

Using miditext

The MIDI-to-textmidi translator

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1 Overview

The `miditext` program translates a binary standard MIDI file into a text file in textmidi language. A file in textmidi language can be edited and processed with text tools and macro processors such as `m4`. Textmidi files can then be re-translated into MIDI using `textmidi`. The goal of `miditext` and `textmidi` together is to permit the specification of any musical events that are permitted by the MIDI 1.1 spec's chapter on Standard MIDI Files. SysEx (system exclusive) is also supported, as are all three filetypes (single track, multitrack and multi-sequence).

The textmidi language is described in the info page for `textmidi`.

The programs `textmidi` and `miditext` are not written to interpret poorly-formed standard MIDI files, that is, files that do not follow the MIDI 1.1 Spec. Nevertheless, although at least one popular multimedia program from decades ago wrote illegal key signature events, with only a byte for the number of sharps or flats, but no mode (major/minor) byte, `miditext` will accept this idiosyncrasy.

No attempt is made in textmidi to support either MIDI show control or machine control.

1.1 What is miditext?

The program `miditext` reads a standard MIDI file and converts it to a text file, which is in the textmidi language. Each item in the text file corresponds to an item in the binary MIDI file, more or less.

`miditext` does not record or play over a MIDI interface.

1.2 History

`miditext` was developed in 2003 and improved in 2020 and 2021 in order to add support for more of the MIDI specification.

2 Invoking miditext

2.1 Options

```
miditext [-i|--midi] midi_input_file [-o|--textmidi textmidi_output_file
[-a|--answer] [-q|--quantize musical_ratio in quotes] [-l|--lazy] [-h|--help]
[-V|--version] [-v|--verbose]
```

-h, --help

Print the options summary.

-v, --verbose

Write some informative messages to the screen. Errors are printed regardless.

-V, --version

Print the version of `miditext`.

-i, --midi *midi_input_file*

The input file: a MIDI file.

-o, --textmidi *textmidi_output_file*

The output file, in textmidi text language.

-q, --quantize *num*

A musical rhythm ratio (in quotes to satisfy most command shells) to use as the common divisor of all rhythmic durations. For example “1/16” would force all durations to be divisible by a sixteenth-note.

-l, --lazy

Will attempt to output track data in textmidi’s LAZY mode, an abbreviated text representation.

-a, --answer

If the output textmidi file already exists, ask before overwriting it.

2.2 Invocation Examples

The following command will read the MIDI file `prelude.mid` and convert it to the text-based textmidi language.

```
miditext --midi prelude.mid --textmidi prelude.txt
```

The following converts `prelude.mid` into `prelude.txt`, and attempt to write using the abbreviated LAZY mode representation.

```
miditext --midi prelude.mid --textmidi prelude.txt --lazy
```

The following converts `prelude.mid` into `prelude.txt`, and coerces rhythms to be divisible by a thirty-second note. If the file `prelude.txt` exists, the user will be asked whether to overwrite it.

```
miditext --midi prelude.mid --textmidi prelude.txt --quantize “1/32” --answer
```

3 Installation

This program was prepared for builds using GNU autoconf tools. Unpack the archive. Move to the directory created for the program. Run the configure script and run make.

```
./configure  
make
```

Make yourself superuser (root), or use sudo to run install targets:

```
make install  
make install-info
```

4 Testing

Part of the testing of the conversion utilities `miditext` and `textmidi` is performed on linux with a script similr to this:

```
#!/usr/bin/env bash
function testmidi
{
    temporary_directory=$(mktemp -d)
    bn=$(basename ${1} .mid)
    ~/me/janzent/miscprog/textmidi/miditext --midi ${1} --textmidi ${temporary_directory}/${bn}.txt
    sed -i -f ~/me/janzent/sed/starttrack.sed ${temporary_directory}/${bn}.txt
    ~/me/janzent/miscprog/textmidi/textmidi --textmidi ${temporary_directory}/${bn}.txt -
-midi ${temporary_directory}/${bn}.mid
    if [ -s ${temporary_directory}/${bn}.mid ]; then
        echo "new MIDI file is finite length";
    else
        echo "new MIDI file is either absent or zero length";
    fi
    ~/me/janzent/miscprog/textmidi/miditext --midi ${temporary_directory}/${bn}.mid --
textmidi ${temporary_directory}/${bn}_B.txt
    sed -i -f ~/me/janzent/sed/starttrack.sed ${temporary_directory}/${bn}_B.txt
    ls -l ${1} ${temporary_directory}/${bn}.mid
    diff -s ${1} ${temporary_directory}/${bn}.mid
    diff -q -bBw -s ${temporary_directory}/${bn}.txt ${temporary_directory}/${bn}_B.txt
}
testmidi ${BASH_ARGV[0]}
```

This script can be invoked with

```
./testmidi prelude.mid
```

The result is to create a temporary directory and create the files `prelude.txt`,

- `prelude.txt`
- `prelude.mid`
- `prelude_B.txt`

The original MIDI file and the temporary `prelude.mid` are compared. The two `textmidi` text files are compared. The test set consists of 6340 classical music files. 64 MIDI files were put aside after having prompting error messages from an independent scoring program. The remaining 6276 files all compare the text files as identical, and about a third of the pairs of MIDI files compare as identical. The differences between MIDI files are still being investigated, but causes known so far include the following:

- Some of the imported MIDI files did not use running status, in which voice-channel events can drop the command byte if the command and channel are the same in consecutive voice-channel events. `textmidi` always uses running status. Running status as used by `textmidi` is marked undefined at the beginning of each track, and set by the first voice-channel event. From then to the end of the track, running status is set only by voice-channel events. It is not reset by non-voice-channel events, including Channel Change. In some files running-status is reset by a control event. Voice-Channel events are one of:
 - Channel Pressure
 - Note On
 - Note Off

- Polyphonic Key Pressure
- Pitch Bend
- Program Change
- Control Change (including omni/poly on/off)
- In text events (including TRACK, INSTRUMENT, COPYRIGHT, etc.) `miditext` drops both prefacing and trailing spaces, as well as terminating “nul” (a character with a numeric value of zero) bytes. Therefore, TEXT events in the round-trip, recreated MIDI file may differ from those in the original MIDI file.
- `miditext` recognizes the short key signature event, but `textmidi` always creates the standard event with five total bytes: (0xFF, 0x59, 2 [the following data length], sharps/flats, mode).

5 Known Bugs

Although the DETAIL mode representation should be accurate, if `--lazy` is selected, and if a track in the MIDI file has overlapping note events with asynchronous start and stop times, the LAZY mode representation may not be accurate. `miditext` is not meant to support non-conforming MIDI files. Neither `miditext` nor `textmidi` are meant to support real-time MIDI messages that are not intended for use in MIDI files.

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7 Bibliography

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