

ASSIGNMENT 1

Assignment Date	19 September 2022
Student Name	Mr. Chandrabose.S
Student Roll Number	721719106010
Maximum Marks	2 Marks

Question 1:

Make a smart home in Tinkercad using 2+sensors,Led,Buzzer in single code and circuit.

Solution:

```
#include <Servo.h>
```

```
int output1Value = 0;
```

```
int sen1Value = 0;
```

```
int sen2Value = 0;
```

```
int const gas_sensor = A1;
```

```
int const LDR = A0;
```

```
int limit = 400;
```

```
long readUltrasonicDistance(int triggerPin, int echoPin)
```

```
{
```

```
  pinMode(triggerPin, OUTPUT); // Clear the trigger
```

```
  digitalWrite(triggerPin, LOW);
```

```
  delayMicroseconds(2);
```

```
// Sets the trigger pin to HIGH state for 10 microseconds
```

```
  digitalWrite(triggerPin, HIGH);
```

```
  delayMicroseconds(10);
```

```
  digitalWrite(triggerPin, LOW);
```

```
  pinMode(echoPin, INPUT);
```

```
// Reads the echo pin, and returns the sound wave travel time in microseconds
```

```
  return pulseIn(echoPin, HIGH);
```

```
}
```

```
Servo servo_7;
```

```

void setup()
{
    Serial.begin(9600);           //initialize serial communication

    pinMode(A0, INPUT);           //LDR
    pinMode(A1, INPUT);           //gas sensor
    pinMode(13, OUTPUT);          //connected to relay
    servo_7.attach(7, 500, 2500); //servo motor

    pinMode(8, OUTPUT);           //signal to piezo buzzer
    pinMode(9, INPUT);            //signal to PIR
    pinMode(10, OUTPUT);          //signal to npn as switch
    pinMode(4, OUTPUT);           //Red LED
    pinMode(3, OUTPUT);           //Green LED

}

void loop()
{

    //-----light intensity control-----//
    //-----
    int val1 = analogRead(LDR);
    if (val1 > 500)
    {
        digitalWrite(13, LOW);

        Serial.print("Bulb ON = ");
        Serial.print(val1);
    }
    else
    {
        digitalWrite(13, HIGH);

        Serial.print("Bulb OFF = ");
        Serial.print(val1);
    }

    //-----
    //----- light & fan control -----//
    //-----

```

```

sen2Value = digitalRead(9);
if (sen2Value == 0)
{
    digitalWrite(10, LOW); //npn as switch OFF
    digitalWrite(4, HIGH); // Red LED ON, indicating no motion
    digitalWrite(3, LOW); //Green LED OFF, since no Motion detected
    Serial.print("    || NO Motion Detected  ");
}

if (sen2Value == 1)
{
    digitalWrite(10, HIGH); //npn as switch ON
    delay(5000);
    digitalWrite(4, LOW); // RED LED OFF
    digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected
    Serial.print("    || Motion Detected!  ");
}

//-----
// ----- Gas Sensor -----//
//-----

int val = analogRead(gas_sensor); //read sensor value
Serial.print("|| Gas Sensor Value = ");
Serial.print(val); //Printing in serial monitor
//val = map(val, 300, 750, 0, 100);
if (val > limit)
{
    tone(8, 650);
}
delay(300);
noTone(8);

//-----
//----- servo motor -----//
//-----

sen1Value = 0.01723 * readUltrasonicDistance(6, 6);

```

```
if (sen1Value < 100)
{
    servo_7.write(90);
    Serial.print("    || Door Open! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");

}
else
{
    servo_7.write(0);
    Serial.print("    || Door Closed! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");
}
delay(10); // Delay a little bit to improve simulation performance
}
```