EENG 348: Digital Systems

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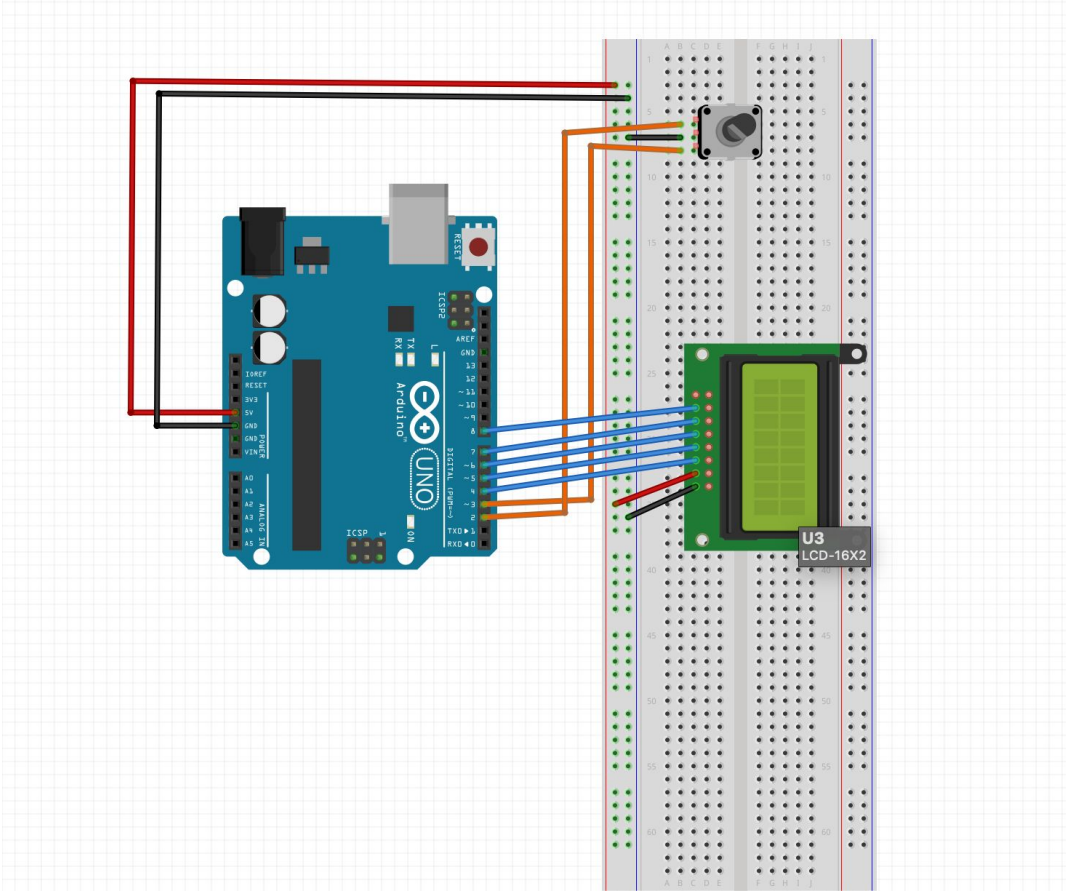
Lab 3 - Part 3



In part 3, we used a rotary encoder to change the velocity of a bouncing ball across an OLED screen. Please note that in the schematic above, there are seven connections going into the screen. These seven connections correspond to CS, DC, RES, D1, D0, Vcc, and GND from top to bottom. The changes in the states of Pin A and Pin B (marked in orange above) are recognized by an interrupt, and depending on the current state and the previous state, we could determine whether the rotary encoder was being turned clockwise or counterclockwise.

A velocity variable kept track of the current velocity of the ball. Boundaries were placed near the edges of the screen that changed the direction of travel of the ball. Boolean variables were used to track the direction of travel in both dimensions. (Please see testing.txt). We used the Adafruit libraries to draw the ball on the screen. The coordinates of the center of the ball were modified depending on the current velocity of the ball. (Please see the commented code.) The value for the velocity of the ball was capped at 255 (maximum positive velocity) and 0 (maximum negative velocity).