IMCA 221
Programming for Artists
Winter 2026

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Class is on Zoom even in the classroom for sharing, find the details on Moodle https://moodle.concordia.ca/

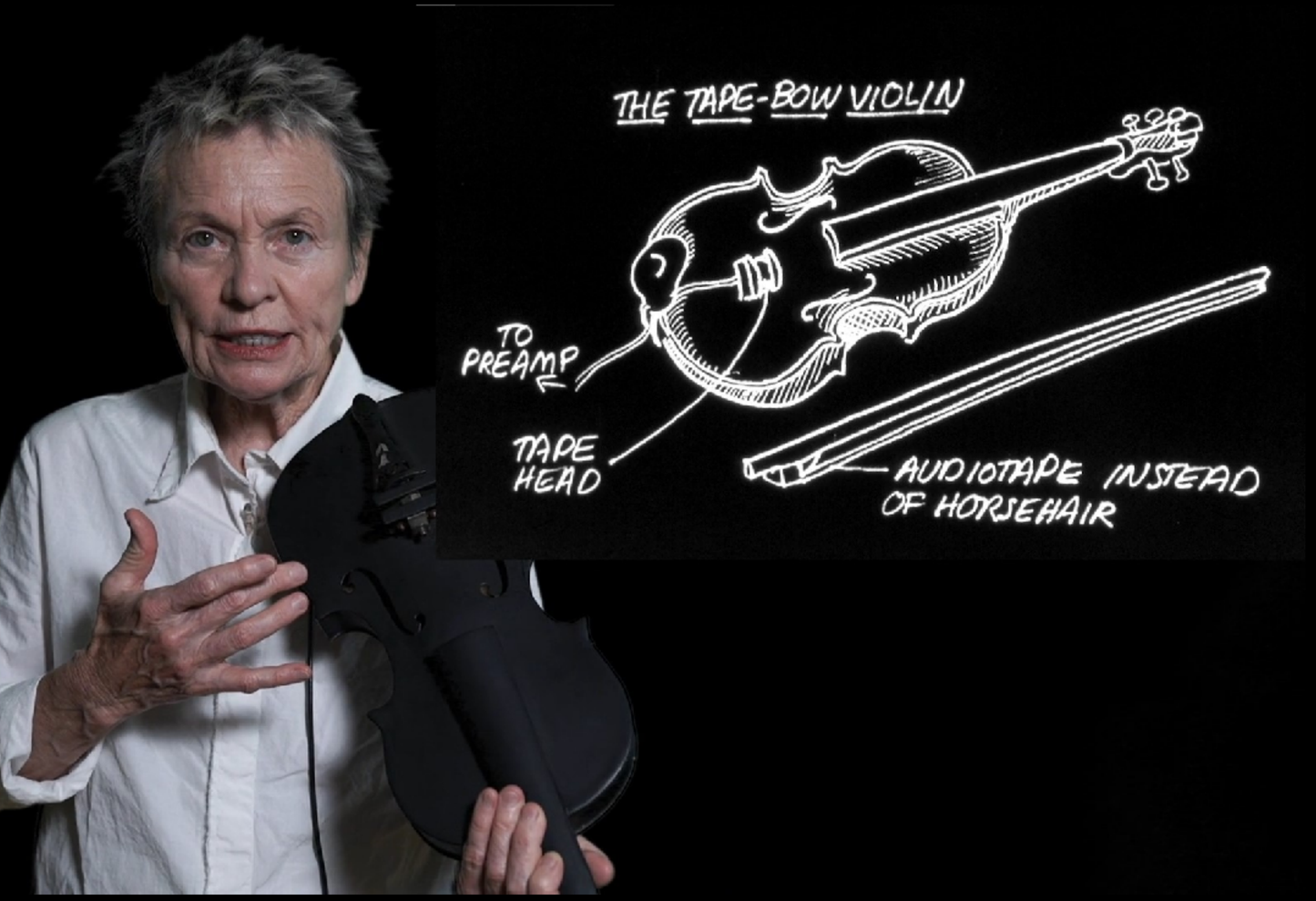
Download the slides!

Inspo

Imagon Heap Gloves

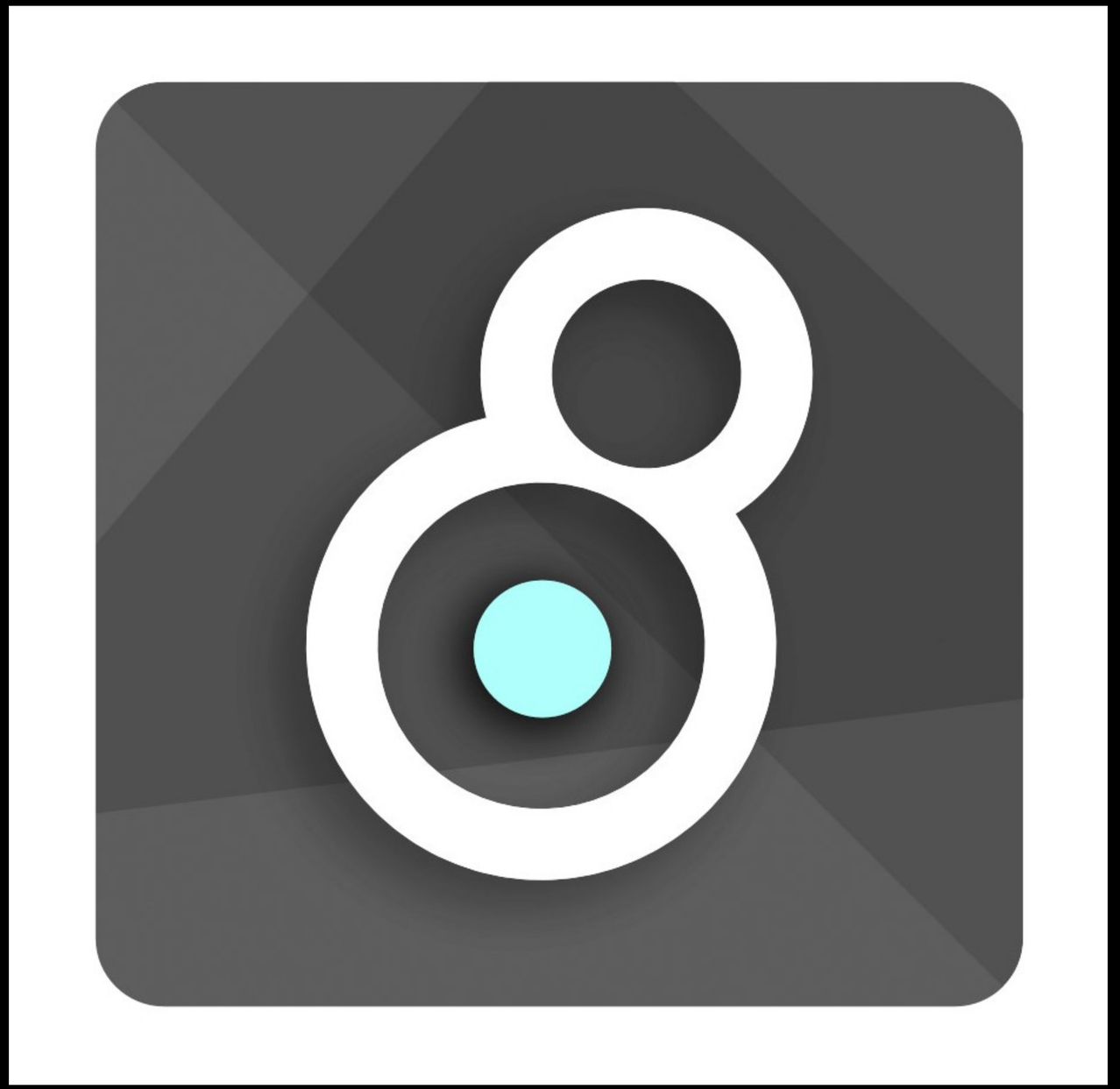
https://www.dezeen.com/2014/03/20/imogen-heap-funding-drive-for-gloves-that-turn-gestures-into-music/

Victoria Shen
https://evicshen.com/misc



Laurie Anderson
https://cdm.link/2021/09/laurie-anderson-in-video-on-the-stories-behind-her-custom-built-instruments/

Janet Cardiff
https://www.youtube.com/watch?v=38ORiaia9r8



Max Thesaurus

https://docs.cycling74.com/max8/vignettes/thesaurus

Find the name for objects that might be difficult to find otherwise!

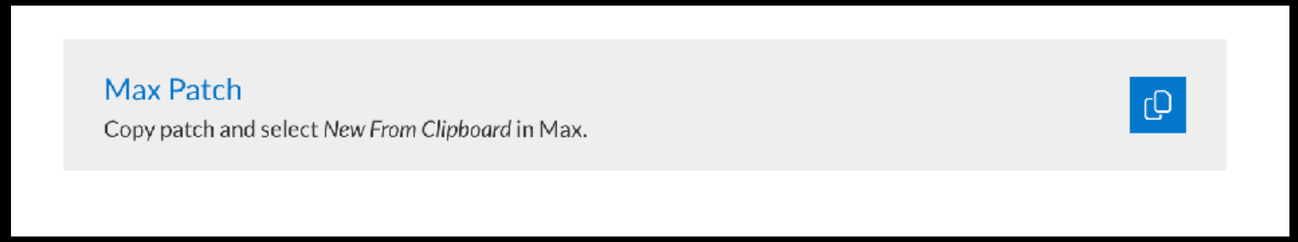
Keyboard Shortcuts

https://docs.cycling74.com/max8/vignettes/keycommands

a: attrui.
b: button.
c: comment.
f: floating point number box.
h: briefly highlights a small area around the cursor.
H: A capital letter "H" briefly highlights a larger area around the cursor.
i: integer number box.
j: object box containing "jit." for creating Jitter objects.
l: object box containing "live." for creating Live objects.
m: message.
n: new blank object with the cursor active. Typing the name of any object and pressing enter or clicking outside of the object box will transform it into that object.
r: bring up a list of the most recently created objects, including any arguments and attributes typed in. Selecting an element from the list creates an object with the corresponding text and with the cursor active at the far right. Hitting a carriage return or clicking away from the object instantiates the object.
p: create an object box containing the message newobj @presentation 1 @text and a cursor. When you type the name of an object (e.g. dial) and hit a carriage return, the object will transform itself into a copy of the object whose name you type in, and the object will be automatically added to the Presentation Layer.
s: slider.
t: toggle.
x: shows a menu describing the key commands, including those added by external packages.
z: zooms the patcher in around the cursor.
Z: A capital letter "Z" zooms the patcher out around the cursor.

You can copy Max code and paste it directly into your patch as text.

CMD + V (paste)




```
{
     "boxes" : [      {
               "box" :          {
                    "maxclass" : "gain~",
                    "patching_rect" :
[ 385.792366743087769,
357.923513054847717, 22.0, 140.0 ],
                    "outlettype" : [ "signal", "" ],
                    "multichannelvariant" : 0,
                    "id" : "obj-114",
                    "parameter_enable" : 0,
                    "numinlets" : 1,
```

Audio Experiment Due next week (midnight, after class)

- Explore audio tools we worked on in class
- Practice and explore tutorials online
- Create an experiment, which could be the beginning of a future project
- Your experiment should have a concept, even though it is not fully developed.

To hand in yoru project, use the project template on Moodle
saved file (File > Save as Project) .maxpat

- A PDF that contains project documentation. See Project_Documentation_template
- A clear, strong image of your project.
- A screen capture of your max patch
- A link to video or audio recording of your project working (can be a video or a link to a private video on YouTube, Vimeo or Google)
- A 50-100 word explanation of your project inside your maxpatch Be sure to name files properly (no untitled-1.zip) All files are expected to be cleaned up and arranged in a reasonable, legible way. Videos should be clear, well light and show your project working.

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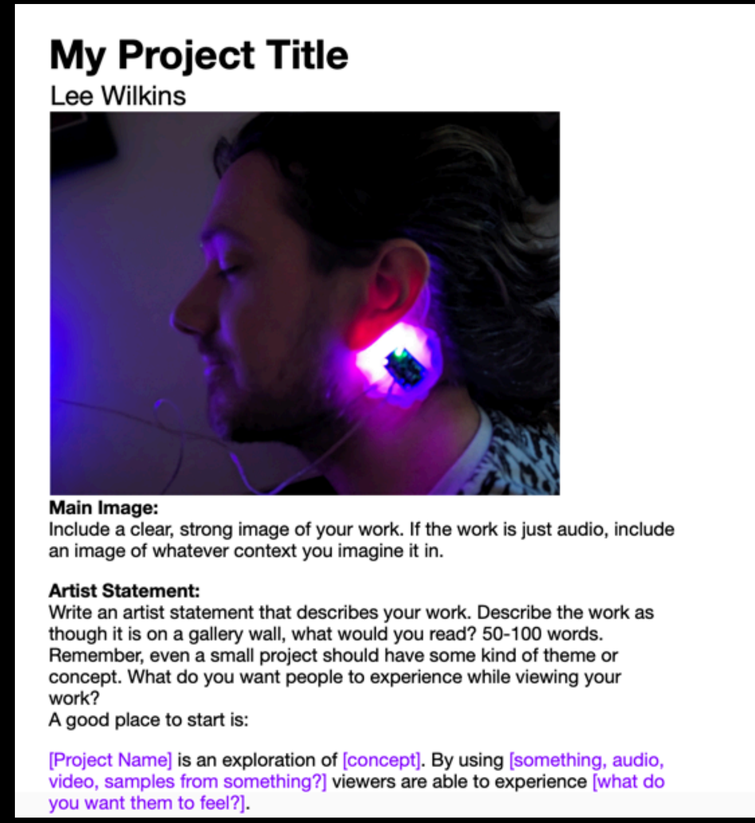
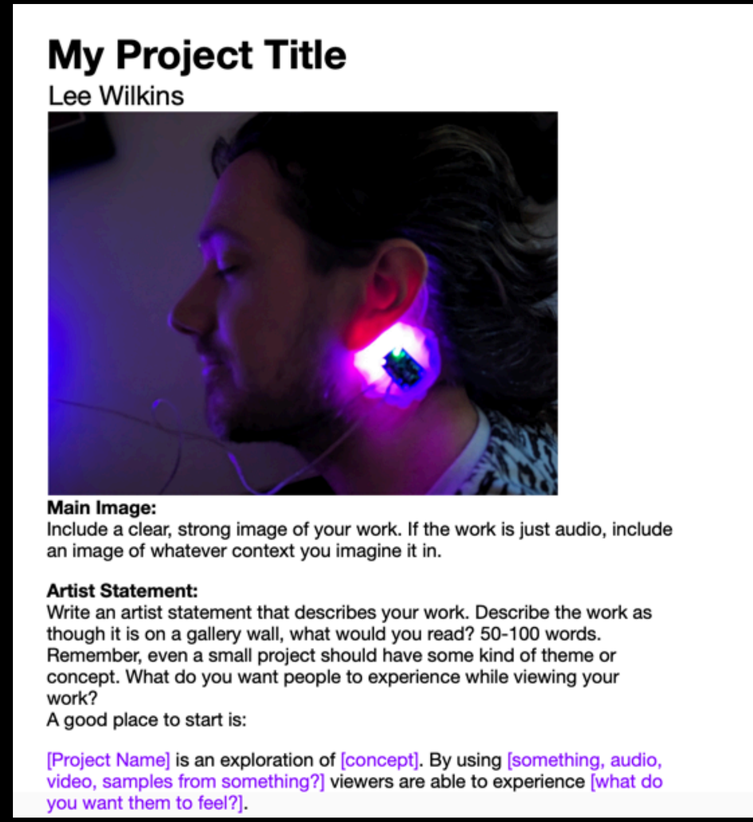


Project Template on Moodle has everything you need, just replace the text and images with your own.

Audio Experiment Due next week (midnight, after class)

25% Functionality / technical
25% creativity / concept
25% execution and quality
25% documentation



My Project Title

Lee Wilkins

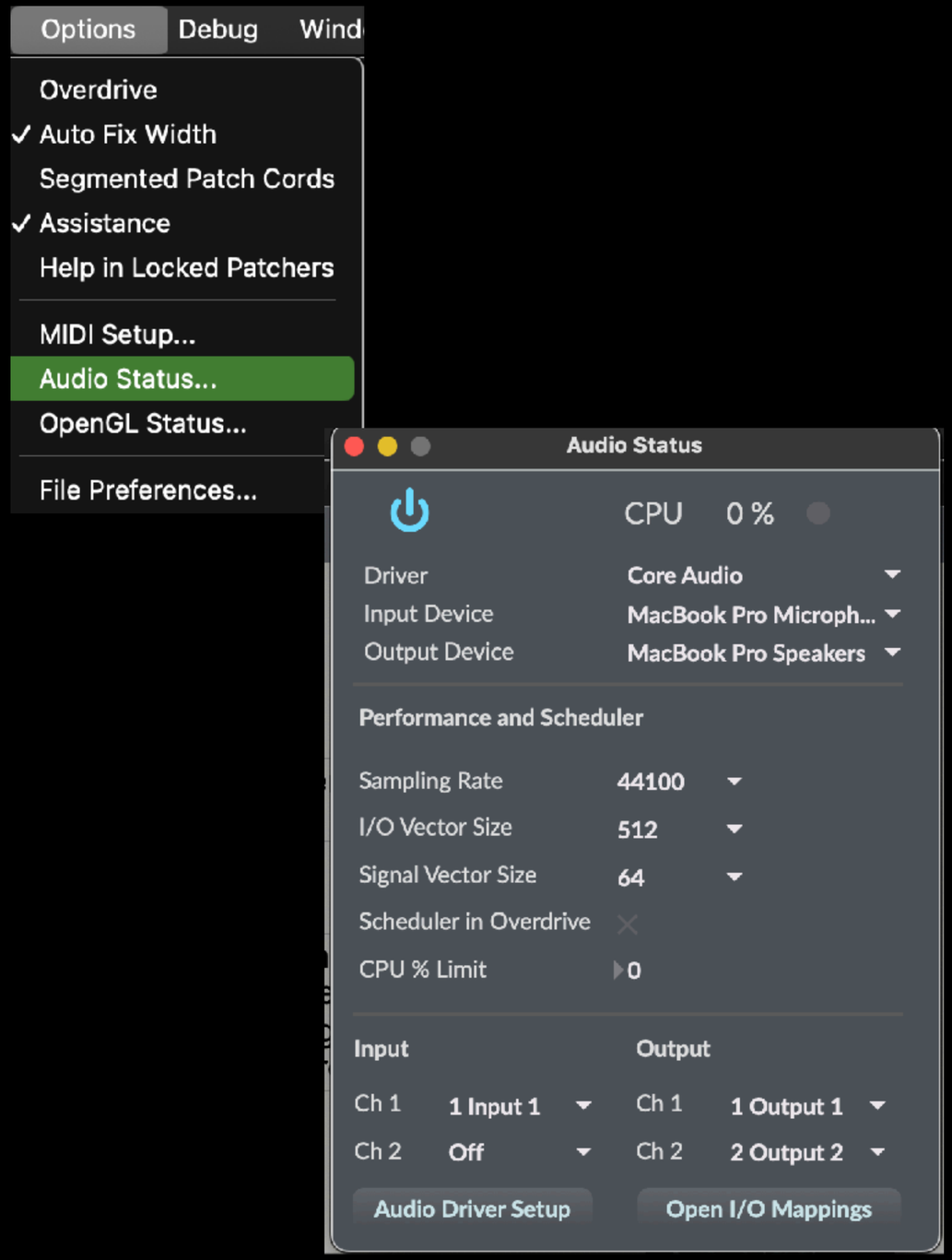
Main Image:
Include a clear, strong image of your work. If the work is just audio, include an image of whatever context you imagine it in.

Artist Statement:
Write an artist statement that describes your work. Describe the work as though it is on a gallery wall, what would you read? 50-100 words. Remember, even a small project should have some kind of theme or concept. What do you want people to experience while viewing your work?
A good place to start is:

[Project Name] is an exploration of [concept]. By using [something, audio, video, samples from something?] viewers are able to experience [what do you want them to feel?].

Project Template on Moodle has everything you need, just replace the text and images with your own.

Audio Status shows where sound is being output. Make sure the sources are correct. You may need to restart it (press the power button)



Ezdac~ is an object for playing audio

~ means you are working with an audio object

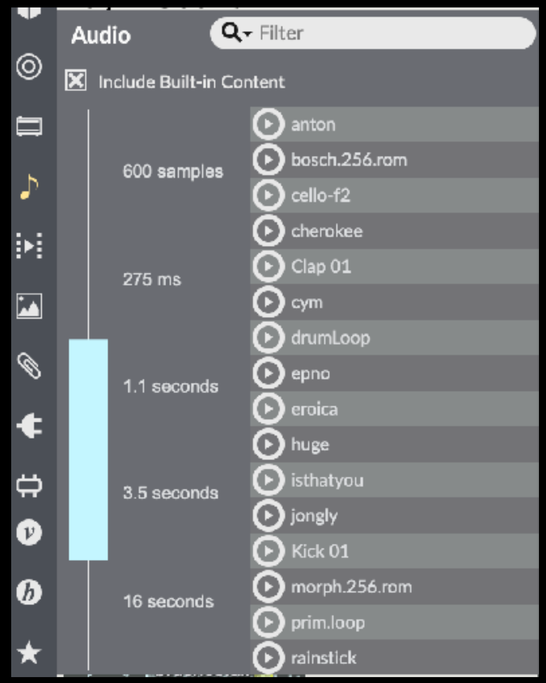
Ezdac has two inputs, left and right channel.

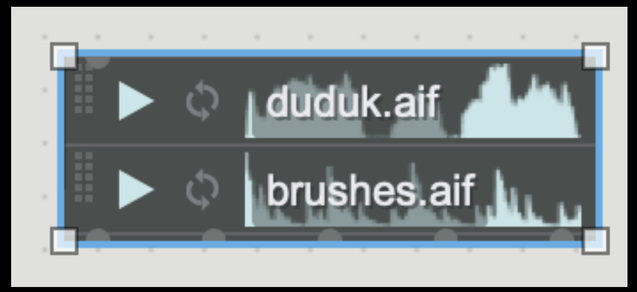
On the sidebar click the music note.

Find a tune you like, drag and drop it into your patch.

Drop a second sound on top of it.

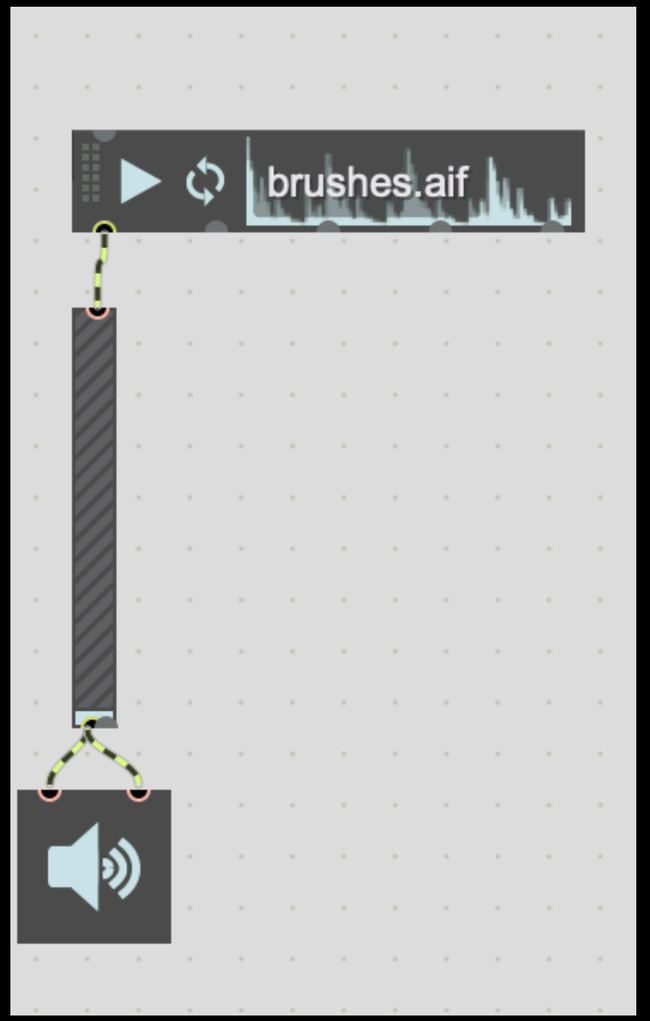
This makes a Playlist object. Its one of many ways to play audio.





Add a Gain object to control volume. All DACs are linked, so its useful to give each its own volume.

Yellow patch cords mean its a signal.



Signal:

Yellow patch cords indicate a signal, aka audio.

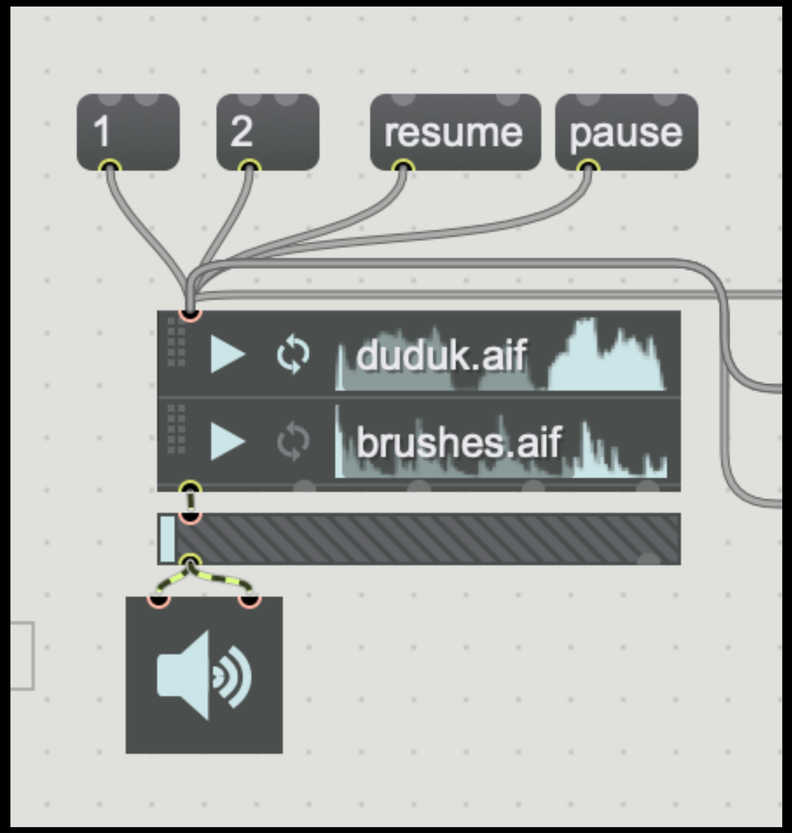
Signals are steady streams of numbers, whereas normal data only happens periodically.

In order to produce a sound, a constant stream of numbers needs to be fed into the dac.

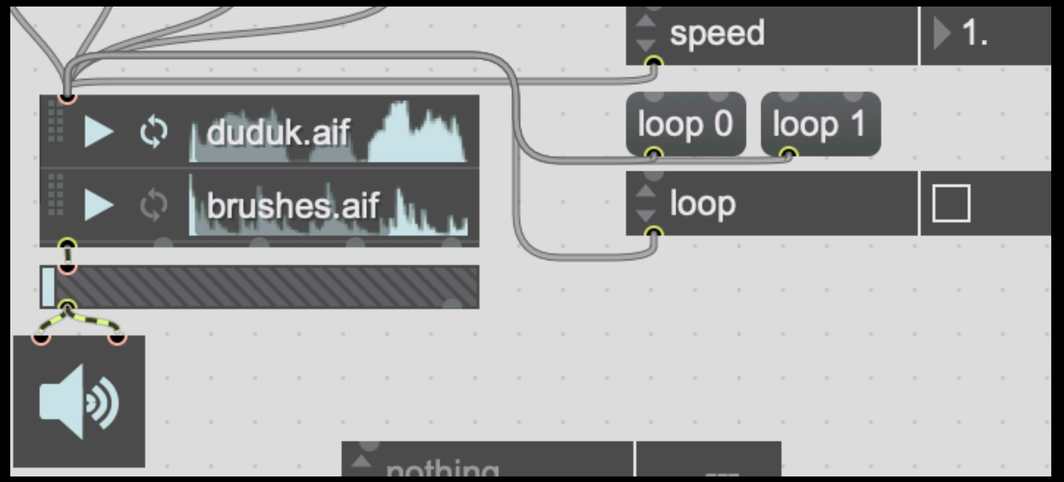
You can send messages to your play list to select which track to play using a number

You can pause/resume.

Check the help file for a full list.

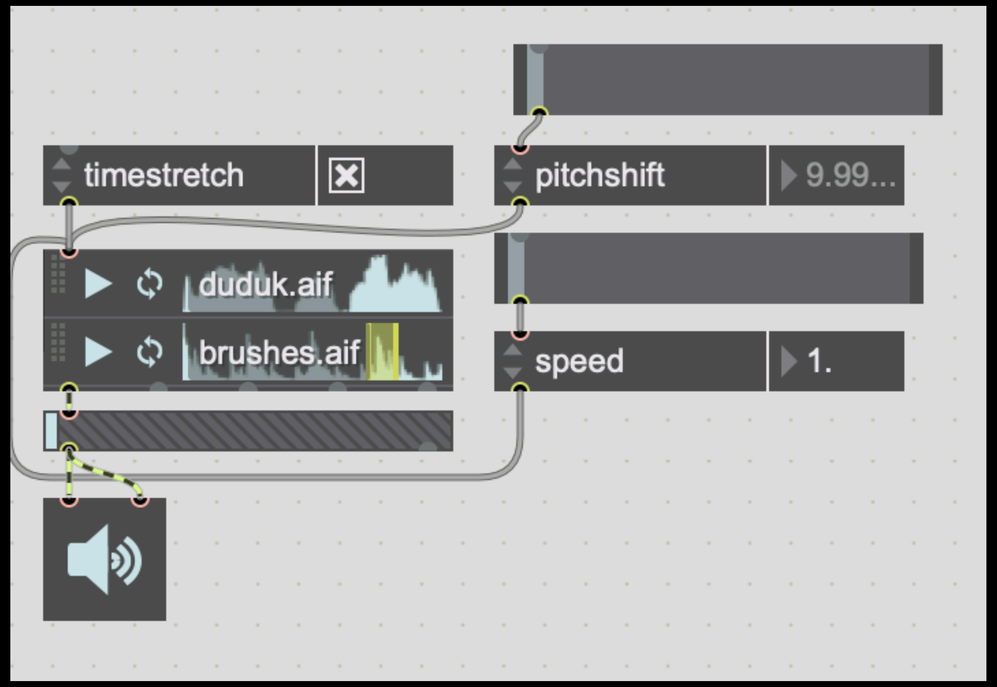


The attrui object (shortcut “a”) lets you change attributes. See help file for a full list

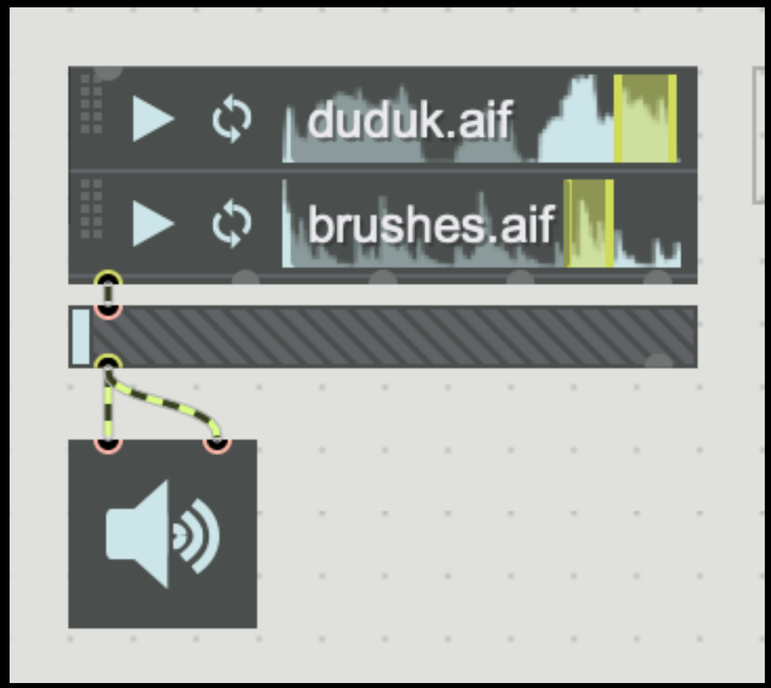


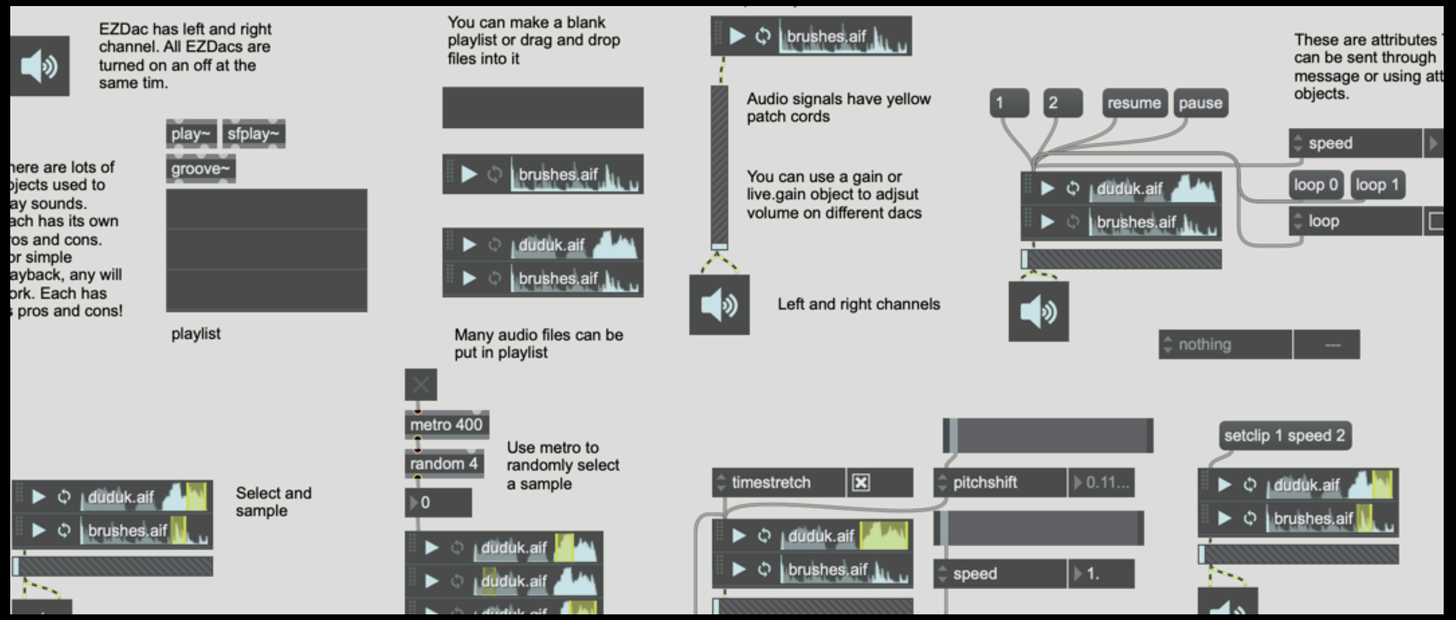
Enabling timestretch attribute on playlist lets you change the ptichshift and speed, all using attrui elements.

You can use a slider, don’t forget to adjust the range!



Select sections for sampling

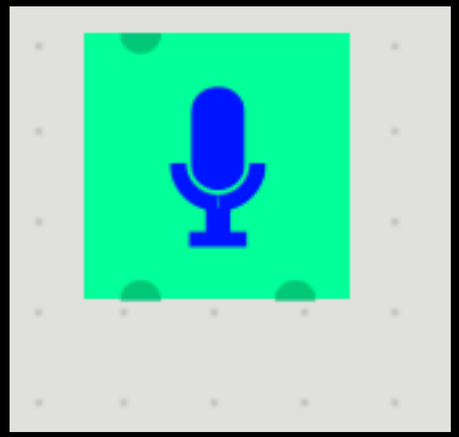




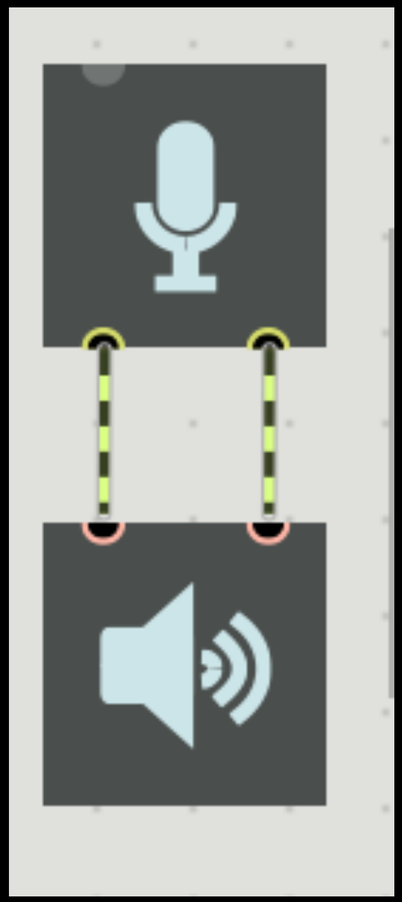
See all this in using_playlists.maxpat

Recording Audio

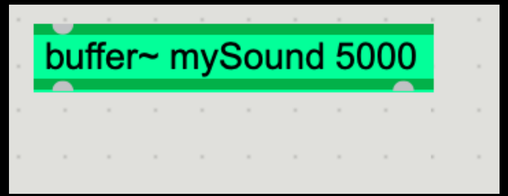
Use ezadc~ to
have audio input.



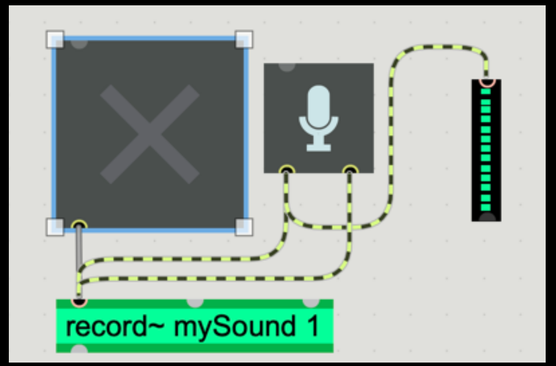
Connect ezdac~ to ezadc~ to put the audio recording directly to the speakers



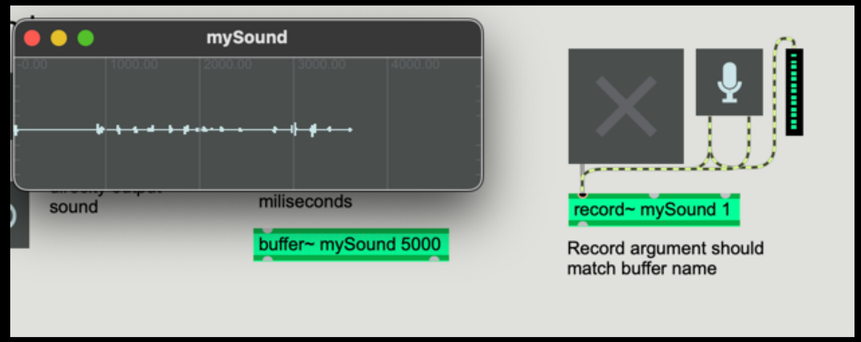
Create a buffer~ object to store your sound. Give it a size.



Then lets record. Use a record~ object, connect a toggle and a ezadc~. Meter can help show you that sound is being input.

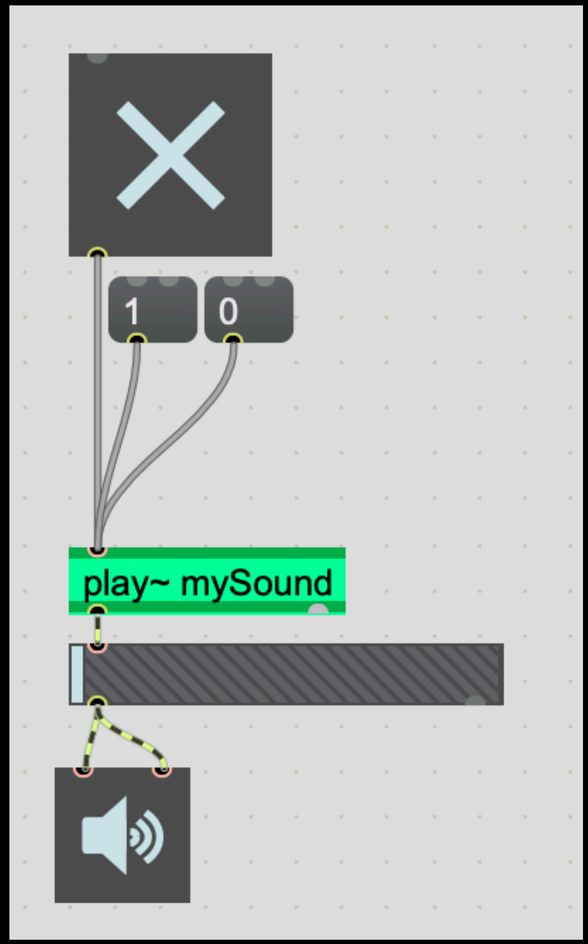


The buffer name must match the record name, you’re referencing the same object!



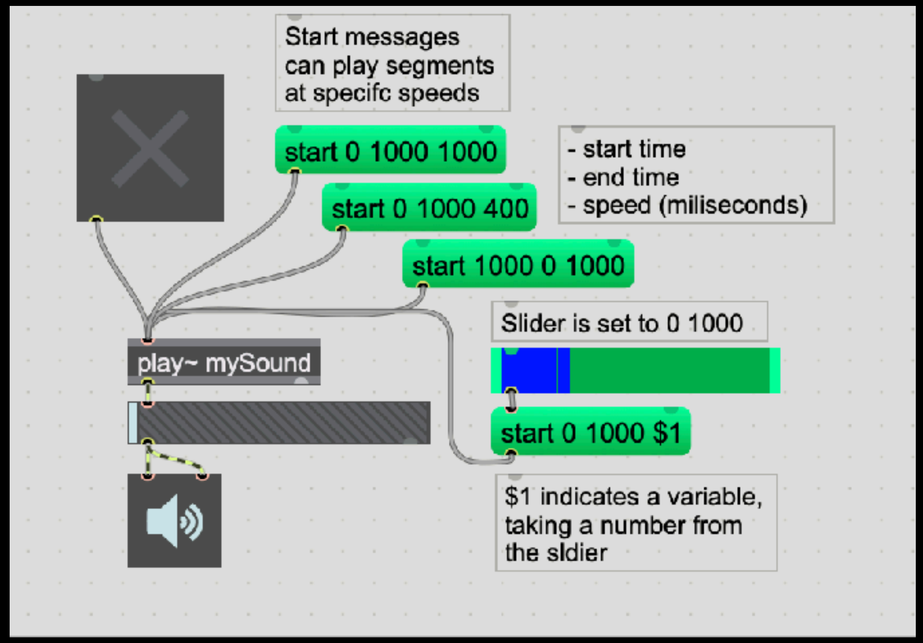
Click the buffer object to see the waveform of your recording

Play~ is an easy way to play this sound. Make sure it matches the buffer. Play needs a message of 0 or 1 to play. Toggle can do this, so can messages.

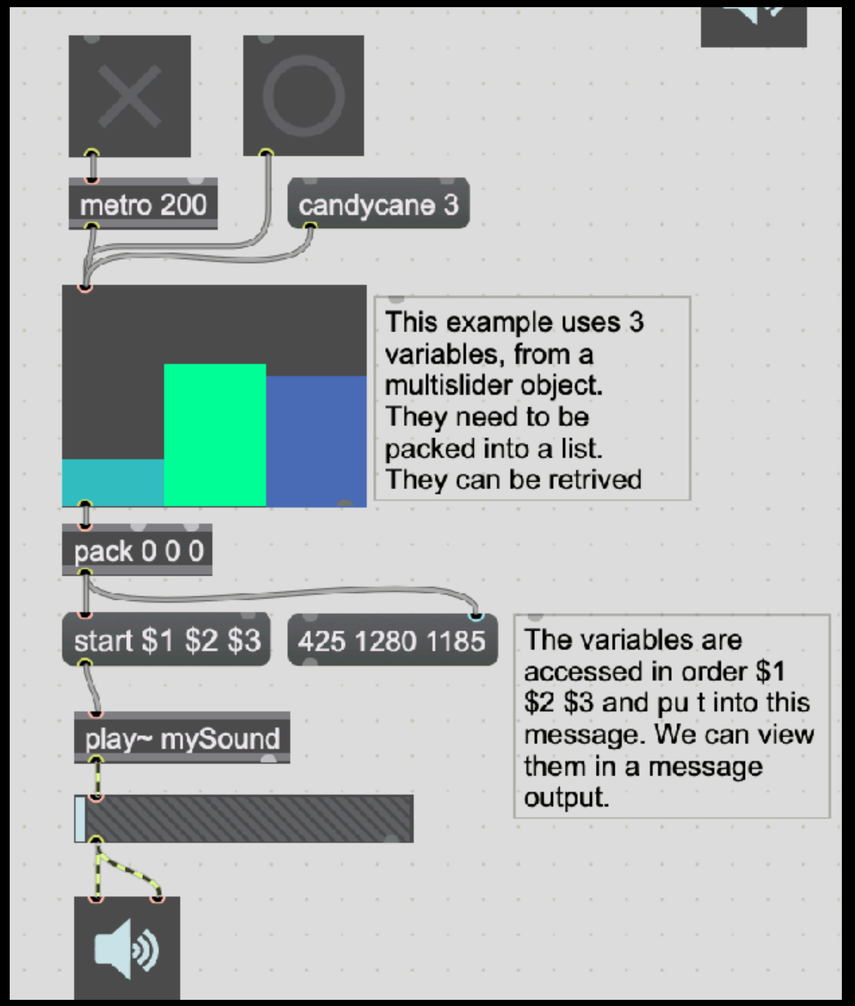


You can control play by setting a start, end, and duration in a message.

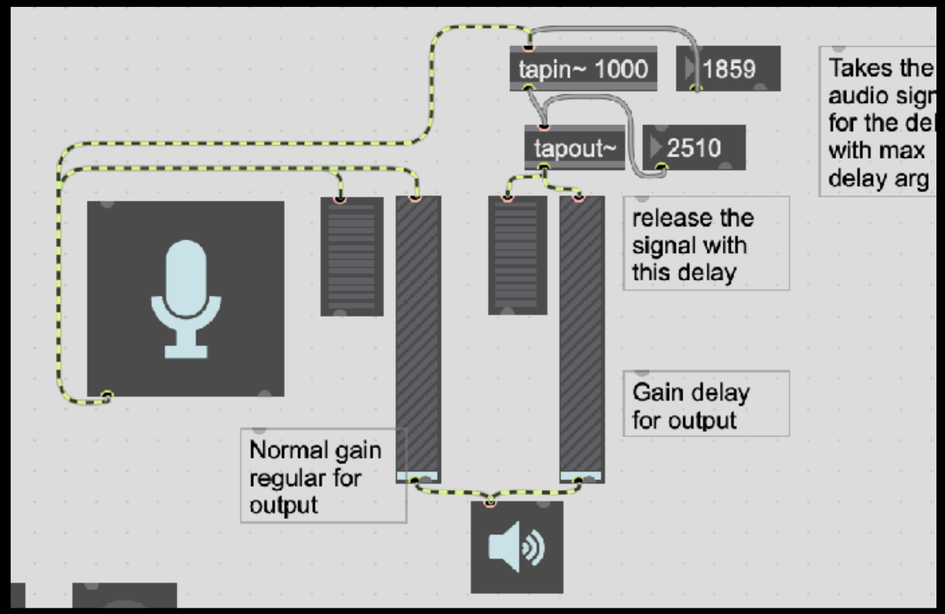
Here is an example with a variable and a slider. $1 is a variable.

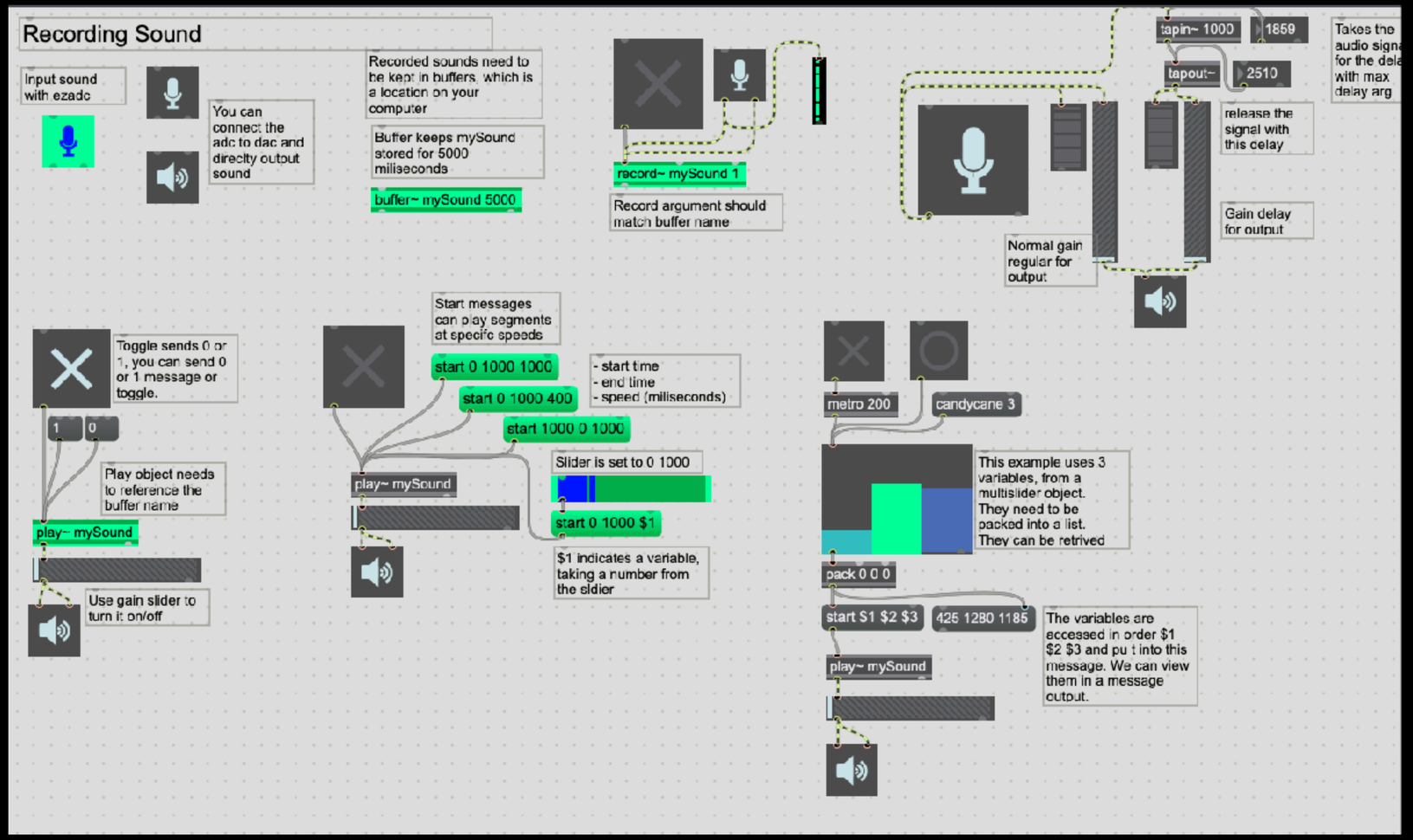


Click the buffer object to see the waveform of your recording



Tapin/tapout can be used to create delay/reverb.



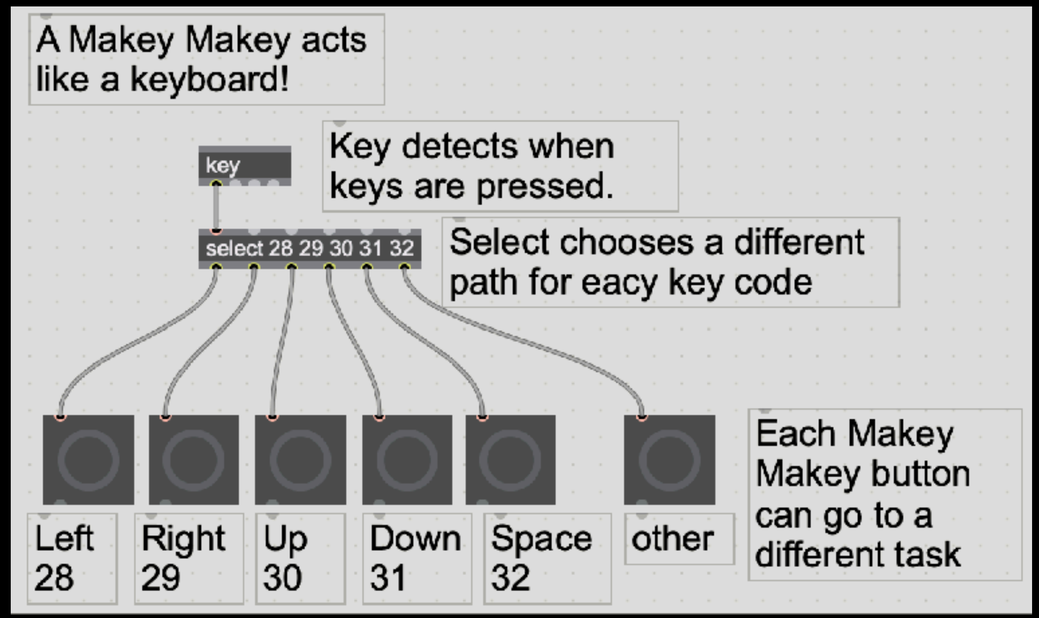


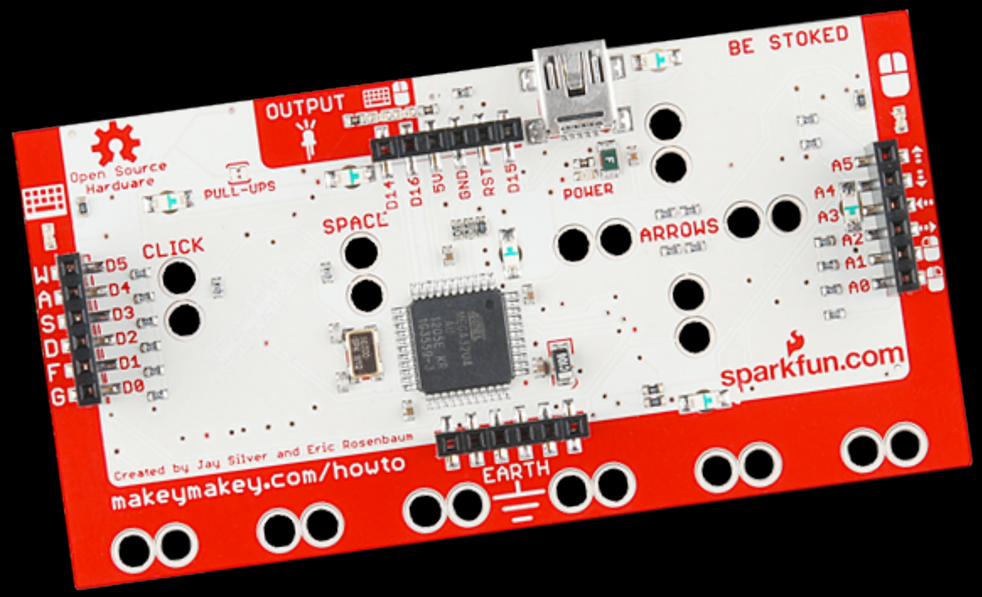
See all of this in record_playback.maxpat

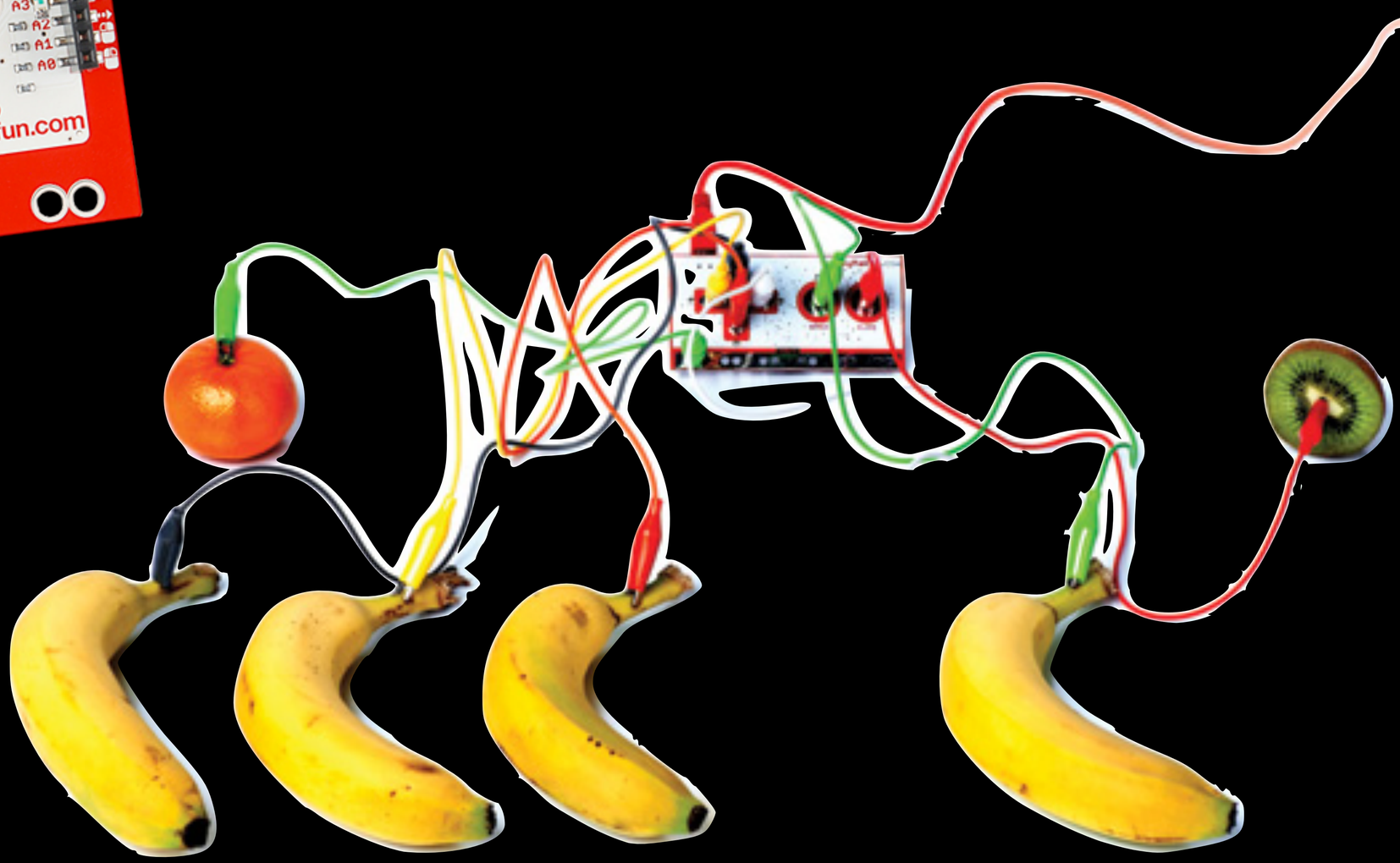
Introducing: Makey makey

This is a tool that simulates a keyboard using capacitive touch. You can essentially turn almost any object into a keyboard. It shows up as a keyboard on your computer.

Open makey_makey.maxpat




BE STOKED
OUTPUT
Open Source Harduare
PULL-UPS
SPACE
CLICK
POWER
ARROWS
D5
D4
D3
D2
D1
D0
A5
A4
A3
A2
A1
A0
sparkfun.com
Created by Jay Silver and Eric Rosenbaum
makeymakey.com/howto
EARTH



Makey Makey Exploration Time:

In groups, make something with the MakeyMakey

Think of these as tools to build / mix / expand to create instruments, interactions, experiences.

How can we get out of our desks and experience these sounds?

What movements or interactions do you imagine paired with sounds?

Briefly look at:
Groove~
Waveform~
Next week: Studio time, sequencers, waveforms.

Download todays patch
on Moodle

Homework:

Work on Audio Experiment (due next week)

Begin to form teams for mid term (max 3 people, 2 is ideal)