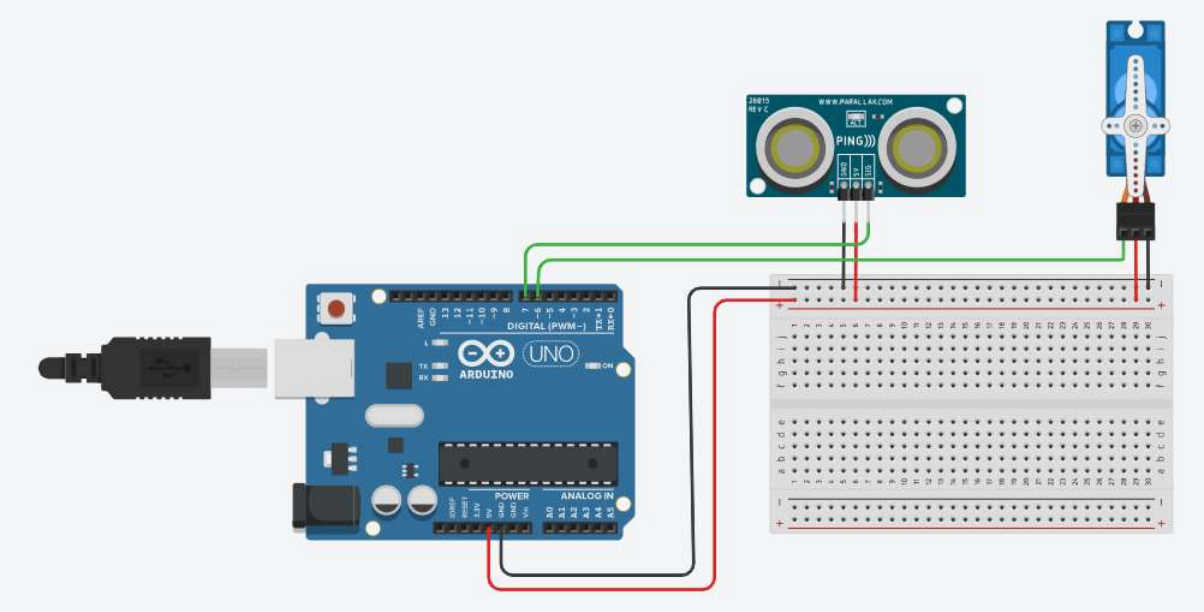
Assignment 2

Develop an "Automatic garage door opening system". Use an Ultrasonic sensor to detect if there is a vehicle in front of the garage. If any vehicle is detected open the garage door (rotate the servo motor) for some time and close it.

Circuit Diagram:



Code:

```
#include <Servo.h>
int distance = 0;
Servo servo_6;

long readUltrasonicDistance(int triggerPin, int echoPin)
{
  pinMode(triggerPin, OUTPUT);  // Clear the trigger
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
  // Sets the trigger pin to HIGH state for 10 microseconds
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
  pinMode(echoPin, INPUT);
  // Reads the echo pin, and returns the sound wave travel time in microseconds
  return pulseIn(echoPin, HIGH);
}
```

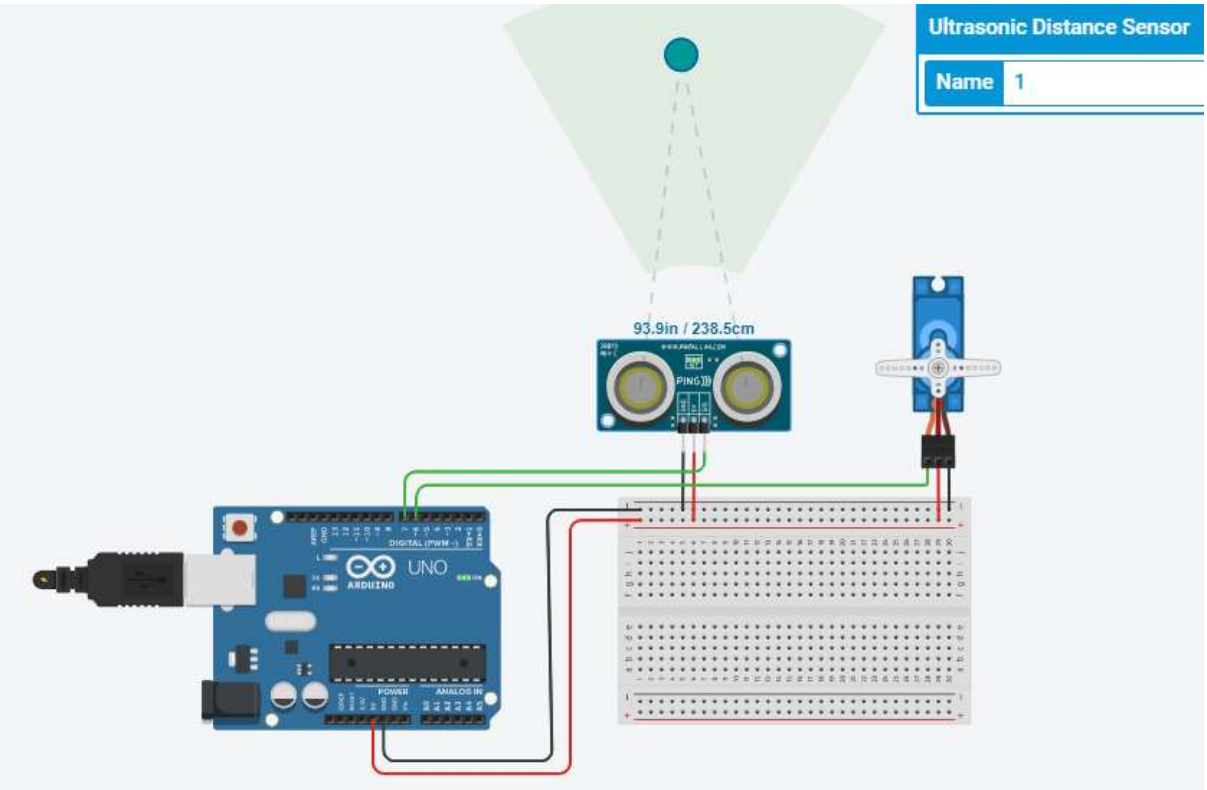
```
void setup()
{
  servo_6.attach(6, 500, 2500);

}

void loop()
{
  servo_6.write(90);
  distance = 0.01723 * readUltrasonicDistance(7, 7);
  if (distance <= 100) {
    servo_6.write(180);
    delay(1000); // Wait for 1000 millisecond(s)
    servo_6.write(90);
  }
  servo_6.write(90);
}
```

Simulation Images:

The garage door is closed.



The garage door is open (Servo motor rotates to 90 degrees).