ASSIGNMENT 2

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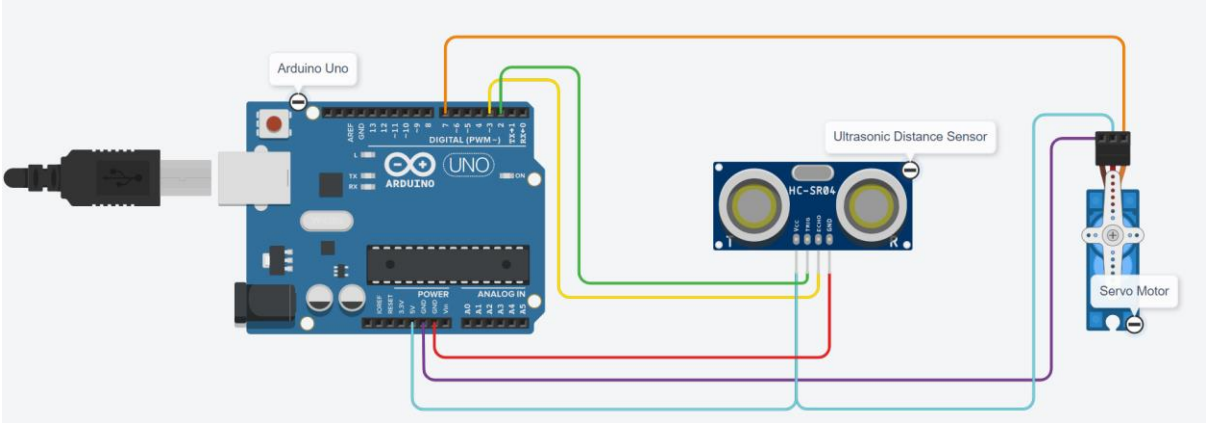
Question - Develop an "Automatic garage door opening system". Use an Ultrasonic sensor to detect if there is a vehicle in front of the garage. if any vehicle is detected open the garage door (rotate the servo motor) for some time and close it.

Solution: -

Circuit Diagram-



Things Required-

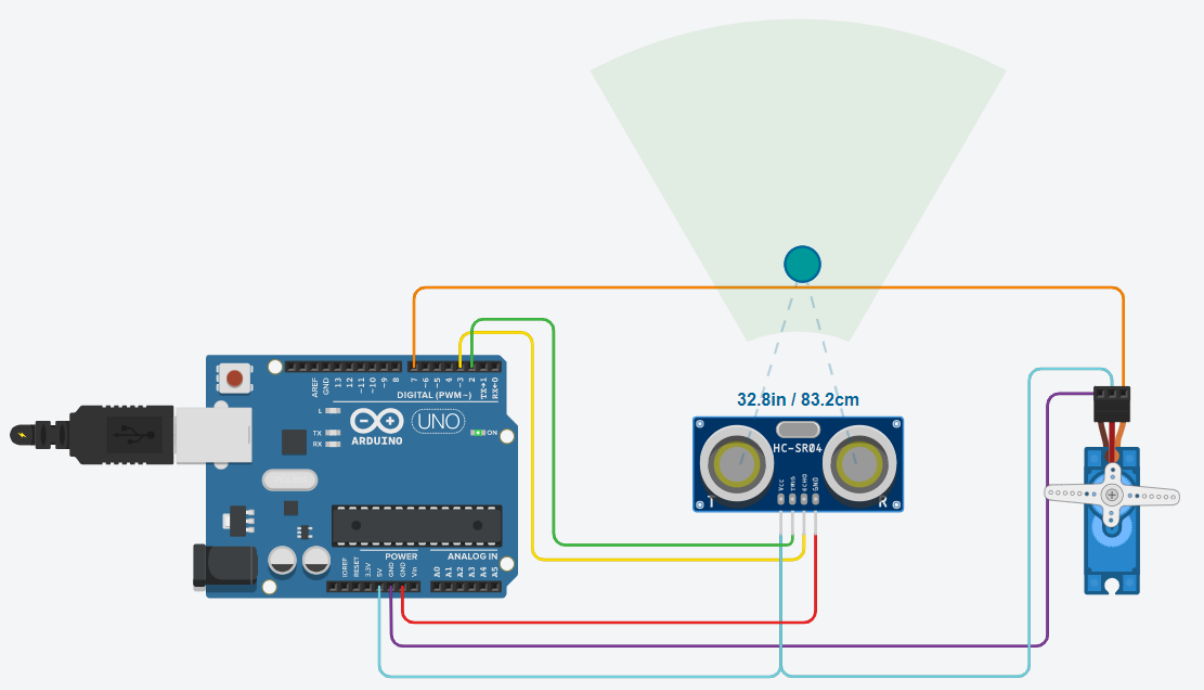
- Arduino Uno R3
- Ultrasonic Distance Sensor
- Servo Motor
- Jumper Wires

Code-

```
#include<Servo.h>       //servo header file

const int MIN_DIST = 100; // centimeters
Servo s;        //
void setup()
{
  Serial.begin(9600);
  pinMode(2, OUTPUT);   // set Arduino pin 2 to output mode
  pinMode(3, INPUT);    // set Arduino pin 3 to input mode
  s.attach(7);          // attaches the servo on pin 7 to the servo object
  s.write(0);
}

void loop()
{
  digitalWrite(2, HIGH);
  delayMicroseconds(10);
  digitalWrite(2, LOW); // generate 10-microsecond pulse to TRIG pin

  float dur = pulseIn(3, HIGH);
  float dis = (dur*0.0343)/2; // calculate the distance


  if(dis <MIN_DIST)
      s.write(90);  // rotate servo motor to 90 degree to open garage door

  delay(2000);
  s.write(0);       // rotate servo motor to 0 degree to close garage door

  Serial.print("Distance in cm: ");
  Serial.println(dis);  //display the distance
}
```

Working Screenshot-

When the object is closer than the minimum distance defined the garage door opens (servo motor rotates to 90 degrees).



When the object is farther than the minimum distance defined, the garage door closes (servo motor rotates back to 0 degrees).