midi-transform

This is a little CoreMIDI MacOSX command-line program whose purpose is to convert some MIDI controller Controller Change MIDI messages into SysEx parameter change MIDI message for some synthesizer. Accessorily, it also forwards all the other MIDI messages from the controller to the synthesizer.

Currently only the SysEx Parameter list for the Korg DW-8000/EX-8000 is implemented, with a default mapping for the Alesis VI61 MIDI controller.

Demo video at:

- https://www.youtube.com/watch?v=zUB6otw7lic

See also:

- https://www.stereoping.com/synth-controller/
- https://www.youtube.com/watch?v=K6nbcbXXn5g

Features

Main Features:

- Receives MIDI messages from the controller, and
- for normal MIDI messages (note, etc), forwards them to the DW-8000 / EX-8000 synthesizer (updating the channel if needed).
- CC messages are transformed into parameter-change sysex (updating the channel if needed).

Secondary Features (implemented):

- pass through mode for knobs (continuous controls).

Secondary Features (not implemented yet):

- option for absolute or pass-thru mode for knobs. (absolute is better when creating new sounds, pass-thru is better when patching a sound live).
- configure the CC mapping interactively:
    - select in the user interface a parameter of the target synthesizer.
    - receive a CC message from the controller.
    - establish the mapping between that CC message and the parameter.
- support other target synthesizers (Korg DSS-1 in addition to Korg DW-8000).
- support multiple target synthesizers and multiple controllers.
- load and save programs.
- load and save whole program banks.
- currently bank MSB/LSB are ignored for program changes; they could be taken into account, automatically downloading new banks.
- add some graphical (or ascii art) features such as drawing the envelopes when modifying them…
- port to Linux (eg. Raspberry Pi)

Usage

```
$ ./midi-transform  --help


midi-transform usage:

    midi-transform [-h|--help] [-l|--list-devices]\
                   [-dd|--dw-8000-device-name|-ed|--ex-8000-device-name  name]\
                   [-dc|--dw-8000-channel|-ec|--ex-8000-channel  midi-channel]\
                   [-cd|--controller-device-name  name]\
                   [-cc|--controller-channel  midi-channel]

  names can be found with --list-devices,
  midi-channel go from 1 to 16.
  Defaults are: -dd "Korg DW-8000" -dc 11 -cd "VI61" -cc 11
```

RC File

When starting up, `midi-transform` will read the file `.midi-transform.lisp` in the user `HOME` directory, if it exists, and evaluate the Common Lisp expressions contained.

Commands

While running, `midi-transform` prints a prompt ("> "), and reads commands. Currently the following commands are recognized:

quit

stops running.

help

prints the list of recognized commands.

Furthermore, when unrecognized commands are entered, they are interpreted as Common Lisp expressions. Example:

```
[pjb@despina :0.0 current-midi-transform]$ ./midi-transform

> (list (lisp-implementation-type) (lisp-implementation-version))
 --> ("Clozure Common Lisp" "Version 1.11-r16635  (DarwinX8664)")
> (+ 2 3)
 --> 5
> (IN-PACKAGE "COM.INFORMATIMAGO.MIDI.TRANSFORM")
 --> #<Package "COM.INFORMATIMAGO.MIDI.TRANSFORM">
> (setf *midi-verbose* t)
 --> T
>
```

Example

```
$ ./midi-transform
    Selected group 0
>
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 4
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 4
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 4
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 4
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 4
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 4
    Selected group 1
CC: UPDATE PARAMETER VCA-VELOCITY-SENSITIVITY TO 3
CC: UPDATE PARAMETER VCA-VELOCITY-SENSITIVITY TO 2
    Selected group 0
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 2
CC: UPDATE PARAMETER VCF-VELOCITY-SENSITIVITY TO 1
    Selected group 2
CC: UPDATE PARAMETER MG-OSC TO 22
CC: UPDATE PARAMETER MG-OSC TO 23
CC: UPDATE PARAMETER DELAY-EFFECT-LEVEL TO 2
CC: UPDATE PARAMETER DELAY-EFFECT-LEVEL TO 3
CC: UPDATE PARAMETER DELAY-EFFECT-LEVEL TO 4
CC: UPDATE PARAMETER DELAY-EFFECT-LEVEL TO 5
> help
Help:
  help     Displays this help.
  quit     Stops this midi application.
> quit

$
```

Obtaining the sources

1- create a directory where to clone it, since dependencies will be cloned in brother directories.

```
$ mkdir src ; cd src
```

2- clone the sources:

```
$ git clone git@framagit.org:pjb/midi-transform.git
```

Running in ccl:

```
> (ccl:chdir "src/midi-transform/")
> (load "loader")
> (com.informatimago.midi.transform:initialize)
> (com.informatimago.midi.transform:run
          :dw-8000-device-name "Korg DW-8000"
          :dw-8000-channel 10
          :controller-device-name "VI61"
          :controller-channel 10)
```

Internally, MIDI channels numbers go from 0 to 15, (they're converted while parsing the the command line arguments). So use 10 to indicate MIDI Channel 11, 0 for MIDI Channel 1. The above values are default parameters, so you can run it with just:

```
> (com.informatimago.midi.transform:run)
```

if you configure your devices on the channel 11 and name them like this in the "Audio MIDI Setup" application.

Compiling the binary program

```
$ make help
$ make
$ ./midi-transform --help
```

The midi-transform program can be installed in `/usr/local/bin` with:

```
$ make install
```

or in some other directory by specifying the `PREFIX`:

```
$ make PREFIX=/opt/local install
```

will install `/opt/local/bin/midi-transform`.

TODO

```
--------------------------------------------------------------------------------
(BACKTRACE-AS-LIST :CONTEXT NIL :PROCESS NIL :ORIGIN NIL :COUNT 1152921504606846975 :STA
(PRINT-BACKTRACE #<SYNONYM-STREAM to *TERMINAL-IO* #x30200121BA3D>)
(FUNCALL (:INTERNAL COM.INFORMATIMAGO.MIDI.TRANSFORM::MIDI-PORT-READ) #<SIMPLE-ERROR #x3
(SIGNAL #<SIMPLE-ERROR #x30200166222D>)
(%ERROR #<SIMPLE-ERROR #x30200166222D> (:EXPECTING-DATA-DUMP) 9390223)
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.KORG.DW-8000::CHECK-STATE (COM.INFORMA
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.KORG.DW-8000::SEND-PROGRAM-CHANGE (COM
(FUNCALL (:INTERNAL ((SETF COM.INFORMATIMAGO.MIDI.ABSTRACT-SYNTHESIZER:SYNTHESIZER-CURRE
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.KORG.DW-8000::ENQUEUE* (T T)> #<COM.IN
(FUNCALL (:INTERNAL ((SETF COM.INFORMATIMAGO.MIDI.ABSTRACT-SYNTHESIZER:SYNTHESIZER-CURRE
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.ABSTRACT-SYNTHESIZER:UPDATE-PARAMETER
(FUNCALL #<STANDARD-METHOD (SETF COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER::CELL-INP
(%%BEFORE-AND-AFTER-COMBINED-METHOD-DCODE (NIL #<STANDARD-METHOD # :AFTER #> . 9390283))
(%%STANDARD-COMBINED-METHOD-DCODE (NIL (#<#>) #<STANDARD-METHOD # #>) 9390283)
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER::CELL-OUTPUT-CH
(FUNCALL #<STANDARD-METHOD (SETF COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER::CELL-OUT
(%%BEFORE-AND-AFTER-COMBINED-METHOD-DCODE (NIL #<STANDARD-METHOD # :AFTER #> . 9390322))
(%%STANDARD-COMBINED-METHOD-DCODE (NIL (#<#>) #<STANDARD-METHOD # #>) 9390322)
(FUNCALL #<STANDARD-METHOD (SETF COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER::CELL-INP
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER:DISPATCH (COM.I
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER:DISPATCH (COM.I
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER:DISPATCH (COM.I
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.PARAMETER-MAP-COMPILER:DISPATCH (COM.I
(FUNCALL #<STANDARD-METHOD COM.INFORMATIMAGO.MIDI.TRANSFORM::MAP-CONTROLLER-TO-SYSEX-REQ
(MIDI-PORT-READ #<A Foreign Pointer #x7000060C3E70> #<A Foreign Pointer #x11144E0>)
(%PORT-READ-CALLBACK #<A Foreign Pointer #x7000060C3E70> #<A Foreign Pointer #x113A40> #
(FUNCALL CFFI-CALLBACKS::|COM.INFORMATIMAGO.MACOSX.COREMIDI::PORT-READ-CALLBACK| 1539317
--------------------------------------------------------------------------------
EE: 17908960: Invalid synthesizer state EXPECTING-DATA-DUMP
    Program change parameter = #<INTERNAL-PARAMETER #x302001314CCD>  value = 32
RC: (MIDI:PROGRAM-CHANGE-MESSAGE :TIME 500878002295559 :STATUS 200 :CHANNEL 8 :PROGRAM 1
RC: #<A Foreign Pointer #x11144E0>: PC 114
```

License