

LAMPIRAN SOURCE CODE

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#define BLYNK_TEMPLATE_ID "TMPL62841ftE0"
#define BLYNK_TEMPLATE_NAME "Skripsi IoT"
#define BLYNK_AUTH_TOKEN "8wilbUwWyshrmJCVQngayDeiagEZd-
CQ"

#include <DHT.h>
#include <Wire.h>
#include <BlynkSimpleEsp32.h>

char ssid[] = "My_Phone"; // Ganti dengan SSID WiFi Anda
char pass[] = "qwertyuiop"; // Ganti dengan password WiFi
Anda
char auth[] = BLYNK_AUTH_TOKEN;

// Definisikan pin sensor dan relay
#define PH_SENSOR_PIN 13
#define TDS_SENSOR_PIN 35
#define DHT_SENSOR_PIN 14

#define RELAY1_PIN 33 // Relay untuk pompa pH < 5
#define RELAY2_PIN 25 // Relay untuk pompa pH > 7
#define RELAY3_PIN 26 // Relay untuk pompa TDS 560 - 840
#define RELAY4_PIN 27 // Relay untuk pompa Air Bersih

#define DHTTYPE DHT11

DHT dht(DHT_SENSOR_PIN, DHTTYPE);
BlynkTimer timer;

void setup() {
  Serial.begin(115200);
  Blynk.begin(auth, ssid, pass);

  // Inisialisasi pin relay sebagai output
  pinMode(RELAY1_PIN, OUTPUT);
  pinMode(RELAY2_PIN, OUTPUT);
  pinMode(RELAY3_PIN, OUTPUT);
  pinMode(RELAY4_PIN, OUTPUT);

  // Matikan semua relay pada awalnya
  digitalWrite(RELAY1_PIN, LOW);
  digitalWrite(RELAY2_PIN, LOW);
  digitalWrite(RELAY3_PIN, LOW);
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digitalWrite(RELAY4_PIN, LOW);

dht.begin();

// Mengatur timer untuk fungsi pembacaan sensor
timer.setInterval(2000L, sendSensorData); // Fungsi ini
akan dipanggil setiap 2 detik
}

void loop() {
  Blynk.run();
  timer.run();
}

void sendSensorData() {
  float pHValue = readPH();
  float tdsValue = readTDS();
  float temperature = dht.readTemperature();
  float humidity = dht.readHumidity();

  // Mengirim data ke aplikasi Blynk
  Blynk.virtualWrite(V0, pHValue);
  Blynk.virtualWrite(V1, tdsValue);
  Blynk.virtualWrite(V2, temperature);
  Blynk.virtualWrite(V3, humidity);

  // Kontrol relay berdasarkan nilai pH
  if (pHValue < 5) {
    digitalWrite(RELAY1_PIN, HIGH);
  } else if (pHValue >= 5.5 && digitalRead(RELAY1_PIN) ==
HIGH) {
    digitalWrite(RELAY1_PIN, LOW);
  }

  if (pHValue > 7) {
    digitalWrite(RELAY2_PIN, HIGH);
  } else if (pHValue <= 6.5 && digitalRead(RELAY2_PIN) ==
HIGH) {
    digitalWrite(RELAY2_PIN, LOW);
  }

  // Kontrol relay berdasarkan nilai TDS
  if (tdsValue < 560) {
    digitalWrite(RELAY3_PIN, HIGH);
  } else if (tdsValue > 620) {
    digitalWrite(RELAY3_PIN, LOW);
  }
}

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    Serial.print("pH: ");
    Serial.println(phValue);
    Serial.print("TDS: ");
    Serial.println(tdsValue);
    Serial.print("Temperature: ");
    Serial.println(temperature);
    Serial.print("Humidity: ");
    Serial.println(humidity);
}

// Fungsi untuk membaca nilai pH dari sensor
float readPH() {
    int phRaw = analogRead(PH_SENSOR_PIN);

    // Kalibrasi berdasarkan data yang diberikan
    float phValue;
    if (phRaw >= 3485) {
        phValue = map(phRaw, 3485, 3741, 65, 42) / 10.0;
    } else {
        phValue = map(phRaw, 2402, 3485, 102, 65) / 10.0;
    }

    return phValue;
}

// Fungsi untuk membaca nilai TDS dari sensor
float readTDS() {
    int tdsRaw = analogRead(TDS_SENSOR_PIN);
    float voltageTDS = tdsRaw * (3.3 / 4095.0);
    float tdsValue = (133.42 * voltageTDS * voltageTDS *
voltageTDS - 255.86 * voltageTDS * voltageTDS + 857.39 *
voltageTDS) * 0.5;
    return tdsValue;
}

// Fungsi untuk mengontrol relay 4 melalui aplikasi Blynk
BLYNK_WRITE(V4) {
    int pinValue = param.asInt();
    digitalWrite(RELAY4_PIN, pinValue);
}

```