**Unsafe Sound Dashboard**

**Developer Documentation**

**Project Intro:**

In music classes across the world, people are playing their instruments at volume levels that are considered unsafe for extended periods of time. The students and teachers in these classes are at risk of hearing loss because of this unsafe sound. This project aims to provide teachers and students with awareness of the sound they are being exposed to so they can make informed decisions about how to safely play music.

This project is a dashboard that provides real-time visuals of sound data collected from a microphone. It is a locally hosted web application built using HTML, CSS, and Javascript with an external library called p5.js.

**External libraries used:**

We used a module called p5.js to handle the data collection, aggregation, and displays. Specifically, we used a sub branch of the library called “p5.sound [that] extends p5 with web audio functionality including audio input, playback, analysis and synthesis.” P5.sound acts as a layer over the web audio API, I.E the API used by a browser for handling a host’s audio. We also used p5 to create the graphs. A further explanation of how the graphs are generated will be discussed later in this documentation.

**Pages:**

The Dashboard consists of 3 separate interactive pages. Those pages are developed as following:

1. **Login page:**

The login page’s front end is written in HTML, and CSS, as well as a javascript function to validate email. The validation function uses a regex equation to determine that an actual email address has been entered. If the email address matches format specification, and the user presses the login button, the next HTML page will be loaded, I.E the dashboard page.

1. **Dashboard:**

The dashboard page’s front end is displayed using HTML, and CSS. However, the main function of the dashboard page, displaying graphs, is written using p5.sound. The graphs are separated as follow:

1. High frequency
2. Medium frequency
3. Low frequency
4. Equalizer

The inner working of these graphs are described as follows:

High-low frequency graphs:

Equalizer:

If the user presses the “end” button the user will be taken to the exit, or “results” page.

1. **Exit: (soon to come)**

The exit page’s front end is written in HTML and CSS with the same format as the login page. However, it will display cumulative data gathered while the user is on the dashboard page with the option for the user to have those results emailed to them. This will all be done using a javascript function.