

IOT - REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

ASSIGNMENT 1 – HOME AUTOMATION SYSTEM

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Program:

```
#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()
{
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!" );
int val = analogRead(gas_sensor);
Serial.print(" | | Gas Sensor Value = ");
Serial.print(val);
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
```

```
}
```

Tinker CAD Output:

