

# MAT 120 — Project 1 — Fall 2024

Due date: Monday, Oct 21

1. Pd Assignment: Create a Pd patch that plays a chromatic scale with any starting frequency  $F$  and any common frequency ratio  $r$ . The notes should sound on the second and have an envelope that lasts one second. The notes should be based on pure sine tones only.  $F$  and  $r$  should be editable (changeable) by the user. The scale should start by clicking on a toggle, and should be stopped if the toggle is clicked again. Pd functions you should use: `metro`, `osc~`, `vline~`, `*~`, `toggle`, `float`, `message` and `number` boxes, as well as `*` and `+` boxes for numbers.
2. Note: The chromatic scale will be an equal-tempered chromatic scale if the common frequency ratio  $r$  is equal to  $2^{1/12}$ . You should test your scale with this  $r$  value, or a decimal approximation. You should be able to hear that this scale will hit the octave after twelve steps. You can also check this numerically by displaying the current frequency as it is being played in a number box. For testing purposes, you can have the scale play faster by adjusting the metronome speed. The one you turn in, however, should play each note once per second.
3. Submit a pdf copy of the patch to the Moodle box. You might need to first print (ie. save) it to pdf. It's a bit confusing since this probably will take several steps:
  - From Pd select print and then choose in the box a name for the file which saves it as filename.ps.
  - This is a postscript file which can be read by many programs, such as Preview on the Mac, which immediately converts it to pdf when you open it by double-clicking on its icon in Finder.
4. Zip a folder with a copy of your Pd patch StudentNameProject1.pd, and the pdf version, and submit on the Moodle web site.