Anshul Aggarwal

Martin Kong

Lab 1F

The Game of Snake

Our goal was to emulate a video game we played often as kids, Snake. Snake is a video game where you play as a hungry snake in search of more and more apples to feed on as you grow longer and longer. The player must direct the snake, taking care not to smash into the boundaries of the area or into themselves in their quest for more and more apples. To implement this, we needed a matrix array of 8x8 pixels that we attached to our Arduino as well as 4 buttons attached to it as well to control movement.

To connect to the Arduino we used a direct implementation. This means that for every pin that needed driving we connected it by wire to a single pin on the microcontroller. We hooked up two buttons directly from the Arduino’s 3.3V and 5V power supply pins to the Analog 0 and 1 inputs. We then used code to quickly scan through each of the rows to turn on specific LED’s so only the ones we wanted to be on turned on. We then used an object-oriented focus to implement the game on the Arduino and utilize the display function we had now created, effectively playing the game.

Once we had everything connected to the Arduino, our biggest challenge was displaying pixels independently. Though this may seem like an easy task at face value, it is much harder than initially anticipated. What we want is something that looks like this:

However, we were consistently getting something that looks like this:

The reason for this is that since the matrix has 16 pins, each associated with a row or column, it is very easy to turn a single LED on. If a row and 2 columns are to be turned on for 2 pixels, 2 LED’s in that row will be turned on. However, if 2 rows and 2 columns are turned on, then 4 pixels will be turned on, rather than the anticipated 2. This causes a problem with the display as we see many more LED’s than we had intended.

How We Designed The Test: We knew that we had to figure out a methodology to turn on only a single LED independent of the rest. This means our overarching goal was to get 2 LED’s in diagonal to light up without any other interference. For our purposes, this was the LED’s at (0,7) and (7,0), the two opposite ends of the matrix.