 33 Tape Reader or the Type 750 High-Speed Reader. When using the ASR 33, make sure the reader is on-line. When using the 750, make sure the reader is on.
- b. Place the starting address of the Binary Loader (7777) in the SWITCH REGISTER.
- c. Press LOAD ADDRESS key.

When using the 750, change the SWITCH REGISTER to 3777 (bit 0 = 0). Omit this step if using the ASR 33.

- d. Press console START key.

When using the ASR 33, move the READER CONTROL switch to START.

Errors

When PAL is used to produce a binary tape, a checksum is automatically placed at the end of the binary tape. The checksum is the sum of all data on the tape including the origin word.

To be more specific, it is the sum of all data contained on tape that will enter the accumulator (AC) in bit positions 4 through 11 from, for example, the ASR 33 Reader buffer. Note that the sum is accumulated character by character and not word by word. Overflow (a carry out of the most-significant bit position of the AC) is ignored both when calculating a checksum (which is done by PAL) and when the Binary Loader accumulates a checksum while loading a tape.

If the checksum accumulated while using the Binary Loader does not agree with the last two characters on the tape (i.e., the checksum on the tape calculated and placed there by PAL), an error has occurred.

When the computer halts, the display lights will be static, the memory buffer (MB) will contain 7402, and the contents of the AC will be unequal to zero if a checksum error has occurred.

Restart the computer after the tape has been repositioned by pressing the CONTINUE key.

5. DETAILS OF OPERATION AND STORAGE

This program furnishes the basic means by which the contents of binary-coded tapes are loaded into core.

The heart of the program is a short subroutine (tagged BEGG) which operates in outline as follows:

The incoming character is tested to see if it is a "rubout" (all eight tape channels punched).

If this is the case, all subsequent information coming from the reader is ignored until another rubout is detected.

This is the mechanism by which PAL diagnostic messages are detected. They are preceded and followed by a single rubout character. Within a diagnostic message, in contrast to the rules concerning the balance of the binary tape, any character is valid except, of course, a single rubout character itself which would prematurely conclude the diagnostic message. Note that two consecutive rubouts within a diagnostic message would, in effect, be ignored.

Next the character is tested to see if it is leader or field settings.

These tests are listed in the order in which they are performed. If none of the actions indicated have occurred upon exit from the BEGG subroutine, the character is part of the origin address, contains part of a data word, or is a part of the checksum, and the appropriate course is followed by the main routine.

6. SPECIAL REQUIREMENTS OR FORMATS

6.1 Format

6.1.1 External Format - Tapes to be read by this program must be in binary-coded format.

Leader of about 1 foot of leader-trailer codes (any code with channel 8 punched; preferably code 200).

Two characters representing the address (origin) into which the first command on the next portion of the tape will be placed. Successive commands are placed in memory at addresses:

origin+1, origin+2,origin+n.

The initial character of the origin has no punch in channel 8, while channel 7 is punched. The second character designating the origin has no punches in either channel 8 or 7.

A concluding 2-character group representing the checksum with no punches present in channels 8 or 7.

Trailer similar to leader.

Reference to Program Listing, will indicate that after the BEGG subroutine tests to see if the character just read was leader/trailer, a test is made to determine whether the character is a "field setting." This is a reference to the fact that PAL produces tapes on which characters of the form

11 XXX 000

indicate the memory field into which the following data is to be loaded. If for example XXX were 101, all data following the field designator should be loaded into memory field five.