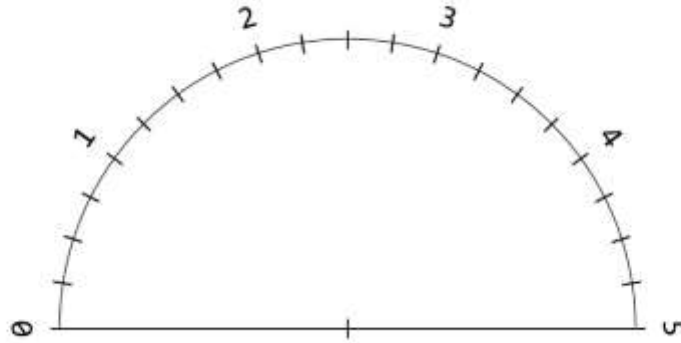**EE 2305 – Introduction to C Programming**
Hardware Project 04

Servo Voltmeter

Project Features: Analog Input and Hobby Servo Control.
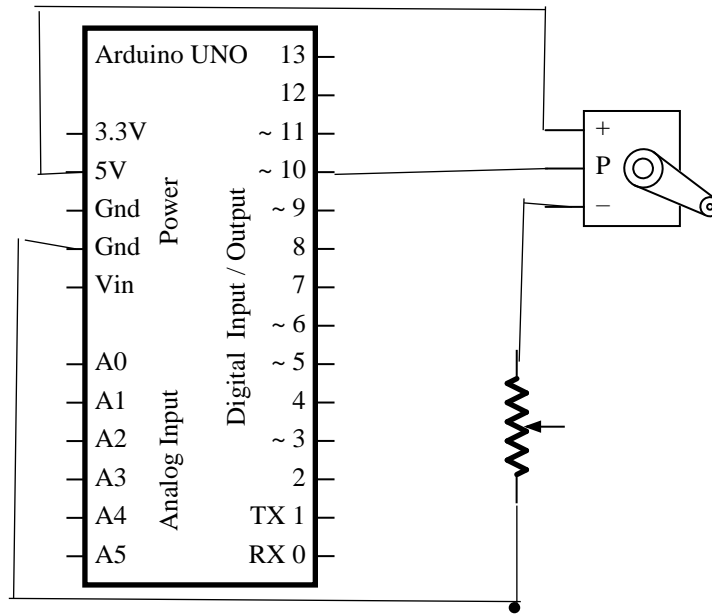
Program an Arduino board to accept an analog input voltage and display the magnitude of the voltage using a Hobby Servo display. Use the servo horn to direct an arrow to the appropriate voltage. Provide as much precision in the display as possible.

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.

Arduino UNO	13
	12
3.3V	~ 11
5V	~ 10
Gnd	~ 9
Gnd	8
Vin	7
	~ 6
A0	~ 5
A1	4
A2	~ 3
A3	2
A4	TX 1
A5	RX 0

Power

Digital Input / Output

Analog Input

P

+

−

B. Program Flowchart:
Draw a flowchart of the program.

Hardware Project 4 Flow Chart   4/16/2024

```
┌─────────────────┐
│  Begin program  │
└─────────────────┘
         │
┌─────────────────────┐
│ Create time         │
│ delay variable      │
│ and variables for   │
│ Servo and           │
│ Potentiometer       │
└─────────────────────┘
         │
┌──────────────────────────┐
│ Set up serial output     │
│ and servo pin            │
└──────────────────────────┘
         │
┌──────────────────┐
│ Read  voltage    │
└──────────────────┘
         │
┌──────────────────┐
│ Move  servo      │
└──────────────────┘
         │
┌──────────────────────┐
│ Loop to begining     │
└──────────────────────┘
```

C. Arduino Source Code
Insert the Arduino Source Code into the document.

```
sketch_mar21a

#include <Servo.h>

Servo myservo;

int pos = 0;

const int td = 15;
int analogVoltage = 0;
int Voltage;

void setup()
{
  Serial.begin(9600);
  myservo.attach(9);
}
void loop()
{
    Voltage = analogRead(analogVoltage);
    Voltage = map(Voltage, 0, 1023, 0, 180);
    myservo.write(Voltage);
    delay(td);
}
```
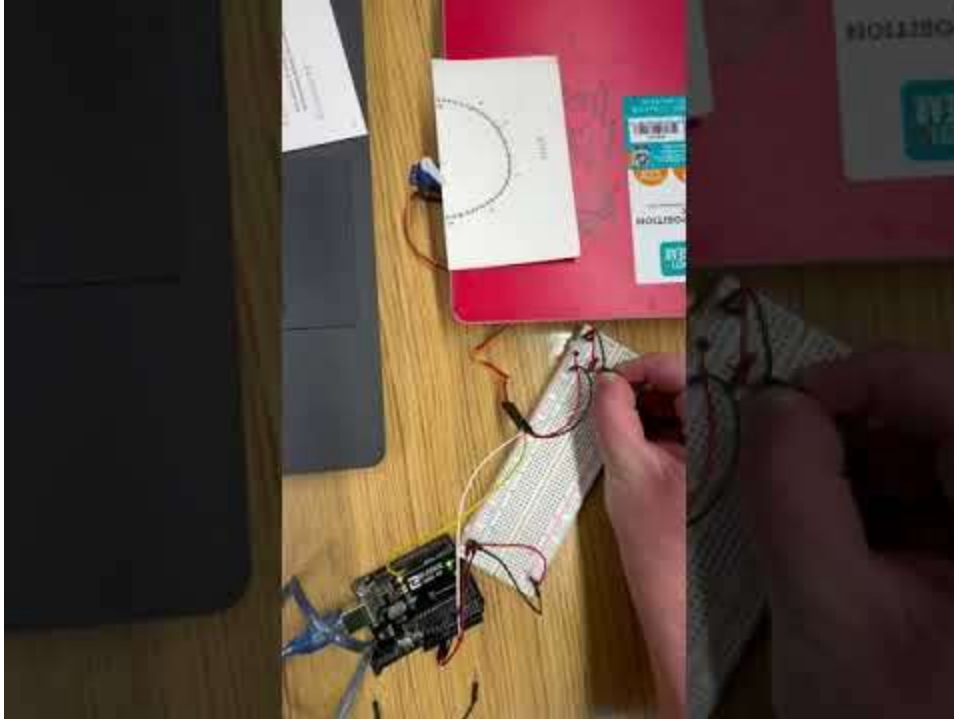
D. Demonstration Video
Record and upload a video demonstrating the operation of the circuit.

Save the document as a *PDF* file and submit the *PDF* document to *Blackboard*.