Assignment -1
Tinkercad

Assignment Date	14 october 2022
Student Name	Sudir C
Student Roll Number	19ec211
Maximum Marks	2 Marks

Question-1:

Make a home automation with tinkercad, add 2-3 sensors, led, buzzers and make a common code and circuit. Multiple detections and alarms should be given

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);

}
```

```arduino
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

}