EE 2305 – Introduction to C Programming
Hardware Project 03

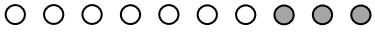
Digital VU Meter

Project Features: Analog Input and Digital Output.

Program an Arduino board to accept an analog input voltage and display the magnitude of the voltage using a 10 LED display.

Input voltage = 0% of maximum (all LEDS off)

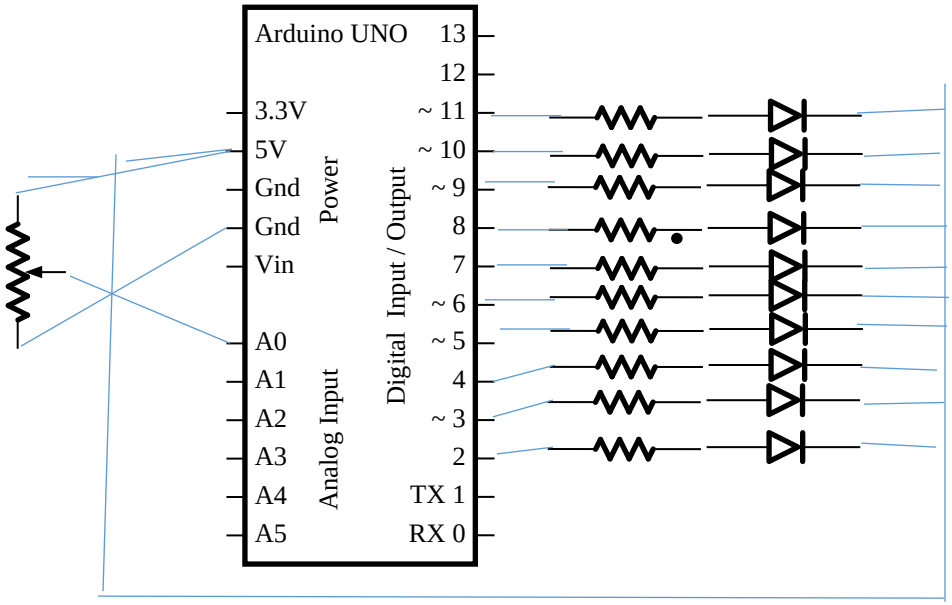
Input voltage = 30% of maximum



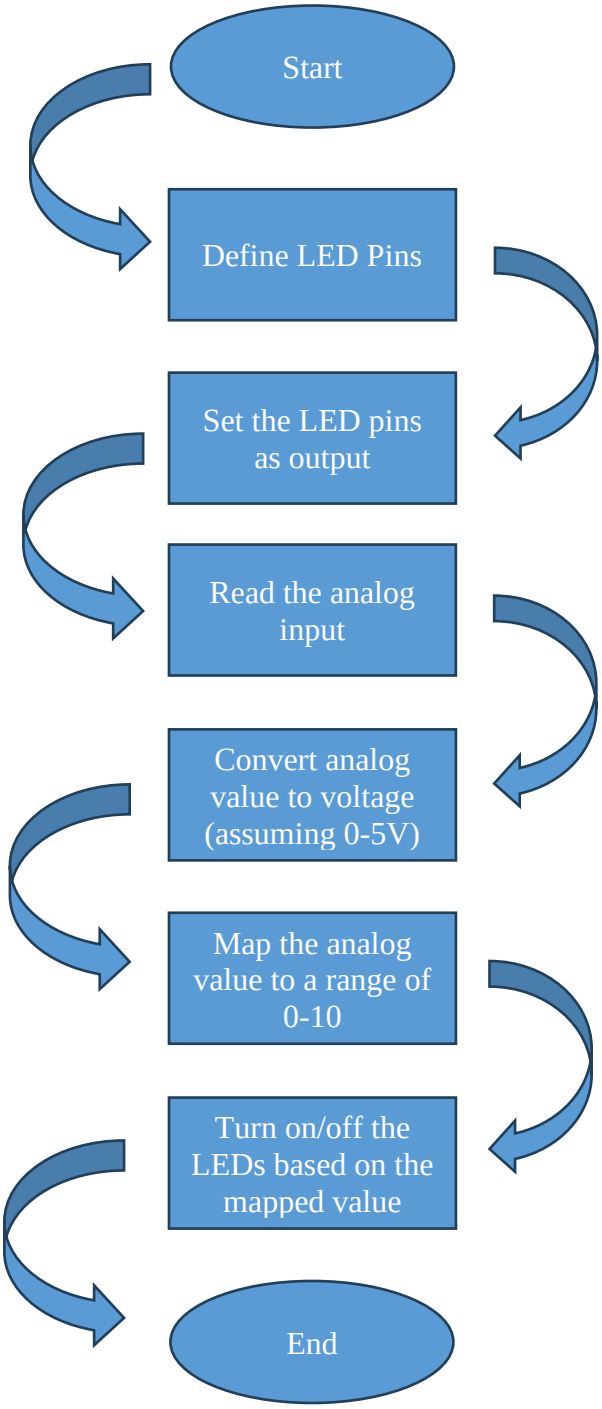
Input voltage = 70% of maximum

Document your program and include the following sections. Provide a brief description of the system and how you are designing it to operate.

A. Hardware Diagram:
Provide a hardware diagram of the components.



B. Program Flowchart:



C. Arduino Source Code

```
//Define LED Pins
const int ledPins[] = {2,3,4,5,6,7,8,9,10,11};
const int numLeds = sizeof(ledPins) / sizeof(ledPins[0]); //Determine the number
of LEDs

void setup() {
  // Set the LED pins as output
  for (int i = 0; i < numLeds; i++) {
    pinMode(ledPins[i], OUTPUT);
  }

  Serial.begin(9600);
}

void loop() {
  // Read the analog input
  int analogValue = analogRead(A0);
  float voltage = analogValue * (5.0 / 1023.0);  // Convert analog value to
voltage (assuming 0-5V)
  Serial.print("Voltage: ");
  Serial.println(voltage);

  // Map the analog value to a range of 0-10
  int mappedValue = map(analogValue, 0, 1023, 0, 10);

  // Turn on/off the LEDs based on the mapped value
  for (int i = 0; i < numLeds; i++) {
      if(i < mappedValue){
        digitalWrite(ledPins[i], HIGH);
      } else {
        digitalWrite(ledPins[i], LOW);
      }
    }
  delay(1000); //Delay 1 second
}
```

D. Demonstration Video

https://drive.google.com/file/d/18AC13lJx6vTPE6SpKVj0vjnBpSV3bgp6/view?usp=sharing