Introduction to Programming II Project Log.

Project title: Music Visualisation
Topic: Lesson 9.3 Beyond console.log

1. **Progress in this topic.**
    a. I've completed the implementation of the Effects Pad.
        i. This feature is not fully behaving as expected, however, I decided to move on and release as is, as I was employing much more time than expected.
            1. I started its development on the 21st of july and finished on the 13th of august.
            2. The plan was to finish the Effect Pad in 2 weeks time.
                a. Considering the 1 - 5 august out of office, I should have finished this feature at most on 9th august at most.
    b. I've completed the implementation of the new Sandstorm visualisation.
        i. This is a new visualisation that uses the factory pattern.
        ii. Sand particles come out from the screen from top to bottom at a random speed, and interact with the amplitude value to alter its x position on the screen.
2. **Problems faced and solutions.**
    a. The delay effect was not behaving as expected, when there was a change in the sound file, the effect did not take place.
        i. I've found out that this was due to how the class is implemented in the program.
            1. When the program starts the Effects Pad class is instantiated with the default sound file of the program.
                a. This creates an Effects array that is instantiated with that default sound file.
            2. When the sound file changes, the Effects does not change the sound file origin, hence could not apply the sound effect on the new sound file.
        ii. To overcome this, I created a function that whenever there is a change on the sound file, a new Effects array is instantiated with the new sound file.
            1. This solution worked well for the Delay effect.
    b. The Reverb effect is not applying as the Delay effect.
        i. This problem was not expected, as I stated on the last project log, both classes p5.Delay and p5.Reverb are extended from the p5.Effect class.
        ii. The reverb is applied once to the sound effect, but seems to have no effect on unattached from the sound file.
        iii. I could not come to a solution for this problem.
    c. The sandstorm visualisation was implemented in a short period of time.

i. To overcome the delay of time I had (approximately a week) I decided to develop this new visualisation as fast as I could.
ii. There was not much challenge on this visualisation.
    1. A factory pattern was implemented correctly.
iii. The one challenge was in the creation of many Sand particles that were on the screen at a time, and seemed to occupy a lot of the call stack.
    1. With this, I could not apply a y-axis transformation on the visualisation.
        a. I wanted to apply a change of speed of the fall of the sand according to the fourier analysis.
        b. However this would imply a quadratic time complexity function on a Sand update.
    2. I overcome this, with a limit on the creation of Sand particles.
        a. If the current Sand particles on screen are above 1000, the function to update the Sand particles is returned.

3. Plans over the next few weeks.

a. Perform testing.
    i. I plan to perform a test over the last feature and visualisation.
        1. These are both the Effects Pad and the Sandstorm visualisation.
b. Perform Usability testing.
    i. I plan to arrange some user tests.
        1. I would put the steps I want the user to reproduce on the whole application.
        2. I would record the interaction of the users with the application.
        3. I would make a report.
c. Sandstorm visualisation backwards.
    i. I want to implement a function that, when the user checks or presses a button, the visualisation goes from bottom to top, instead of top to bottom.