

IM3080 Design and Innovation Project (AY2023/24 Semester 1)

Individual Report

Name: Claire Chai Xin Ying

Group No: 3

Project Title: nIEMtendo

Contributions to the Project (1 page)

- Brainstormed for ideas for our interactive content
- Researched on how to display words and images on screen
- Tested codes for display using Tinkercad during the initial phase
- Implemented the code for Scrolling Text and static numbers (score display)
- Created Excel sheet to design the Menu Screen and to automate the process of mapping out each colour to their individual hex colour codes
- Compose the code for presenting the Menu Screen
- Implemented the hover animation when different game modes are selected (removed in the end, changed to button toggle)
- Modified and constantly improved on the design of the menu display by experimenting with different colours and layouts
- Assisted in sourcing for sound effects and integration into game
- Assisted in optimising and tidying up codes for better readability
- Designed and beautified the exterior of the arcade game body
- Coordinated with other team members to troubleshoot different problems

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:

Point 1: Engineering Knowledge

Prior to this project, I had no experience at all with Arduino and hence this project provided me with the opportunity to have a hands-on learning experience. I was part of the software team, involved specifically in the design and aesthetics aspects, which includes designing and displaying the menu screen. At the start, it was rather challenging as I had to learn everything from scratch by researching and asking my peers who are more experienced for advice on using Arduino. After plenty of research, I learned how to display scrolling text, different colours, and images on LED strips.

To display images in the correct orientation, knowledge on how the wiring of the led strips were required. In the case for our project, it was in zig-zag form and hence the code I used required additional modifications and adjustments.

Point 2: Design/ Development of Solutions

Initially, drawing and displaying our desired menu screen design was tedious and cumbersome as it meant that we had to manually key in all the hex colour codes one at a time. Thankfully, I came across a video which showcased how one was able to make use of Microsoft Excel to create pixel art and I made alterations to the formula to conveniently map out the colours to hex colour codes.

Given a fixed screen size that the hardware team has come up with, I had to ensure that my design was able to fit in the screen. Initially, the game title 'Snake' was unable to fit within the width of the screen with the preset font used in the Adafruit library. To solve this issue, creating a custom font and the use of alternate colours were required to enhance readability.

Additionally, with the 2 game modes available, displaying the proper game selection is crucial for the user experience.

Point 3: Individual and Teamwork

It is the first time I worked in a group with so many people and I had a great time learning from and collaborating with my team members. For such a big project, we further divided ourselves into smaller subgroups. Hence, I worked more closely with my software team in developing and integrating our codes together. There are times when integration posed errors and we had to slowly dissect and analyse our codes accordingly. Since there are four of us writing our own individual codes for our respective parts, there were times where we need further explanation from one another regarding the meaning of our code. Thus, listening and communication skills are vital in such situations when working together to debug issues. Overall, this project has afforded me valuable insights into the dynamics of collaborating within a large team and I believe the hard and soft skills I have acquired through this teamwork experience will prove to be a useful asset in my future career.