V.S.B. ENGINEERING COLLEGE KARUR

ASSIGNMENT 1

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AIM:

To make a smart home in TINKERCAD using 2+ sensor, LED, buzzer in single code and circuit.

CODE:

```
#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 = ");
```

```arduino
      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
}
```

OUTPUT CIRCUIT: