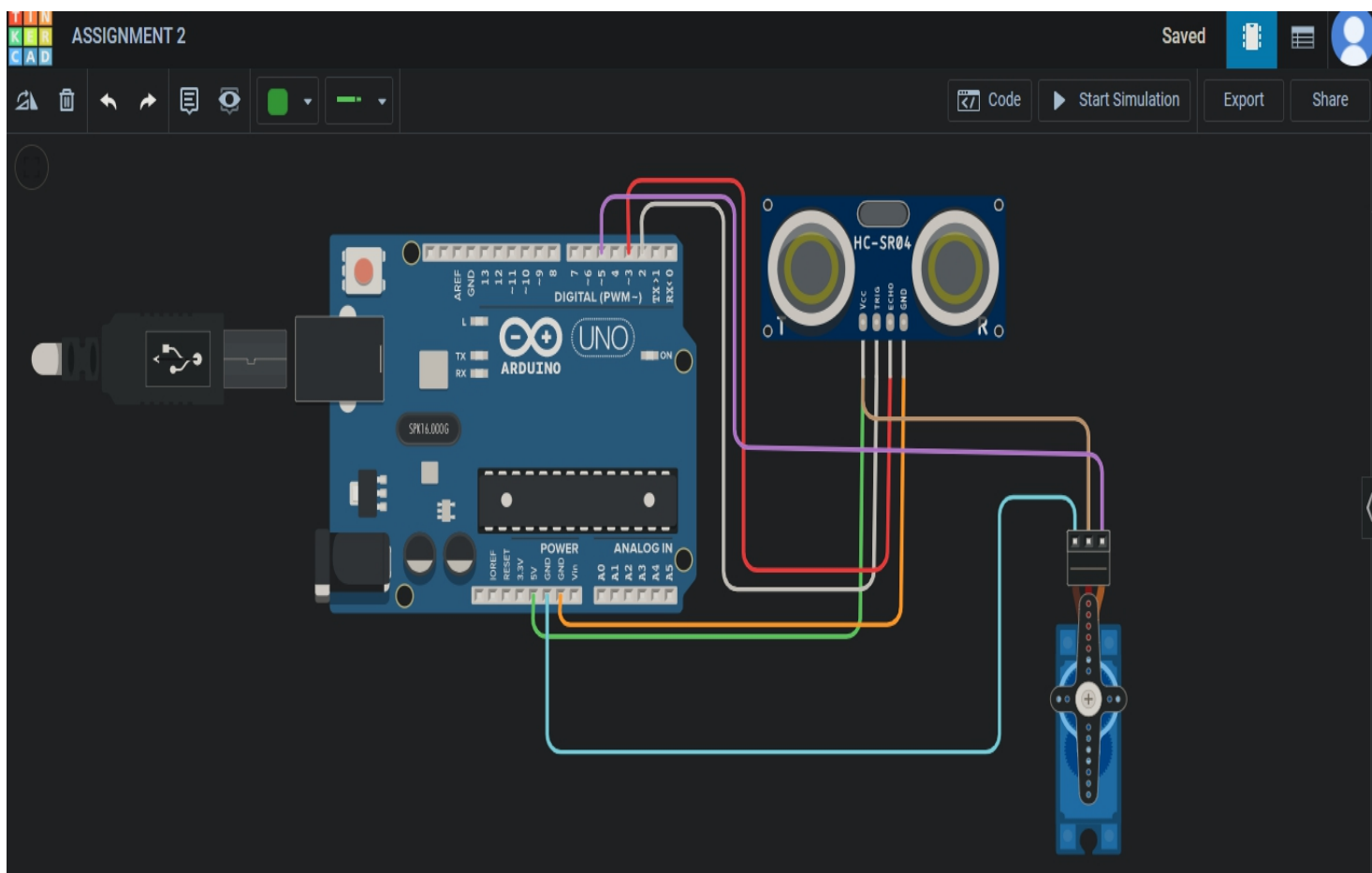


Assignment 2

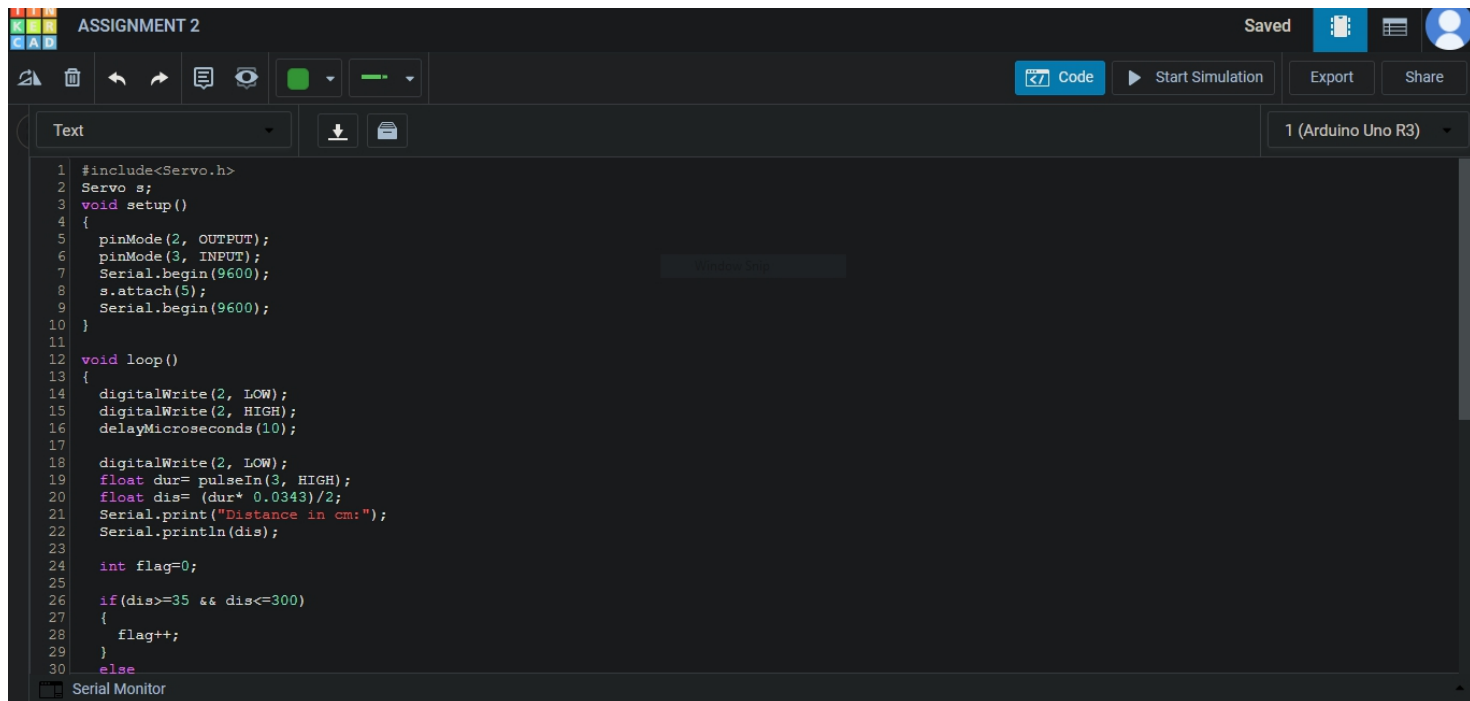
NAME: NEHA SHREE

REGISTRATION NUMBER: 19BEI0130

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.



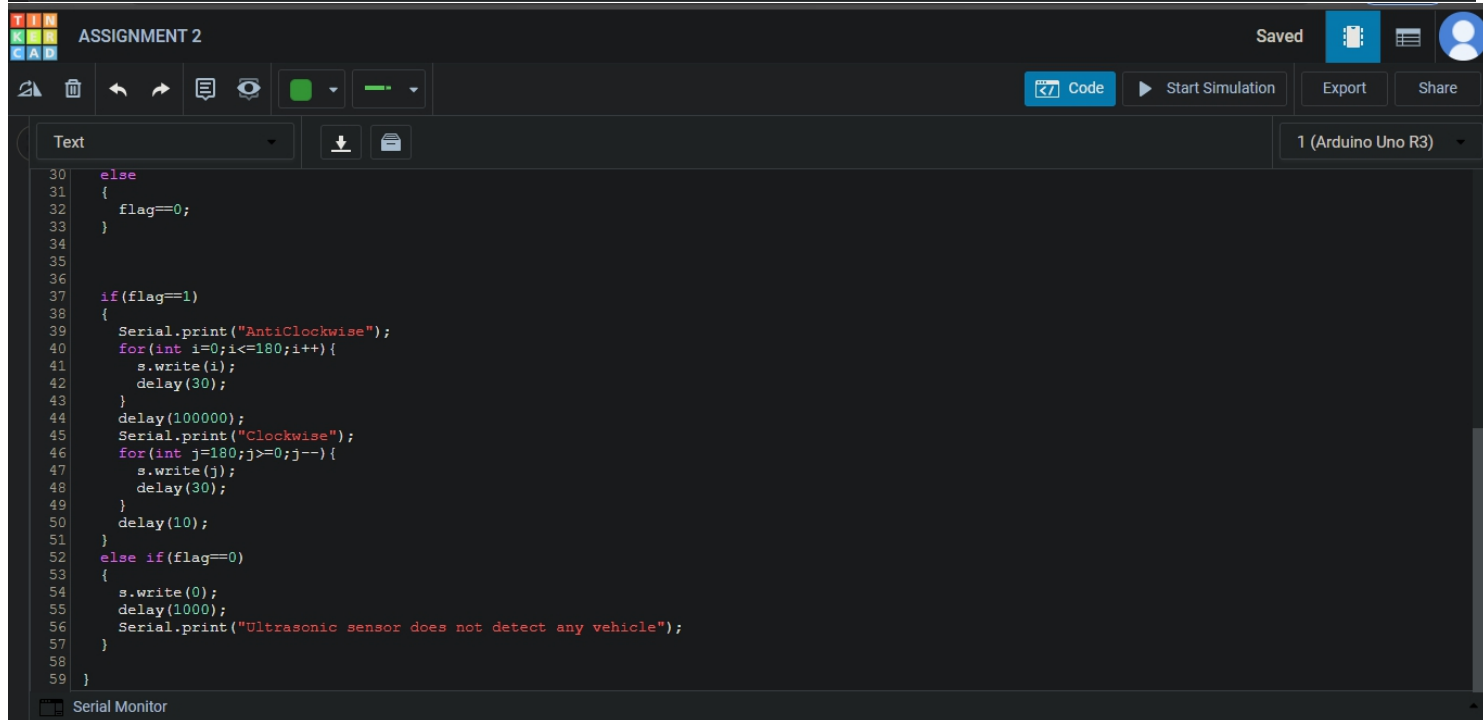
CODE:



The screenshot shows the Arduino IDE interface with the file 'ASSIGNMENT 2' open. The code is written in C++ and includes the Servo.h library. The setup function initializes a servo motor on pin 5 and a serial port at 9600 baud. The loop function uses a digitalWrite to control a servo, reads a pulse width on pin 3, and prints the distance. A flag variable is used to track the state of the servo. The Serial Monitor is visible at the bottom.

```
1 #include<Servo.h>
2 Servo s;
3 void setup()
4 {
5     pinMode(2, OUTPUT);
6     pinMode(3, INPUT);
7     Serial.begin(9600);
8     s.attach(5);
9     Serial.begin(9600);
10 }
11
12 void loop()
13 {
14     digitalWrite(2, LOW);
15     digitalWrite(2, HIGH);
16     delayMicroseconds(10);
17
18     digitalWrite(2, LOW);
19     float dur= pulseIn(3, HIGH);
20     float dis= (dur* 0.0343)/2;
21     Serial.print("Distance in cm:");
22     Serial.println(dis);
23
24     int flag=0;
25
26     if(dis>=35 && dis<=300)
27     {
28         flag++;
29     }
30     else
```

Serial Monitor



The screenshot shows the continuation of the code from the previous block. It includes the else block for the flag, a loop for printing the servo position, and a delay. The code also includes a loop for printing the servo position in the opposite direction. The Serial Monitor is visible at the bottom.

```
30     else
31     {
32         flag=0;
33     }
34
35
36
37     if(flag==1)
38     {
39         Serial.print("AntiClockwise");
40         for(int i=0;i<=180;i++){
41             s.write(i);
42             delay(30);
43         }
44         delay(100000);
45         Serial.print("Clockwise");
46         for(int j=180;j>=0;j--){
47             s.write(j);
48             delay(30);
49         }
50         delay(10);
51     }
52     else if(flag==0)
53     {
54         s.write(0);
55         delay(1000);
56         Serial.print("Ultrasonic sensor does not detect any vehicle");
57     }
58 }
59 }
```

Serial Monitor

```
#include<Servo.h>
Servo s;
void setup()
{
  pinMode(2, OUTPUT);
  pinMode(3, INPUT);
  Serial.begin(9600);
  s.attach(5);
  Serial.begin(9600);
}

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

  digitalWrite(2, LOW);
  float dur= pulseIn(3, HIGH);
  float dis= (dur* 0.0343)/2;
  Serial.print("Distance in cm:");
  Serial.println(dis);

  int flag=0;

  if(dis>=35 && dis<=300)
  {
    flag++;
  }
  else
  {
    flag==0;
  }
}
```

```
if(flag==1)
{
  Serial.print("AntiClockwise");
  for(int i=0;i<=180;i++){
    s.write(i);
    delay(30);
  }
  delay(100000);
  Serial.print("Clockwise");
  for(int j=180;j>=0;j--){
    s.write(j);
    delay(30);
  }
  delay(10);
}
else if(flag==0)
{
  s.write(0);
  delay(1000);
  Serial.print("Ultrasonic sensor does not detect any vehicle");
  delay(10000);
}

}
```

SIMULATIONS:

ASSIGNMENT 2

All changes saved

Simulator time: 00:00:03

Code Stop Simulation Export Share

1 (Arduino Uno R3)

```
42   delay(30);
43   }
44   delay(100000);
45   Serial.print("Clockwise");
46   for(int j=180;j>=0;j--){
47     s.write(j);
48     delay(30);
49   }
50   delay(10);
51   }
52   else if(flag==0)
53   {
54     s.write(0);
55     delay(1000);
56     Serial.print("Ultrasonic sensor does not detect any vehicle");
57     delay(10000);
58   }
59
60
```

Serial Monitor

Distance in cm:116.64
AntiClockwise

Send Clear

ASSIGNMENT 2

All changes saved

Simulator time: 00:00:29

Code Stop Simulation Export Share

1 (Arduino Uno R3)

```
42   delay(30);
43   }
44   delay(100000);
45   Serial.print("Clockwise");
46   for(int j=180;j>=0;j--){
47     s.write(j);
48     delay(30);
49   }
50   delay(10);
51   }
52   else if(flag==0)
53   {
54     s.write(0);
55     delay(1000);
56     Serial.print("Ultrasonic sensor does not detect any vehicle");
57     delay(10000);
58   }
59
60
```

Serial Monitor

Distance in cm:116.64
AntiClockwiseClockwise

Send Clear

ASSIGNMENT 2

All changes saved

Simulator time: 00:03:01

Code Stop Simulation Export Share

1 (Arduino Uno R3)

Ultrasonic Distance Sensor

Name 1

88.7in / 225.3cm

```

42   delay(30);
43   }
44   delay(100000);
45   Serial.print("Clockwise");
46   for(int j=180;j>=0;j--){
47     s.write(j);
48     delay(30);
49   }
50   delay(10);
51   }
52   else if(flag==0)
53   {
54     s.write(0);
55     delay(1000);
56     Serial.print("Ultrasonic sensor does not detect any vehicle");
57     delay(10000);
58   }
59
60

```

Serial Monitor

```

AntiClockwiseClockwiseDistance in cm:333.45
Ultrasonic sensor does not detect any vehicleDistance in cm:333.45
Ultrasonic sensor does not detect any vehicleDistance in cm:333.41
Ultrasonic sensor does not detect any vehicleDistance in cm:335.01
Ultrasonic sensor does not detect any vehicleDistance in cm:333.41
Ultrasonic sensor does not detect any vehicleDistance in cm:224.42
AntiClockwiseClockwiseDistance in cm:222.88
AntiClockwise

```

Send Clear

Serial Monitor

```

Distance in cm:116.64
AntiClockwiseClockwiseDistance in cm:116.64
AntiClockwiseClockwiseDistance in cm:116.64
AntiClockwiseClockwiseDistance in cm:333.45
Ultrasonic sensor does not detect any vehicleDistance in cm:333.45
Ultrasonic sensor does not detect any vehicleDistance in cm:333.41
Ultrasonic sensor does not detect any vehicleDistance in cm:335.01
Ultrasonic sensor does not detect any vehicleDistance in cm:333.41

```

Serial Monitor

```

Ultrasonic sensor does not detect any vehicleDistance in cm:335.01
Ultrasonic sensor does not detect any vehicleDistance in cm:333.41
Ultrasonic sensor does not detect any vehicleDistance in cm:224.42
AntiClockwiseClockwiseDistance in cm:222.88
AntiClockwiseClockwiseDistance in cm:130.07
AntiClockwiseClockwiseDistance in cm:129.29
AntiClockwiseClockwiseDistance in cm:128.49
AntiClockwise

```

Send Clear