ASSIGNMENT 1

Assignment Date	19 September 2022
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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 --------//

//---------------------------------------------------------
```

```arduino
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
}
```