LAPORAN

Praaktek system IOT (Jumat 4 Oktober)

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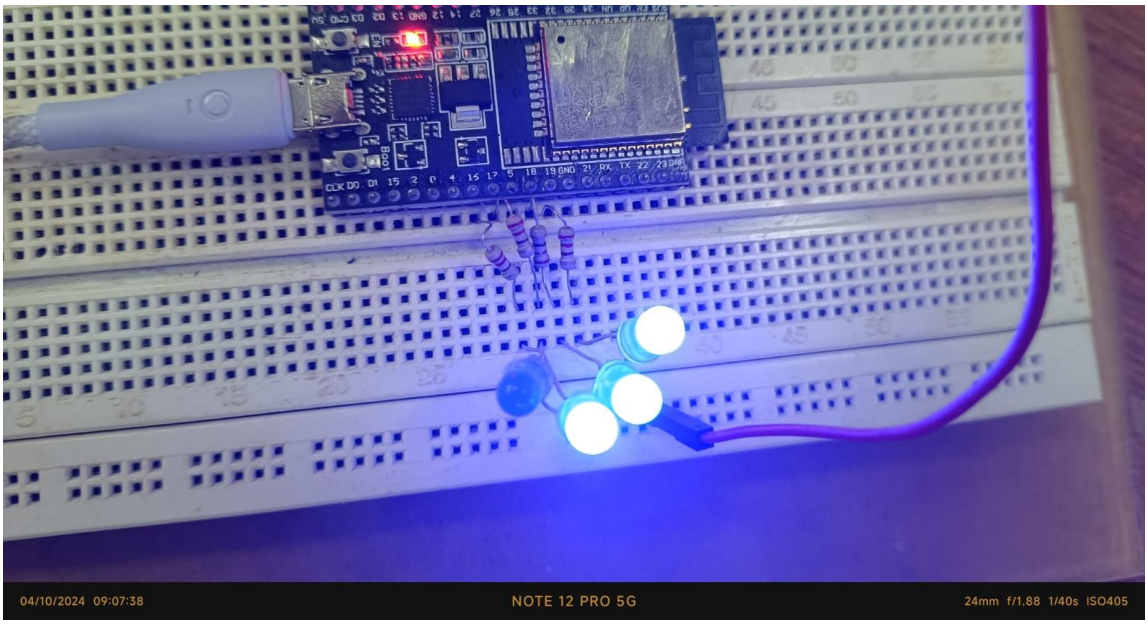
Matkul : Prak system IOT

Teknik Komputer (S1)

PRAKTEK

Praktek 1

- Bentuk rangkaia



Lampu yang paling timur matisoalnya di dalam code lampunya tidak di nyalakan

- Tulis program berikut ini dan upload terus dievaluasi. Coba dari Mqtt.Fix untuk publish sesuai Subcribe pada method reconnect();

```
#include <WiFi.h>
#include <PubSubClient.h>
#define LED1 19
#define LED2 18
#define LED3 5
#define LED4 17
const char* ssid = "RPLA_5";
const char* password = "utdijogja";
const char* mqtt_server = "broker.mqtt-dashboard.com";
WiFiClient espClient;
PubSubClient client(espClient);
```

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```
char msg[50];
String tpk = String(50);

void setup_wifi() {
  delay(10);
  Serial.println();
  Serial.print("Connecting to ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  randomSeed(micros());
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

void callback(char* topic, byte* payload, unsigned int length) {
  String action;
  tpk = topic;

  if (tpk == "yogya/utara/lampu") {
    switch (char(payload[0])) {
      case '1':
        action = (char(payload[1]) == '1') ? "LED1 ON" : "LED1 OFF";
        digitalWrite(LED1, (char(payload[1]) == '1') ? HIGH : LOW);
        break;
      case '2':
        action = (char(payload[1]) == '1') ? "LED2 ON" : "LED2 OFF";
        digitalWrite(LED2, (char(payload[1]) == '1') ? HIGH : LOW);
        break;
    }
  }

  if (tpk == "225510017/timur/lampu") {
    switch (char(payload[0])) {
      case '1':
        action = (char(payload[1]) == '1') ? "LED3 ON" : "LED3 OFF";
        digitalWrite(LED3, (char(payload[1]) == '1') ? HIGH : LOW);
        break;
      case '2':
        action = (char(payload[1]) == '1') ? "LED4 ON" : "LED4 OFF";
        digitalWrite(LED4, (char(payload[1]) == '1') ? HIGH : LOW);
        break;
    }
  }

  Serial.print("Message arrived [");
  Serial.print(topic);
  Serial.print("] Payload: ");
  for (int i = 0; i < length; i++) {
    Serial.print((char)payload[i]);
```

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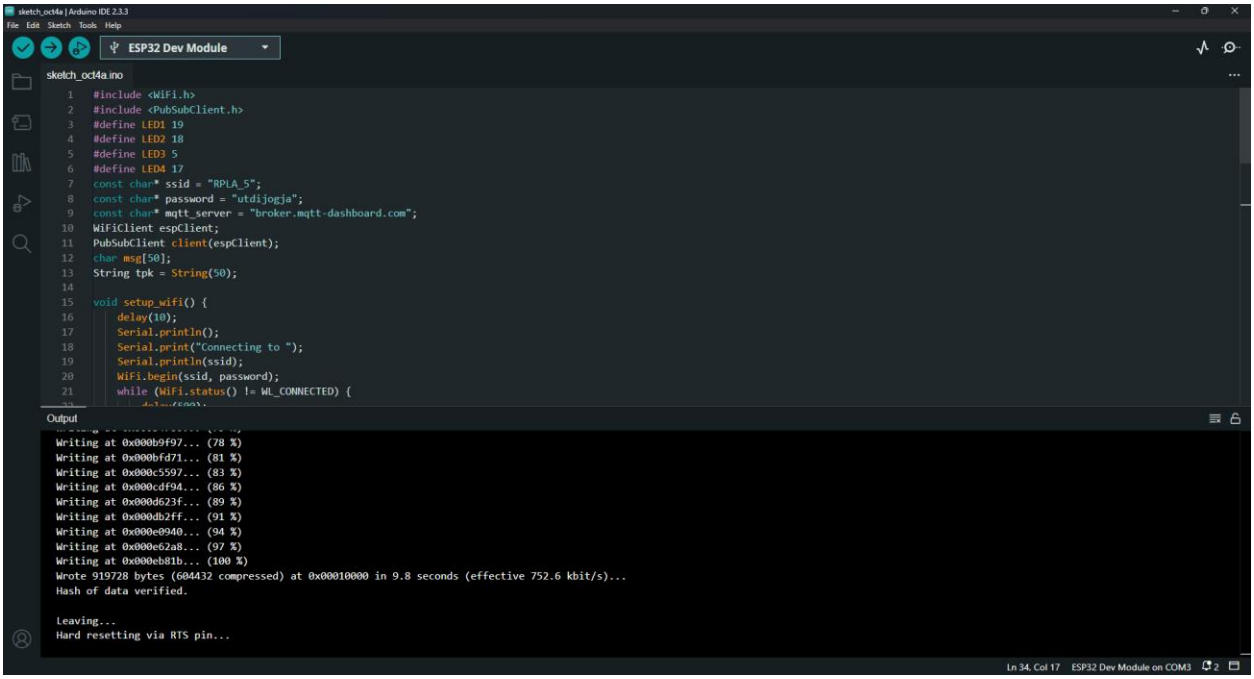
```
    }
    Serial.print(" Action: ");
    Serial.println(action);
}

void setup() {
    Serial.begin(115200);
    pinMode(LED1, OUTPUT);
    pinMode(LED2, OUTPUT);
    pinMode(LED3, OUTPUT);
    pinMode(LED4, OUTPUT);
    setup_wifi();
    client.setServer(mqtt_server, 1883);
    client.setCallback(callback);
}

void loop() {
    if (!client.connected()) {
        // Reconnect logic
    }
    client.loop();
}
```



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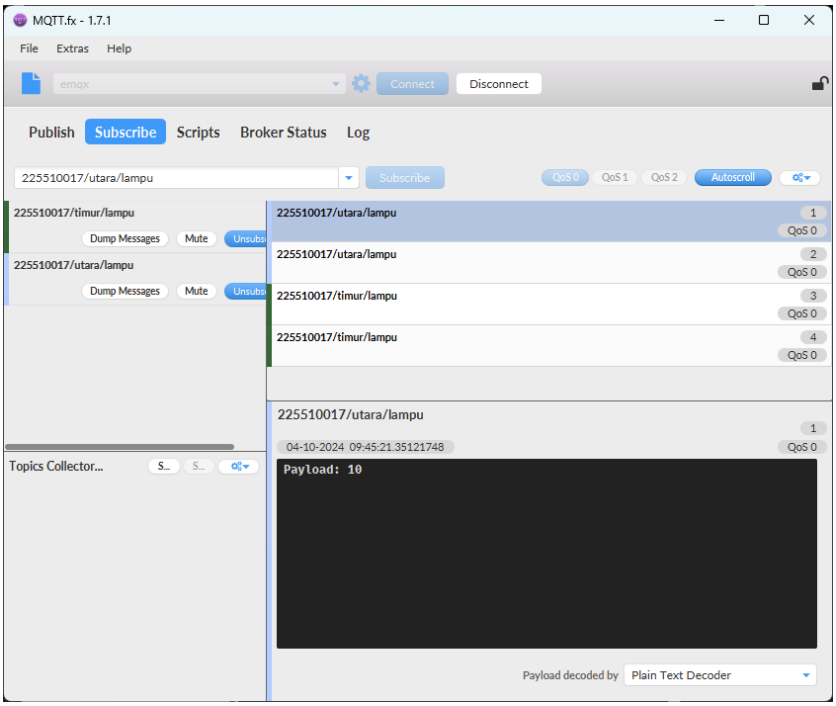
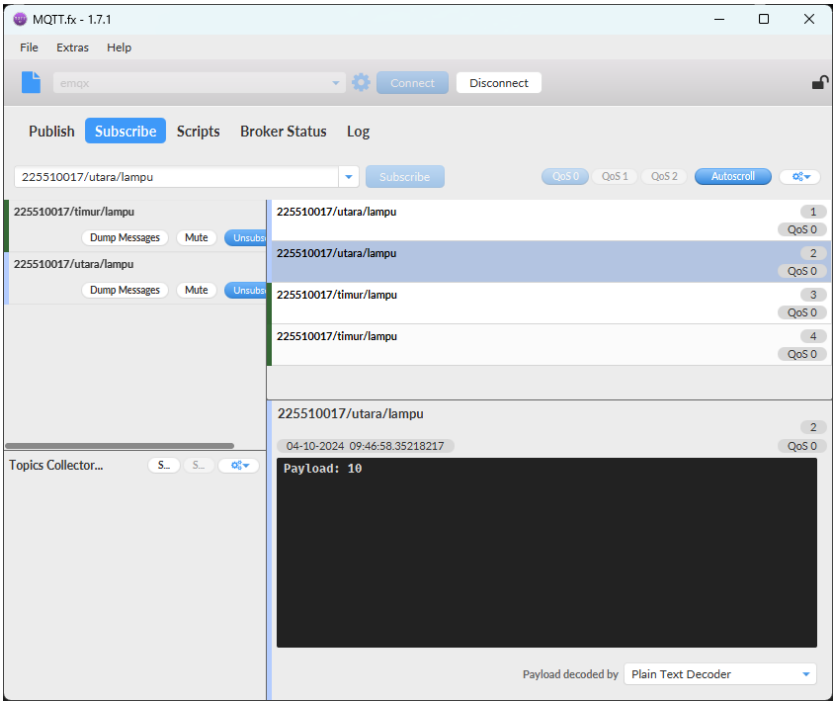
- Keluaran di MQTT

Saat lampu menyala





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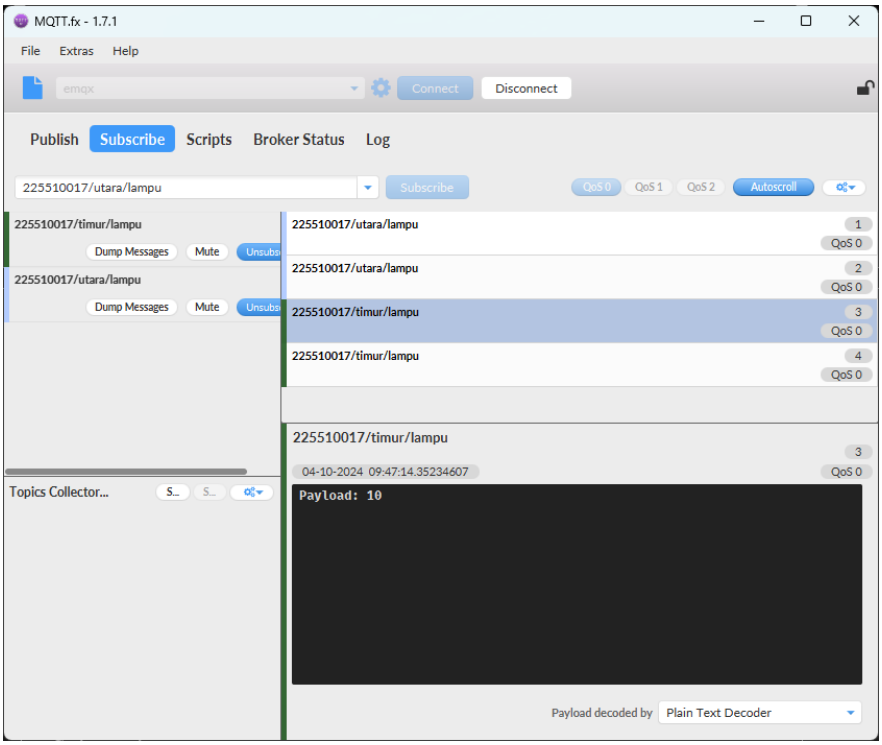
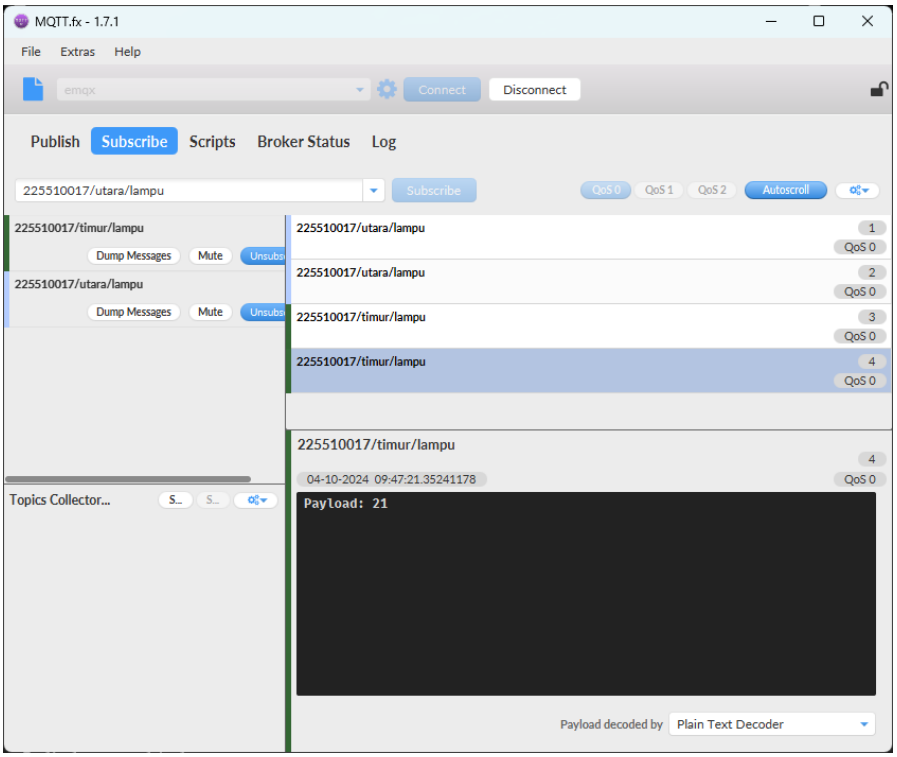


Saat memasukan Perintah untuk mematikan Lampu



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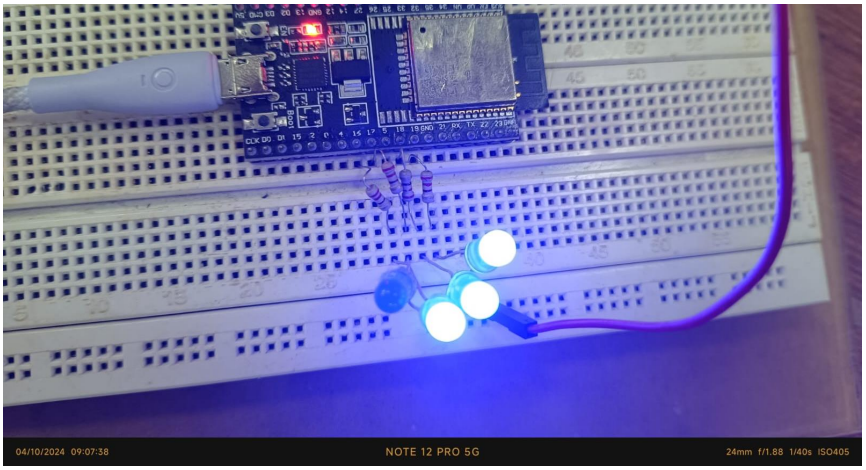
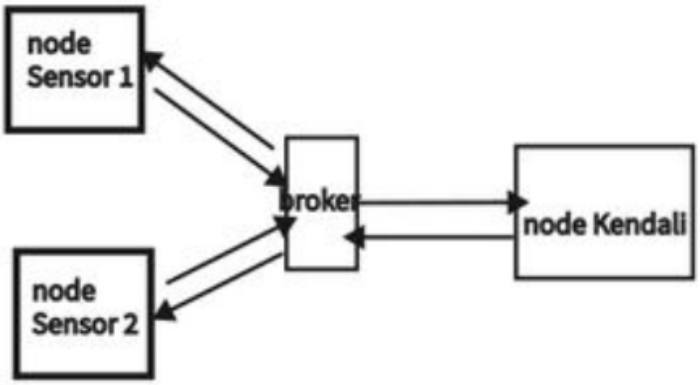


Lampu bagian kiri mati

LATIHAN

Latihan 1

Kerjakan berdua.



Gambar 2.

Buat sistem seperti pada Gambar 2. Rangkaian nodeSensor1 dan nodeSensor2 seperti pada Gambar 1. nodeSensor1 dan nodeSensor2 diatur nyala dan padamnya LED dari node Kendali. Setiap diberi perintah dari nodeKendali nodeSensor memberikan respon balik.

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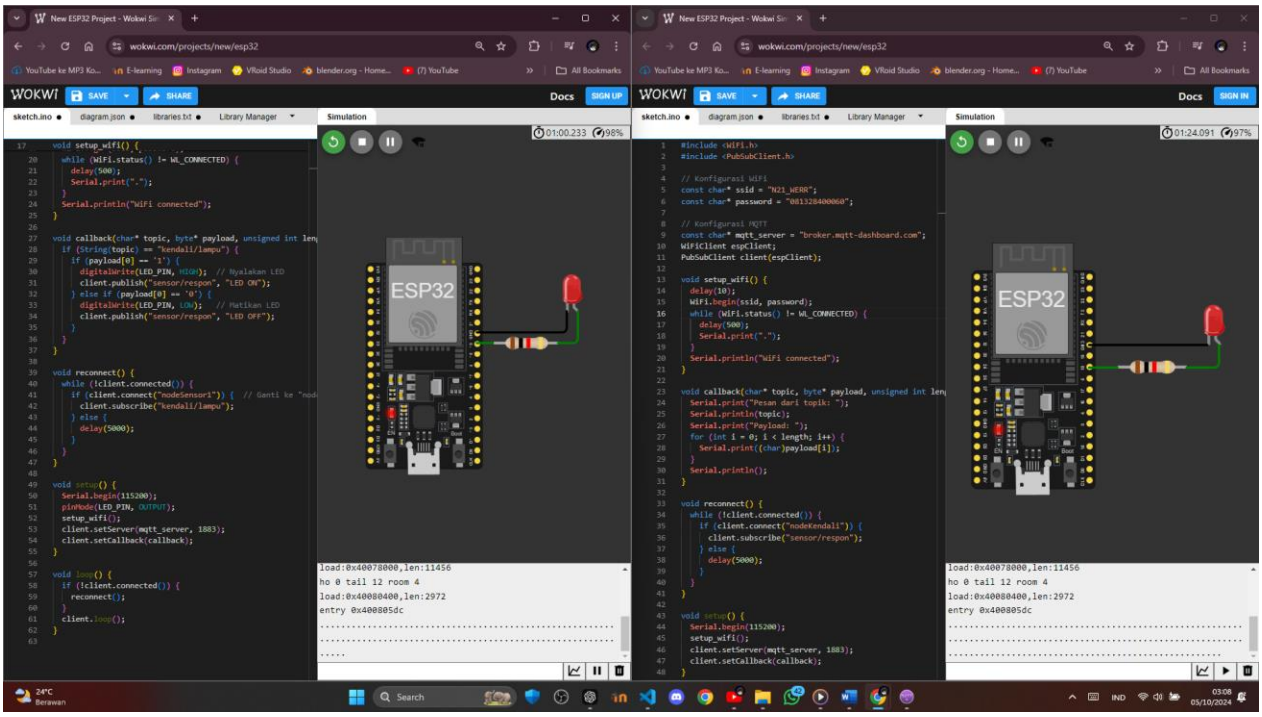
- Bentuk rangkaian



Ynag kiri Seneor respon 1 yang kana sensor respon 2

Link wokwi sensor respon 1 https://wokwi.com/projects/410846457680444417

- Code

```
#include <WiFi.h>
#include <PubSubClient.h>

// Konfigurasi WiFi
const char* ssid = "N21_WERR";
const char* password = "081328400060";

// Konfigurasi MQTT
const char* mqtt_server = "broker.mqtt-dashboard.com";
WiFiClient espClient;
PubSubClient client(espClient);

// Pin LED nodeSensor1 (gunakan GPIO berbeda untuk nodeSensor2)
#define LED_PIN 19 // Untuk nodeSensor1
```

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```
// #define LED_PIN 18 // Untuk nodeSensor2

void setup_wifi() {
  delay(10);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("WiFi connected");
}

void callback(char* topic, byte* payload, unsigned int length) {
  if (String(topic) == "kendali/lampu") {
    if (payload[0] == '1') {
      digitalWrite(LED_PIN, HIGH);  // Nyalakan LED
      client.publish("sensor/respon", "LED ON");
    } else if (payload[0] == '0') {
      digitalWrite(LED_PIN, LOW);   // Matikan LED
      client.publish("sensor/respon", "LED OFF");
    }
  }
}

void reconnect() {
  while (!client.connected()) {
    if (client.connect("nodeSensor1")) {  // Ganti ke "nodeSensor2" untuk node kedua
      client.subscribe("kendali/lampu");
    } else {
      delay(5000);
    }
  }
}

void setup() {
  Serial.begin(115200);
  pinMode(LED_PIN, OUTPUT);
  setup_wifi();
  client.setServer(mqtt_server, 1883);
  client.setCallback(callback);
}

void loop() {
  if (!client.connected()) {
    reconnect();
  }
```

```
  client.loop();
}
```

Link wokwi sensor respon 2 https://wokwi.com/projects/410846540635400193

- Code

```
#include <WiFi.h>
#include <PubSubClient.h>

// Konfigurasi WiFi
const char* ssid = "N21_WERR";
const char* password = "081328400060";

// Konfigurasi MQTT
const char* mqtt_server = "broker.mqtt-dashboard.com";
WiFiClient espClient;
PubSubClient client(espClient);

void setup_wifi() {
  delay(10);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("WiFi connected");
}

void callback(char* topic, byte* payload, unsigned int length) {
  Serial.print("Pesan dari topik: ");
  Serial.println(topic);
  Serial.print("Payload: ");
  for (int i = 0; i < length; i++) {
    Serial.print((char)payload[i]);
  }
  Serial.println();
}

void reconnect() {
  while (!client.connected()) {
    if (client.connect("nodeKendali")) {
      client.subscribe("sensor/respon");
    } else {
```

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```
      delay(5000);
    }
  }
}

void setup() {
  Serial.begin(115200);
  setup_wifi();
  client.setServer(mqtt_server, 1883);
  client.setCallback(callback);
}

void loop() {
  if (!client.connected()) {
    reconnect();
  }

  // Kirim perintah nyala/mati ke node sensor
  client.publish("kendali/lampu", "1");  // Perintah nyalakan LED
  delay(5000);  // Tunggu 5 detik
  client.publish("kendali/lampu", "0");  // Perintah matikan LED
  delay(5000);

  client.loop();
}
```

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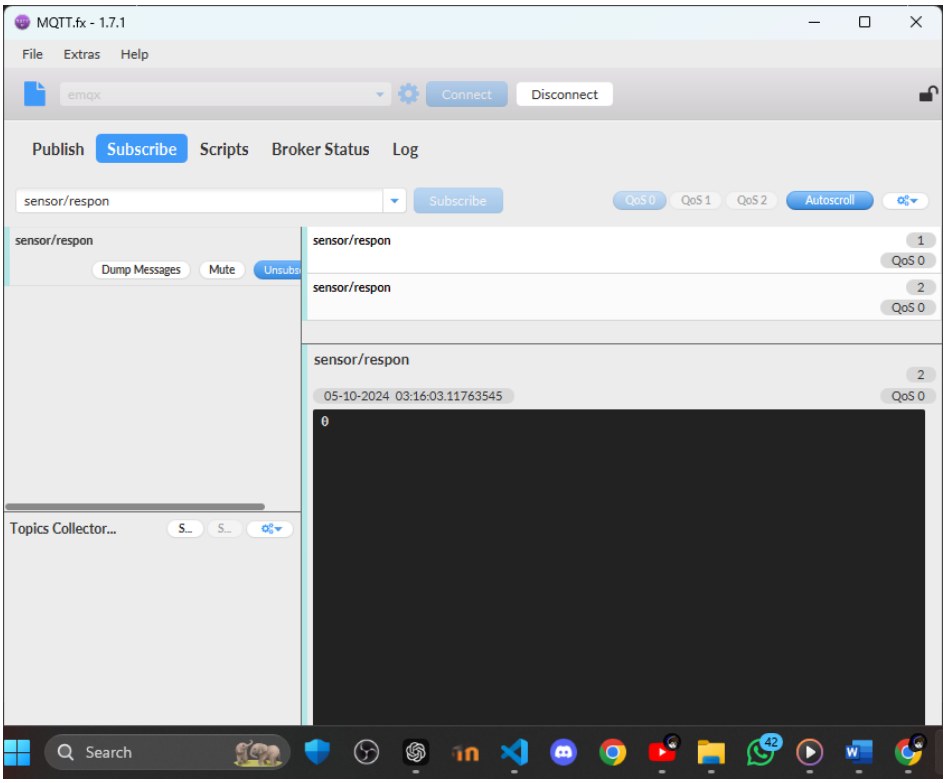
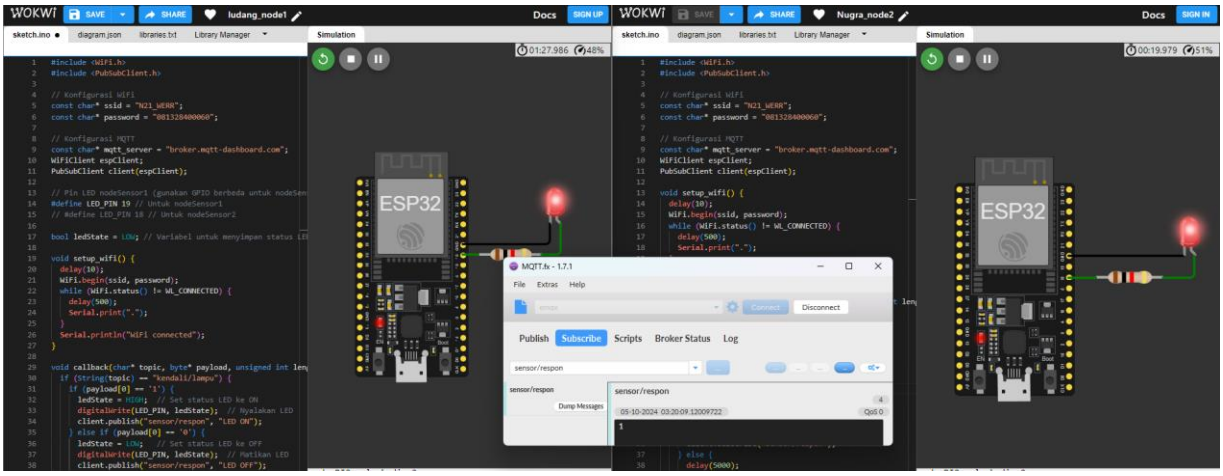
- MQTT



Subscribe ke sensor/respon

- Saat memasukan angka (1) ← Untuk mematikan LED



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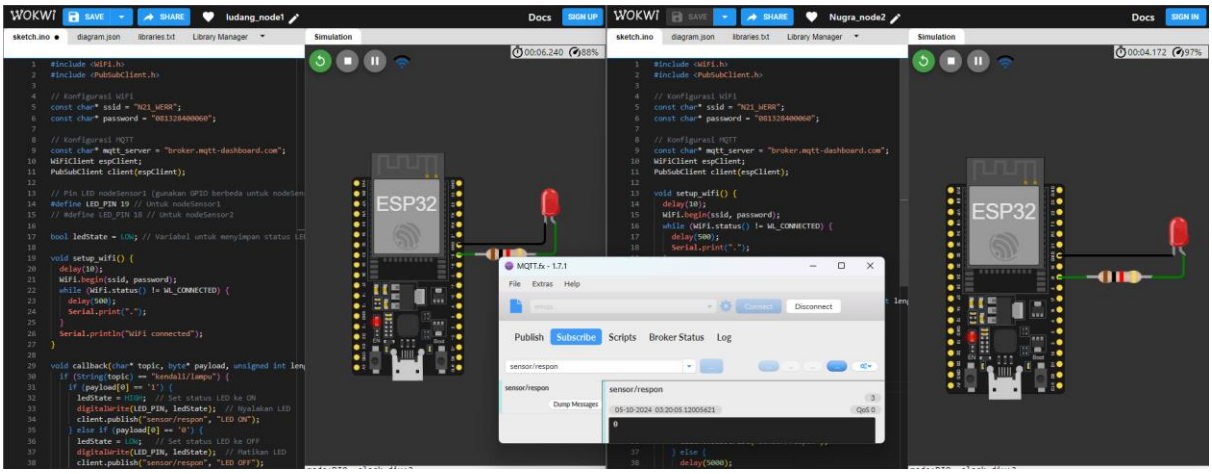
- Saat memasukan angka (0) ← Untuk Menyalakan LED



TUGAS

Tugas

- Diagram Alir

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