

# LAPORAN

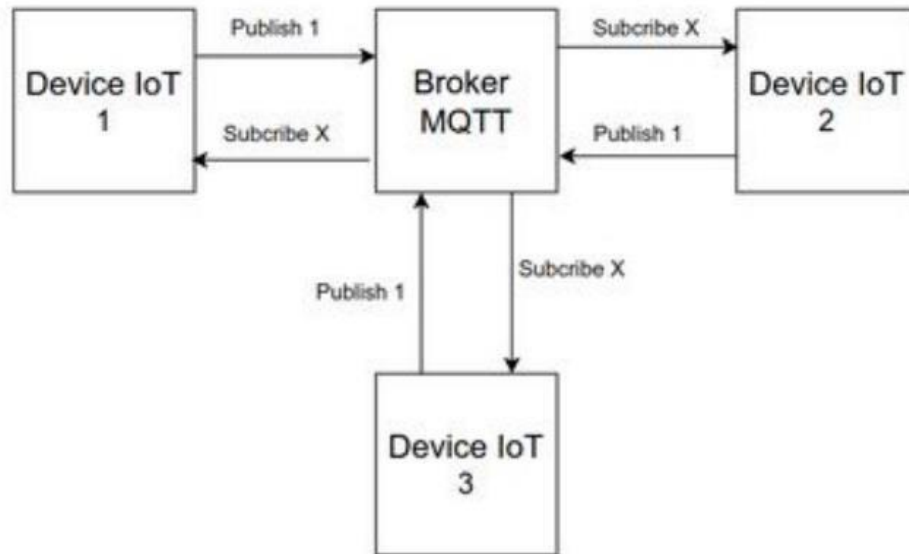
Praaktek system IOT ( Jumat 11 Oktober

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Matkul : Prak system IOT

[Teknik Komputer \( S1\)](#)

## # SOAL

# Buat Sistem kendali LED antar Device IoT dengan diagram sistem sebagai berikut



Masing-masing Device IoT menggunakan rangkaian Gambar 2. Device IoT 1 LED berkedip dikendalikan berdasar data dari Device IoT 2 dan 3, Device IoT 2 LED berkedip dikendalikan berdasar data dari Device IoT 1 dan 3, dan Device IoT 3 LED berkedip berdasar data dari Device IoT 1 dan 2. Kedipnya LED dikendalikan dengan mengirim/publish data 0 dan 1 dari masingmasing Device IoT.

Buat struktur data yang dikirim untuk mengenali device IoT dan datanya.

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## PRAKTEK & LATIHAN

### # PRAKTEK DI LEB

Code program sat praktek di leb

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

#define LED1 19
#define LED2 18
#define LED3 5
#define LED4 17

const char* ssid = "RPLA_2.4"; // Ganti dengan SSID WiFi Anda
const char* password = "utdijogja"; // Ganti dengan password WiFi Anda
const char* mqtt_server = "broker.mqttdashboard.com"; // Alamat broker MQTT

WiFiClient espClient;
PubSubClient client(espClient);

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

  // Inisialisasi pin LED
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  pinMode(LED3, OUTPUT);
  pinMode(LED4, OUTPUT);

  // Matikan semua LED di awal
  digitalWrite(LED1, LOW);
  digitalWrite(LED2, LOW);
  digitalWrite(LED3, LOW);
  digitalWrite(LED4, LOW);

  setupWiFi();
  client.setServer(mqtt_server, 1883);
  client.setCallback(callback);
}

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

void setupWiFi() {
  delay(10);
  Serial.print("Menghubungkan ke ");
  Serial.println(ssid);

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

  Serial.println(" Terhubung");
  Serial.print("IP address: ");
  Serial.println(WiFi.localIP());
}
```

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```
void reconnect() {
  while (!client.connected()) {
    Serial.print("Menghubungkan ke MQTT...");
    if (client.connect("ESP32Client")) {
      Serial.println("Terhubung");
      client.subscribe("data/bersama");
    } else {
      Serial.print("Gagal, kode rc=");
      Serial.print(client.state());
      delay(2000);
    }
  }
}

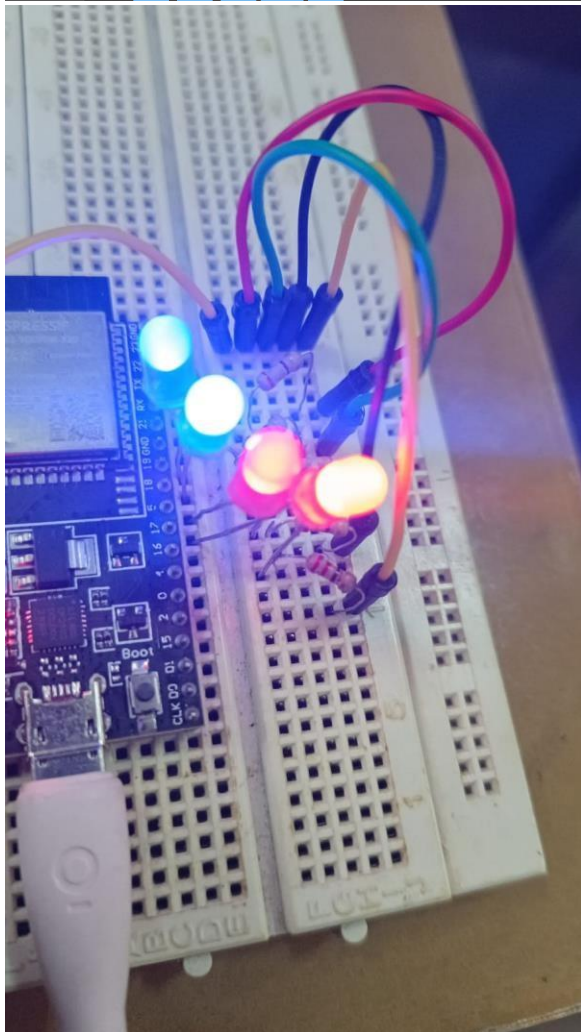
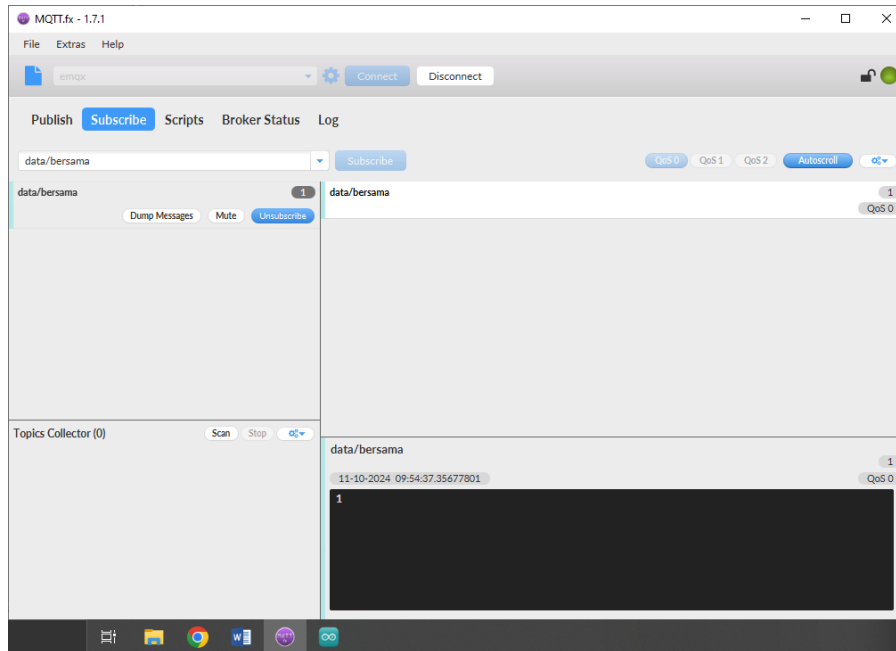
void callback(char* topic, byte* payload, unsigned int length) {
  payload[length] = '\0'; // Menambahkan null terminator
  String message = String((char*)payload);

  Serial.print("Pesan diterima: ");
  Serial.println(message);

  // Mengendalikan LED berdasarkan pesan
  if (message.length() >= 4) {
    digitalWrite(LED1, message[0] == '1' ? HIGH : LOW);
    digitalWrite(LED2, message[1] == '1' ? HIGH : LOW);
    digitalWrite(LED3, message[2] == '1' ? HIGH : LOW);
    digitalWrite(LED4, message[3] == '1' ? HIGH : LOW);
  }
}
```

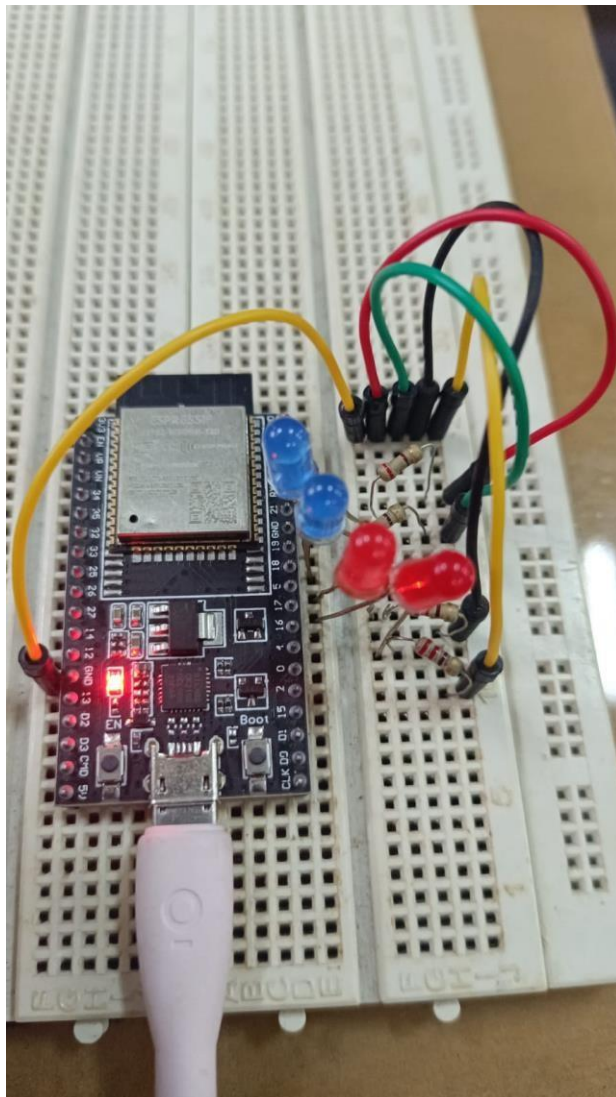
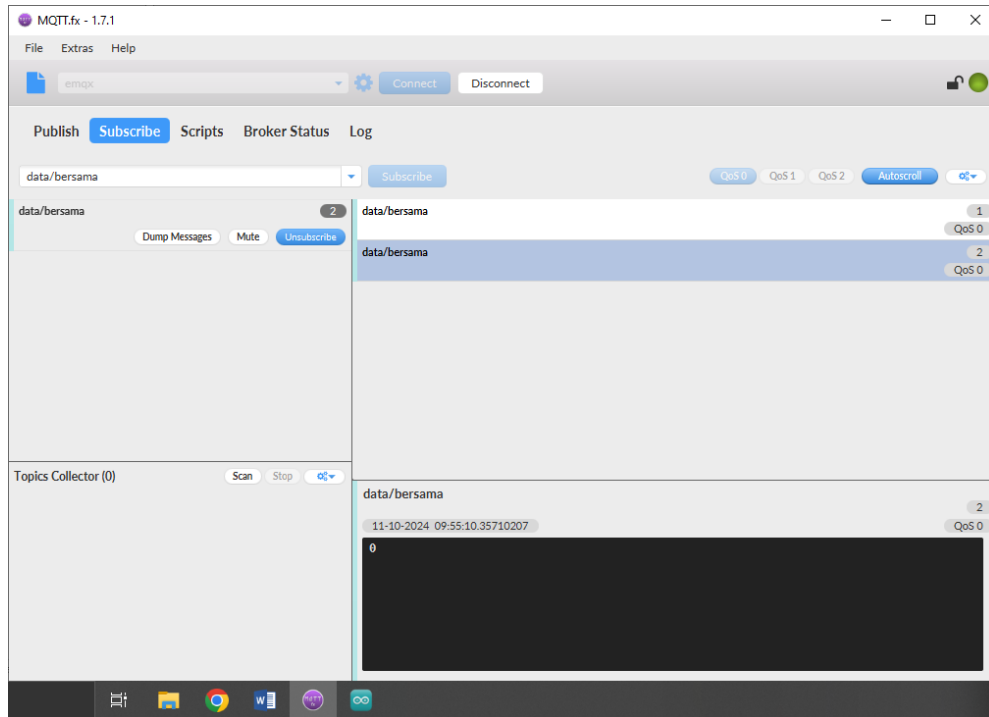
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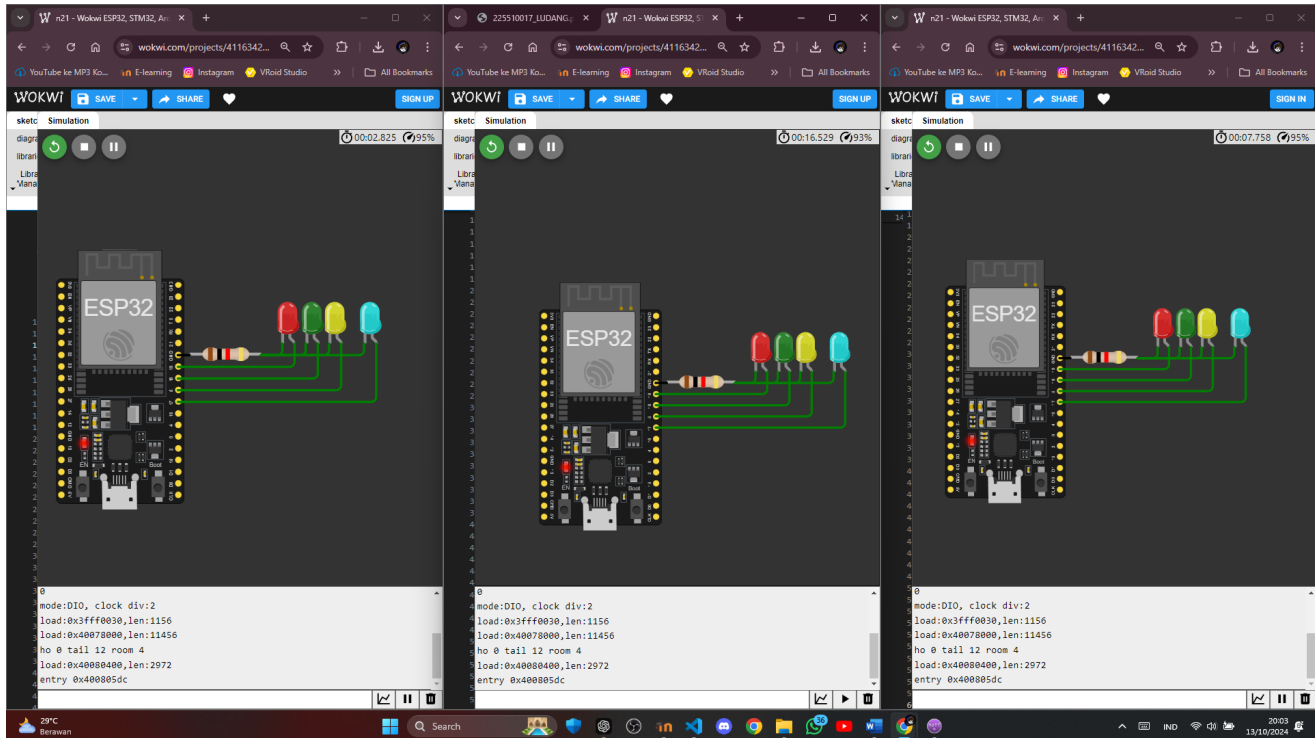


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## # PRAKTEK DI RUMAH

### Rangkaian dengan wokwi



Kiri device 1 , tengah device 2 , kanan device 3

### # Code device 1 yang Subscribe dan public

```
#include <WiFi.h>
#include <PubSubClient.h>
#define LED1 19
#define LED2 18
#define LED3 5
#define LED4 17

const char* ssid = "N21_WERE"; // Ganti dengan SSID WiFi Anda
const char* password = "081328400060"; // Ganti dengan password WiFi Anda
const char* mqtt_server = "broker.mqttdashboard.com"; // Alamat broker MQTT

WiFiClient espClient;
PubSubClient client(espClient);

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

  // Inisialisasi pin LED
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  pinMode(LED3, OUTPUT);
  pinMode(LED4, OUTPUT);

  // Matikan semua LED di awal
  digitalWrite(LED1, LOW);
  digitalWrite(LED2, LOW);
```

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```
digitalWrite(LED3, LOW);
digitalWrite(LED4, LOW);

setupWiFi();
client.setServer(mqtt_server, 1883);
client.setCallback(callback);
}

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

  // Contoh publish data secara berkala
  static unsigned long lastMsg = 0;
  if (millis() - lastMsg > 5000) { // Publish setiap 5 detik
    lastMsg = millis();
    String payload = "1100"; // Contoh pesan
    client.publish("data/bersama", payload.c_str());
  }
}

void setupWiFi() {
  delay(10);
  Serial.print("Menghubungkan ke ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }

  Serial.println(" Terhubung");
  Serial.print("IP address: ");
  Serial.println(WiFi.localIP());
}

void reconnect() {
  while (!client.connected()) {
    Serial.print("Menghubungkan ke MQTT...");
    if (client.connect("ESP32Client")) {
      Serial.println("Terhubung");
      client.subscribe("data/bersama");
    } else {
      Serial.print("Gagal, kode rc=");
      Serial.print(client.state());
      delay(2000);
    }
  }
}

void callback(char* topic, byte* payload, unsigned int length) {
  payload[length] = '\0'; // Menambahkan null terminator
  String message = String((char*)payload);
  Serial.print("Pesan diterima: ");
  Serial.println(message);

  // Mengendalikan LED berdasarkan pesan
  if (message.length() >= 4) {
    digitalWrite(LED1, message[0] == '1' ? HIGH : LOW);
    digitalWrite(LED2, message[1] == '1' ? HIGH : LOW);
    digitalWrite(LED3, message[2] == '1' ? HIGH : LOW);
    digitalWrite(LED4, message[3] == '1' ? HIGH : LOW);
  }
}
```

**Code device 2 dan 3 yang menerima data dari subscribe devace 1**

```
#include <WiFi.h>
#include <PubSubClient.h>
#define LED1 19
```

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```
#define LED2 18
#define LED3 5
#define LED4 17

const char* ssid = "N21_WERE"; // Ganti dengan SSID WiFi Anda
const char* password = "081328400060"; // Ganti dengan password WiFi Anda
const char* mqtt_server = "broker.mqttdashboard.com"; // Alamat broker MQTT

WiFiClient espClient;
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void setup() {
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  // Inisialisasi pin LED
  pinMode(LED1, OUTPUT);
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  // Matikan semua LED di awal
  digitalWrite(LED1, LOW);
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  digitalWrite(LED3, LOW);
  digitalWrite(LED4, LOW);

  setupWiFi();
  client.setServer(mqtt_server, 1883);
  client.setCallback(callback);
}

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

void setupWiFi() {
  delay(10);
  Serial.print("Menghubungkan ke ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }

  Serial.println(" Terhubung");
  Serial.print("IP address: ");
  Serial.println(WiFi.localIP());
}

void reconnect() {
  while (!client.connected()) {
    Serial.print("Menghubungkan ke MQTT...");
    if (client.connect("ESP32Client")) {
      Serial.println("Terhubung");
      client.subscribe("data/bersama"); // Hanya subscribe, tidak publish
    } else {
      Serial.print("Gagal, kode rc=");
      Serial.print(client.state());
      delay(2000);
    }
  }
}
```



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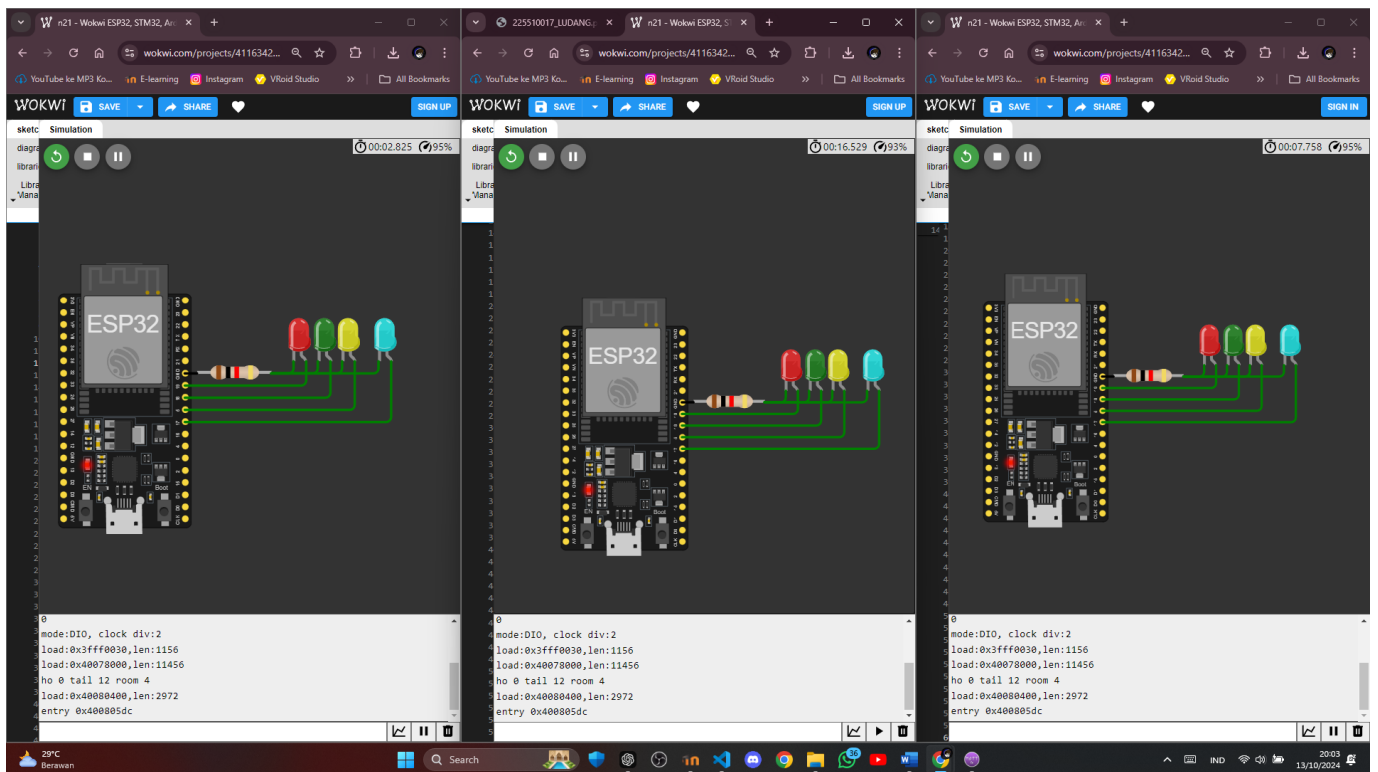
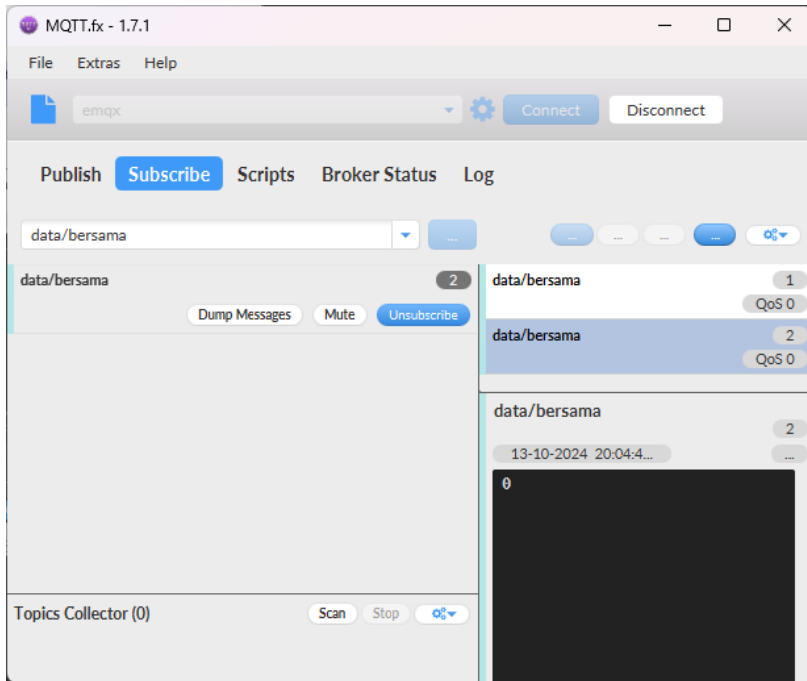
```
void callback(char* topic, byte* payload, unsigned int length) {
  payload[length] = '\0'; // Menambahkan null terminator
  String message = String((char*)payload);
  Serial.print("Pesan diterima: ");
  Serial.println(message);

  // Mengendalikan LED berdasarkan pesan
  if (message.length() >= 4) {
    digitalWrite(LED1, message[0] == '1' ? HIGH : LOW);
    digitalWrite(LED2, message[1] == '1' ? HIGH : LOW);
    digitalWrite(LED3, message[2] == '1' ? HIGH : LOW);
    digitalWrite(LED4, message[3] == '1' ? HIGH : LOW);
  }
}
```

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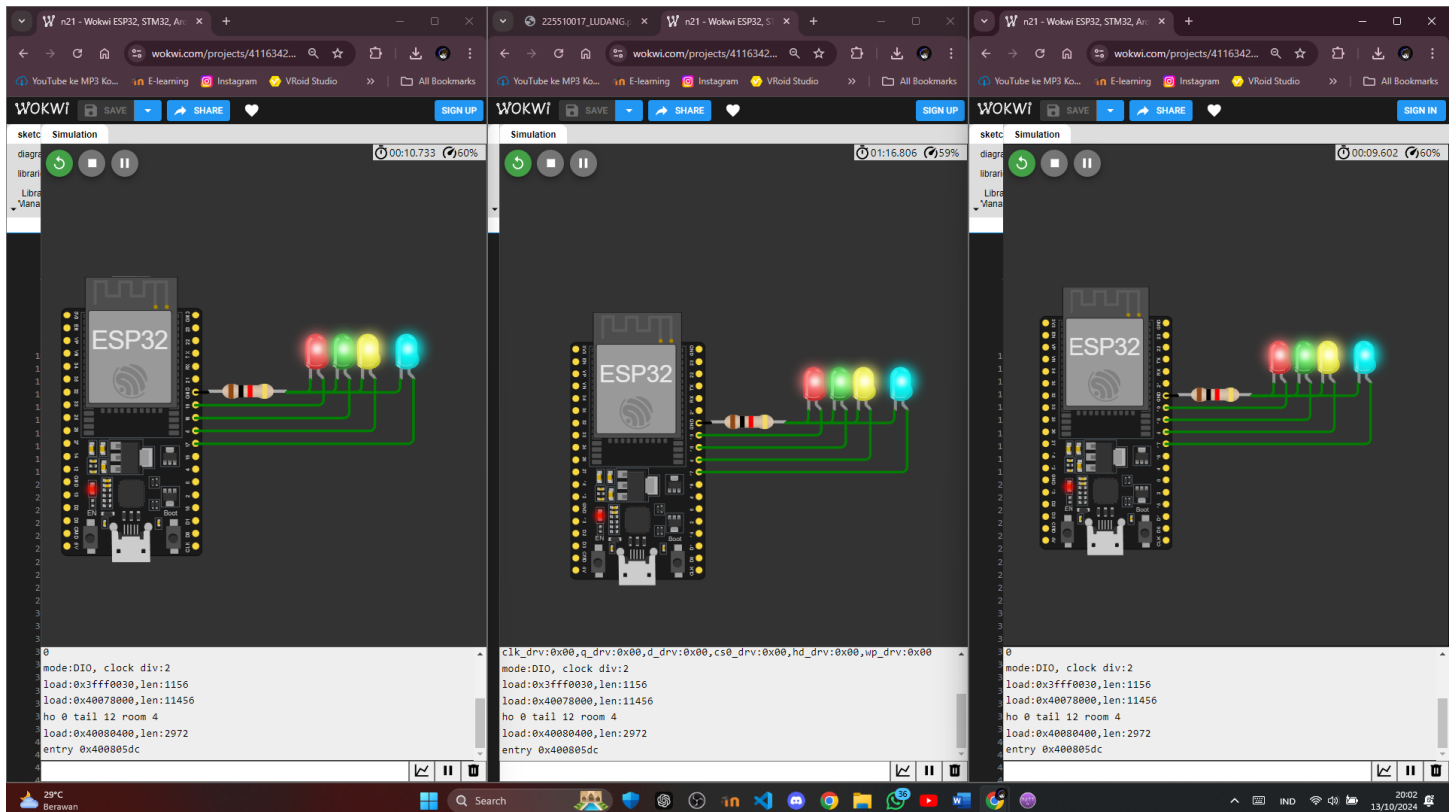
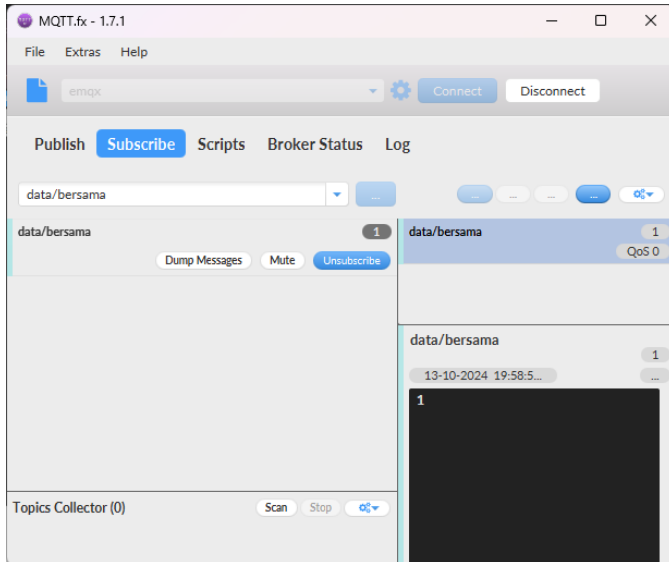
Saat memasukan ( 0 ) maka led akan mati dan yang lain juga ikut mati



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Saat memasukan ( 1 ) maka led akan Menyala dan yang lain juga ikut menyala karrena yang divace 2 dan 3 subscribe dari device 1 maka saat menerima data maka ke 3 device akan saling merespon



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## # TUGAS

### Diagram alir

