CS 120B Final Project Report – Glow Pong

Project Description:

Glow Pong is basically the classic game Pong recreated on a LED Matrix. It includes the option of having two players with an AI built in if the player chooses to play in one player mode. There are also special modes the player can choose from including the fire ball mode (where the player has to dodge an additional obstacle that travels horizontally back and forth) and the mirror mode (where the ball's X trajectory is reversed every time the ball passes through an invisible located between the two paddles).

User Guide:

Located on the left side of the circuit board are sets of LEDs. From the top of the board downwards, the first two LEDs indicate how many players are playing the game. The first LED in the set indicates one player while the other indicates two players. The next set of lights have normal mode as the first light, fireball mode as the second light, and mirror mode as both lights on. The triple sets of LEDs indicate the player's score (first one to score three points wins). On the right side of the board includes buttons. The first button from the top changes the number of players. The second button changes the mode. The third button starts the game (and prevents the player from further changing the settings). The next set of two buttons control the first players' paddle and the next set controls the second player's paddle.

Components and Software:

- ATmega1284
- LED Matrix
- AVR Studio 6
- LED lights
- Buttons

GitHub Link:

https://github.com/achen067/GlowPong

GlowPong.c – the main file that runs the game, controls the paddles, and settings.

gamefunctions.h/c – provides all the functions of the game

max7219led8x8.h/c – provides the functions to control the LED matrix.

io.h/c – included it but didn't use it

scheduler.h – provides the availability to tasks.

timer.h/c – provides the functions for using the timer.

utilities.h/c – provides basic functionality such as SetBit and GetBit.

Video Demo Link:

https://youtu.be/PYVIEG2UzKU