Introduction to Programming II Project Log

Project title:	Music Visualisation
Topic:	Week 14 Improvement to Ridge Plot Extension

What progress have you made this topic?

- I have successfully created a standalone .js file for the implementation of the ridge plot extension, taking reference from the lecture videos.
- I have created parameters instead of fixed constants that shapes the ridges.
- I have added sliders that would be able to control the parameters so the tool could be interactive.
- I have added colour to the ridges

What problems have you faced and were you able to solve them?

- The variable inheritance in a standalone .js is different than all in the sketch.js file. This created a lot of bugs when trying to create the addWave function.
- After trial and errors I tried multiple times before finally able to create the addWave function correctly.
- I have also read more about inheritance and looked at the structure of the template starter more carefully to see what variables could be passed on to my extension.
- One key feature of the slider is that they could be controlled by a key press on “s” to show/hide themselves. In the first implementation, if the user change to other visualisation before hiding the sliders, the slider would still be shown on screen as there were no instruction to the code to hide the sliders. I tried to create a callback function but unsuccessful.

What are you planning to do over the next few weeks?

- I would plan on working on other visualisation first according to plan.
- I would keep the issue of the sliders noted to be reviewed later.

Are you on target to successfully complete your project? If you aren’t on target, how will you address the issue?

- Yes, I am on target to the completion of my project.

Introduction to Programming II Project Log

Project title:	Music Visualisation
Topic:	Week 16 Improvement to Spectrum Extension & Improvement to Ridge Plot Extension

What progress have you made this topic?

- I have created a ring by blending the bars of the spectrum extension, with the lowest frequency be at the 0 degree and the highest frequency be at the 359 degrees.

- I have created a formula to calculate the position of the spectrum bars. However it became a shape like flames from a gas stove instead.

- Alternatively, I figured from the p5js library that rotation and translation would better fit my needs, while further simplify the expression of the positions of spectrum bars.

- On the previous issue of sliders of the ridge plot extension, I have successfully implemented a solution by introducing a boolean variable at setup, which indicates the on/off of sliders, and calling a layer of checking before switching to other visualisation. If the new visualisation is not ridge plot but the slider boolean is indicating to show sliders, then I would “turn off” the slider before switching to another extension. This seemingly straightforward solution took me attempting to create extra workarounds before understanding so. Also it re-enforced my understanding on functions in javascript by creating methods that could be called in another function, and also understanding the sequence of the call stack that the visualisation follows.

What problems have you faced and were you able to solve them?

- Positioning the bars can be difficult at first so I drafted them in pen and paper and applied coordinates to help orient myself.

- The rotation method was not functioning correctly at first. Further investigation revealed that the default was “Radians” mode. It has to be turned to “Degrees” mode and turned back so other visualisation would not display incorrectly.

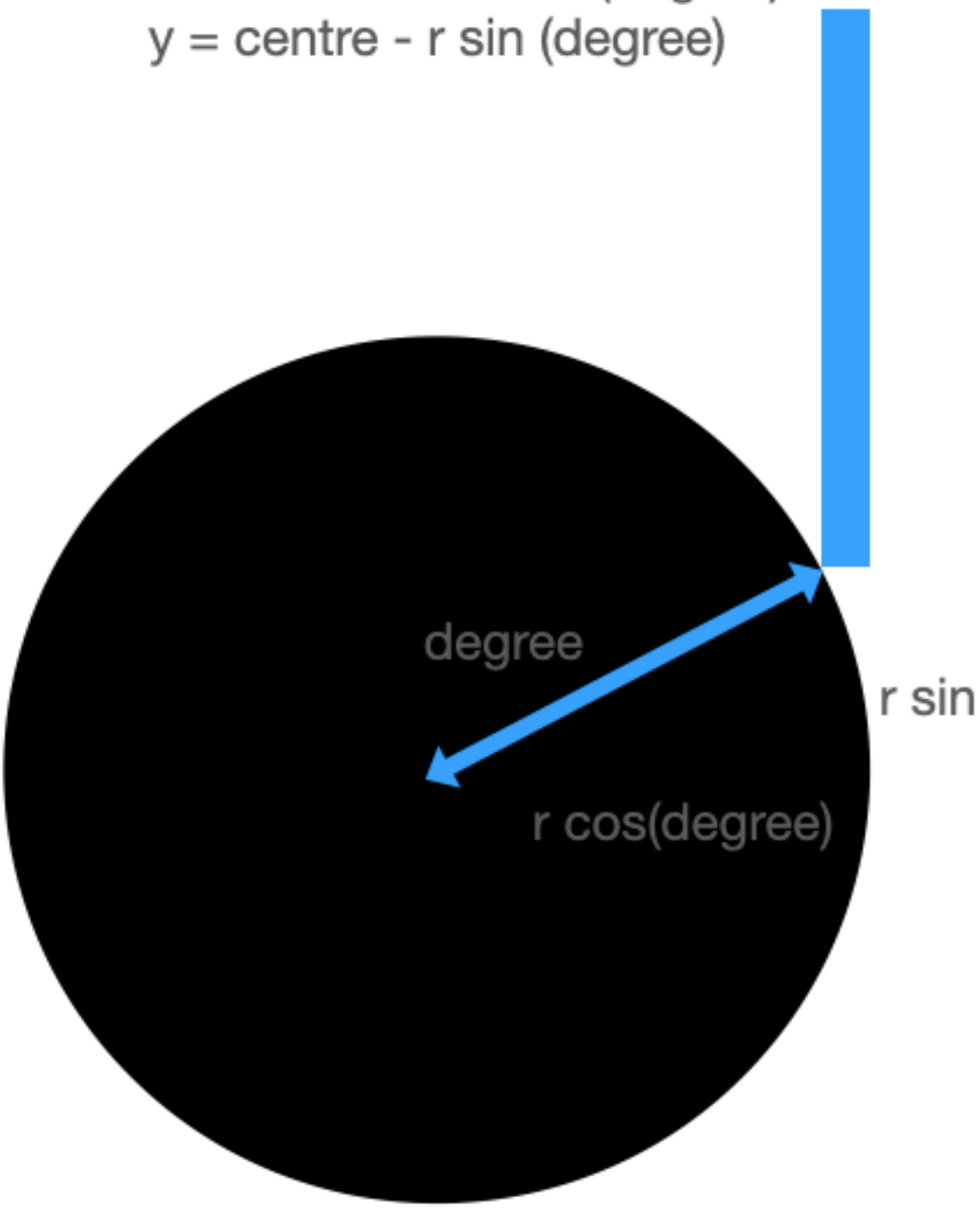
What are you planning to do over the next few weeks?

- I plan on working on another new visualisation in the next few weeks.

Are you on target to successfully complete your project? If you aren’t on target, how will you address the issue?

- The progress is on track and a legacy bug from last weeks have been solved.

x = centre + h + r cos (degree)
y = centre - r sin (degree)



Introduction to Programming II Project Log

Project title:	Music Visualisation
Topic:	Week 18 New extension - 3D objects

What progress have you made this topic?

- I have created a 3D canvas within graphs by using createGraphic

What problems have you faced and were you able to solve them?

- Originally, I thought creating 3D objects would be easy given p5.js extensive support to 3D. However, it was only when I started working I realised that the default renderer of p5.js is P2D, which does not support 3D images.

- I had trials about converting to WEBGL from createCanvas, but it would require a major overhaul of the existing extension. Instead, I learned about createCanvas which I eventually created one for this extension.

- I have also came to surprise that 3D objects operated on a different positioning system than 2D. The plan was to create multiple objects, which appear when the volume of a given frequency goes higher than a predefined threshold and slowly go off-screen by time, I had difficulties positioning different objects into the canvas, since the objects are not positioned by x, y, but using translation methods.

What are you planning to do over the next few weeks?

- I would further study 3D examples on p5.js and try to present different objects in the canvas

- I would try to implement the visualisation according to plan.

- I would invite a friend to help with user testing to seek external feedbacks to my project

Are you on target to successfully complete your project? If you aren't on target, how will you address the issue?

- It is currently a bit lag to the intended schedule, since using 3D was unexpectedly complex.

- I may change the target outcome if the planned implementation turned out to be too complex to be completed.

Introduction to Programming II Project Log

Project title:	Music Visualisation
Topic:	Week 20 New extension - 3D objects, testing feedback and amendments

What progress have you made this topic?

- I have completed multiple objects by multiple createCanvas() with WEBGL renderers
- I have created 3D torus and changing their size depending of the fourier.waveform() function, which I mapped against the size of the canvas; I have also made them rotate along the Y axis.
- I have also taken a modular approach to the visualisation, by creating custom functions of renderObject() which took in the canvas object. Canvas objects are also created iteratively by defining a object class that could be pushed into an array, which are subsequently rendered
- I have noted the feedback from a user (my friend) and amended some layout, including to provide more instructions by default. The menu is changed to be shown by default.

What problems have you faced and were you able to solve them?

- The visualisation was laggy when I tried to run it, it was at first quite puzzling to me since normally it would not be that lag. I went through the lecture and learned more about performance, which I found the memory being used by the 3D rendering is very high, close to 1GB after a few moment of running.
- In order to figure out the memory issue, I have looked closer to the codes and ensured I did not have a bug that could significantly hinder the performance, such as calling createGraphics() at draw() stage. However, it was not the case.
- Eventually, I tried to host my project externally, onto a server that I used for another web development project. (https://lightformify.com/private/p2/finalproj/) There was no memory issue on there, so I figured that the issue was due to Bracket's overhead when loading the preview server. Thus, I could not solve the problem.

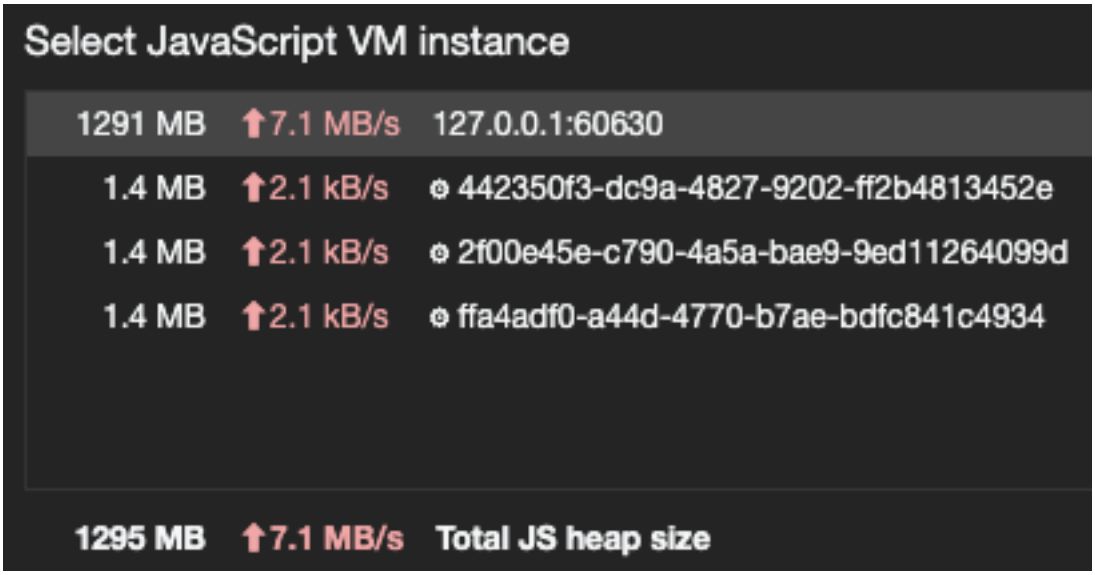
What are you planning to do over the next few weeks?

- I plan to complete the report part of the project

Are you on target to successfully complete your project? If you aren't on target, how will you address the issue?

- As there are performance issue regarding a static number of 3D objects, the original plan of having them dynamically created should be unrealistic and hence I would have to change the plan, presenting with 16 fixed positioned objects.

Memory usage under Bracket's preview server



Memory usage under external web server