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Memorandum M-1733

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge, Massachusetts

SUBJECT: A WORD-BY-WORD MODE OF OPERATION FOR THE PAPER TAPE PUNCH

To: Group 61, Applications, In-Out Group, Systems Group

From: Guy Young

Date: November 26, 1952

Abstract: Effective December 8, 1952, there will be an si order which will enable the paper tape punch to handle a 16-digit word with each rc order. After this date, the si addresses of the punch and printer will be changed to those listed below. The results of using certain "unassigned" si addresses with the printers, punch, and readers are listed to aid in program trouble location. •

1.0
        Effective December 8, 1952, there will be an si order which will enable the paper tape punch to handle a 16-digit word with each record order. It will thus punch 3 characters in response to an rc following this si order. These characters will be correctly interpreted by the mechanical paper tape reader and PETR when operating in the word-by-word mode.

        A tape punched by this method will have information in all six digits of each line. Thus, a 16-digit word, ABCDEFGHIJKLMNOP, will appear, on the tape, as:

                              ABCDEF
                              FGHIJK
                              KLMNOP

2.0
        After this date, the si addresses of the punch and printers will be changed to those listed below. The reader addresses will not be changed, but are listed for ready reference.

    2.1 si Addresses for the Punch

        si 204 (octal) or si 132 (decimal) – will allow an rc to punch
                                        one character (line-by-line)
                                        with the 7th hole suppressed.

        si 205 (octal) or si 133 (decimal) – will allow an rc to punch
                                        one character with the 7th
                                        hole punched.

si 206 (octal) or si 134 (decimal) - will allow an rc to punch
three characters (word-by-word)
with the 7th hole suppressed.

si 207 (octal) or si 135 (decimal) - will allow an rc to punch three
characters with the 7th hole
punched.

2.2 si Addresses for the Printers

si 215 (octal) or si 141 (decimal) - printer #1 will print one
character on an rc.

si 225 (octal) or si 149 (decimal) - printer #2 will print one
character on an rc.

si 235 (octal) or si 157 (decimal) - printer #3 will print one
character on an rc.

2.3 si Addresses for the Mechanical Reader (not changed)

si 200 (octal) or si 128 (decimal) - will allow an rd to read in
one character (line-by-line).

si 202 (octal) or si 130 (decimal) - will allow an rd to read in
three characters (word-by-word) .

2.4 si Addresses for the PETR (not changed)

si 211 (octal) or si 137 (decimal) - will allow an rd to read in
one character.

si 213 (octal) or si 139 (decimal) - will allow an rd to read in
three characters.

3.0
It is advised that the following si orders not be used. The results
of using these orders are listed for completeness and to aid in trouble
location in programs.

3.1 The following orders will select the printer indicated, and operate
properly on an rc provided that digits AC 0-5 of the accumulator do not
all contain "zero." If AC 0-5 all contain "zero," a completion pulse will
never be received from the printer, and the computer will hang up.

si 214 (octal) or si 140 (decimal) - select printer #1

si 224 (octal) or si 148 (decimal) - select printer #2

si 234 (octal) or si 156 (decimal) - select printer #3

3.2 The following orders will select the printer indicated, but three characters will be printed on one rc. The code of these characters will depend on the contents of the AC. If AC contains ABCDEFGHIJKLMNOP, the printer will attempt to print the three characters whose codes are

                        ABCDEF
                        FGHIJK
                        KLMNOP

        If one of these groups of six contains all zeros, the computer will not receive a printer completion pulse, and will hang up.

        si 216 (octal) or si 142 (decimal) - select printer #1

        si 226 (octal) or si 150 (decimal) - select printer #2

        si 236 (octal) or si 158 (decimal) - select printer #3

3.3 The following orders will select the printer indicated. The action on an rc will be the same as described in (2), except that a printer completion pulse will always be received.

        si 217 (octal) or si 143 (decimal) - select printer #1

        si 227 (octal) or si 151 (decimal) - select printer #2

        si 237 (octal) or si 159 (decimal) - select printer #3

3.4 The Mechanical Reader will operate properly on the following si orders:

        si 201 (octal) or si 129 (decimal) - line-by-line

        si 203 (octal) or si 131 (decimal) - word-by-word

3.5 The PETR will operate properly on the following si orders:

        si 210 (octal) or si 136 (decimal) - line-by-line

        si 212 (octal) or si 138 (decimal) - word-by-word

                                        Signed _____
                                                Guy Young

                                        Approved _____
                                                E.S. Rich

GY/mrs