

# Smart Bridge Externship Program

## Internet of Things

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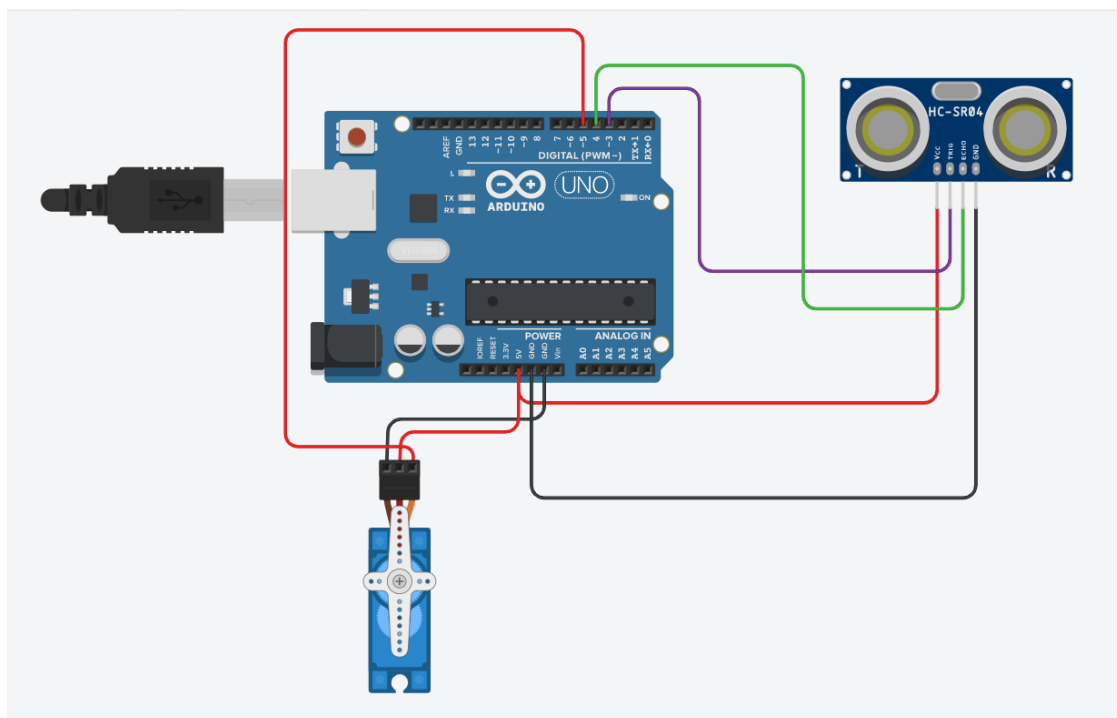
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### Assignment – 2

**Q.** 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.

**Tinkercad Circuit:**



## Code:

```
#include<Servo.h>

Servo s;

void setup()
{
  pinMode(3, OUTPUT);
  pinMode(4, INPUT);
  Serial.begin(9600);
  s.attach(5);
}

void loop()
{
  digitalWrite(3, LOW);
  delayMicroseconds(2);
  digitalWrite(3, HIGH);
  delayMicroseconds(10);
  digitalWrite(3, LOW);

  float duration = pulseIn(4, HIGH);
  float distance= duration*0.034/2;
  Serial.print("Distance: ");
  Serial.println(distance);
  if (distance<50){
    for(int i=0;i<=180;i++){
      s.write(i);
      delay(100);
    }
  }
```

```

delay(2000);

Serial.print("Vehicle has approached, Opening Gate!!");

for(int j=180;j>=0;j--){

  s.write(j);

  delay(100);

}

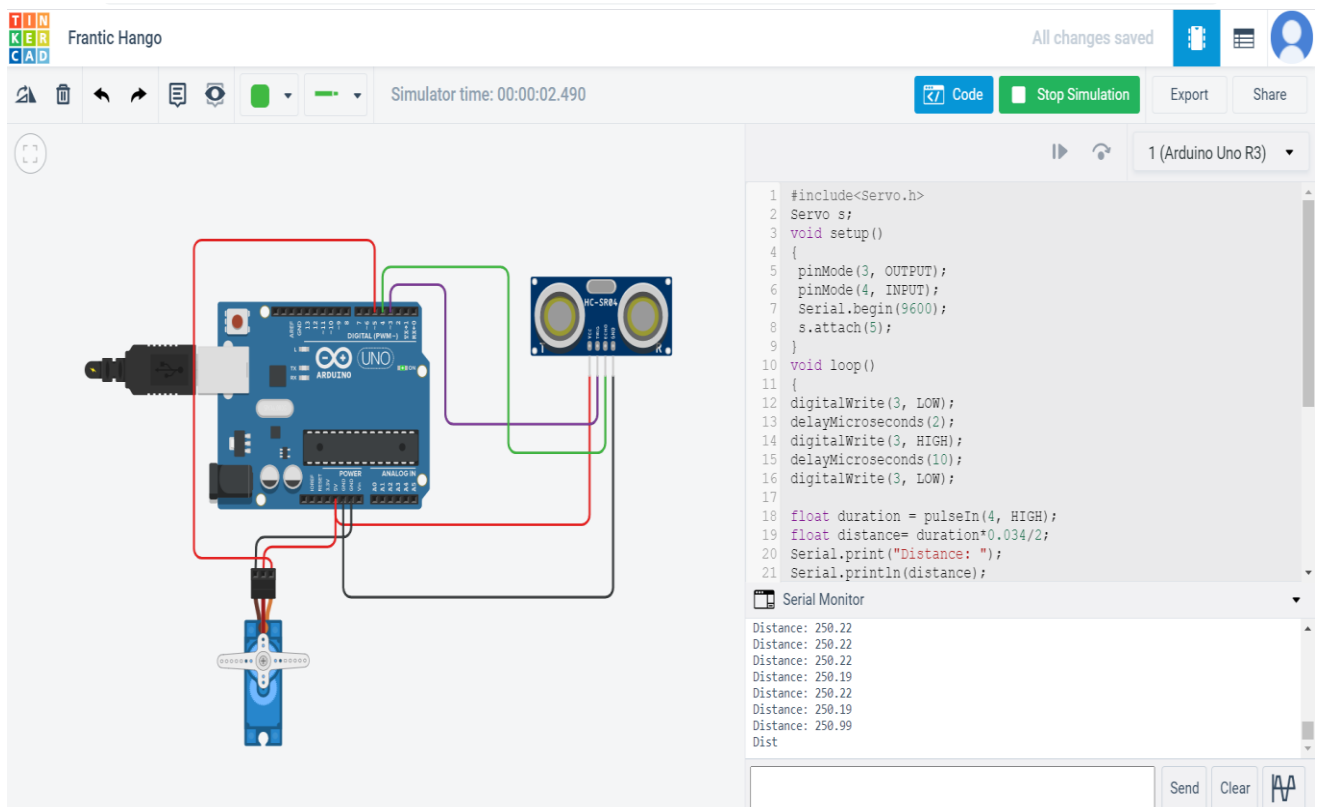
delay(2000);

}

}

```

### When there is no vehicle in the range of Ultrasonic Sensor:



The screenshot shows the TinkerCAD interface with an Arduino Uno R3 board. It is connected to an HC-SR04 ultrasonic sensor and a servo motor. The wiring is as follows: the sensor's VCC is connected to the 5V pin, GND to GND, and Trig to digital pin 4. The servo's VCC is connected to 5V, GND to GND, and the signal wire to digital pin 3. The code in the editor is:

```

1 #include<Servo.h>
2 Servo s;
3 void setup()
4 {
5   pinMode(3, OUTPUT);
6   pinMode(4, INPUT);
7   Serial.begin(9600);
8   s.attach(5);
9 }
10 void loop()
11 {
12   digitalWrite(3, LOW);
13   delayMicroseconds(2);
14   digitalWrite(3, HIGH);
15   delayMicroseconds(10);
16   digitalWrite(3, LOW);
17
18   float duration = pulseIn(4, HIGH);
19   float distance= duration*0.034/2;
20   Serial.print("Distance: ");
21   Serial.println(distance);

```

The Serial Monitor shows the following output:

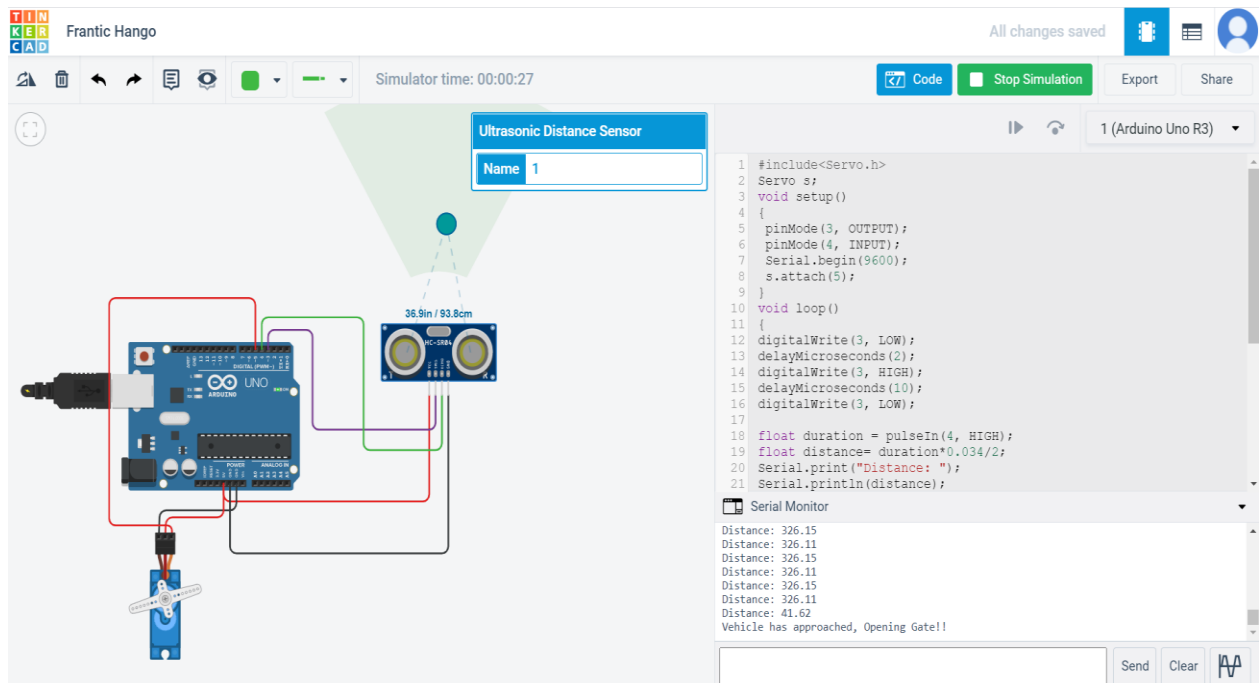
```

Distance: 250.22
Distance: 250.22
Distance: 250.22
Distance: 250.19
Distance: 250.22
Distance: 250.19
Distance: 250.99
Dist

```

**When the vehicle approaches the gate and comes in the range of the sensor, servo motor rotates and the garage door opens and stays like that for a**

certain time delay until the car goes inside after which it closes. The distance between the car and sensor is displayed in the serial monitor.



Text is displayed in serial monitor:

**“Vehicle is approaching, Opening Gate”**

