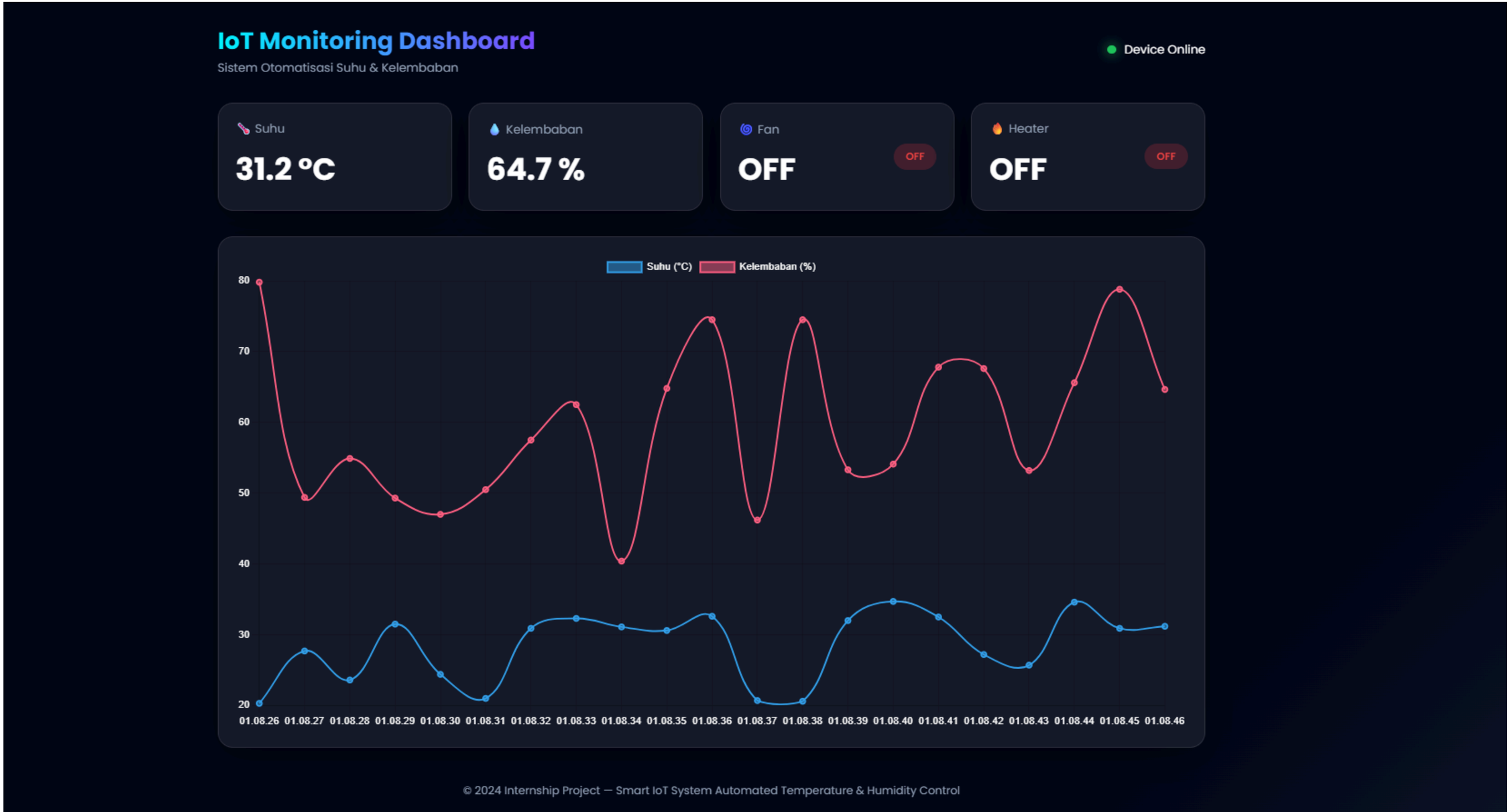
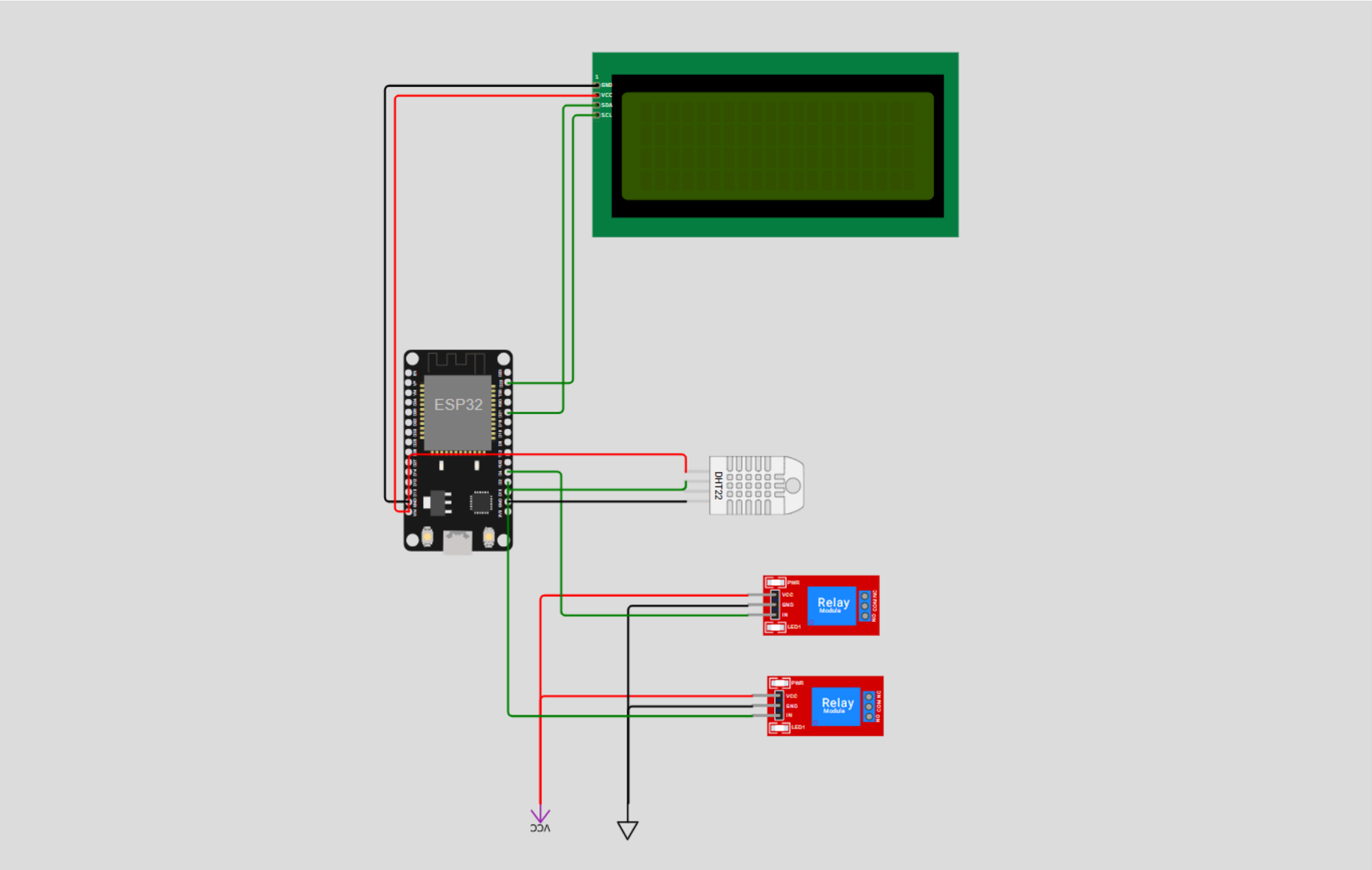
Web Monitoring Suhu & Kelembaban

https://ai-tj.github.io/smart-tempcontrol/



Smart Environment – Penerapan Sistem Automasi Kontrol Suhu dan Kelembaban Menggunakan Pendingin dan Penghangat Berbasis IoT



Smart Environment – Penerapan Sistem Automasi Kontrol Suhu dan Kelembaban Menggunakan Pendingin dan Penghangat Berbasis IoT

Sistem pengontrol suhu dan kelembaban pada alat pendingin dan penghangat merupakan suatu inovasi teknologi yang bertujuan untuk menjaga agar kondisi suhu dan kelembaban dalam ruangan atau area tertentu agar tetap stabil sesuai dengan parameter yang telah ditentukan.

```ino
#include <DHTesp.h>
#include <LiquidCrystal_I2C.h>

const int DHT_PIN = 15;
const int fan = 2;
const int heater = 4;

DHTesp dhtSensor;
LiquidCrystal_I2C lcd(0x27, 16, 4);

float temperature = 0;
float humidity = 0;

void readSensor() {
  TempAndHumidity data = dhtSensor.getTempAndHumidity();

  if (isnan(data.temperature) || isnan(data.humidity)) {
    Serial.println("❌ Sensor Error!");
    lcd.setCursor(0, 0);
    lcd.print("Sensor Error     ");
    lcd.setCursor(0, 1);
    lcd.print("Check DHT22      ");
    digitalWrite(fan, LOW);
    digitalWrite(heater, LOW);
    return;
  }

  temperature = data.temperature;
  humidity = data.humidity;
}

void controlSystem() {

  if (temperature > 30 && humidity < 40) {
    digitalWrite(fan, HIGH);
    digitalWrite(heater, LOW);
    lcd.setCursor(0, 0);
    lcd.print("Fan    : ON      ");
    lcd.setCursor(0, 1);
    lcd.print("Heater : OFF     ");
  }

  else if (temperature >= 21 && temperature <= 30 && humidity >= 40 && humidity <= 69) {
    digitalWrite(fan, LOW);
    digitalWrite(heater, LOW);

    lcd.setCursor(0, 0);
    lcd.print("Fan    : OFF     ");
    lcd.setCursor(0, 1);
    lcd.print("Heater : OFF     ");
  }

  else if (temperature < 21) {
    digitalWrite(fan, LOW);
    digitalWrite(heater, HIGH);

    lcd.setCursor(0, 0);
    lcd.print("Fan    : OFF     ");
    lcd.setCursor(0, 1);
    lcd.print("Heater : ON      ");
  }

  else {
    digitalWrite(fan, LOW);
    digitalWrite(heater, LOW);

    lcd.setCursor(0, 0);
    lcd.print("Fan    : OFF     ");
    lcd.setCursor(0, 1);
    lcd.print("Heater : OFF     ");
  }
}

void displayLCD() {
  lcd.setCursor(0, 2);
  lcd.print("Suhu : ");
  lcd.print(temperature, 1);
  lcd.print(" C   ");

  lcd.setCursor(0, 3);
  lcd.print("Hum  : ");
  lcd.print(humidity, 1);
  lcd.print(" %   ");
}

void serialMonitor() {
  Serial.print("Suhu: ");
  Serial.print(temperature, 1);
  Serial.print(" C | Kelembaban: ");
  Serial.print(humidity, 1);
  Serial.println(" %");
}

void setup() {
  Serial.begin(115200);

  pinMode(fan, OUTPUT);
  pinMode(heater, OUTPUT);

  digitalWrite(fan, LOW);
  digitalWrite(heater, LOW);

  lcd.init();
  lcd.backlight();
  lcd.clear();

  dhtSensor.setup(DHT_PIN, DHTesp::DHT22);

  lcd.setCursor(0, 0);
  lcd.print("Smart Control IoT");
  lcd.setCursor(0, 1);
  lcd.print("Temp & Humidity  ");
  delay(2000);
  lcd.clear();
}

void loop() {
  readSensor();
  controlSystem();
  displayLCD();
  serialMonitor();

  delay(1500);
}
```