IM3080 Design and Innovation Project (AY20xx/xx Semester 1)
Individual Report

Name: _____Wu Zhao Yi_____

Group No: _____3_____

Project Title: _____Cloud Tubes_____

Contributions to the Project (1 page)

1. Obtained ultrasonic sensors for “Interactive” mode of the project.
2. Obtained cotton wool, plastic folders, foam sheets for decoration of our physical structure.
3. Decorated physical structure with cotton wool to emulate clouds.
4. Obtained beat timings (millisecond) of 2 songs by running them in a ‘beat recognition program’, for use in “Beats” mode of project.
5. Implemented Arduino code for ‘raising’ design for “Beats” mode of the project.
6. Optimized code to exclude called delays for “Beats” mode of the project.
7. Implemented entire Arduino code for “Story Mode” mode of the project.
8. Optimized code to improve runtime for “Story Mode” mode of the project.
9. Compiled mp3 audio using GarageBand software, for “Story Mode” mode of the project.

Reflection on Learning Outcome Attainment

Reflect on your experience during your project and the achievements you have relating to at least two of the points below:

(a) Engineering knowledge
(b) Problem Analysis
(c) Investigation
(d) Design/development of Solutions
(e) Modern Tool Usage
(f) The Engineer and Society
(g) Environment and Sustainability
(h) Ethics
(i) Individual and Team Work
(j) Communication
(k) Project Management and Finance
(l) Lifelong Learning

Point 1: _____Communication _____

There were many discussions that took place throughout the project, for instance during team meetings, pair programming, and even conversations that do not pertain to the project. Through these interactions, I have learnt about the importance of good communication and what it means. It is to be able to properly articulate what I want to convey, for example when pitching an idea to the team or explaining a code issue to another teammate. Having good communication is also being able to have casual conversation with my teammates, example during lunch breaks. This strengthens our bonds which helps us be more cohesive when doing project work.

Point 2: __Design/development of Solutions__

I have gained a skill on Arduino programming for live sized project. I have only done small scale Arduino coding in the past and have now realized the added challenges when it comes to a live size project. One main difference would be that the runtime to light up 25 LED strips take significantly more time than just a couple, which enabled me to learn how to optimize the runtime while coding. Second main difference would be that many physical wire connections and hardware were required, which made troubleshooting a little more difficult, as it could be either your code or the hardware that is the issue.

Point 3: _____Investigation_____

While implementing code for the project, errors and issues were faced. Sometimes there may be no errors that can be seen on Arduino IDE, but the result that is displayed on our light fixture is clearly not what we want. Hence this means there were many instances where we had to troubleshoot and investigate what the problem was before we can try to fix it. Trial and error was a big part of troubleshooting our code, which taught be how to be patient and persistent when investigating an error.