Ethan Nguyen / Ashley Budman
ECE153B W23
Project Proposal

Overview:

For our final project, we will be re-creating a similar memorization game to a project in the past. We will also be using a matrix module to display the direction arrows/button letters and a Wii nunchuck for the player to use. The purpose of the game is to test a player's memorization skills under a time constraint. We will display the set of icons on the module one by one at a constant speed, and the player will use the nunchuck to input the same instructions in the same order before their time runs up. As the player successfully completes each round, the number of instructions will increase for each subsequent round. If the player does not input the correct instruction or the time limit is reached, the player will lose one of their three lives. Once the player loses all lives, the game finishes. Additional features include having the players choose their difficulty level and time limit.

Peripherals/Serial Interface Protocols:
    Wii nunchuck (I2C option 2)
    Dot Matrix module (SPI)

Block Diagram:
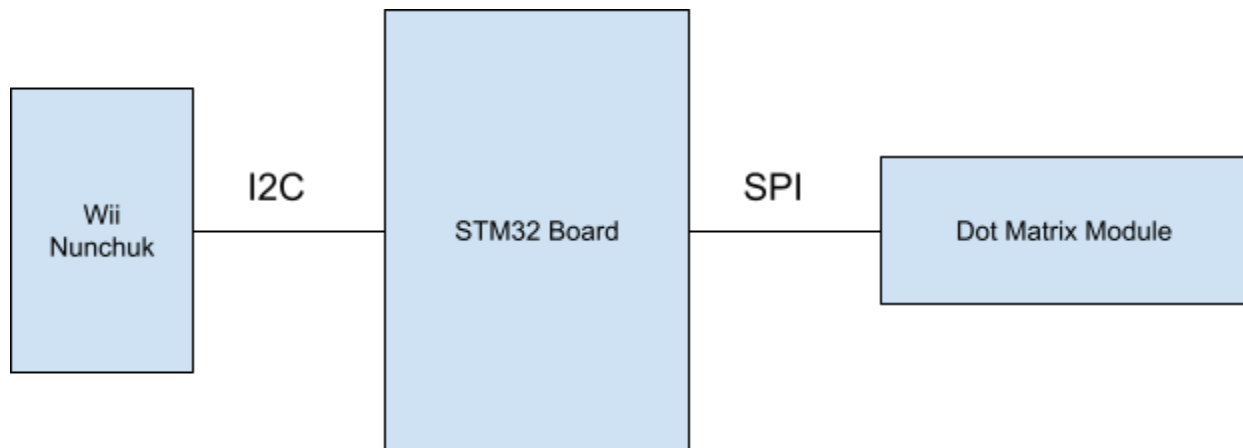
Responsibilities:
Ethan will be responsible for connecting the Wii nunchuck to the STM32 board using I2C protocol. Ashley will be responsible for the dot matrix module and making sure it interfaces with the STM32 board correctly using SPI protocol. Together, we will work on the software design of the game along with adding the difficulty levels and time limit features. We will also work on the website and weekly updates together.

Software Structure:

For the dot matrix module, we will display the set of instructions using a buffer that will be holding a set initially. As a player successfully moves past rounds, the size of the buffer increases since we add more instructions. We will use I2C protocol to connect the Wii nunchuck with the STM32 board and dot matrix module. If the player inputs the wrong instruction, then an interrupt will be sent.