ASSIGNMENT – 2

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PROBLEM STATEMENT: 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.

API REQUIRED:

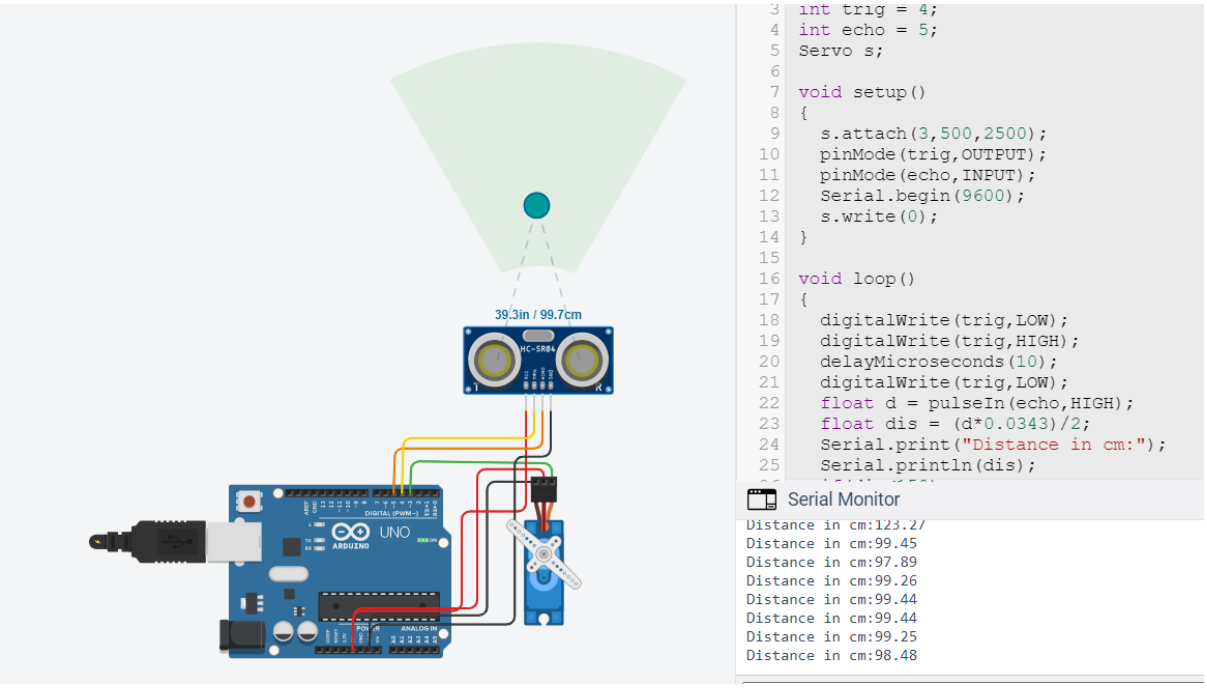
- pinMode(pin, mode) – It configures the specified pin to either input or output. - pin: the Arduino pin number to set the mode of. - mode: INPUT or OUTPUT.
- servo.write(angle) - Writes a value to the servo, controlling the shaft accordingly.- angle: the value to write to the servo, from 0 to 180
- servo.attach(pin, min, max) - Attach the Servo variable to a pin. -servo: a variable of type Servo,pin: the number of the pin that the servo is attached ,min: the pulse width, in microseconds, corresponding to the minimum (0-degree) angle on the servo , max: the pulse width, in microseconds, corresponding to the maximum (180-degree) angle on the servo.
- digitalWrite(pin, value) - Write a HIGH or a LOW value to a digital pin. - pin: the Arduino pin number. - value: HIGH or LOW.
- delay(ms) - Pauses the program for the amount of time (in milliseconds) - ms: the number of milliseconds to pause.
- Serial.begin(9600) - It passes the value 9600 to the speed parameter. This tells the Arduino to get ready to exchange messages with the Serial Monitor at a data rate of 9600 bits per second.
- Serial.println(“ “) - Prints data to the serial port as human-readable ASCII text followed by a carriage return character (ASCII 13, or '\r') and a newline character (ASCII 10, or '\n').

ARDUINO CODE:

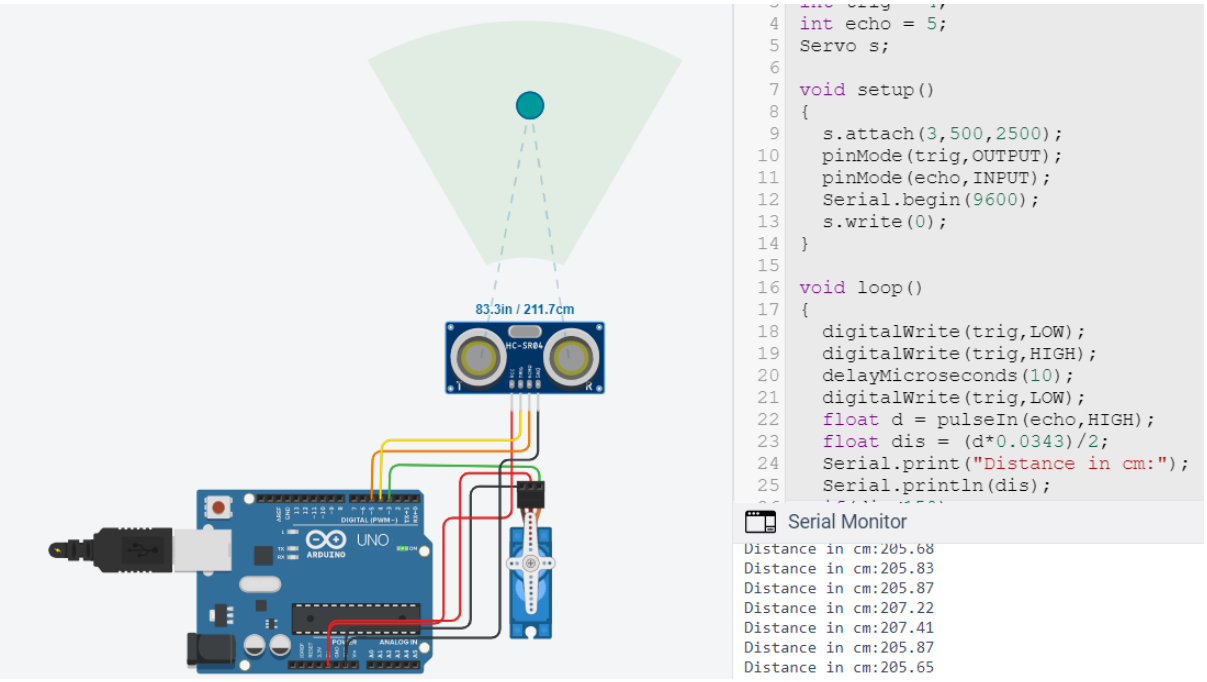
```
#include <Servo.h>

int pos = 0;

int trig = 4;

int echo = 5;

Servo s;


void setup()

{
```

```
  s.attach(3,500,2500);
  pinMode(trig,OUTPUT);
  pinMode(echo,INPUT);
  Serial.begin(9600);
  s.write(0);
}

void loop()
{
  digitalWrite(trig,LOW);
  digitalWrite(trig,HIGH);
  delayMicroseconds(10);
  digitalWrite(trig,LOW);
  float d = pulseIn(echo,HIGH);
  float dis = (d*0.0343)/2;
  Serial.print("Distance in cm:");
  Serial.println(dis);
  if(dis<150)
  {
    for (pos = 0; pos <= 180; pos += 1) {
    s.write(pos);
    delay(15); // wait for 15 millisecond(s)
  }
    delay(3000);// wait for 3 sec after opening the door
  for (pos = 180; pos >= 0; pos -= 1) {
    s.write(pos);
    delay(15); // wait for 15 millisecond(s)
  }
  }
}
```

OUTPUT:



When the distance is less than 150cm, the garage opens and closes after 3 seconds.



When the distance is greater than 150 cm , the garage never opens.

TINKERCAD LINK:
https://www.tinkercad.com/things/kLfyZtOWxJj-shiny-inari/editel?sharecode=ciu3J6X4RB01t4whxaBFdG2jEvzWmTpsUMisMuXUilM