IM3080 Design and Innovation Project (AY2022/23 Semester 1)
Individual Report

Name: Sean Young Song Jie

Group No: 4

Project Title: Tetris

Contributions to the Project (1 page)

- Create and constantly update Trello
- Assisted with the things on Tinkercad and deciding on the flow of LEDs
- Test the wiring with codes
- Research and tested the codes to store colours in an array for the LEDs
- Introduce Tinkercad to the rest of the software team for testing of codes on the working simulation
- Debug and collaborate with the rest of the software team with the movements of the blocks
- Worked on displaying scores and high scores in 2 7-segment each via inputs sent to function
- Assisted in migrating the simulation code into actual Arduino for testing and debugging
- Implement specific colours to block
- Implement random generation of blocks
- Integrated sounds effects and background music using dual mode speaker, 7-segments for scores and high scores into the main Arduino Tetris code
- Implement “initial start game” feature into the “restart game” button
- Assisted in finding and retrieving logistics
- Help to complete migrating and mounting of Arduino
- Bug fix and Quality check
- Optimising codes by removing duplication and simplifying codes
- Modify the tile generation function to not let it generate the same tile more than twice
- Assisted in adding in the game difficulty feature by increasing the speed based on score
- Modify the code by changing the dual mode speaker to single mode speaker for background music and added the code for buzzer for sound effects
- Created GitHub to do version control and store our codes

Reflection on Learning Outcome Attainment

Point 1: Modern Tool Usage

When both the hardware and software team started consecutively, I started questioning myself how are we supposed to test our codes when the hardware is not ready? I knew that this is a big problem where we the software team wouldn't know if our codes and logics are working properly without constant testing.

So, while the rest of the software team are learning and experimenting Arduino's syntax and module by using the Arduino Tool Kit we bought, I used the time to research if we can simulate everything for the time being.

I came across Tinkercad, an online platform tool that can simulate Arduino circuit with all the basic components and libraries available. Since it's just an online simulator, there're some limitations with memory and text section but it is still more than enough for us to get started while waiting for the hardware team to get all the require logistics.

Point 2: Individual and Teamwork and Communication

I work separately from the rest of the software team. They focus more on displaying the Tetris tile and its movements. But I focus more on creating functions to random generation tiles, displaying score, high score and playing background music and sound effects. I also focus on quality checking, optimizing the overall code and simplifying it.

Even though we work individually on our portion, we are also able to discuss to combine our codes together. To have a good teamwork, we need to have good communication as well to make sure everyone is on the same page.