HOME AUTOMATION ASSIGNMENT 1

TEAM ID: PNT2022TMID41524

```
#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
}
```