Assignment Date	14 September 2022
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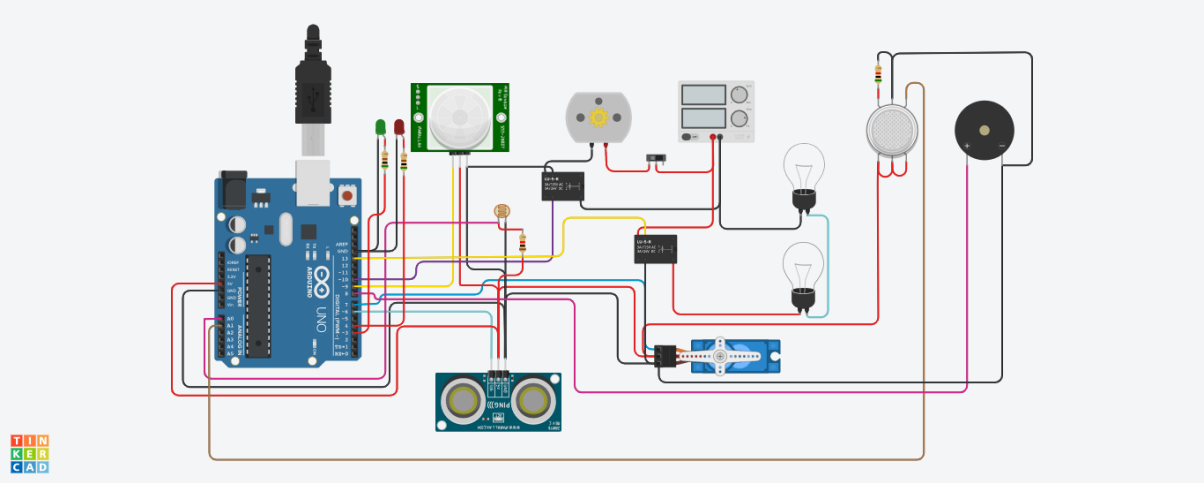
Maximum Marks	2 Marks

ASSIGNMENT-1

SMART HOME AUTOMATION

Circuit Design:



Source 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);
}

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
}
```

Output: [Below is Part of Output]. Running the code gives the full output.