CC-205

COMPUTATION CENTER
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

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TO: Computation Center Staff

FROM: M. J. Leslie Lowry, F. J. Corbató, J. R. Steinberg

SUBJECT: Memo, Modify, and Ditto Commands in the Compatible Time
         Sharing System.

INTRODUCTION

This memorandum describes a new facility which has been added to
the MIT Compatible Time Sharing System (CTSS). A programmer may now
use the IBM Selectric typewriter to edit a memorandum easily and create
a master for reproduction without time-consuming retyping. Consecutive
lines of the text are entered on the typewriter. When the whole memorandum
has been entered, with appropriate control instructions, a finished copy
will be typed, page by page, on the typewriter.

Control instruction to modify the format of the memorandum are
each entered on control word lines. These are lines in the text
which will not appear in the finished copy.

Each line is automatically given a number for easy referencing
when changes are being made. This line number does not appear on the
finished copy of the memorandum. The sequencing of the line numbers
implies the order of their appearance in the finished memorandum.

Any line of text may be changed by typing another line using the
same line number. Lines may be easily deleted using a control word
line. Other control word lines allow the programmer to do the
following:

1. Change all or part of the memorandum to double spacing.
2. Begin a new page.
3. Cause skipping of any number of lines.
4. Type in a header or title line which will automatically
   appear at the top of each page of the finished copy.
5. Insert footnotes anywhere in the memorandum and have them
   appear at the bottom of the correct page.
6. Easily modify several consecutive lines of the memorandum.

DESCRIPTION

Three new commands have been made available to the foreground user of the CTSS. These commands are:

1. MEMO$|\alpha|\beta$
2. MODIFY$|\alpha|\beta|\alpha|\delta$
3. DITTO$|\alpha|\beta|$

where the $\alpha, \beta, \gamma, \delta$ are file and class designations corresponding to those described for the INPUT, and EDIT commands. Use of MEMO generates a user's file, $\alpha|\beta$. Use of MODIFY brings a user's file, $\alpha|\beta$ into core for modification and refiling as $\gamma|\delta$. Use of DITTO generates a memorandum from the file and prints it on the IBM Selectric typewriter being used as a Time-Sharing console.

USAGE

MEMO, DITTO, and MODIFY are used with the typewriter to produce a memorandum. Textual information can be written, edited and manipulated by use of various control words.

The method of entering the textual matter is similar to the method used by the INPUT command. The MEMO programme types a line number on the typewriter. The programmer then types the line of text which he wishes to enter and strikes a carriage return. MEMO will then type the next line number. If the programmer strikes an initial carriage return before the line of text would have been given, he enters the manual mode. This allows him to type his own line number followed by the text to be entered in that line. An initial carriage return before the line number would have been given effects the re-entry to automatic typing of sequential line numbers. While operating in the manual mode, the programmer may cause a previous line to be replaced or a new line to be inserted between previous lines, dependent upon the line number which was typed. In particular, control word lines may be inserted among text lines.

The MODIFY command, which is essentially a restart of a previous MEMO command, brings the requested file into core memory. Line numbers are then typed sequentially as described in MEMO, except that the first number given is the line that closed the previous MEMO. Typed control words and line numbers are then accepted as if in MEMO. If no $\gamma|\delta$ designation was given, the file $\alpha|\beta$ will be replaced by the modified file. This new file will now be $\alpha|\beta$.

The DITTO command loads the requested file into core memory, strips the line numbers, and types a copy of the memo divided into pages. This process is guided and controlled by the control words interspersed in the text. The control words which may be used to alter the format or facilitate correction are listed in Table 1.

TABLE 1

CONTROL WORDS

Fixed Format	Variable Portion	Brief Mode Equivalent
.EDIT FROM LINE XX		.ED XX
.END EDIT		.EE
.END MEMO		.EM
.DELETE LINE XX		.DE XX
.RESEQUENCE LINE NUMBERS		.RE
.COMMENT		.CO
.END COMMENT		.EC
.HEADER YYY...		.HE YYY...
.BEGIN PAGE		.BE
.FOOTNOTE IN LINE XX AFTER/YYY.../		.FO XX /YYY.../
.DOUBLE SPACE		.DO
.SINGLE SPACE		.SI
.SPACE XX		.SP XX
.CHANGE TYPE BALL TO XX		.CH XX
.END FOOTNOTE		.EF

A control word is indicated by a leading period which is the first entry after a line number. A control word is recognized by the first six characters after the period. In control words requiring the recognition of a number or special set of characters, the remainder of the line is scanned from left to right until the number or special set of characters is found.

For ease in entering the control words a brief mode of operation will be allowed. Instead of matching a 6-character control word after the period, MEMO and MODIFY will accept the two-letter codes listed in Table 1. The scan for numerics or special characters is then begun, if applicable.

CONTROL WORD DESCRIPTIONS:

1. .HEADER YYY...

The 48 characters YYY... will be printed at the top of each page of the memo. The statement "Page xx of yy" will automatically be inserted to complete this header (or title) line appropriately for each page. Pages will not be numbered unless this control word is used. Normally this control word line should only occur once in a memorandum.

2. .EDIT FROM LINE XX

This control word line is not entered into the memorandum file. MEMO and MODIFY automatically switch to printing the line numbers which have previously been entered, instead of the consecutively incremented line numbers. This printing starts with line XX. The programmer can thus replace a series of lines without worrying about omitting any. The sequence will be interrupted by a new .EDIT FROM LINE XX control word or by the .END EDIT control word.

3. .END EDIT

This control word line, which is not entered into the memo file, causes the resumption of typing of new line numbers.

4. .END MEMO

The lines which have been entered will be filed in the user's file with the title given by the initial request for MEMO or MODIFY.

5. .DELETE LINE XX

The line XX will be deleted, and no line will be entered into the memo file for this control word line.

6. .RESEQUENCE LINE NUMBERS

All the lines of the memorandum are assigned sequential line numbers starting with 000100 and incrementing by 100's. A copy of the text (with line numbers) is printed when this process is complete. This control word facilitates additional correction and editing of texts which may have had excessive corrections and insertions. The .END MEMO control word is then assumed and the memorandum is filed as explained in description 4.

7. .COMMENT

The lines of text which follow this control word line are considered to be notes or comments to the programmer. The .COMMENT control word line will not appear in the finished copy of the memorandum. The lines of notes following it will be printed on an initial page of the finished copy. These comments are exerpted and printed at the beginning of the memorandum in spite of the fact that they had line sequence numbers implying their position to be later. The signal to MEMO and MODIFY that the comments are done is the .END COMMENT control word line. Other control word lines will not be recognized between .COMMENT and .END COMMENT.

8. .END COMMENT

This control word is the only means of indicating the end of a sequence of messages to the operator.

9. .BEGIN PAGE

The line following this control word will be positioned at the beginning of a page, (after a heading line, if present.)

10. .FOOTNOTE IN LINE XX AFTER YYY...

The lines following this control word are considered the body of the footnote. The footnote is terminated by the .END FOOTNOTE control word or another .FOOTNOTE control word. The exact sequence of characters YYY... is found in line number XX and a footnote reference number is inserted in parentheses immediately following. Three or four blanks should be left in the correct position in line XX to permit this insertion without any overlapping. The body of the footnote will appear at the foot of the page containing line XX. Large footnotes may be extended to the next page.

11. .DOUBLE SPACE

A blank line will be inserted after each subsequent line of the memorandum.

12. .SINGLE SPACE

This control word causes a change in mode from double spacing to single spacing.

13. .SPACE XX

XX blank lines will be skipped before the next line of text is printed by the DITTO programme.

14. .CHANGE TYPE BALL TO XX

This control word, useful only for the IBM Selectric typewriter implies the intention to print one or more characters of the preceeding line using a different type ball. When the finished form of the memorandum is to be typed by DITTO, a set of instructions to the operator will be printed on a preliminary page. This is illustrated in the example below. As described there, a stop occurs after the affected line. The carriage should then be manually rotated back 2 lines. When the carriage return is struck, the printing of the line will continue, assuming the type ball has been changed. It can be seen that blanks must be inserted carefully in the lines preceeding the control word line and following the control word line to prevent over printing.

When typing with a non BCD character set extra care must be taken not to strike the period position on the keyboard at the beginning of a line unless a control word line is intended.

The memo may be continued using the new type ball until a change type ball control word is recognized.

15. .END FOOTNOTE

See the description of control word 10.

EXAMPLE:

The following is an example of the use of the commands to prepare a short memorandum.

login|m1416|1966

WAIT,

M1416|1966 LOGGED IN 1/10 1135 7

READY.

memo|CC320|memo

000100   .header New Commands for CTSS.

000200   .space 40

000300   This memorandum has been prepared by M.J.L. Lowry.

000400   Distribution: F. J. Corbató

000500   J. R. Steinberg

000600   R. J. Creasy

000700   .begin page

000800   Section I:

000900   Three new commands have been added to the

001000   MIT CTSS. These are MEMO, MODIFY and DITTO.

001100   These commands provide a fast, easy way to

001200   manipulate and duplicate textual matter.

001300   Textual material is entered via the on-

001400

001250   They can be used consecutively or individually.

001500   line typewriter, manipulated in part automatically

001600   and in part by means of control words.

001700   .Edit from line 400

000400   Limited distribution, as follows: F. J. Corbató

000500   J. R. Steinberg

000600   R. J. Creasy

000700 ⊙End edit⟩

001700 ⊙Begin page⟩

001800 Section II:⟩

001900   If it is necessary to type a special character⟩

002000 using a different type ball, the following procedure⟩

002100 is used. The line with the special character, for⟩

002200 example , is typed leaving a blank.⟩

002300 ⊙change type ball to Greek⟩

002400 α ⟩

002500 ⊙change type ball to Roman⟩

002600

002700   The ball was changed to Greek to type line 2400⟩

002800 and then restored for the next line. In the finished⟩

002900 copy both line 2400 and line 2600 will be typed⟩

003000 on top of line 2200. It is also possible to use⟩

003200 more than one type ball change per line. If line⟩

003300 2500 requested a change to ball X, any special⟩

003400 characters typed into line 2600 by ball X would also⟩

003500 be inserted in line 2200.⟩

003600 ⊙Space 7⟩

003700 Section III:⟩

003800   To conclude the memo one uses a control⟩

003900 word which will file the text in a form ready for access⟩

004000 by the DITTO program.⟩

004100 ⊙End memo⟩

READY.⊙

ditto|CC320|memo⟩

Type request for single form or continuous form paper.

single form⟩

At the first stop on page 3, change type ball to Greek,
turn carriage back 2 turns and strike a carriage return.
At the next stop on page 3, change type ball to Roman,
turn carriage back 2 turns and strike a carriage return
At final stop on each page load paper for next page and
strike carriage return to continue typing.
There are 3 pages in this memo.
When this message ends load paper and hit return to begin.

At the first stop on page 3, change type ball to Greek,
turn carriage back 2 turns and strike a carriage return.
At the next stop on page 3, change type ball to Roman,

New Commands for CTSS.

This memorandum has been prepared by M.J.L. Lowry.

Limited distribution, as follows: F.J. Corbató
                                    J.K. Steinberg
                                    R.J. Creasy

New Commands for CTSS.   Page 002 of 003

SECTION I

    Three new commands have been added to the
MIT CTSS. These are MEMO, MODIFY and DITTO.
These commands provide a fast, easy way to
manipulate and duplicate textual matter.
They can be used consecutively or individually.

    Textual material is entered via the on-
line typewriter, manipulated in part automatically
and in part by means of control words.

New Commands for CTSS.

SECTION II:

If it is necessary to type a special character
using a different type ball, the following procedure
is used. The line with the special character, for
example α, is typed leaving a blank.

The ball was changed to Greek to type line 2400
and then restored for the next line. In the finished
copy both line 2400 and line 2600 will be typed
on top of line 2200. It is also possible to use
more than one type ball change per line. If line
2500 requested a change to ball X, any special
characters typed into line 2600 by ball X would also
be inserted in line 2200.

SECTION III:

To conclude the memo one uses a control
word which will file the text in a form ready for access
by the DITTO program.