Smart Bridge Externship Program

Internet of Things

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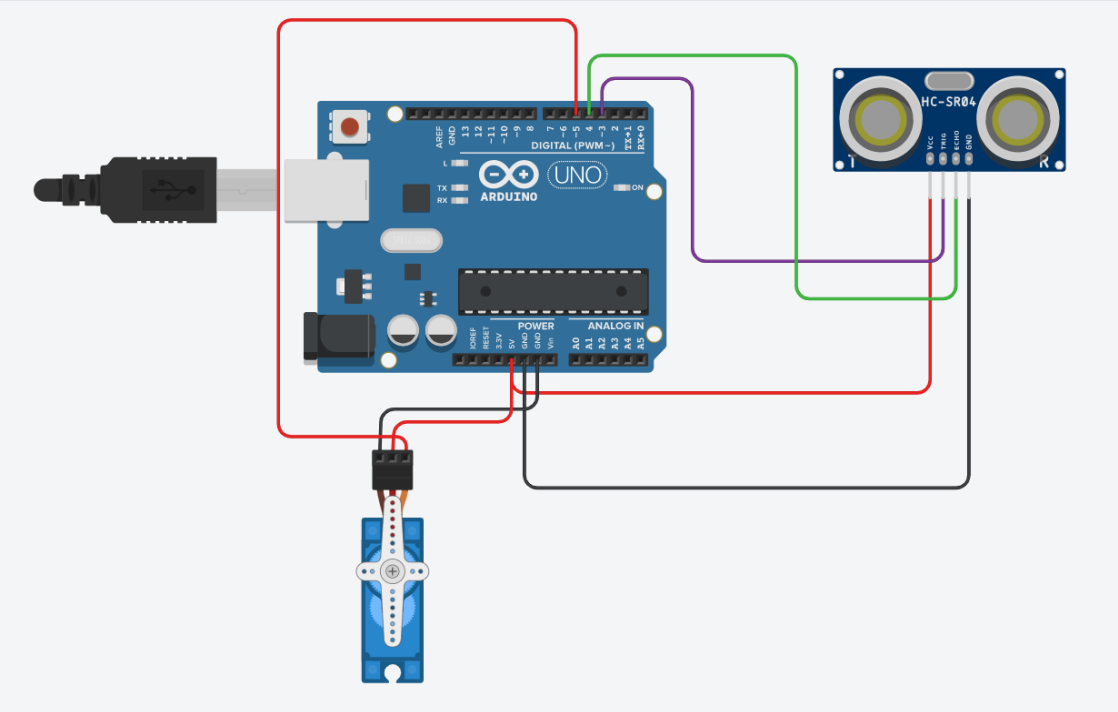
Assignment – 2

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:

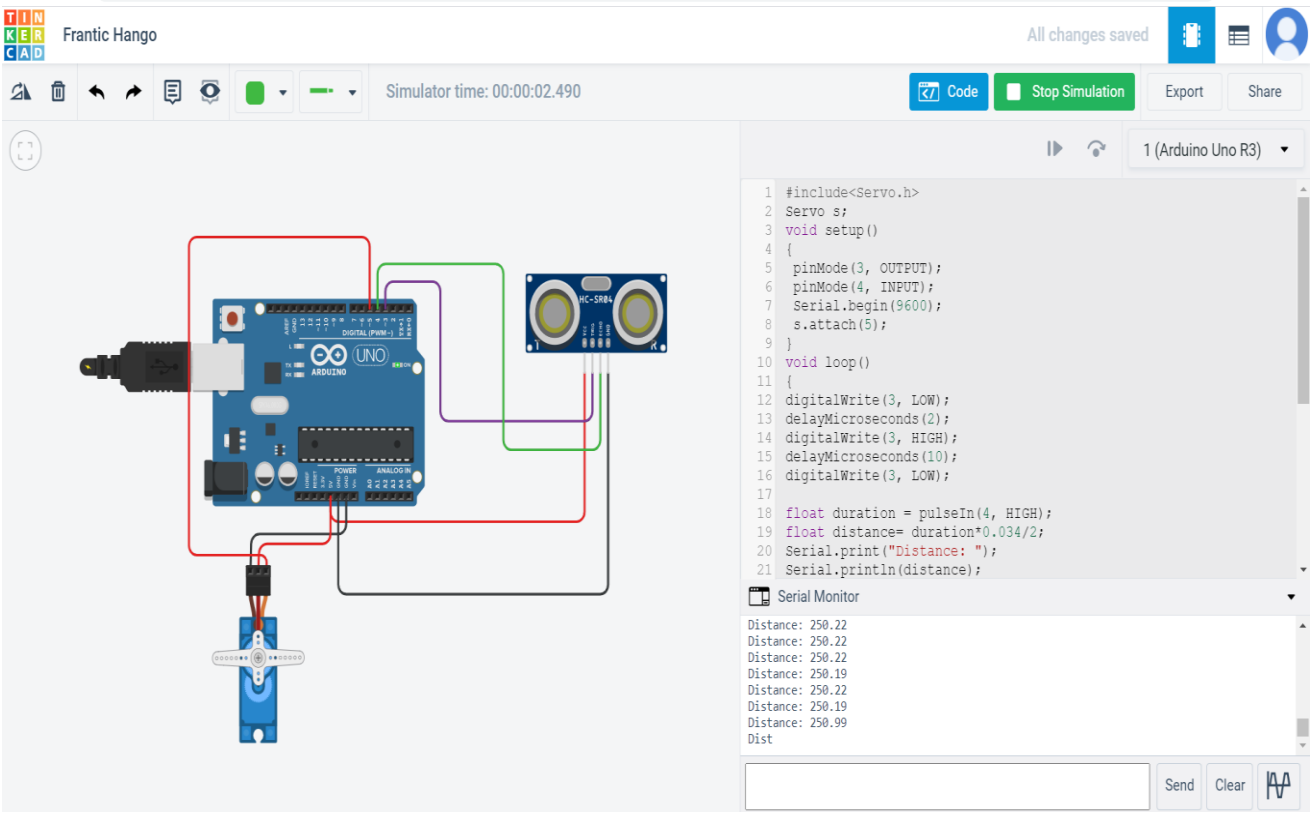


Code:

```
#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);

}
```

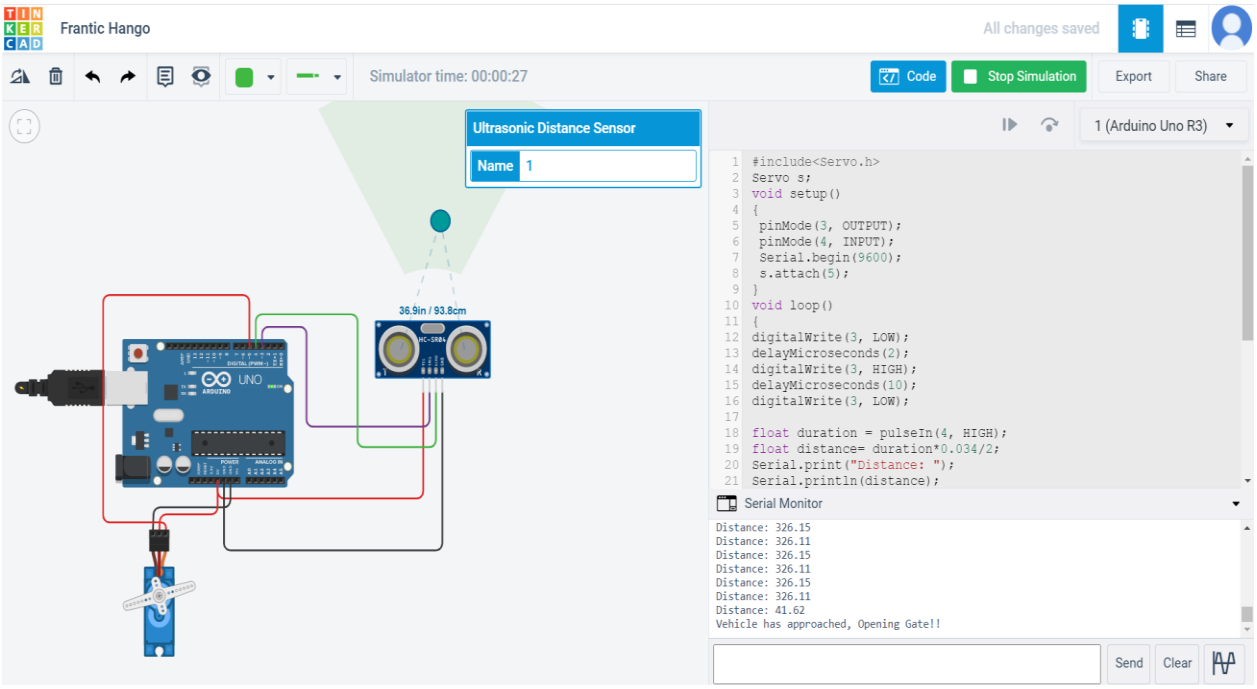
```
delay(2000);
Serial.print("Vehicle has approached, Opening Gate!!");
for(int j=180;j>=0;j--){
 s.write(j);
 delay(100);

}
delay(2000);
 }
}
```

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



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”

```
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);
```

Serial Monitor

```
Distance: 92.94
Distance: 92.62
Distance: 93.99
Distance: 94.30
Distance: 87.01
Distance: 87.01
Distance: 60.11
Distance: 60.11
Distance: 61.23
Distance: 63.56
Distance: 64.53
Distance: 64.53
Distance: 64.33
Distance: 64.29
Distance: 64.53
Distance: 64.53
Distance: 63.56
Distance: 62.80
Distance: 63.75
Distance: 61.40
Distance: 61.22
Distance: 18.92
Vehicle has approached, Opening Gate!!
```