

SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES

CODING :

```
#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

}

```

CIRCUIT DIAGRAM:

