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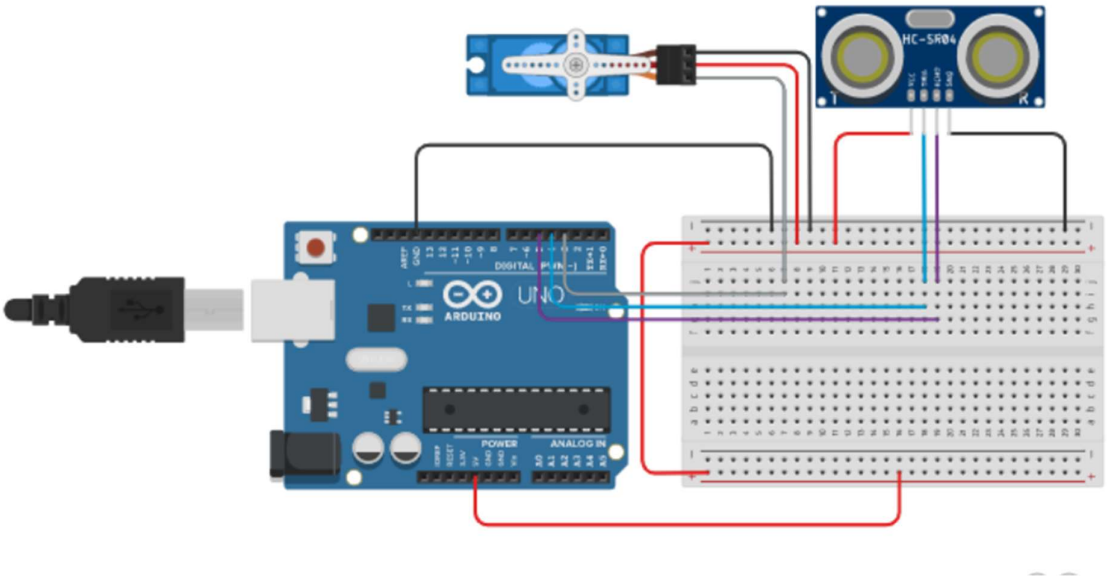
Course: Smart Bridge IoT

# Assignment 2

**Task:**

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.

**Architecture:**




**Code:**

```
// importing servo package
#include <Servo.h>


//setting up pin numbers
Servo motor;
int signal = 3;
int trigger = 4;
int echo = 5;
```

```
void setup()
{
  //configuring pins
  pinMode(signal, OUTPUT);
  pinMode(trigger, OUTPUT);
  pinMode(echo, INPUT);
  motor.attach(signal);

  //using serial monitor to debug the results
  Serial.begin(9600);
}

void loop()
{
  //keep the doors closed initially
  motor.write(0);

  //Initiating trigger
  digitalWrite(trigger, LOW);
  digitalWrite(trigger, HIGH);
  delayMicroseconds(20);
  digitalWrite(trigger, LOW);

  //receiving echo
  float dur = pulseIn(echo, HIGH);

  //calculating distance using formula
  float dis = (dur * 0.035)/2;

  //print the distance recorded by Ultra Sonic sensor
  Serial.print("Distance measured: ");
  Serial.println(dis);
```

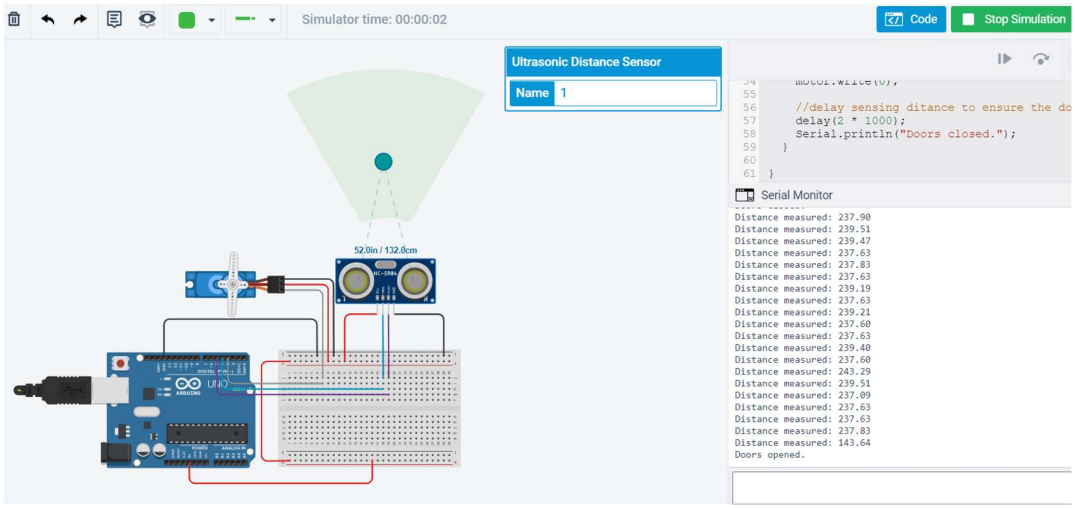
```
//open if distance less than 2m
if(dis  < 200){
  //open the garage doors when vehicle approaches
  motor.write(90);
  Serial.println("Doors opened.");

  //wait gates opened for 30 secs to enter vehicle
  delay(15 * 1000);
  //close the doors again
  motor.write(0);

  //delay sensing ditance to ensure the doors closed
  delay(2 * 1000);
  Serial.println("Doors closed.");
 }
}
```

**Working Prototype**: (**Note**: Threshold distance is 200cm ~ 2m)

1. Garage doors opening when vehicle detected



**2.** Doors closing after vehicle passed or vehicle is not detected