Assignment -1

HOME AUTOMATION

Assignment Date	21 September 2022
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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.

CIRCUIT DIAGRAM:
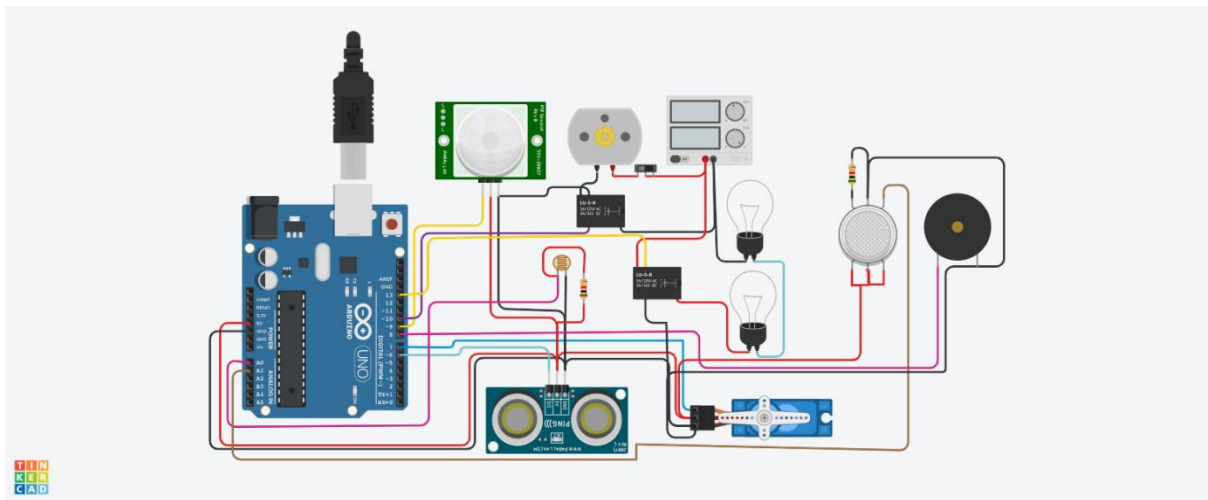
CODE:

```
#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
```

```arduino
  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)
         {
```

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        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
}
```