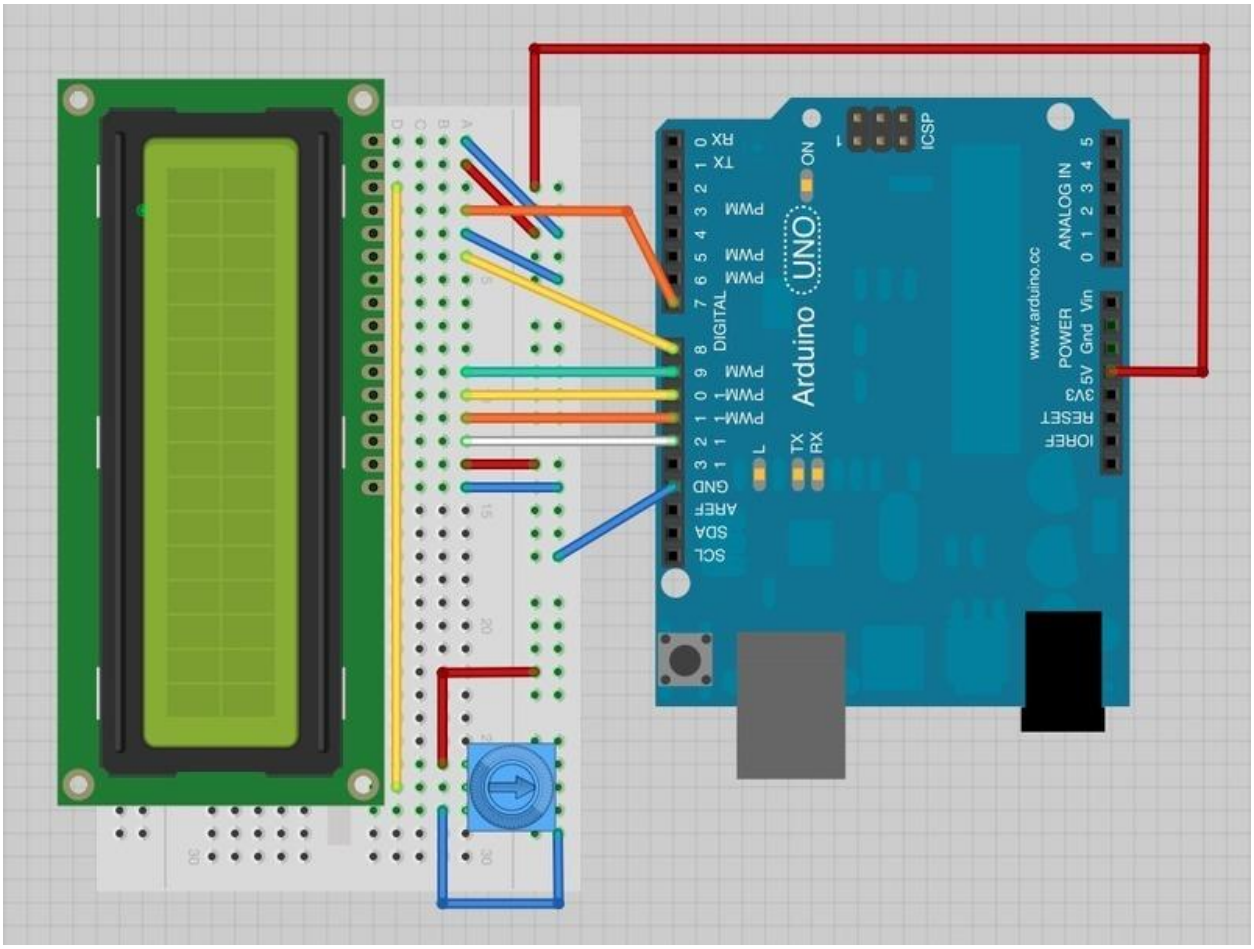
Materials

- Arduino Uno
- LCD Screen
- 2x Potentiometers
- 1x Pushbutton

Background & Set-Up:

You will use finite state machines to implement a menu from which you can select various apps. You will need to draw state machines so that you correctly handle each state and understand the inputs that make it transition to the next state.

You will need to set up the LCD display and utilize the Liquid Crystal library to communicate with it. More info on how to set up the LCD display:
https://learn.adafruit.com/adafruit-arduino-lesson-11-lcd-displays-1/overview
https://www.arduino.cc/en/Reference/LiquidCrystal



Goal:

We want to write a program for the Arduino that has a menu of applications that we can scroll through and select. You will set up a potentiometer to scroll through the various options and a pushbutton to select the options.

You can support the following applications:

- Magic 8-Ball
- Rock, paper, scissors
- Fortune teller

You will need to utilize state machines, switch-case statements, interrupts, digital inputs, analog inputs, and digital outputs.

Additional Info:
For better performance and easier set-up, you may want to configure the pushbutton as an external hardware interrupt. More info here: https://www.arduino.cc/reference/en/language/functions/external-interrupts/attachinterrupt/

I wrote a function to scroll a single line of text on the LCD for you to use. Just pass it the line number you want it to print on (0 or 1) and the entire string that you want printed. Function defined below:

```
/* if string is too large to print, scroll on single line */
void oneLineScroll (int line, String str1) {
  int i;

  // set cursor on intended line and print first 16 chars
  lcd.setCursor(0, line);
  lcd.print(str1.substring(0,15));
  delay(700);
  // for every additional letter, shift in from right
  if (str1.length()>16) {
    for (i = 0; i <= (str1.length()-16); i++) {
      lcd.setCursor(0, line);
      lcd.print(str1.substring(i,i+16));
      delay(300);
```

```
    }
  }
}
```