

Autograph:

< read in mode >

initialize : start at loc 20.

Program will want to read a paper tape in the reader of the following format :

< carriage return > < text string > < carriage return >

which may be quickly punched on any flexowriter.

It will punch out

"TO. " < text string > " WITH LOVE --- THE TX-0 "

After the tape has been punched, pushing RESTART will generate a new copy of the last tape read.

Winston Edmond

4/14/72 1730 hrs.

The program may be started at 20 as many times as desired. Case shifts are filtered.

## Interpret Music

### Abstract:

Interpret Music is a program designed to facilitate the conversion of sheet music into machine language. The program uses the light pen to write the desired notes. The output produced is a binary tape which is directly playable by the Music VIII program. Provision is made for most of the commonly required features appearing on sheet music. Interpret Music uses all of storage.

### Use of the Program:

1. Title Punching Facility: Read in ~~Interpret Music~~ and press Restart. The flexo-writer must be on. The program will feed some blank tape and enter a listen loop. The title typed will be punched. Terminate with a carriage return. The following special characters are used:

Upper case--open quotes.

Lower case--close quotes.

Delete--deletes (all holes)

Stop code--number sign

Equal sign--colon

### ~~2. Control Staff:~~

After carriage return, some more tape will be fed, and a TRN 177<sup>44</sup> punched. The standard input routine (which must be in storage, of course) will read in the tape when it is to be used.

2. Control staff: The five lines appearing at upper left on the CRT and anything which appears on them is collectively termed the Control Staff. Here will appear clef, key signature and time.

Point the light pen at the top of the desired clef. It will appear on the staff, and a number of sharps and flats appear. If, for example, two flats appear in the desired key signature, point the light pen at the second flat from the left. The key signature will appear on the staff. If none is required (key of C) point the light pen at the natural sign. Now select the time, first numerator, then denominator. Note that each figure is associated with a nearby test point, which is what must be seen by the light pen.

3. Main staff: The five lines across the center of the screen are the Main Staff. A line of points appears at right, and an assortment of rests at lower center. At lower right are a figure 3 and a letter D.

If a Rest is required, select dotted ( D ) or triplet (  $\beta$  ) if required, then point the pen at the rest of the proper time value. It will appear on the staff.

If a Note is desired, first select its pitch by pointing the light pen at the line at far right. A small x will appear opposite the point the pen sees. Moving the pen moves the x. Take away the pen when the pitch is satisfactory. Correction of the position by a single tone can be had by pointing at the correction arrows above and below the pitch line.

Now a sequence of notes appears at lower center, and an array of accidentals and other figures appears at the very bottom of the screen. These are:

Double Flat

Flat

Natural

Sharp

Double Sharp

ST--staccato

LG--legato

8v--octave shifts; left arrow for octave up, right one for octave down

3--triplet, as before,

D--dotted, also as before.

All of the modifiers required must be selected before a time value is selected. Those selected are identified with arrows.

Additional dots appear above ST, LG, and the octave shift arrows. These will select the modifier, not only for the present note, but for succeeding notes as well. All modifiers selected are erased if <sup>(CANCEL SPECIAL FEATURES)</sup>CSF, which appears top center, is selected.

Selection of the appropriately timed note will put all of this at the correct place on the staff. In case of error, CNT(Cancel Note) will delete the last note which was completely written ( it has no effect on any in progress ), and CBR (Cancel Bar) will delete the entire measure.

Ending a measure can occur at any time it is not empty. This is done by selecting EBR (End Bar). The measure will be punched out as one block. The first address of the first block is 2220 octal. The program will indicate that all the allotted time for a measure has been used by drawing a bar across the staff after the last note. No more notes can be written in that measure. If notes are selected such that the allotted time is exceeded, the letters MTE (Measure Time Exceeded) appear at lower center. If a mistake has been made, it can be corrected by erasure<sup>INC</sup> and rewriting notes. Or, it can be punched as is by selecting EBR. The entire contents of the measure as punched are recorded in storage to enable repeating measures.

At the beginning of the new measure, the measure count, which appears at lower right, is increased by one. The display is initially in octal, but if decimal is desired, pointing the pen at the dot near the letter 0, which is just above and to the left of the count, will change the count to decimal, as indicated by the letter D. One can change back in identical fashion.

Also at the beginning of a measure, the letters DCS and CCS appear at top center. DCS is the Display Control Staff switch, which will turn that figure off and increase the display speed slightly, if desired. CCS is Cancel Control Staff. In the event of a change in key signature, selecting this will enable the writing of a new control staff.

EMU is End of Music. Selecting this ends the current selection. The figures HLT, RPT, RDI are displayed. These tell Music VIII how to treat the end of the music. HLT is, of course, halt, RPT is repeat indefinitely, RDI will cause a tape into the PETER to be read in.

4. Repeating: Any measure in storage can be repeated. Set up the octal number of the measure in the TAC, then turn it on by flipping up TAC 0. If there is nothing in the present measure, the TAC will be examined, and the measure will appear on the screen. Also, the controls ERP (End Repeat) and, after a short delay, CPY (Copy) will appear. CPY punches out the measure as displayed, <sup>AND DISPLAYS THE NEXT MEASURE,</sup> ERP will prevent the next measure from being read out after the present one is punched. Single notes of the entire measure can be deleted by using CNT and CBR. While repeating, the number of the measure being repeated is displayed at lower center. The Octal-Decimal switch applies to this as well as to the measure count.

Once the TAC has been examined and found on, it will not be examined again until it has been found to be off.

Should the control staff of the measure being repeated be different from the previous display, the one for the measure being examined will be displayed, and the display will be turned on if it was off.

5. Final Stop: After the final stop at EMU, restart starts the entire program over again.

**SUMMARY OF CONTROL INDICATIONS**

- DCS-Display Control Staff-display off-on switch
- CCS-Cancel Control Staff, and write a new one
- EBR-End Bar-punch current measure
- EMU\*End of Music
- CSF-Cancel Special Features-deletes all accidentals and other modifiers
- CBR-Cancel Bar
- CNT-Cancel Note
- CPY-Copy-punch the measure being repeated and copy the next out of storage
- ERP-End Repeat, return to normal music-writing mode
- MTE (not selectable) Measure Time Exceeded--check for mistake

Storage limits: The number of notes in any measure may not exceed 18.

The number of notes plus twice the number of measures may not exceed 3543 decimal.

DEMONSTRATION TAPES

LEARN

CONSOLE: "CM SELECT" UP  
"INTENSITY CONTROL" UP  
LIGHT PEN AMPLIFIER ON

READ IN TAPE.

RESTART (TRN 4000)

Scope will display Random Number Generator Points.

Draw in an "X" or a "O" with light pen.

Flick the TAC Bit No. <sup>0</sup> ~~3~~ up <sup>+</sup> ~~to~~ down to signify completion of a drawing.

Computer will examine the figure and calculate on the basis of previous learning its decision.

The result is indicated by an arrow. The operator must tell the computer, by use of the light pen, what the figure was meant to be. This way you build up the history of learning as you demonstrate.

This tape starts with a history of 200 samples. The program, by Larry Roberts, is a modified version of Rosenblatt's PERCEPTRON.

DEMONSTRATION TAPES

MOUSE (See Memo by John E. Ward for complete details.)

CONSOLE: "CM SELECT" UP  
"INTENSITY CONTROL" UP  
"LIGHT PEN AMPLIFIER POWER" ON  
FLEXO: POWER ON, HIT "START READ"  
"PUNCH ON" DOWN

READ IN TAPE.

RESTART (TRN /CO )

An undeveloped maze will appear. By means of the light pen and "DO" switch, the operator may build up a maze, insert up to three cheeses and insert a mouse.

Several sample mazes are stored at the end of the tape. To obtain these developed mazes, put the program in the "WHAT" Loop by "DOING" an incomplete statement.

STOP THE COMPUTER.

READ IN THE NEXT BLOCK OF TAPE.

RESTART.

NOTE: The MOUSE may only be re-run once with memory. The second attempt will allow the MOUSE to escape through the outside wall of the maze.

Use card to identify the functions of the TAC bits.

DEMONSTRATION TAPES

MOVING GROUP

CONSOLE:       "CM SELECT"    UP  
                  "INTENSITY CONTROL"    UP  
                  LIGHT PEN AMPLIFIER    ON

READ IN TAPE.

RESTART (TRN 500)

CLUSTER IN CENTER OF SCOPE MAY BE MOVED UNDER CONTROL OF THE  
LIGHT PEN.

DEMONSTRATION TAPES

READ AND PRINT FLE XO

CONSOLE: "CM SELECT" UP

"TYPE IN" DOWN

TAC = TRN 155

FLE XO: POWER ON, HIT "START READ"

"PUNCH ON" DOWN

READ IN "READ AND PRINT FLE XO" TAPE.

PLACE ENGLISH (FLE XO CODED) TAPE IN PETR.

RESTART (TRN 100)

WHEN ENGLISH TAPE HAS BEEN READ IN PUSH TEST (TAC = TRN 155)

TO OBTAIN ANOTHER PRINTOUT PUSH TEST AGAIN.



DEMONSTRATION TAPES

TIC TAC TOE

CONSOLE: "CM SELECT" UP

"INTENSITY CONTROL" UP

~~LIGHT PEN AMPLIFIER POWER~~ ON

READ IN TAPE.

RESTART (TRN 3770)

Machine will make the first play. Use pen to insert an "X" for your play. When the game is completed, wait for comments displayed on the scope.

DEMONSTRATION TAPES

TYPE AND DISPLAY

CONSOLE: "CM SELECT" UP  
"TYPE IN" UP  
"INTENSITY CONTROL" UP  
"TAC" = 0, 1, 2, or 3 (CONTROLS SIZE OF CHARACTERS)  
FLEXP: POWER ON, HIT "START READ"  
"PUNCH ON" DOWN

READ IN TAPE.

RESTART (TRN 30)

NOTE: As a margin warning, when approaching end of the line,  
the computer halts.

RESTART to continue.

## Type and Display II

- a) Restart after reading — marker dot will appear in upper left corner.
- b) Push color-shift key to change display scale.
- |               |    |                      |            |   |  |
|---------------|----|----------------------|------------|---|--|
| Initial scale | is | $7/8$                | units high |   |  |
| First push    | is | <del>14</del> $14/8$ | "          | " |  |
| Second "      | "  | $22/8$               | "          | " |  |
| Third "       | "  | $30/8$               | "          | " |  |
| Fourth "      | "  | $7/8$                | "          | " |  |
|               |    | etc                  |            |   |  |
- c) Use Upper case or lower case keys as desired.
- d) Marker dot appears in lower left corner of next character space after an invisible key, i.e.; tab, space, carriage return.
- e) Use backspace key to erase mistyped letters.
- f) Use delete key to completely erase typing. This also puts scale back in smallest ( $7/8$ ) size, so repeat step b).
- g) Margin warning hits computer — use restart to continue. Automatic carriage return at edge of screen.
- h) After typing has started, color-shift key is ? (lower case) and ! (upper case).

DEMONSTRATION TAPES

TYPE MUSIC

CONSOLE: "CM SELECT" UP

"TYPE IN" UP

AUDIO AMPLIFIER: "INPUT SELECTOR" AUX,

"VOLUME" 1/8 - 1/4 TURN CLOCKWISE

FLEXO: POWER ON, HIT "START READ"

"PUNCH ON" DOWN

READ IN TAPE

Transfers into program at completion of Read-in  
(If necessary to re-enter, TRN 400).

NOTE: Each key on Flexo keyboard will produce a different note.  
Type slowly.

DEMONSTRATION TAPES

WELCOME TO TX-0

CONSOLE: "CM SELECT" UP

"INTENSITY CONTROL" UP

READ IN TAPE.

TRANSFERS INTO PROGRAM AT COMPLETION OF READ-IN

RESTART (TRN 1400)