Assignment 1

Smart Home

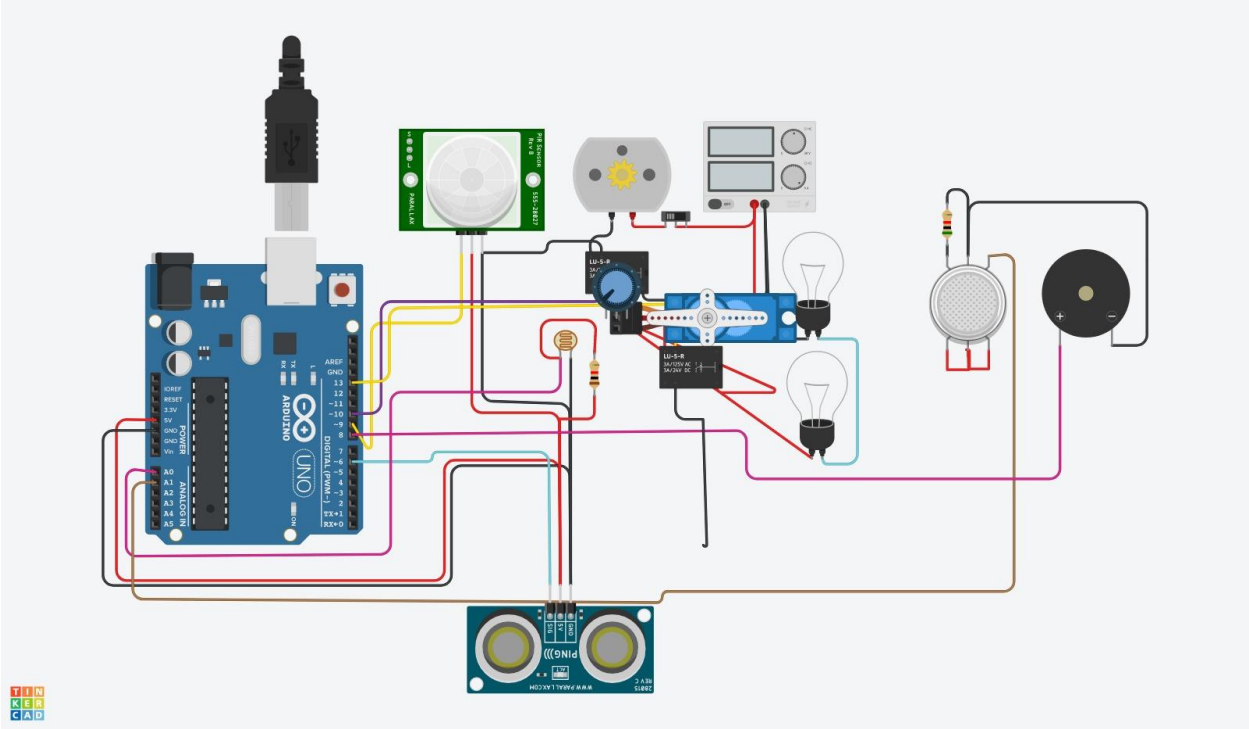
```
#include <Servo.h>


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(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

}
```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