PDP-1 COMPUTER
ELECTRICAL ENGINEERING DEPARTMENT
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PDP-18-1

TS MACRO

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# TS MACRO

TS Macro is a version of 6-63 Macro with the title punch
and input routine punch removed and the symbol table limited
to a maximum of 540 symbols, fewer if macros are used. It
will assemble an average program of 2000 registers. Provision
has been made for assembling directly onto the drum and for
getting Macro's symbols directly into ID.

A control routine has been added to replace the START,
CONTINUE, and READ IN switches and to assign and deassign the
punch and reader. Macro may be entered from ID by typing "20U",
"OG", from the administrative routine by typing "Macro", or
from ET 11A by typing "N". When Macro is initially started or
whenever any of the non-ts Macro halts are encountered, a red
shift and a back space are typed. If the entry occurs because
one of the automatic punch or reader assignment requests fail,
a letter(porr respectively) is typed but no red shift or back
space.

The control recognizes the following characters, all others
are ignored.

s     has the same result as the START switch at 0 when
      out of time-sharing.

c     has the same result as the CONTINUE switch.

ÿ     is used to yank the system tape or any symbol punch
      produced by the TS Macro Symbol Package.

n     This will read in tapes produced by a normal version
      of Macro; it will not accept macro definitions. The
      routine for this lies in Macro's punch buffer and is
      destroyed when the punch buffer is filled.

z     The Symbol (zymbol) Package is swapped from the drum
      into Macro. Its operation is unchanged except it will
      not punch a title. [Sense Switches]

g     Macro enters the get assignment mode for the punch or
      reader.

x     Macro enters the exchange assignment mode for the punch
      and reader.

r     The reader will be assigned or deassigned according to
      the mode, see "g" and "x".

p     The punch will be assigned or deassigned according to
      the mode, see "g" and "x".

t     deassigns the punch and returns to ID for typing a tape
      title or input routine.

b     (black and back) A black color shift is typed, any reader
      or punch assignment is released and control is returned

## TS Macro Operation

1. TS Macro is Unsaved from field "20" with ID.

2. The "i" command in ID can be used to punch *a title & input routine,*

3. Macro is entered by typing "OG". A red shift and a back space will be typed by Macro's control.

4a. The test word and sense switch use is the same as for non-time-sharing Macro, except that the middle 6 bits of the test word specify the drum field onto which Macro is to assemble.

4b. The reader is assigned automatically at the start of each pass. If the reader is busy, an "r" is typed. Typing "gr" will get the reader when it is no longer busy. A "c" will let Macro procede from the reader assignment. For multiple tape assembly, "gr" must be typed at the end of each tape in order to reset time-sharing's reader buffers.

4c. If on pass 2, the automatic punch assignment fails because the punch is busy, a "p" will be typed. Typing "gp" will get the punch when it is no longer busy, and "c" will procede with the assembly.

5. The Symbol Package is started by typing "z". Its operation is unchanged except that it will not punch a title and the jump blocks at both ends are not compatable with normal Macro. If a title is desired on the symbol punch, return to ID with a "t", type the title, leave the routine by pressing "CALL" (do not punch an input routine or jump block), and return to Macro with "OG".

6a. If Macro is yanking a tape with either "n" or "y", and a checksum error occurs, ID will indicate an illegal instruction was executed: "6174>> bpt" for a "y" checksum. Back the tape up past the error and type "OG" then "y". "4201>> bpt" for an "n" checksum. Start the tape over, type "OG" then "n".

6b. If the user continues past a punch or reader assignment that failed, ID will consider any rpa or ppb illegal and will give an error printout. Typing "OG" getting the punch or reader assignment, then repeating the "s," "c," "y," "n," or "z" will work.

7. If control is returned to ID, and, before Macro is destroyed, "1T" is typed it will kill all of ID's symbols except the initial table and then merge Macro's symbols except the initial table and then merge Macro's symbol table with ID's.

8. If the Nightmare Version of Macro is used to assemble, the user's binary program is stored on field 1; after getting symbols using "1T" (See Step 7) the program may be unsaved from field 1 by typing "1U".