LAB REPORT #10

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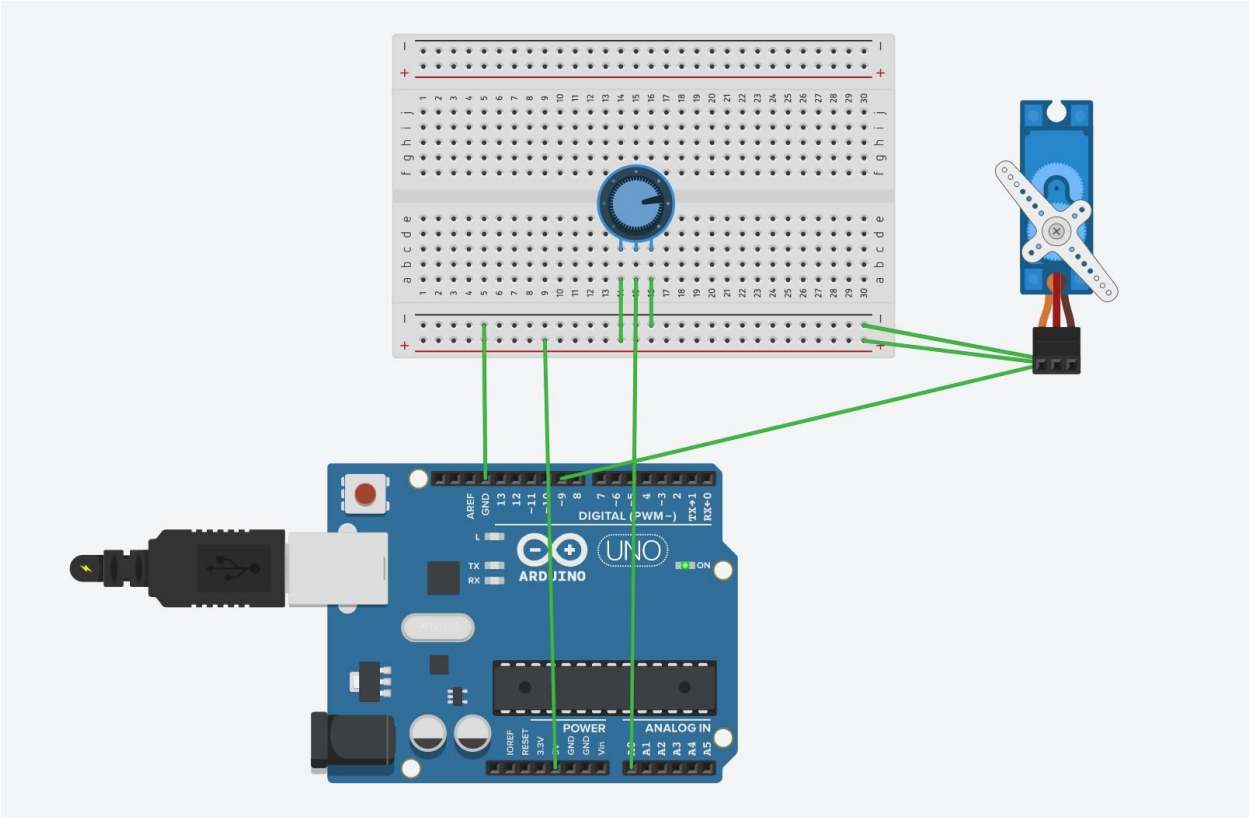
Screenshot and components



Potentiometer: A resistor that can change resistance either by input or manually turned. This will be used to control the micro servo.
Micro Servo: A motor that can spin based on the voltage it receives.

Summary: This lab is about how to control a micro servo using a potentiometer. The micro servo's gear will spin to reach an angle based on the voltage it receives and the potentiometer can be used to spin the servo since it can change the resistance of the circuit. We will also use an analog pin in order to convert the voltage of 0 to 5 V to an integer 0 to 1023 to map the angle of the micro servo from 0 - 180 degree.

Result:

When turning the potentiometer from left to right, the analog gives a decreasing value and the angle increases as well. This is due to the decrease in voltage as the resistance increases. The relationship between the analog value and the angle is linear.

1. With the code $y = map(x, 0, 1023, 0, 180);$

a. If x is 0 what will y be? 0 b. If x is 512 what will y be? 90 c. If x is 768 what will y be? 135

Conclusion: I learned how to control a micro servo by using a potentiometer. I also learned about the map function in arduino that seems to work as a linear relationship. I also learned that a certain level of resistance can change the angle so it would be wise to use the correct metric unit. I learned this due to the mistakes by changing the resistance manually, when I change the ohm by a small numerical value, there seem to have no effect. When I changed the value by kiloohm, the effect was much greater. The spinning on the potentiometer itself is also based on kiloohm.

```
/* Standard Servomotor sketch
   Bob Wilson
   12/12/2012
   */

#include <Servo.h>

Servo myServo;

int potpin = 0;
int val;

void setup() { Serial.begin(9600);
  myServo.attach(9); //we will use pin 9
}

void loop() {
  val = analogRead(potpin);
  Serial.print("val :");
  Serial.println(val);
  /* take the value of val (should be in the
   * range [0, 1023]) and map it to a value
   * in the range [0, 180].
   * 0 -> 0, 1023 -> 180, 511 -> 90 */
  val = map(val, 0, 1023, 0, 180);
Serial.print("degree :"); Serial.println(val);


  myServo.write(val);
  delay(3000);
}
```