IM3080 Design and Innovation Project (AY22/Y3 Semester 1)
Individual Report

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Group No: 4

Project Title: Project Tetris

Contributions to the Project

- Ideation & Brainstorming of Project
- Procurement of basic materials (i.e. wires, buttons, led strips, box)
- Measure & cut led strips to exact length
- Measure & liase with software team to settle on number of led lights required for one shape
- Implement sufficient spacing between led lights
- Soldering of all led strips, buttons to wires
- Wires are color-coded and labelled to distinguish individual functions & polarities, while ensuring they are of sufficient length to connect to other parts
- Quality test of buttons & led strips to ensure functionality
- Insulation layers for solders (i.e. hot glue, heat shrink wrap)
- Create 3D Tetris blocks (i.e. cutting, gluing)
- Cut partitions to ensure proper isolation of led lights without leakage
- Acquisition & Testing of mockup controller box & speaker
- Refinement of actual model to add sturdiness to controller box
- Bundling & tidying of wires
- Mounting of final model, with all individual parts

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: Individual and Teamwork

I picked this point because my experience for this project was unique from most of the projects I have participated in so far. I felt that everyone tried our best to contribute both individually and worked together with one another as well. We started off the project with the realization that out of 9, only 3 of us had experience in hardware so my teammates had to be patient and they taught us as much as they could, while we ourselves also tried our best to learn and pick up skills along the way.

In the hardware team, I helped and volunteered in whichever way possible, learning how certain hardware worked along the way.

The 3 different teams also helped to come up with solutions when we met with a problem and helped each other out wherever we were lacking. I came out of this project feeling accomplished, equipped with new knowledge and new friends. I felt like through this project, I really felt the teamwork because most of us started from not knowing much about the hardware we were using and together we worked together to learn it.

Point 2: Design/development of Solutions

My team met with many problems, both in hardware and software aspects. For me, I was in the hardware team, so we met with issues such as loose connections of wires, copper chips falling off, imbalance of controllers and even having too many wires to manage. This was where the development of solutions occurred. To ensure that we didn't have to connect the wires another time, after we soldered them for the second time, we came up with the application of hot glue on them. Two reasons because it is an insulation layer so it reduces any short circuit due to contact, and it protects the solder from any physical abrasion we may have with the wire.

Additionally, we came up with a makeshift styrofoam platform that stretches throughout the surface of the controller box' inner surface, ensuring that it'll be balanced and sturdy. We also color coded the wires and labelled them clearly to distinguish them easily.