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REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

ASSIGNMENT -1

CODE:

```
// include the library code:
#include <LiquidCrystal.h>

// initialize the library with the numbers of the interface pins
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

//For ultrasound sensor
int distanceThreshold = 0;
int cm = 0;
int inches = 0;

//for Relay Control
int releNO = 13;
int inputPir = 8;
int val = 0;
int resuldoSensorLDR;
int sensorLDR = A0;

//For Gas sensor
int const PINO_SGAS = A1;

long readUltrasonicDistance(int triggerPin, int echoPin)
{
    pinMode(triggerPin, OUTPUT); // Clear the trigger
    digitalWrite(triggerPin, LOW);
```

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    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);
}

void setup() {
    // set up the LCD's number of columns and rows:
    lcd.begin(16, 2);

    pinMode(releNO, OUTPUT);
    pinMode(inputPir, INPUT);
    pinMode(sensorLDR, INPUT);
    Serial.begin(9600);
}

void loop() {
    // set threshold distance to activate LEDs
    distanceThreshold = 350;
    // measure the ping time in cm
    cm = 0.01723 * readUltrasonicDistance(7, 6);
    // convert to inches by dividing by 2.54
    inches = (cm / 2.54);

    lcd.setCursor(0,0); // Sets the location at which subsequent text written to the
LCD will be displayed
    lcd.print("D:"); // Prints string "Distance" on the LCD
    lcd.print(cm); // Prints the distance value from the sensor
    lcd.print("cm");
    delay(10);

    val = digitalRead(inputPir);
    resuldoSensorLDR = analogRead(sensorLDR);

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if(resuldoSensorLDR<600)
{
  if(val == HIGH)
  {
    digitalWrite(releNO, HIGH);
    lcd.setCursor(0,1);
    lcd.print("L: On ");
    delay(5000);
  }
  else{
    digitalWrite(releNO, LOW);lcd.setCursor(0,1);
    lcd.print("L: Off");
    delay(300);
  }
}
else{ digitalWrite (releNO, LOW);
Serial.println(resuldoSensorLDR);
delay(500);
}

int color = analogRead(PINO_SGAS);

lcd.setCursor(8,0);
//lcd.print("");
if(color <= 85){
  lcd.print("G:Low ");
} else if(color <= 120){
  lcd.print("G:Med ");
} else if(color <= 200){
  lcd.print("G:High");
} else if(color <= 300){
  lcd.print("G:Ext ");
}

delay(250);
}

```

PROJECT LINK:

<https://www.tinkercad.com/things/01FSJ9MV4Ir-terrific-fyyran-jaban/editel?sharecode=S7MP89HwSmM26JouaXVf1GTXXZ9lgcrL4BOhG0mLmQhs>

CIRCUIT:

