ASSIGNMENT-1
(TinkerCad)

Date	09 September 2022
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Maximum Marks	2 Marks

Question:

Smart home automation in Tinkercad using 2 or more 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(3000);
          digitalWrite(4, LOW); // RED LED OFF
          digitalWrite(3, HIGH);//GREEN LED ON , indicating motion detected
   Serial.print("      || Motion Detected!     " );
```

```
            }
  delay(300);

//-----------------------------------------------------------------
      // ------- 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
}
```

Circuit Diagram: