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ECE-447-201

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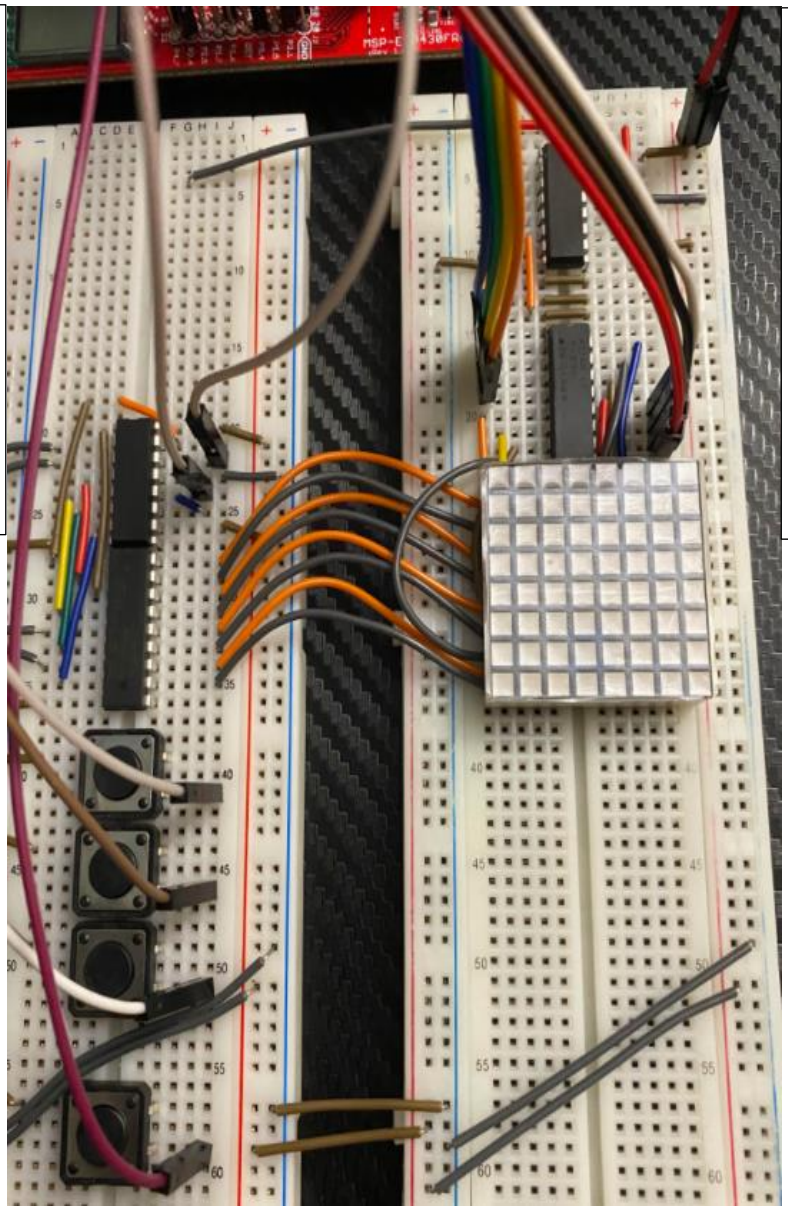
Lab 3: Moving Dot on LED Matrix

Introduction: The purpose of this lab is to implement a moving LED on a LED matrix using c code. The main outputs are the 8 pins that power each of the columns in the matrix while the 2 pins that connect to the shifter are used as a clock and a serial input. The shifter controls the power going to the rows of the LED matrix. The main inputs are the four pins used for the buttons.

Hardware Design:

Left Breadboard:
Shifter:
Brown (top): P2.7
Brown: P2.6

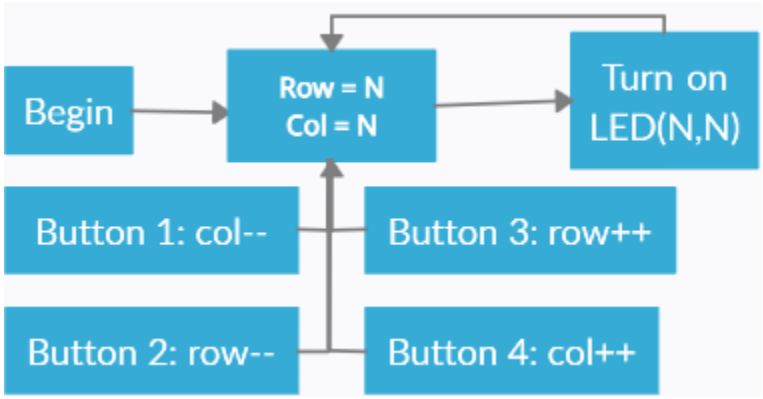
Button 1:
White: P2.1
Button 2:
White: P2.2
Button 3:
White: P2.3
Button 4:
White: P2.4



Right Breadboard:
Red: 3.3V
Black: GND

Resistor Array:
Orange: P8.7
Yellow: P9.6
Green: P9.5
Blue: P9.4
White: P9.3
Black: P9.2
Brown: P9.1
Red: P9.0

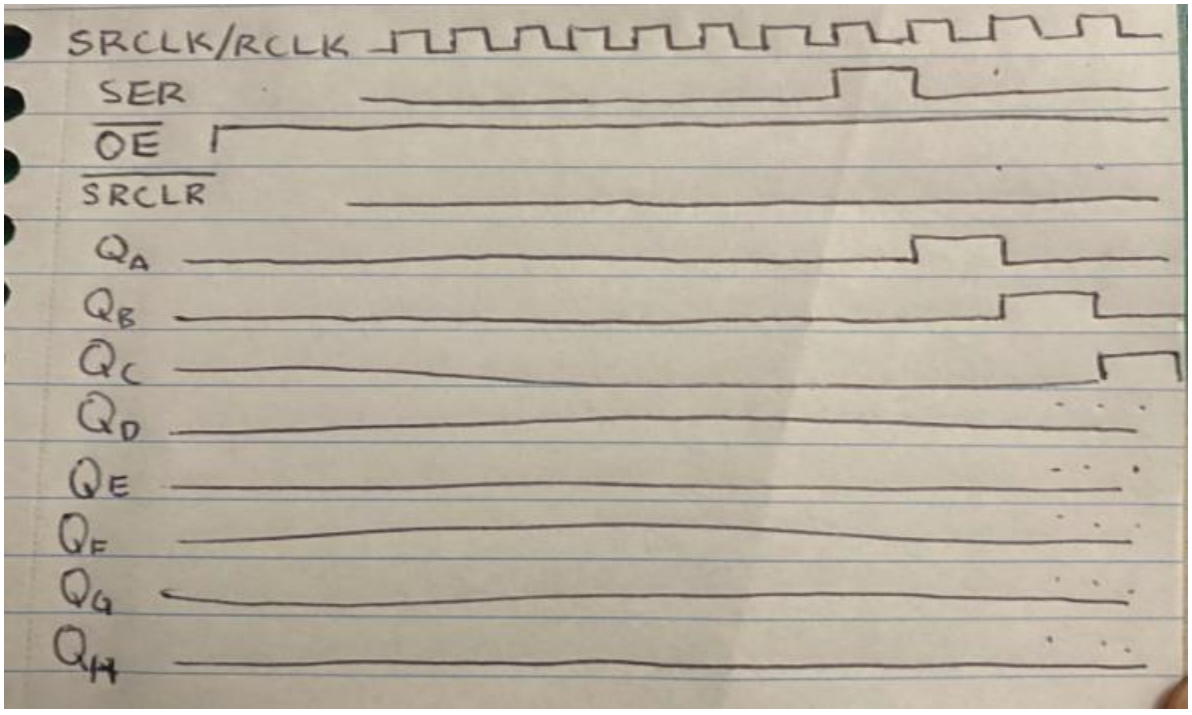
Software Design:



Conclusions: I was able to complete the lab and achieve all the functionality for the buttons. The hardest part for me was making the button move up, I managed to do this but not as efficiently as I managed to make the button move down, left, and right.

Questions:

1. P2.6 is connected to SRCLK and RCLK while P2.7 is connected to SER. The inverse of OE is connected to logic level 0 while the inverse of SRCLR is connected to logic level 1.



2. The reason for the LEDs being dim is because the shifter is going transistor array very quickly and the current supplied to the led matrix is less than usual due to the speed.

Demo Video: https://youtu.be/7yQglTZ3gs8