Technites 2016

MIDI Band

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MIDI CC and its interface with FL Studio

I assume you are already familiar with midi messages, their structures and, some basic messages to turn on and off notes. I'll any how discuss it as quickly as possible. Most MIDI messages are composed of the following parts:

Status byte	Data byte1	Data byte2
0x 9 0	0x 3 C	0x 5 5
1001 | 0000	0011 1100	0101 0101
Command | Channel		

MIDI CC

MIDI CC (Control Change) are a special set of MIDI messages that allow the user to change the "Quality" of a note that is already played without turning it off. This way different characteristics of a tone can be controlled. For controlling these characteristics we use different MIDI controllers which we will discuss up on. Any MIDI CC message starts with hex B (1011) as the command part of the status byte following which is the channel number. The next byte is the controller number. In the MIDI flute 0x 0 B or 11 (decimal 11 :P) controller is used to control expression or simply volume of the current note that is being played on MIDI channel 1. There are a number of different controllers but many of them are reserved for specific purposes. On the other hand there are some not defined controllers that the user can use and map it to different properties of a channel. FL studio is an exception where even the reserved controllers are to be mapped manually.

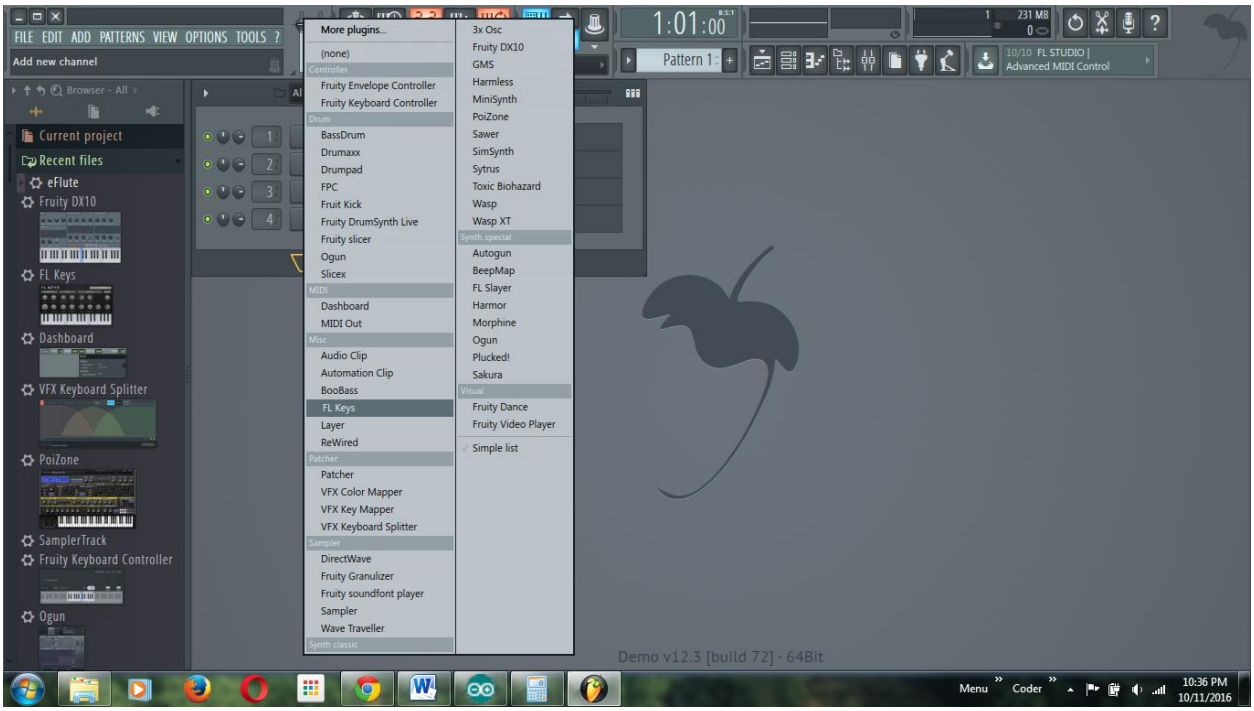
Implementation

The Arduino code is kind of more than enough to get an idea of how it works but as an example we send the message midi(0xB0 , 0x05 , map(analogRead(A0),0,1023,0,127)).

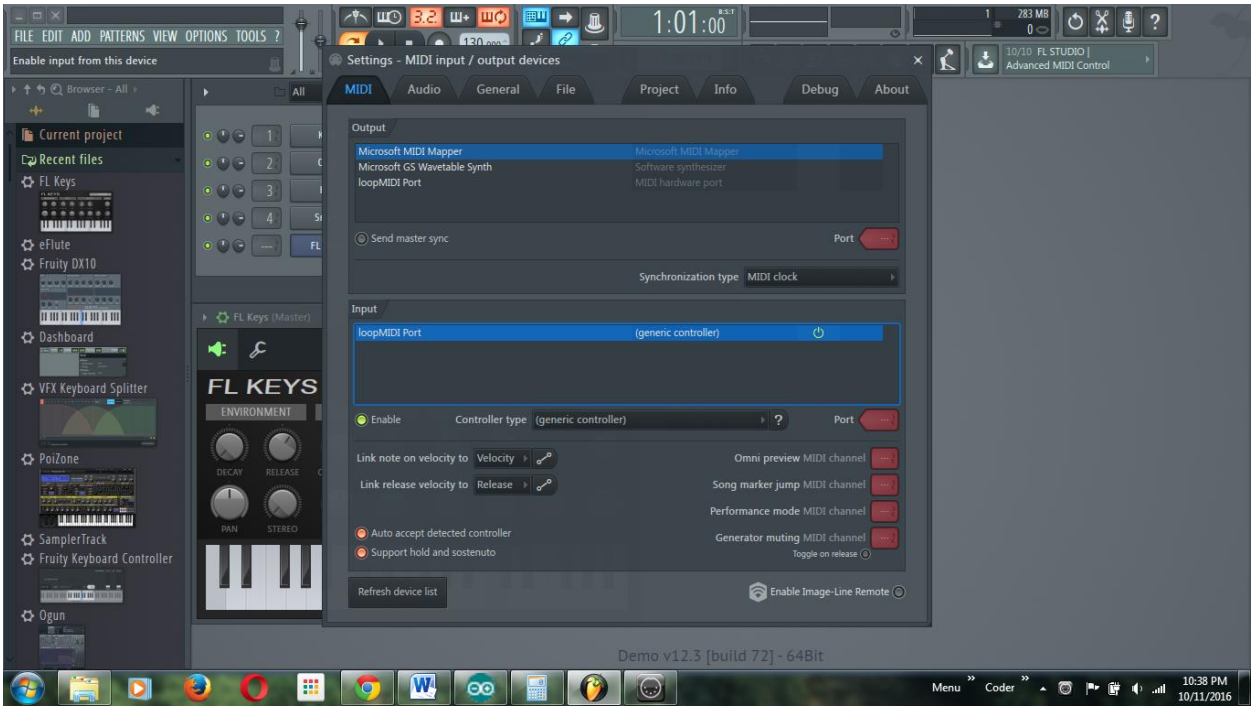
The status byte will tell the MIDI software that a MIDI CC message is going to arrive for the channel 0. The next byte tells the software which controller is sending data. In our case it is "Portamento Time". The next value is the "magnitude" of the property the controller is controlling. For most MIDI CC messages the generic midi() function (as defined in the code can be used).

Interfacing with FL Studio

1. Open FL studio and find a suitable plugin for the required instrument.



2. Connect your MIDI input device and enable it.



3. Right Click the property you want to control and go to link to controller.

4. Select the controller that you are using and appropriate channel. Also enable smoothing to avoid abrupt jumps.

5. And it's done!! Well at least the part of FL Studio. Try if the controller works. In the top left corner

Beneath the file edit toolbar you can see if the midi messages received are valid (understood by FL studio or not). If valid it'll show a tic mark for every message it receives else it'll display '?'.

6. Caution always constraint the output of second data byte between 0 and 127 else it may result in breach of the MIDI protoco 

l itself and if you are using software like hairless MIDI then it might crash.

7. Check Out the complete list of MIDI CC controllers and their functions here:

https://www.midi.org/specifications/item/table-3-control-change-messages-data-bytes-2