Digital voltmeter using Arduino

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Project Report

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Embedded System Software

Overview

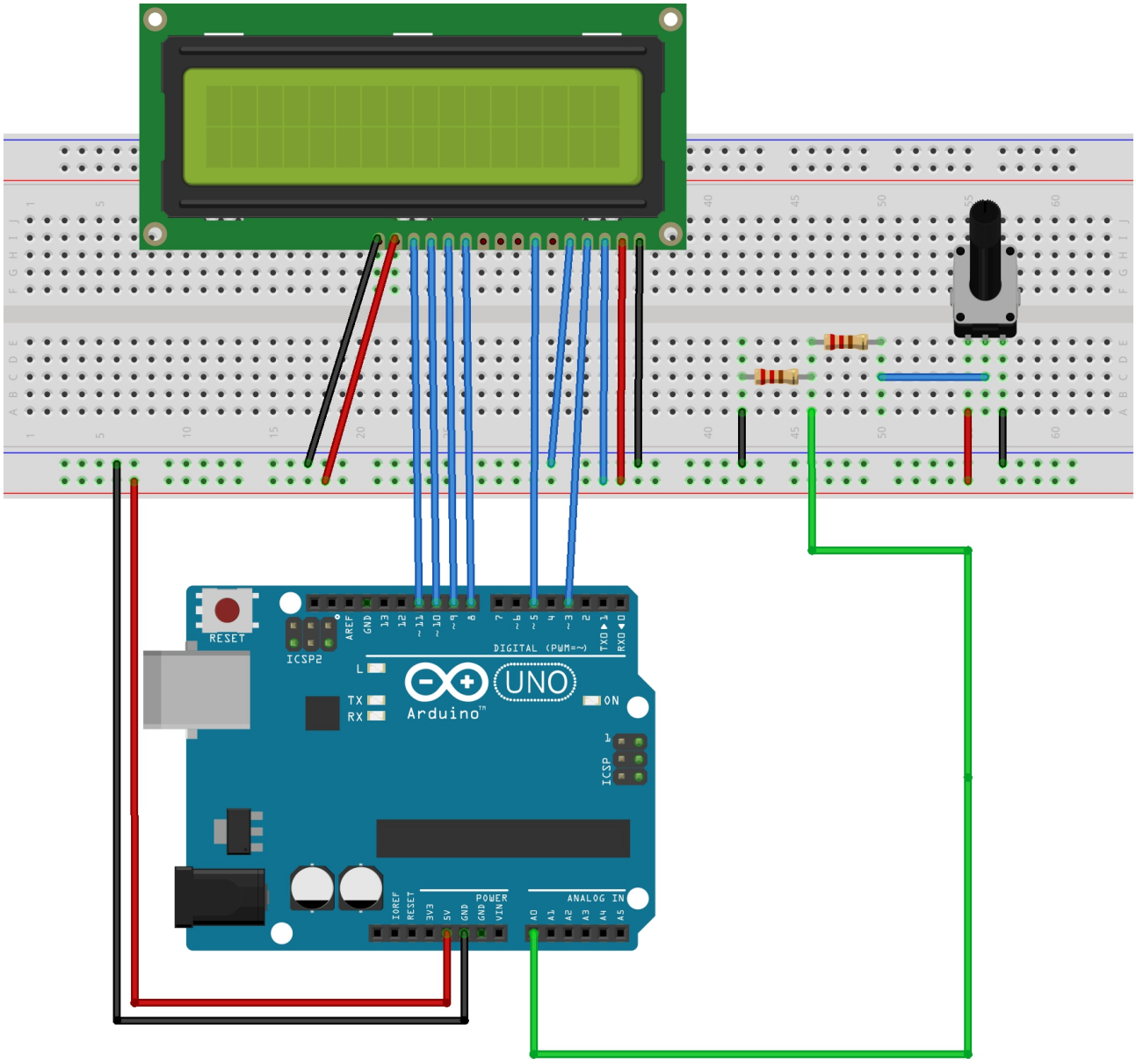
A voltmeter is an instrument used for measuring electrical potential difference between two points in an electric circuit. Analog voltmeters move a pointer across a scale in proportion to the voltage of the circuit; digital voltmeters give a numerical display of voltage by use of an analog to digital converter. In analog voltmeter a pointer moves on the scale to represent the voltage. Digital voltmeter directly displays the voltage in digits with the help of analog to digital converter.

Purpose

By doing this project to study more about the microprocessor board, lcd ,and potentiometer (present pot) that can be apply it to use in real life. I hope this will going to be useful.

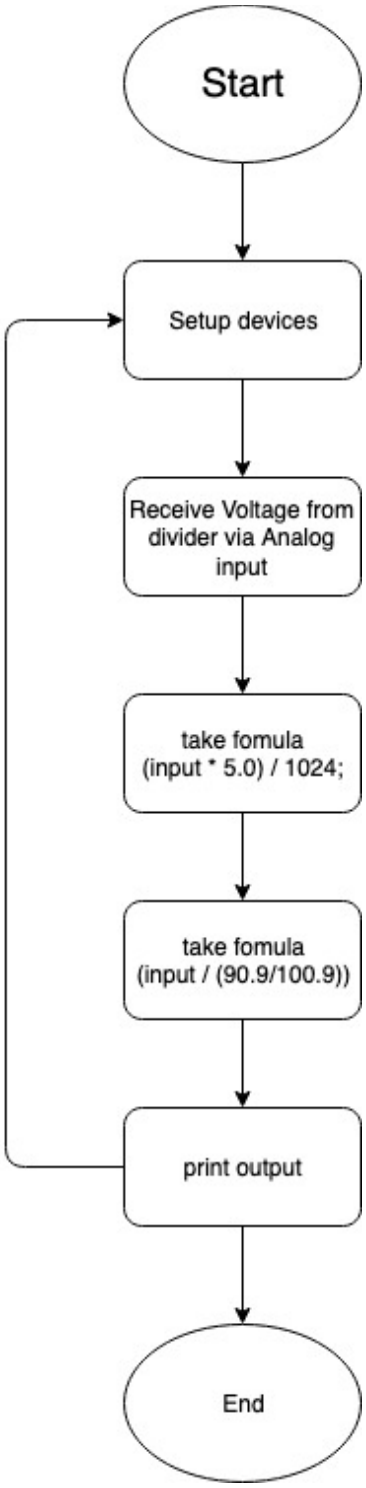
Hardware

- 1x Arduino Uno
- 1x 16x2 LCD
- 1x I2C adapter(optional)
- 1x Breadboard
- 1x potentiometer
- 1x 10k ohms resistor
- 1x 90.9 ohms resistor
- Jumper wires



Software

- Arduino IDE
- #include <Wire.h>
- #include <LiquidCrystal_I2C.h>



Source Code

```
 LiquidCrystal_I2C lcd(0x27, 16, 2);
  float input_voltage = 0.0;
  float temp=0.0;
  float r1=90900.0;
  float r2=10000.0;

void setup() {
  Serial.begin(9600);
  lcd.begin();
  lcd.print("DIGITAL VOLTMETER");
}
void loop() {
  int analog_value = analogRead(A0);
    temp = (analog_value * 5.0) / 1024.0;
   input_voltage = (temp / (r2/(r1+r2)));
   if (input_voltage < 0.1)
   {
     input_voltage=0.0;
   }
    Serial.print("v= ");
    Serial.println(input_voltage);
    lcd.setCursor(0, 1);
    lcd.print("Voltage= ");
    lcd.print(input_voltage);
    delay(300);
}
```