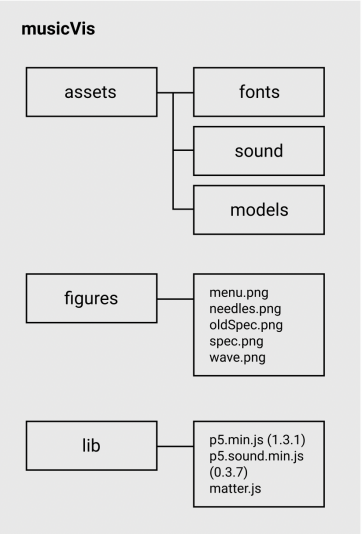
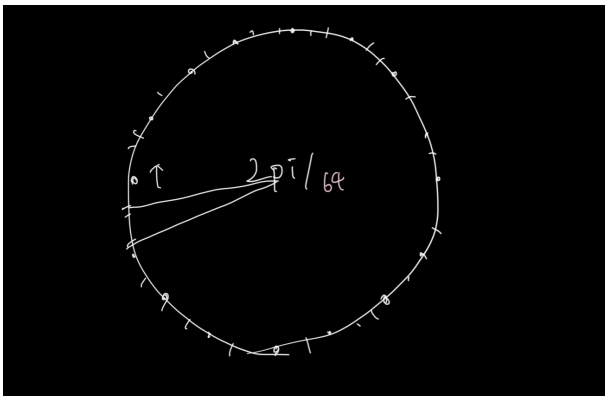
Introduction to Programming 2
Mid-Term assignment

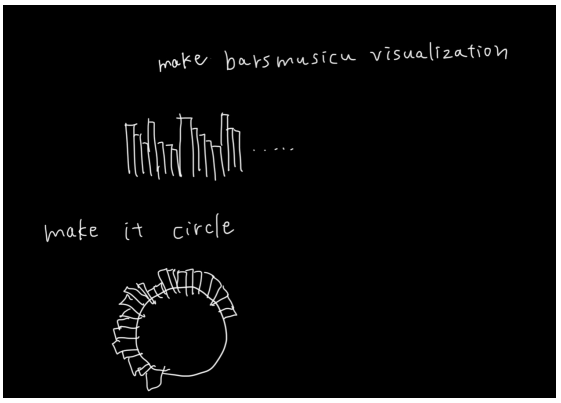
Section2 Outline your project and which extensions you are building on to the template. (400 words)

In this section, I will discuss the progress of the project. At first, I changed the writing style from es5 to es6. It was challenging to rewrite all the code, but it is more readable than before.



In the assets folder, I created a directory for 3D models and a directory for fonts.





For the first extension, circle music visualization, I placed bars along the central circle, using trigonometry to set each bar position with a "for" statement. Then, by adding the spectrum for the length of bars, you can see the movement of the bar with the rhythm of the song. In addition, the colors also change using bass level, allowing you to see the beautiful gradation changes.

The 3D extension was necessary to use WebGL canvas. According to research from the p5.js documentation, you can create 2D shapes in a WebGL canvas, but some shapes might not appear. When I made circle.js, the bar's radius didn't show on WebGL canvas which was already apparent in the p5.js GitHub issue, but they are working to fix it now. Then I decided to use the "createGraphics" method that can change canvas from WebGL to 2D in circle.js. Additionally, I imported my 3D models using a 3D tool called Blender. I used red and blue point lights from both sides, and one of the point lights move by mouse positions.

As for the physical extension, it is still in the middle stage, and the code is a bit messy. I adopted a library called matter.js to use its physics engine. According to the documentation, it needs to be set by some method in "the setup function." I wrote the function for many small boxes to fall from

above before the music starts playing in the setup function, but I believe there is a better way to write. In addition, I made a class for creating small boxes and instantiated them to create a large number of them. I'm currently trying to turn the level of the song into a force to make the little boxes bounce, but I'd like to improve on this to make the movement more natural.

I made a prototype of the UI design. The play button is currently located on the left side of the screen, but I decided to place it in the center and make it look simple to not interfere with the music visualizer.