
NAME

perform — play Humdrum ****MIDI** files

SYNOPSIS

perform [-g] [-i *hex*] [-t *n.n*] [-v *n*] [*inputfile.hmd*]

DESCRIPTION

The **perform** command allows the user to listen to synthesized performances of Humdrum ****MIDI**-format input. When invoked, **perform** provides an interactive environment suitable for proof-listening and other audition tasks.

The **perform** command accepts as input Humdrum inputs containing ****MIDI** representations. The command generates serial MIDI data which are sent directly to a MIDI controller card. The user must have an appropriate MIDI synthesizer connected via a Roland MPU-401 (or compatible) MIDI controller card. All ****MIDI** spines present in the input stream are performed. Non-MIDI spines are ignored and do not affect the sound output.

When first invoked, the **perform** command reads in the entire input into memory. By loading the complete input into memory, random data access is possible and so the user can move freely both forward and backward through the MIDI score. (Note that the size of any input is limited by the available memory.) While the data is being loaded into memory, a tally of the number of bytes loaded is reported. Once the data is loaded, MIDI performance commences immediately.

The **perform** command provides a set of interactive commands that allow the user to pause and resume playback, to change tempo, to move to any measure by absolute or relative reference, and to search forward or backward for commented markers. Editing of MIDI data is not available using **perform**.

Playback can be suspended by typing the space-bar; typing any key will resume playback. By itself, typing ENTER will return to the beginning of the score and re-initiate playback. If a number is typed before pressing ENTER, **perform** will search for a corresponding measure number and continue playback from the beginning of the specified measure. Where more than one measure matches the inputted measure-number, **perform** will find the nearest matching measure, without going backward through “measure zero.” Typing a *number* followed by the plus sign (+) will move to the numbered measure corresponding to the current measure plus <*number*>, and continue playback from the beginning of that measure. Typing a *number* followed by the minus sign (–) will move to the numbered measure corresponding to the current measure minus <*number*>, and continue playback from the beginning of that measure. The **perform** commands for moving forward and backward should be avoided when inputs contain unnumbered measures or highly unusual orderings —

such as reverse-order measure numbers.

The tempo can be modified interactively by using the greater-than (>) and less-than (<) signs to increase or decrease the tempo respectively. The less-than sign reduces the tempo whereas the greater-than sign increases the tempo. Tempo changes are in increments of 6 quarter-note durations per minute. A minimum tempo of 8, and a maximum tempo of 250 quarter-notes per minute are permitted. The current tempo is displayed whenever a change of tempo is made.

In the default operation, **perform** echoes all global comments on the screen as the comments are encountered in the input. For inputs containing appropriate annotations, the echoing of comments can provide useful visual markers or reminders of particular moments in the sound output. Whether or not global comments are echoed on the standard output, users can use the **perform** forward-search (/) and backward-search (?) commands to move directly to a particular commented point in the score. For example, if an input contains a global comment containing the character string “Second theme,” the user can move immediately to this position in the input by entering the following command:

```
/Second theme
```

followed by a carriage return <cr> (or ENTER). (The search string need only contain sufficient characters to distinguish uniquely the appropriate point of interest.) Similarly, the user can search backward for this character string by entering:

```
?Second theme
```

If the search is successful, playback continues immediately from the new score position. If the search is unsuccessful, playback continues from the current score position.

In rare circumstances, ciphers (stuck notes) can occur in MIDI tasks — such as where an intermittent MIDI cable fails to convey a “note-off” instruction to an active synthesizer. The **p** command (“panic”) turns off all active notes. In addition, a “power panic” command (upper-case letter **P**) is provided; this command sends “all-notes-off” commands on MIDI channels 1-16. See also the **tacet** command.

The **f** command will flag a current measure by echoing the measure number on the screen. This can be useful for chronicling various events without having to pause or interrupt playback.

The **perform** command is terminated by typing either **q** or **Q**, or by pressing the escape key (ESC).

The following table summarizes the interactive commands provided by **perform**. A summary of these commands can be displayed from within **perform** by typing the **h** (help) command.

<space>	pause; suspend playback; strike any key to continue
<	reduce tempo
>	increase tempo
-	go back to the beginning of the previous measure and continue performing
<i>integer</i> -	go back <i>integer</i> measures and continue performing from the beginning of that measure
+	go forward to the beginning of the next measure and continue performing
<i>integer</i> +	go forward <i>integer</i> measures and continue performing from the beginning of that measure
<cr>	by itself the carriage return moves to the beginning of the score and continues performing
/string<cr>	search forward from the current position for the next global comment containing <i>string</i> and continue performing
?string<cr>	search backward from the current position for the nearest global comment containing <i>string</i> and continue performing
<i>integer</i> <cr>	go to numbered measure <i>integer</i> ; where more than one measure shares the same numerical label go to the next (forward) measure matching <i>integer</i>
h	display command summary help screen
p	panic; turn off all active notes
P	power panic; reset all notes off on all MIDI channels
q	same as q
Q	terminate the perform command
<ESC>	same as q

Interactive commands in perform.

In order to facilitate user interaction, a number of keyboard ‘aliases’ are provided. For example, the comma (,) and the period (.) are valid aliases for the less-than (<) and greater-than (>) signs; these aliases normally share the same keys on ASCII keyboards and so avoid the need to use the shift-key. For similar reasons, the equals-sign (=) and the underscore (_) are valid aliases for the plus and minus signs respectively.

OPTIONS

The **perform** command provides the following command-line options:

- g** suppress the echoing of global comments on the standard output
- h** displays a help screen summarizing the command syntax
- i hex** assign MIDI input/output address to *hex*
- t n.n** set initial tempo to *n.n* times the default tempo
- v n** specify default MIDI key-velocity value (0-127)

Options are specified in the command line.

In addition to modifying the tempo interactively while performing, the performance tempo may be specified either in the command line or in the input Humdrum representation. The tempo may be specified on the command line by using the **-t** option. The **-t** must be followed by an integer or real value between 0.13 and 3.80. A value of 1.0 corresponds to the default tempo of 66 quarter-notes per minute. A value of 2.0 doubles the tempo, whereas a value of 0.5 halves the tempo. Alternatively, tempo may be specified using the ****MIDI** tandem interpretation for metronome marking (e.g. ***MM96**). Tempos found in the input representation take precedence over any tempo specified on the command line. If no tempo information is available, **perform** uses the default tempo of 66 quarter-notes per minute.

The **-v** option allows the user to specify a key-velocity default. MIDI instruments normally treat key-velocity data as dynamic or accent information — thus higher key-velocity values are associated with accented notes. Permissible key-velocity values range between 0 and 127. The **-v** option can be used to set the default key-velocity for key-on commands with unspecified key-velocities. In the absence of the **-v** option, the default key-velocity value is 64.

In normal operation, **perform** echoes all global comments on the standard output. This feature may be defeated by invoking the **-g** option.

The **-i** option is used to specify the input/output address of the MIDI card. The default address is '330.' The address is specified as a hexadecimal number.

WARNINGS

When using Microsoft *Windows*, the **perform** command requires the use of “standard mode;” **perform** is unable to work in “386 enhanced mode.”

Improper termination of **perform** may leave the MIDI card active, and so possibly to hang the machine. Proper termination of **perform** is achieved via the letters **q** or **Q**, or via the escape key (ESC). In the event of improper termination, the **midreset** command should be used.

PORTABILITY

DOS 2.0 and up. Microsoft *Windows*, in “standard mode” only.

PROPOSED MODIFICATIONS

The program should be modified to allow inputs to contain MIDI control codes and MIDI system exclusive codes.

SEE ALSO

encode (4), **encode.rc** (5), ****MIDI** (2), **midi** (4), **midreset** (4), **record** (4), **smf** (4), **tacet** (4)

perform (4)

◇ *Humdrum Command Reference* ◇

REFERENCES

Use of the Music Quest Inc. MIDI library functions is gratefully acknowledged.