Introduction

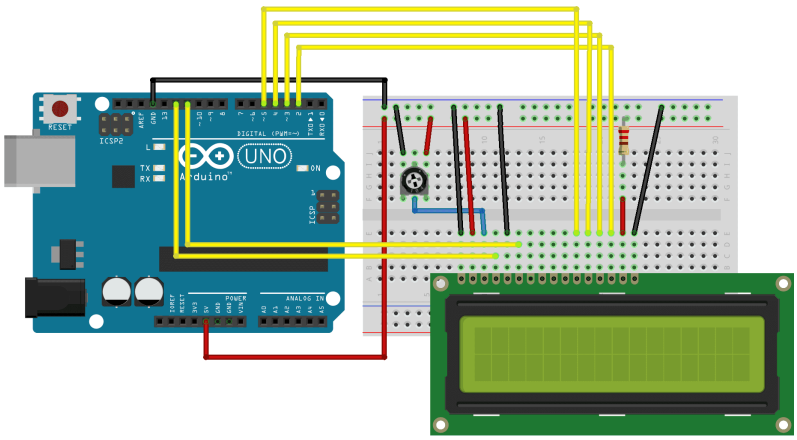
This report outlines the steps and components involved in my first “project” of connecting a 1602 LCD screen to an Arduino. The project aimed to display text on the LCD screen using an Arduino microcontroller, providing an introduction to both hardware connections and software programming.

Components

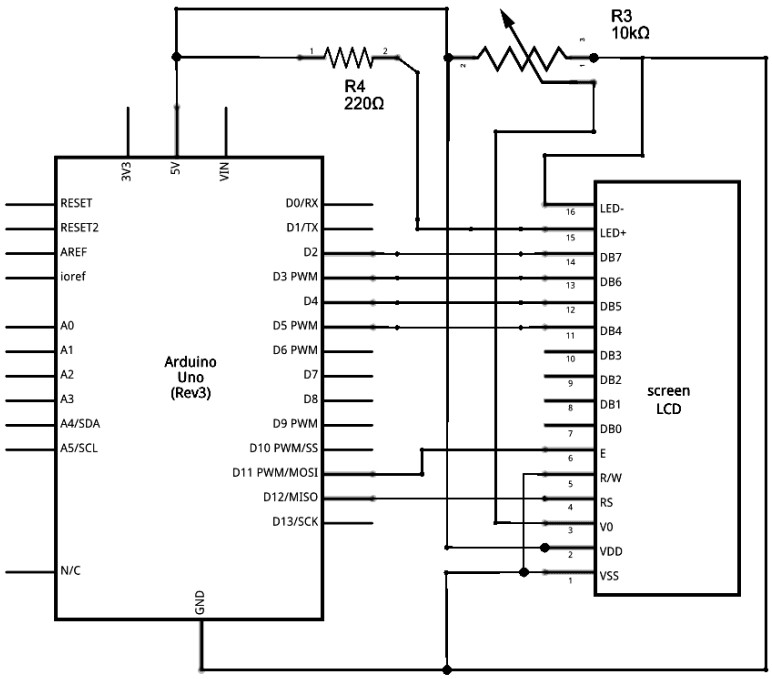
1. Arduino UNO R3 dip
2. 1602 LCD Screen
3. Breadboard
4. Jumper Wires
5. Potentiometer
6. 220-ohm Resistor

LCD screen to Arduino Connections [Order does not apply]:

- LCD RS pin to digital pin 12
- LCD Enable pin to digital pin 11
- LCD D4 pin to digital pin 5
- LCD D5 pin to digital pin 4
- LCD D6 pin to digital pin 3
- LCD D7 pin to digital pin 2
- LCD R/W pin to GND
- LCD VSS pin to GND
- LCD VCC pin to 5V
- LCD LED+ to 5V through a 220 ohm resistor
- LCD LED- to GND



“Figure 1, displays the default layout of all connections for the LCD”



"Figure 2 displays a more in-depth view of all connections"

Setting Up the Potentiometer:

1. Connect one end of the potentiometer to the 5V pin on the Arduino.
2. Connect the other end to the GND pin on the Arduino.
3. Connect the middle pin (wiper) of the potentiometer to the VO (contrast) pin on the LCD.

Connecting the Resistor and Backlight:

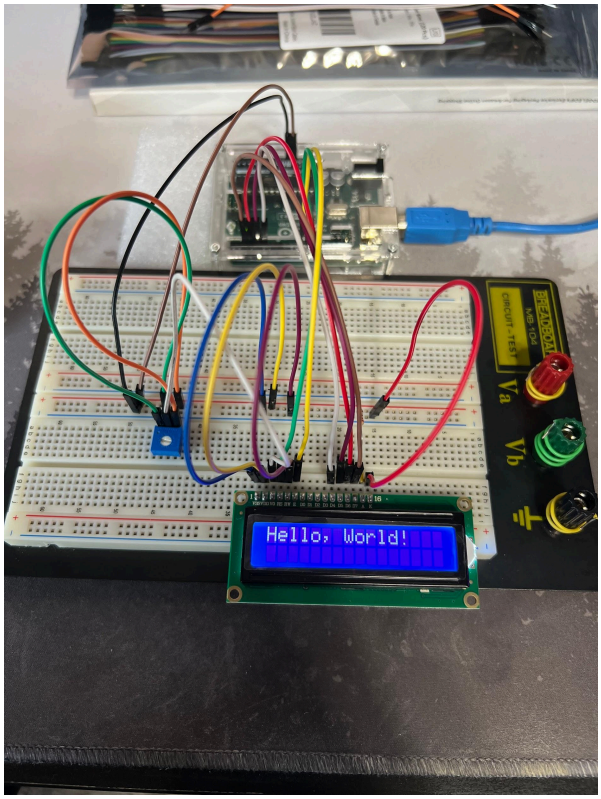
1. Connect a 220-ohm resistor between the A (anode) pin of the LCD and the 5V pin on the Arduino to limit the current to the backlight.
2. Connect the K (cathode) pin of the LCD to the GND pin on the Arduino.

Arduino Code for LCD

```
// include the library code:
#include <LiquidCrystal.h>

// initialize the library by associating any needed LCD interface pin
// with the arduino pin number it is connected to
const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

void setup() {
```

```
  // set up the LCD's number of columns and rows:
  lcd.begin(16, 2);
  // Print a message to the LCD.
  lcd.print("Hello, World!");
}

void loop()
{
}
```

“The code takes an example sketch given through the Arduino IDE and is adjusted to adhere to Figure 1”



“Figure 3 displays the completed beginner project”

Conclusion

Setting up the LCD screen with the Arduino was a successful project that allowed me to “break into” the Arduino experience. With both hardware connections and programming. Understanding the role of each pin, was crucial. This project served as a foundational step in exploring more complex electronics and microcontroller applications.

References

Liquid Crystal Displays (LCD) with Arduino. docs.arduino.cc. (n.d.). https://docs.arduino.cc/learn/electronics/lcd-displays/