

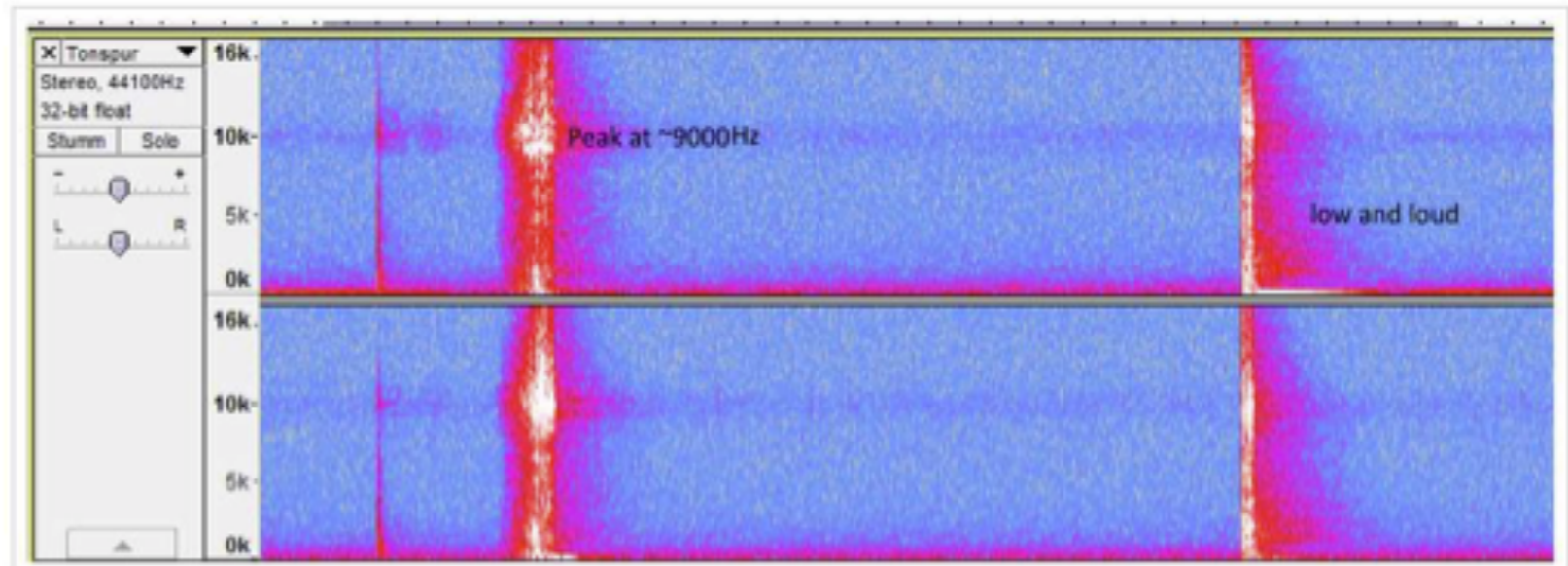
Sound Processing with Pure Data

6.S063 Engineering Interaction Technologies

Prof. Stefanie Mueller | HCI Engineering Group

exercise:

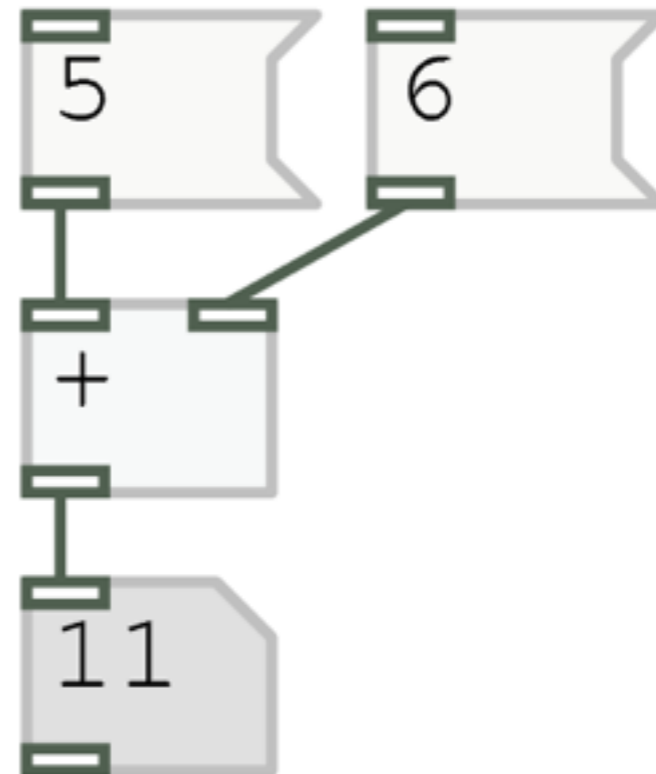
- detect peak in amplitude (mic input)
- trigger music to play (or whatever!)



here is what you need to know...

PureData:

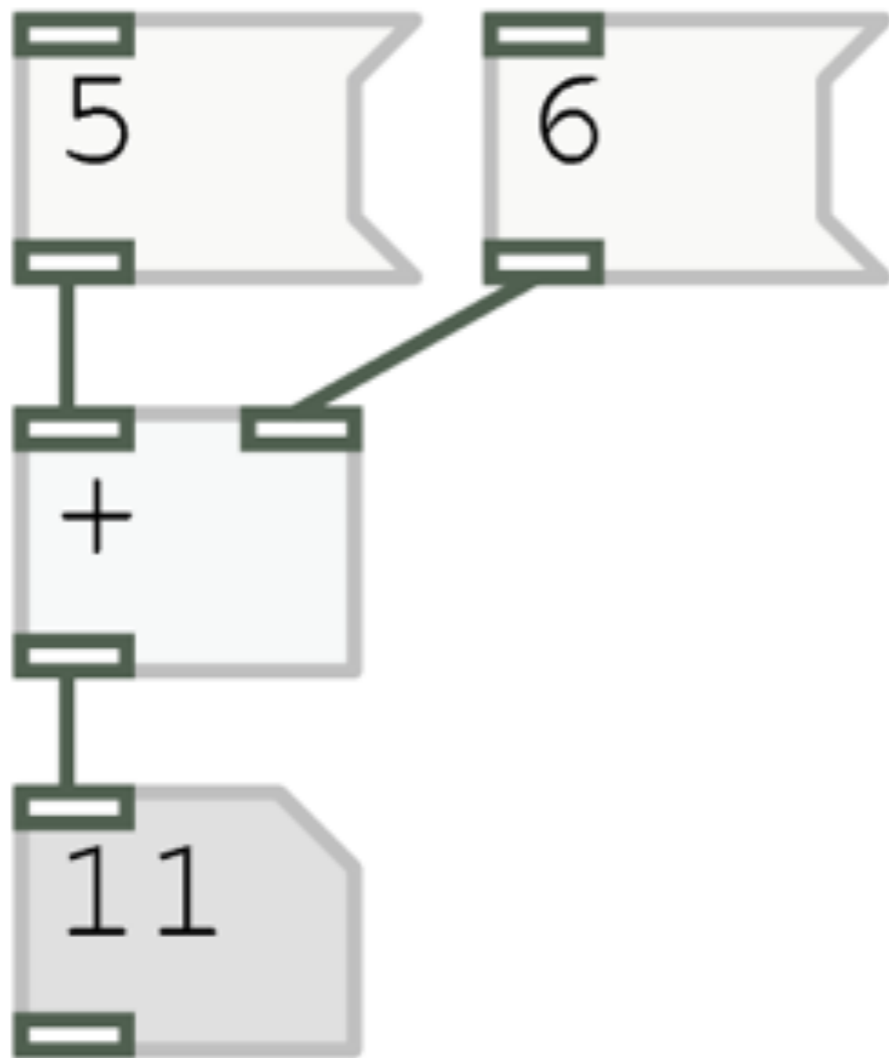
visual programming language



download : <http://puredata.info/downloads/pd-extended>

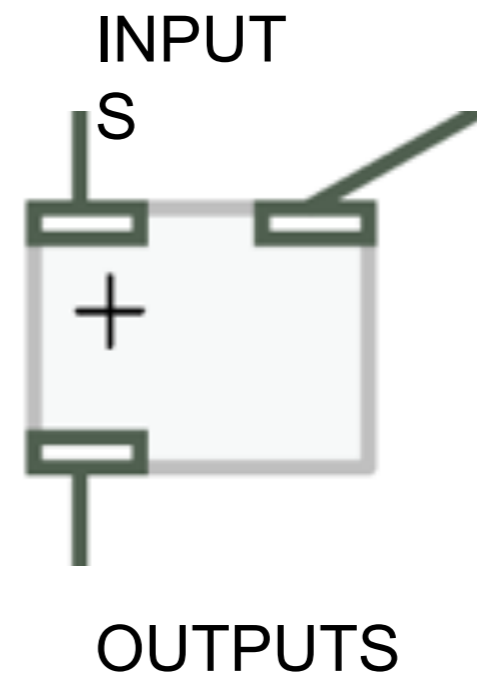
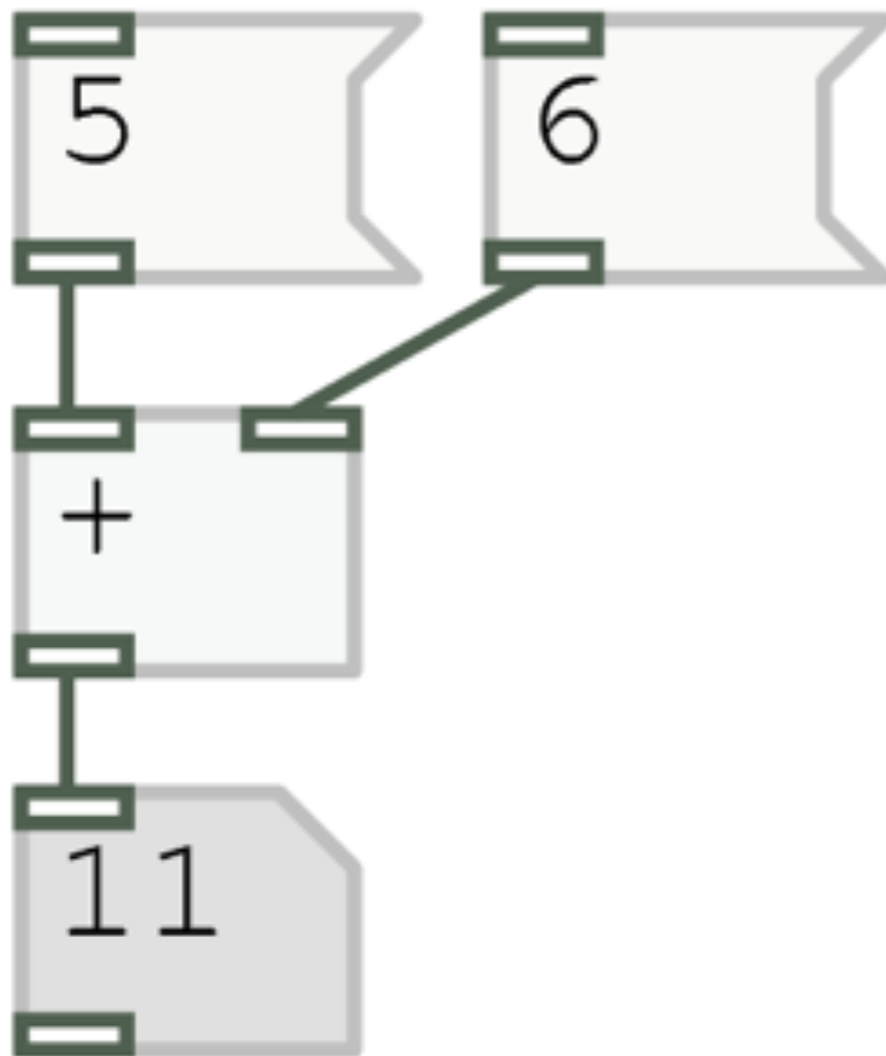
dataflow:

- from top to bottom



dataflow:

- from top to bottom



data types:



comment

- objects
- messages (numbers, lists, ...)
- numbers (float, double, int)
- symbols
- comments

data flow :

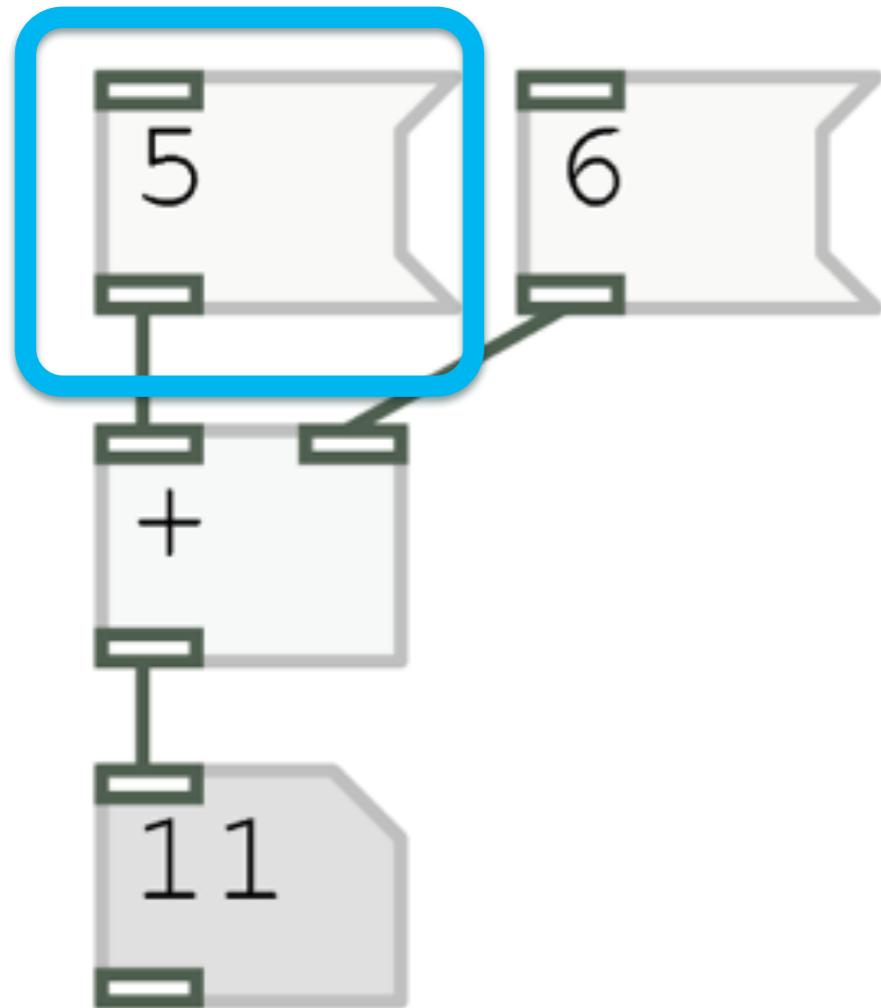
- needs a trigger (bang)



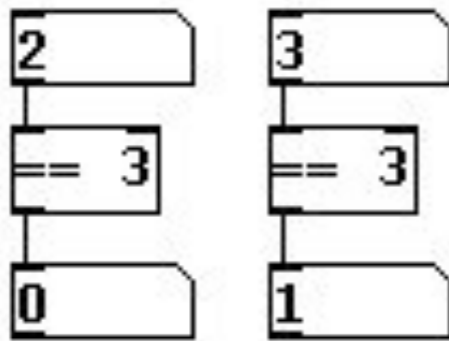
bang!

left-most rule:

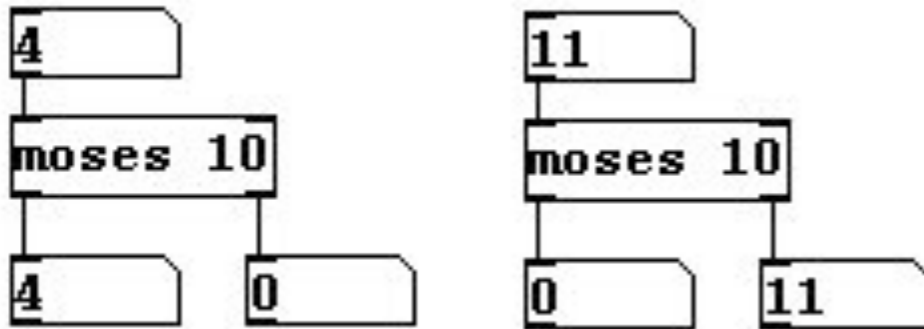
- change in left inlet triggers the function



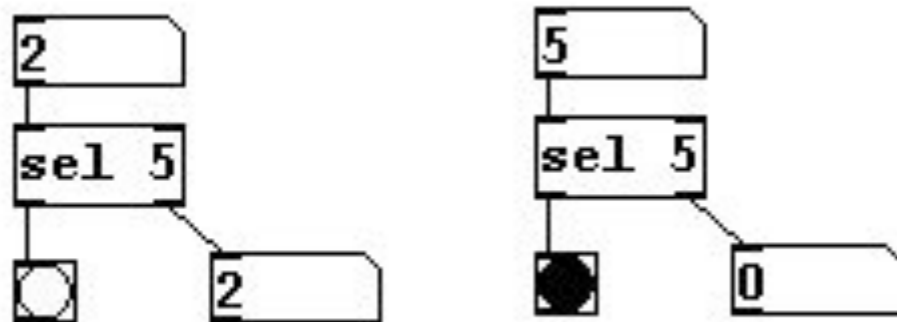
control flow:



comparisons == > >= < <=



control flow



trigger

benefit:

- no compile time (programming at runtime)
- awesome for prototyping!
- quick debugging...

reading and writing
audio



analog digital converter

read
audio input

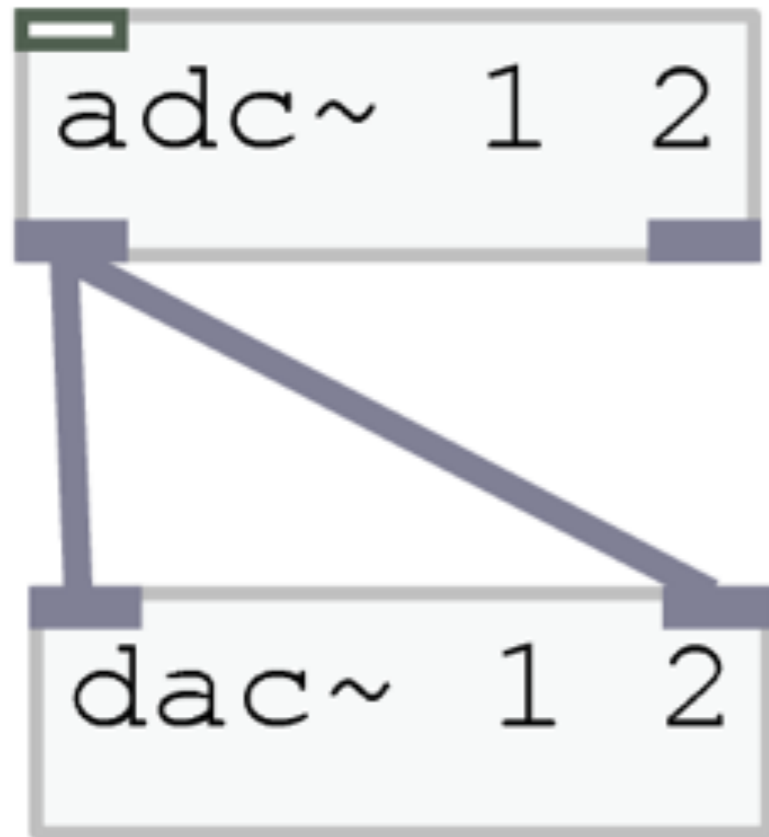


digital analog converter

write
audio output

read & write

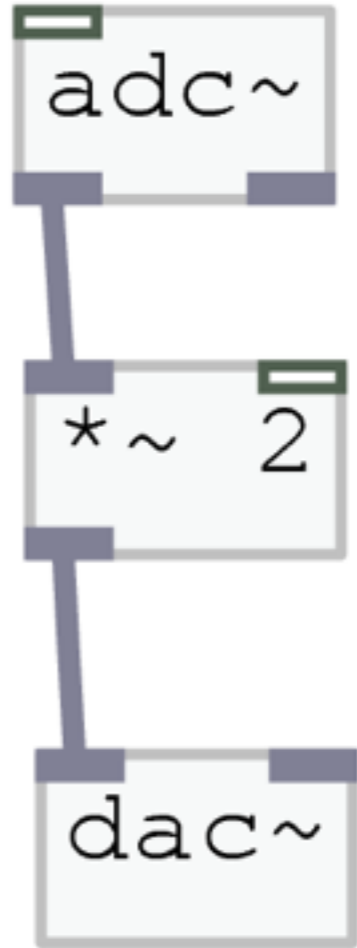
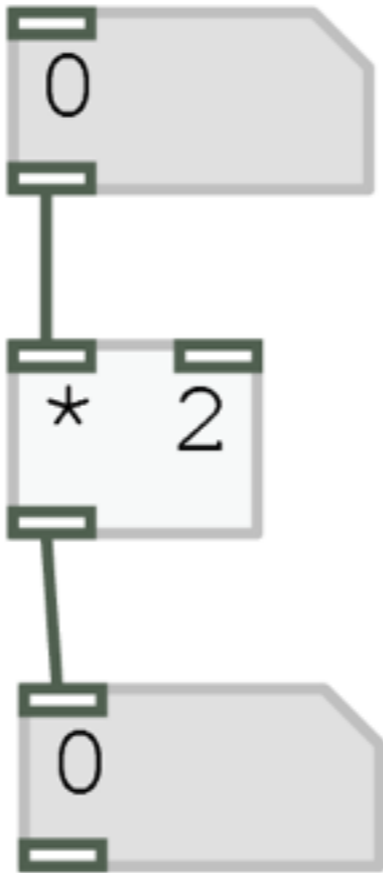
and do something in between ;)

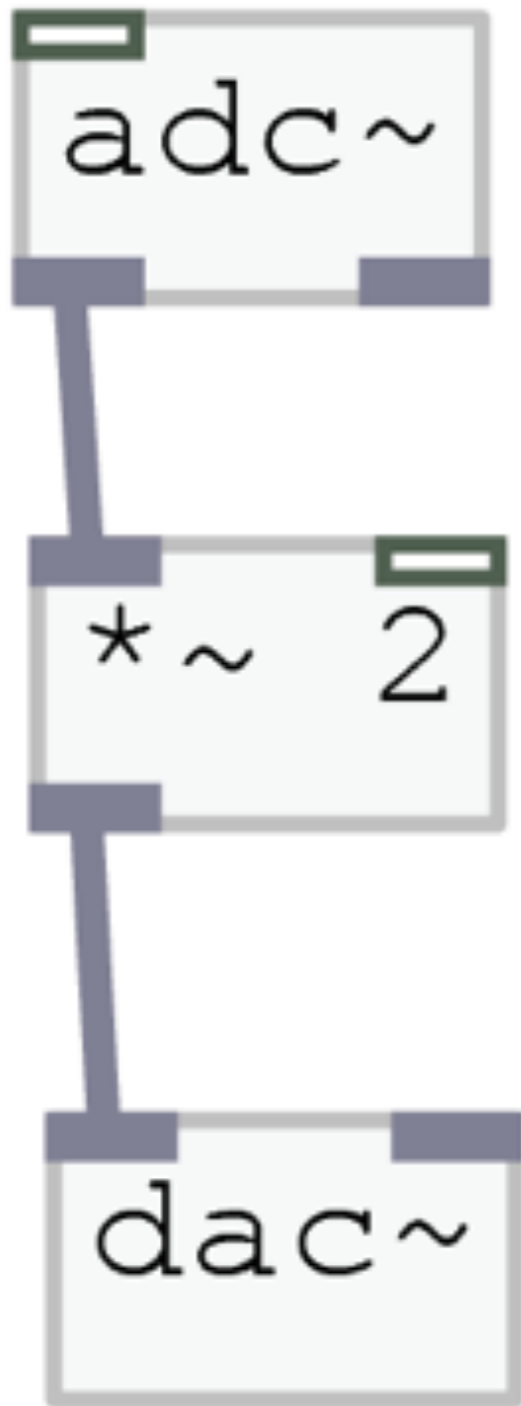


what is the ~ sign?



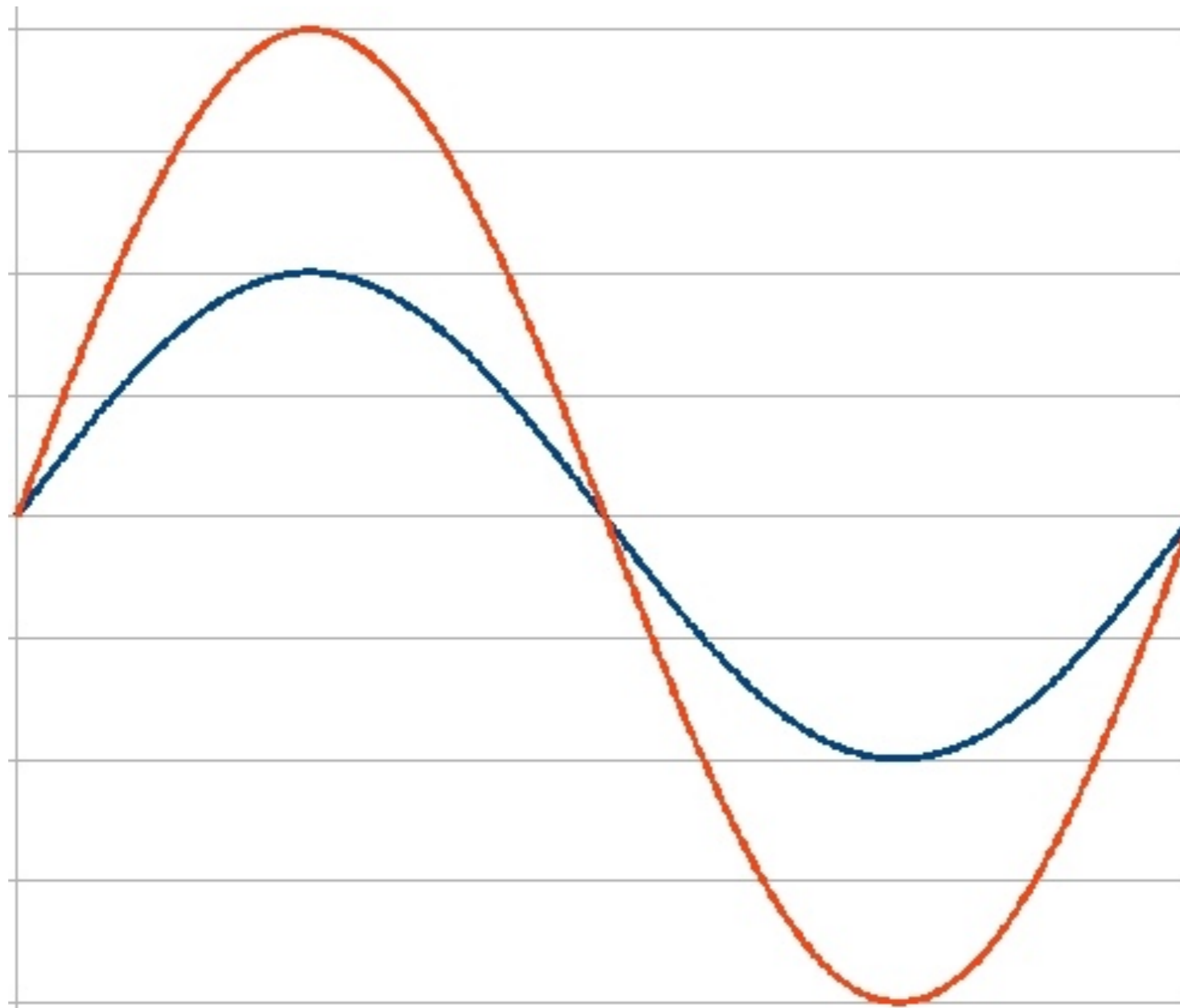
data vs. signal





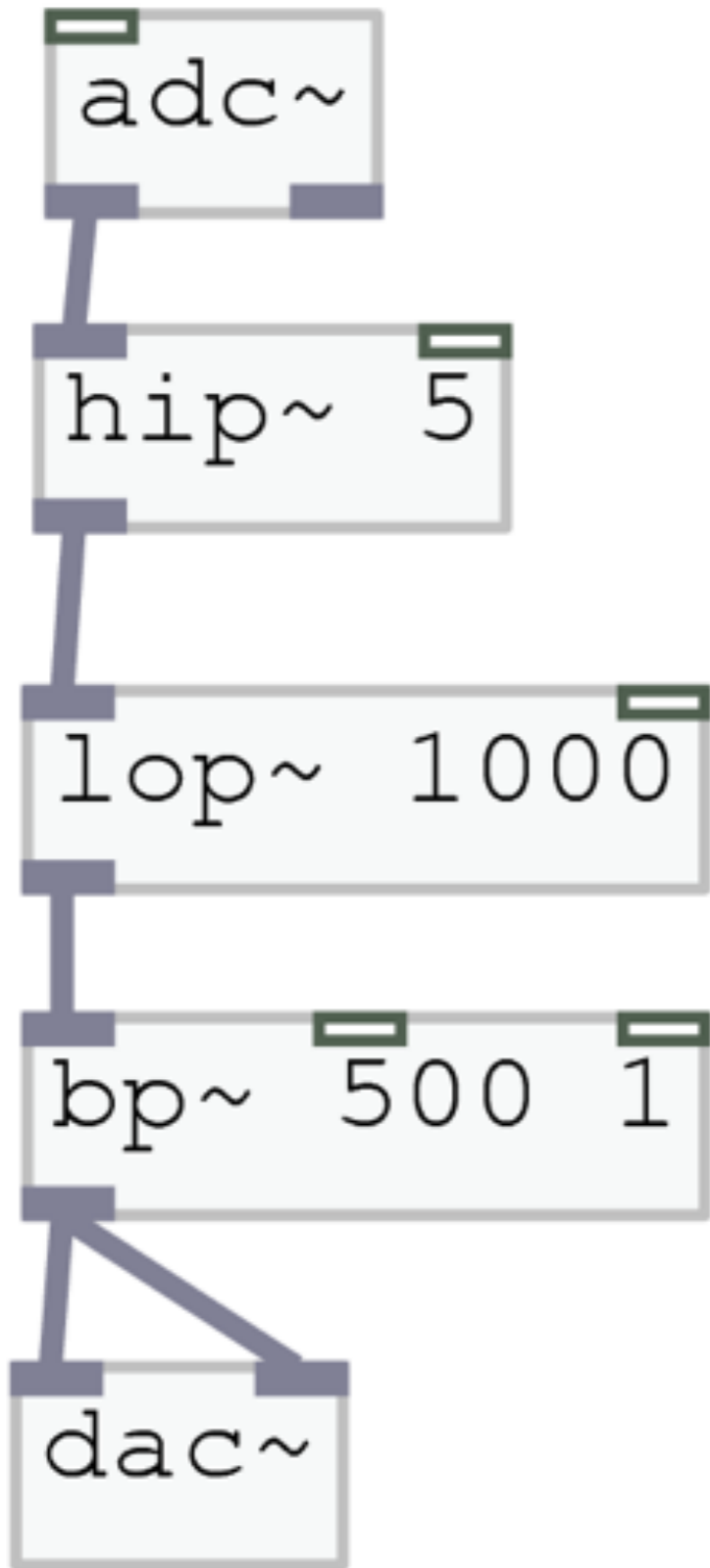
what does this do?

<30s brainstorming>



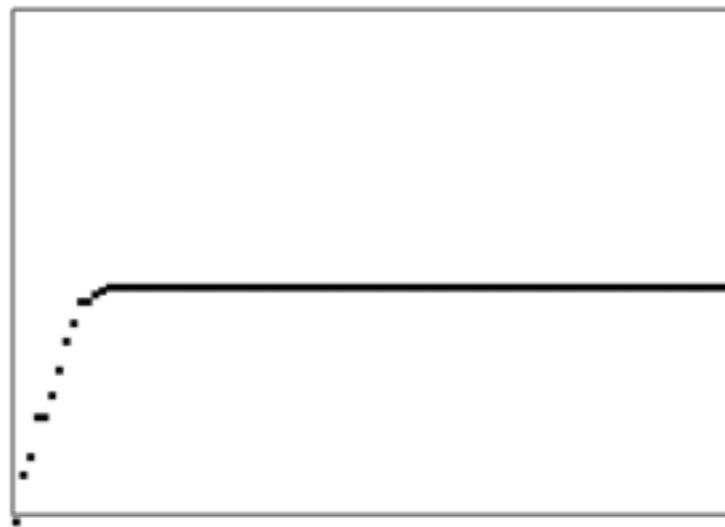
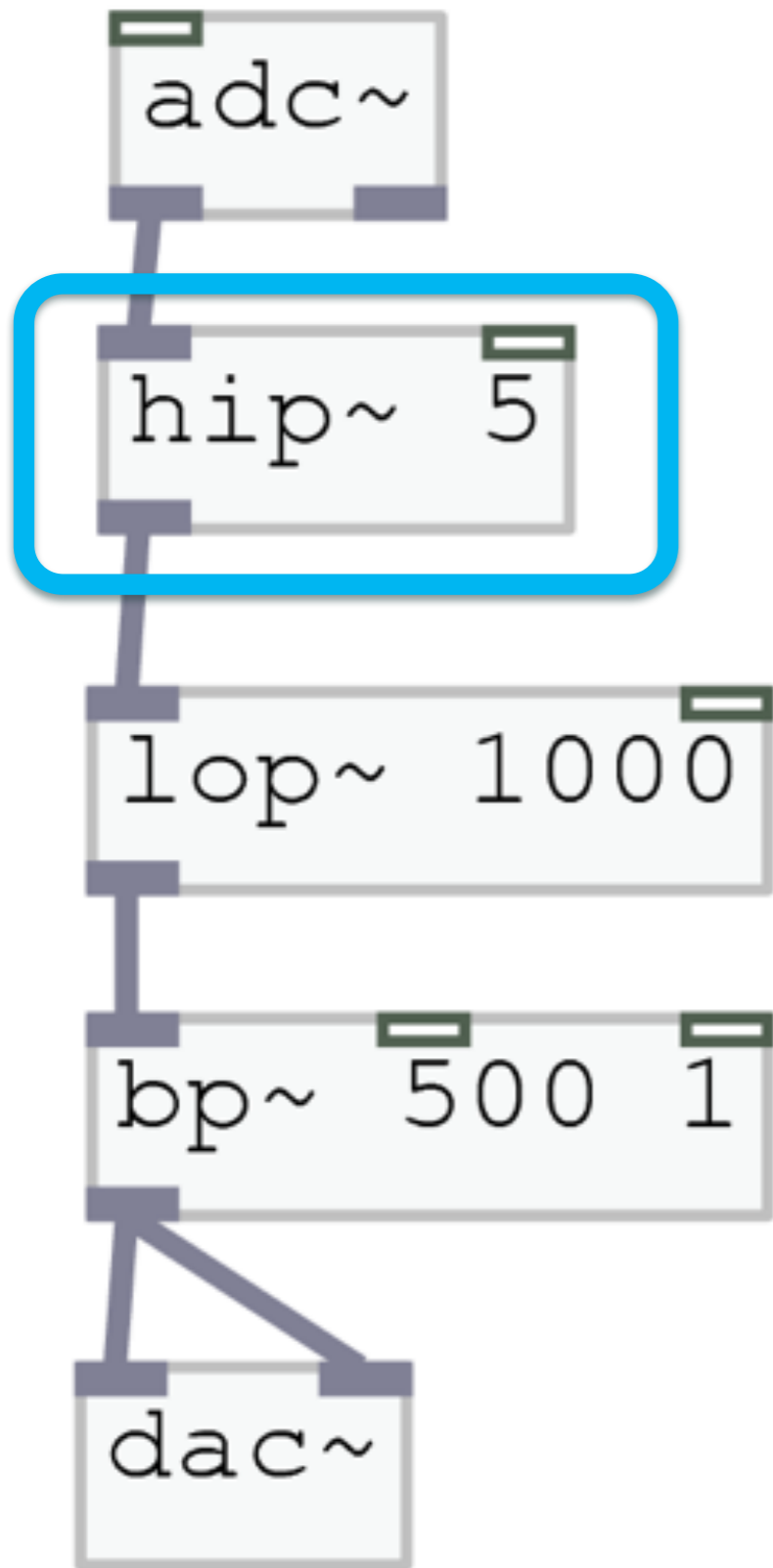
volume * 2

**filtering audio signals
(frequency)**

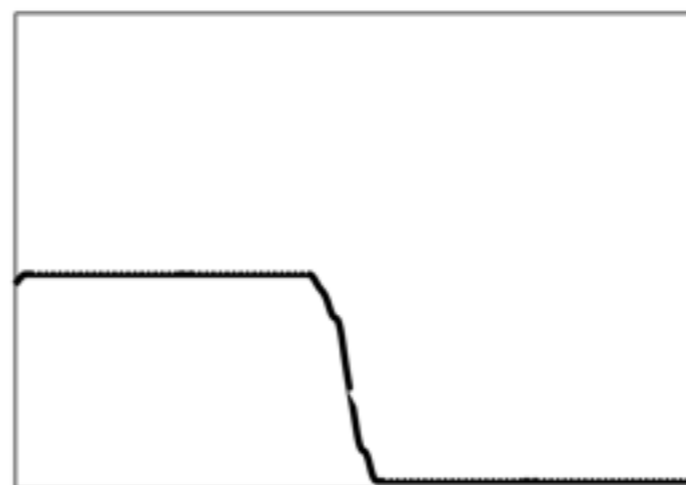
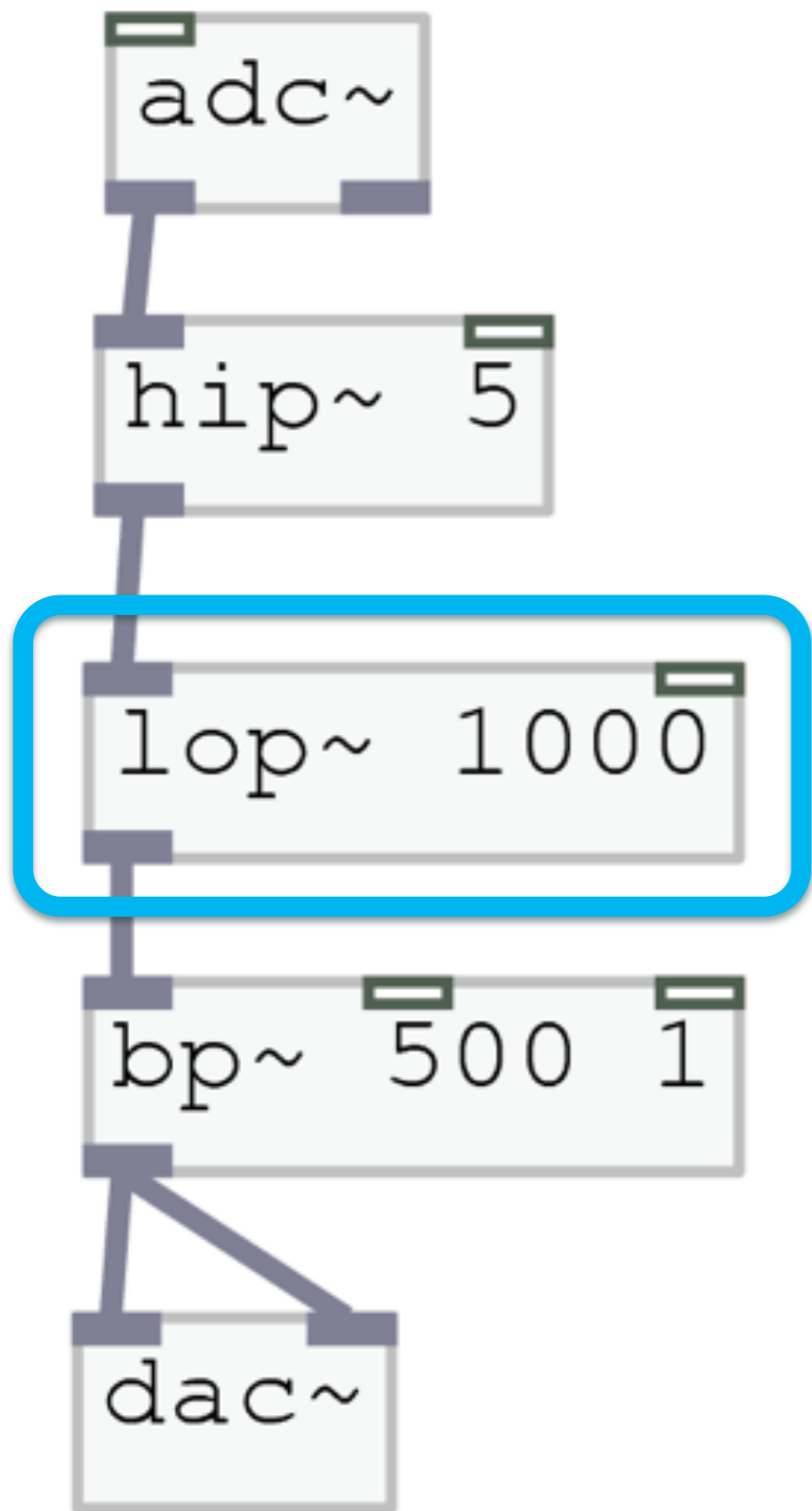


which filters are these?

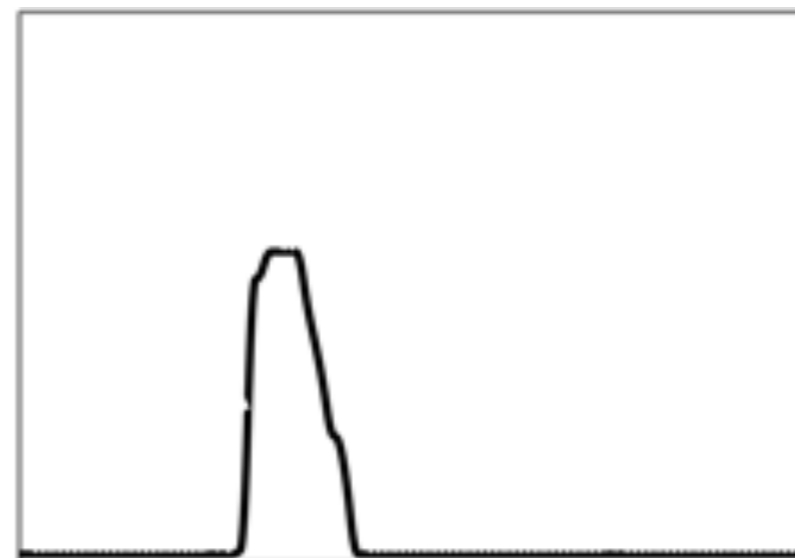
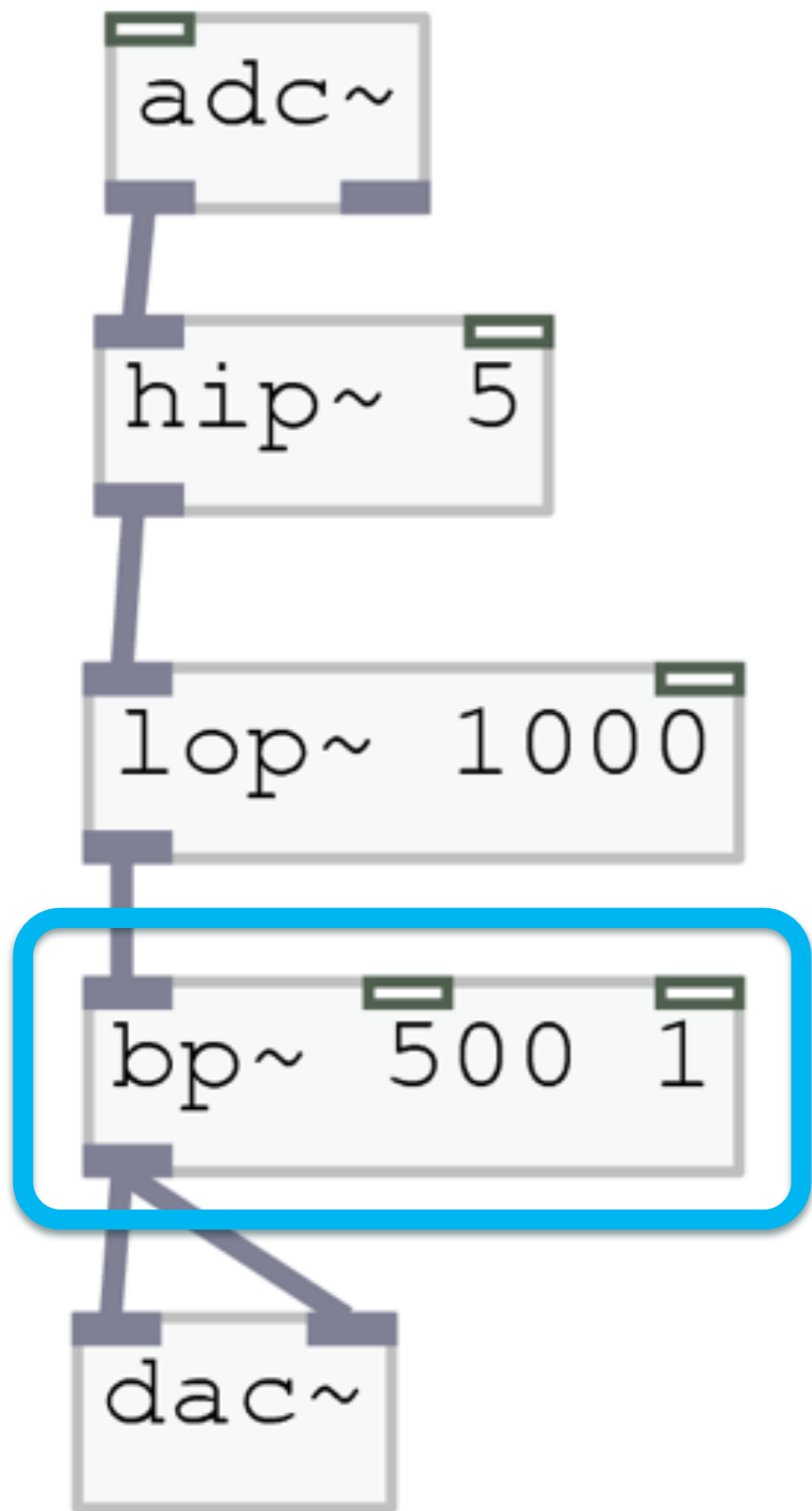
<30s brainstorming>



high pass filter $> 5\text{hz}$




low pass filter < 1khz



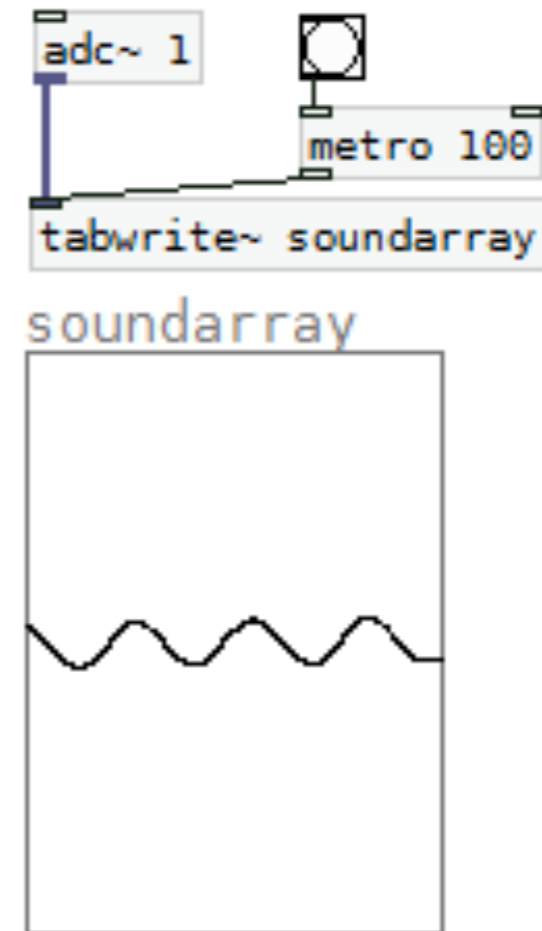
band pass filter
only passes 500hz

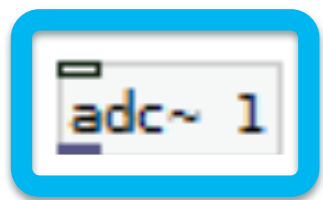
coding time

 Frequenzgenerator

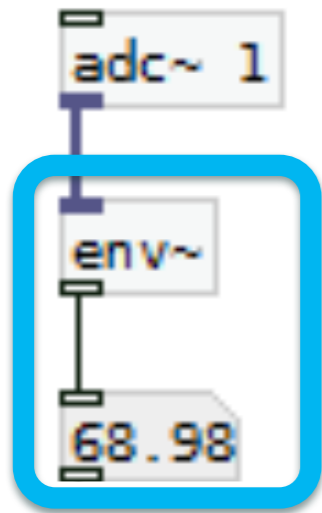
1600 Hz

STOP



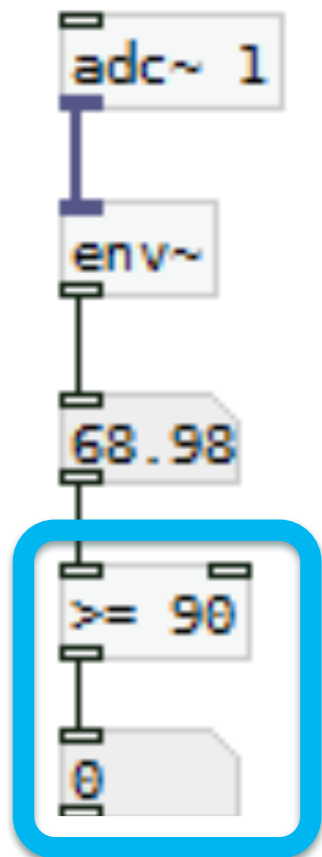


read audio input from channel 1



read audio input from channel 1

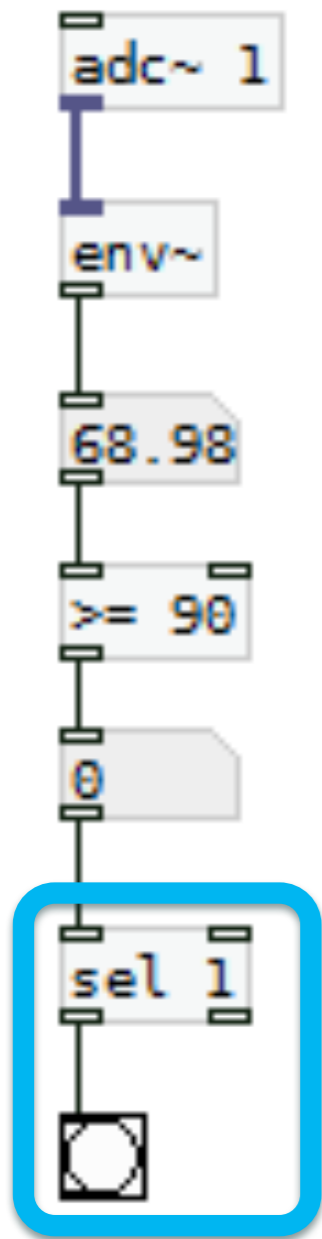
**get average volume over
last 1024 samples**



read audio input from channel 1

**get average volume over
last 1024 samples**

compare volume to threshold



read audio input from channel 1

**get average volume over
last 1024 samples**

compare volume to threshold

trigger function if high volume detected

pd syntax :

- right click on object and “help”
- ctrl+b opens up the browser
- pd-list and/or forum
- ...google

end.