

Homework 4: MIDI Keyboard

Due at 11:59pm ET on November 4

1 MIDI Keyboard (5 points)

In this assignment, we are going to build a simple MIDI keyboard in Max using the computer keyboard as inputs. You will be using the “key” and “keyup” objects to detect the computer keyboard inputs. You should use the “key” object to detect whether a key is pressed and send a MIDI note-on event. Similarly, you should use the “keyup” object to detect if a key is released and send a MIDI note-off event. Your MIDI keyboard should support the keys ‘asdfghjk’ as middle C to high C and the keys ‘wetyu’ as C#, D#, F#, G# and A#. Also, it should support playing multiple pitches at the same time, i.e., polyphony.

In addition, your Max patch should include a “umenu” object that allows the users to select the instrument from a drop-down menu. The patch should support piano (program 1), guitar (program 25), bass (program 33), strings (program 49), drums (channel 10) and optionally other instruments you like. Note that when the user selects the drums, the MIDI pitch should start from 35 rather than 60 so that we get an acoustic bass drum sound when pressing the key ‘a’, a snare drum sound for the key ‘e’ and a closed hi-hat sound for the key ‘g’. Moreover, make sure that your Max patch works when switching to the drums and back to another instrument, i.e., you need to reset the MIDI channel.

There are always many different ways to implement the same idea in Max, but some are cleaner than the other. Please try your best to make your code easy to follow.

Hints

- You might find the “send” and “receive” objects useful to avoid long cords.
- You might find the “==” object useful for value comparison.
- You might find the “switch”, “gate” and “select” objects useful for conditionals.

2 Submission

- All assignments must be completed on your own. You are welcome to exchange ideas with your peers, but this should be in the form of concepts and discussion, not in the form of writing and code.
- Please provide proper citations/references for any external resources you use in your writing and code.
- Please submit your work to [Gradescope](#).
- Late submissions will be deducted by 1 point per day.