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Mata Kuliah : Internet of Things

## TUGAS PRAKTIKUM 30 Oktober 2025

```
mqtt_esp8266 | Arduino IDE 2.3.6
File Edit Sketch Tools Help
ESP32 Dev Module
mqtt_esp8266.ino
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3
4 // Update these with values suitable for your network.
5 const char* ssid = "noi Midori";
6 const char* password = "setanarwah";
7 const char* mqtt_server = "broker.hivemq.com";
8
9 WiFiClient espClient;
10 PubSubClient client(espClient);
11 unsigned long lastMsg = 0;
12 #define MSG_BUFFER_SIZE (50)
13 char msg[MSG_BUFFER_SIZE];
14 int value = 0;
15
16 // Definisikan pin
17 #define LED1 15
18 #define LED2 2
19 #define LED3 4
20 #define LED4 5
21
Output Serial Monitor X
Message (Enter to send message to 'ESP32 Dev Module' on 'COM3')
Publish message: hello world #239
Message arrived [nyobaMqtt] hello world #238
Publish message: hello world #239
Message arrived [nyobaMqtt] hello world #239
Publish message: hello world #240
Message arrived [nyobaMqtt] hello world #240
Publish message: hello world #241
Message arrived [nyobaMqtt] hello world #241
Publish message: hello world #242
Message arrived [nyobaMqtt] hello world #242
Ln 9, Col 22 ESP32 Dev Module on COM3 9:2 9:38 AM 10/30/2025
```

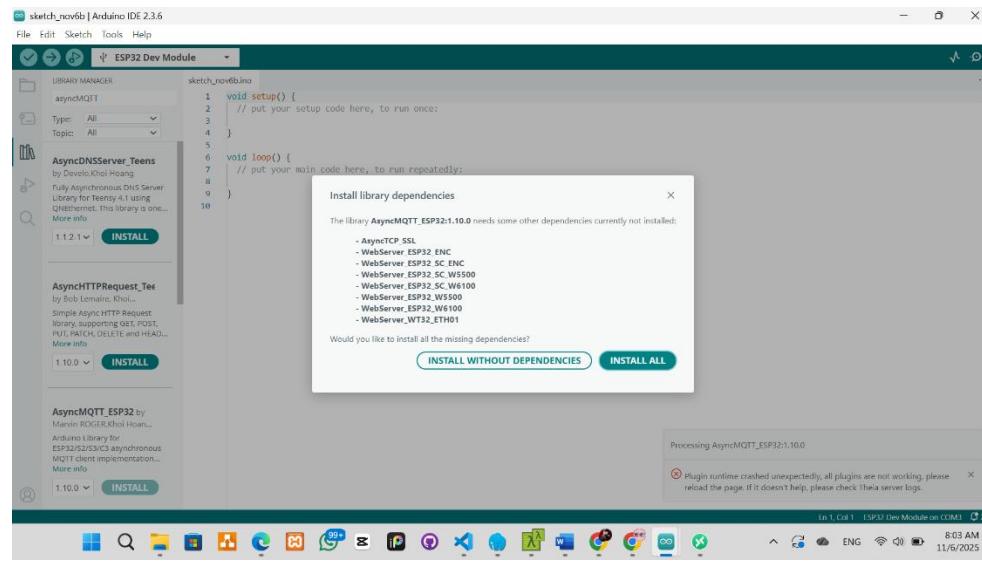
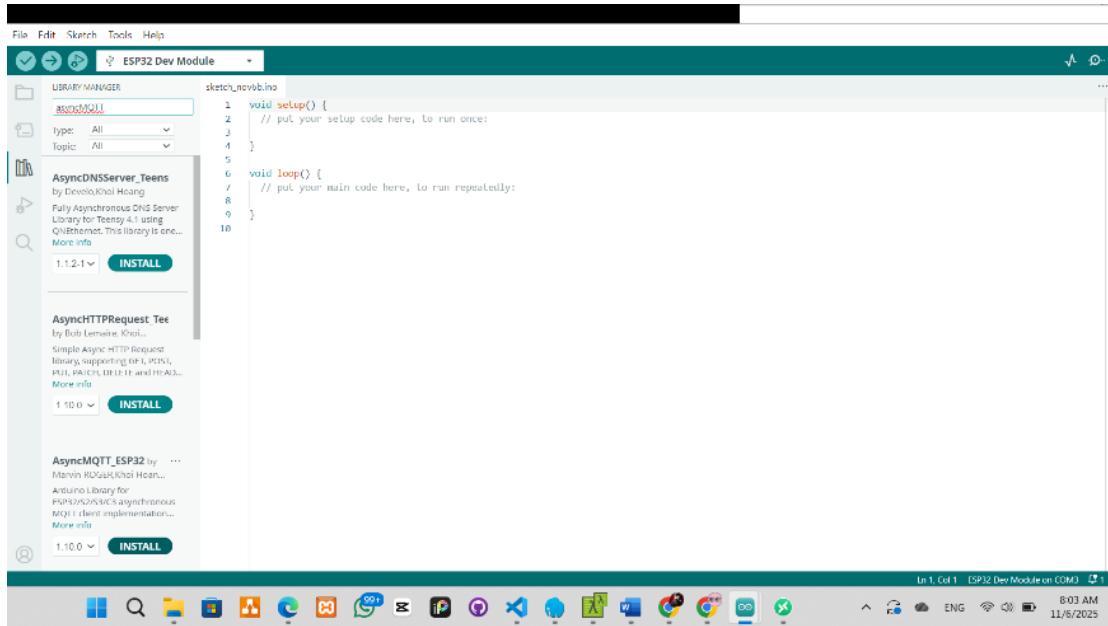
```
mqtt_esp8266 | Arduino IDE 2.3.6
File Edit Sketch Tools Help
MQTTX
File Edit View Window Help
ESP32 Dev Module
mqtt_esp8266.ino
135 digitalWrite(LED1, LOW);
136 digitalWrite(LED2, LOW);
137 digitalWrite(LED3, LOW);
138 digitalWrite(LED4, LOW);
139 digitalWrite(RELAY, LOW);
140
141 setup_wifi();
142 client.setServer(mqtt_server,
143 client.setCallback(callback);
144
145 Serial.println("== AKTUATOR
146 }
147
148 // ---- LOOP ----
149 void loop() {
150 if (!client.connected()) {
151 | reconnect();
152 }
153 client.loop();
154 }
155
Output Serial Monitor X
Message (Enter to send message to 'ESP32 Dev Module' on 'COM3')
Pesan diterima [kelompok4]: Jarak: 4.03
Ketinggian air: 79.95%
Pesan diterima [kelompok4]: Jarak: 4.03
Ketinggian air: 79.95%
Pesan diterima [kelompok4]: Jarak: 4.03
Ketinggian air: 78.30%
Pesan diterima [kelompok4]: Jarak: 4.32
Ketinggian air: 78.40%
Pesan diterima [kelompok4]: Jarak: 3.99
Ketinggian air: 80.05%
Ln 155, Col 1 ESP32 Dev Module on COM3 9:2 9:38 AM 10/30/2025
```

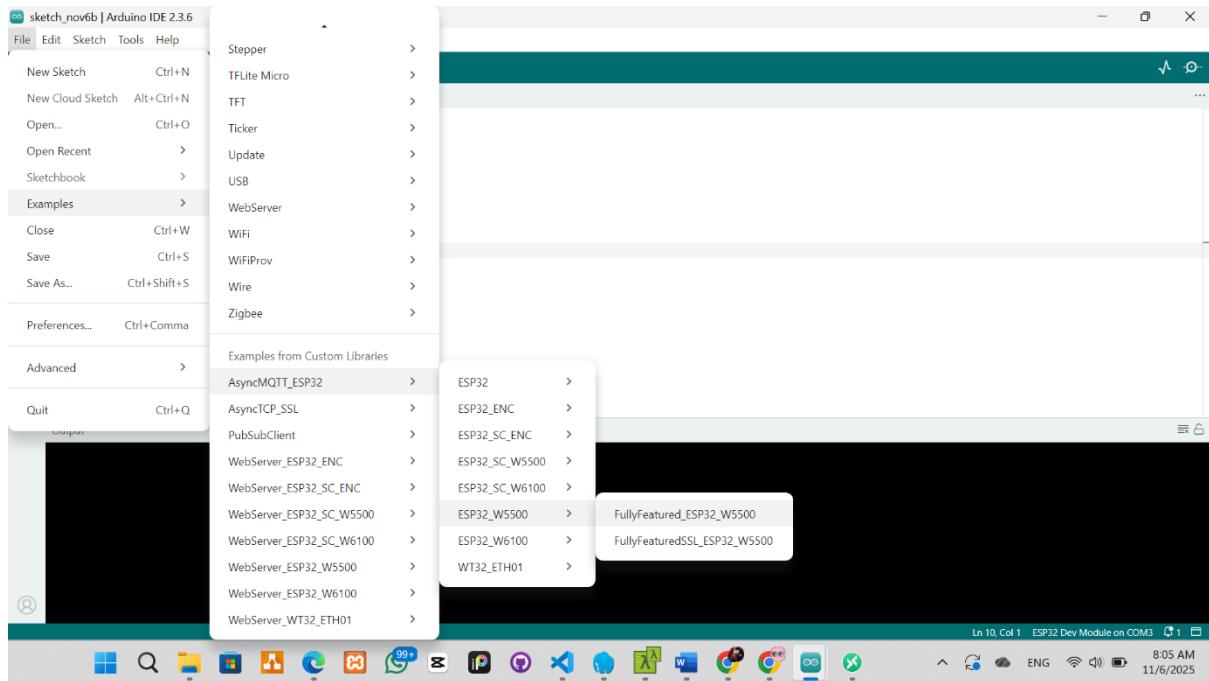
Pada praktikum ini aktuator berhasil menerima data dari sensor, sehingga LED dapat menyala sesuai dengan jarak yang diterima dari sensor



# TUGAS PRAKTIKUM

## 06 November 2025





FullyFeatured\_ESP32 | Arduino IDE 2.3.6

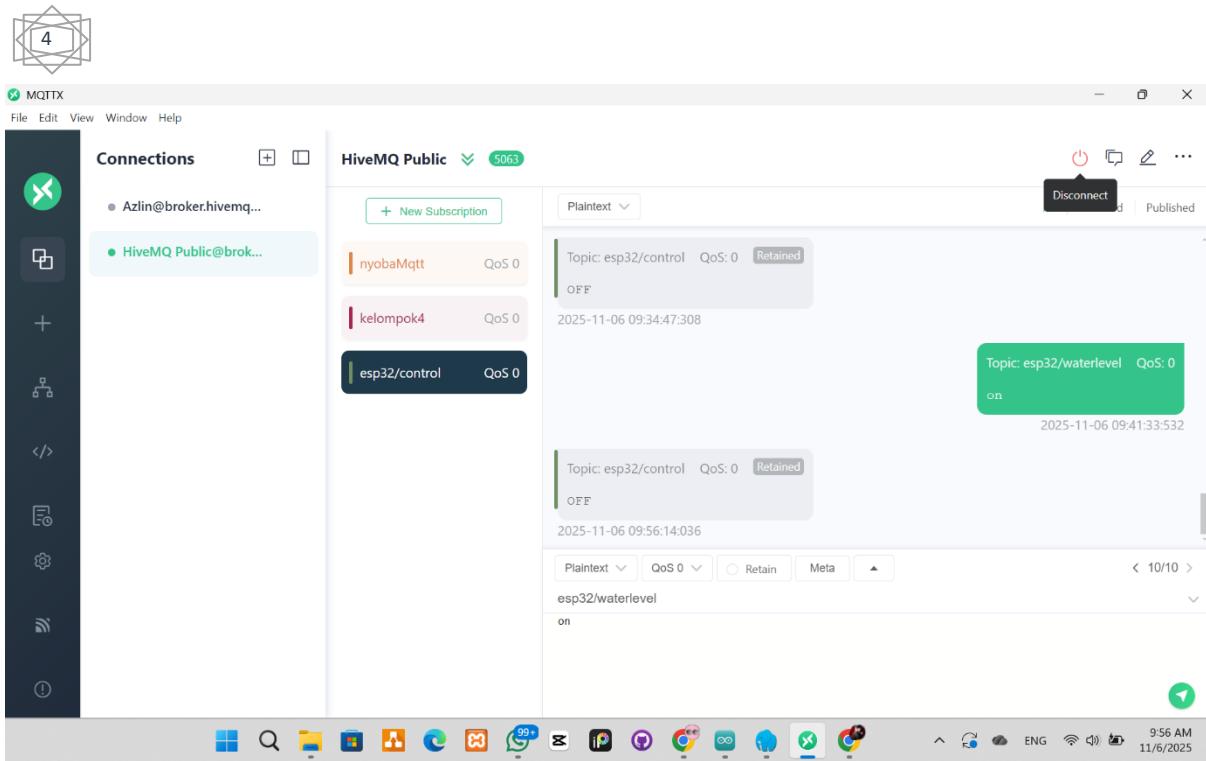
```
File Edit Sketch Tools Help
ESP32 Dev Module
FullyFeatured_ESP32.ino defines.h
35 const float tinggi_tandon = 20.0; // ubah sesuai wadah kamu (cm)
36
37 // ----- FUNGSI SENSOR -----
38 float bacaJarak() {
39     digitalWrite(TRIG_PIN, LOW);
40     delayMicroseconds(2);
41     digitalWrite(TRIG_PIN, HIGH);
42     delayMicroseconds(10);
43     digitalWrite(TRIG_PIN, LOW);
44     long durasi = pulseIn(ECHO_PIN, HIGH, 30000);
45     float cm = durasi * 0.0343 / 2;
46     return cm;
47 }
48
49 // ----- CALLBACK WIFI -----
50 void onWiFiConnect(WiFiEvent_t event, WiFiEventInfo_t info) {
51     Serial.println("\n✓ WiFi Terhubung!");
52     Serial.print(" IP Address: ");
53     Serial.println(WiFi.localIP());
54     Serial.println(" Menghubungkan ke broker MQTT...");
```

Output Serial Monitor

Message (Enter to send message to 'ESP32 Dev Module' on 'COM5')

```
% Jarak: 20.00 cm | ⚪ Level air: 0%
% Data terkirim ke MQTT: 0%
% Jarak: 20.00 cm | ⚪ Level air: 0%
% Data terkirim ke MQTT: 0%
% Jarak: 7.89 cm | ⚪ Level air: 60%
% Data terkirim ke MQTT: 60%
% Jarak: 16.38 cm | ⚪ Level air: 15%
% Data terkirim ke MQTT: 15%
% Jarak: 20.00 cm | ⚪ Level air: 0%
% Data terkirim ke MQTT: 0%
```

Ln 25, Col 2 ESP32 Dev Module on COM5 9:50 AM 11/6/2025



Pada dasarnya praktikum ini tidak jauh berbeda dari praktikum sebelumnya, namun ada perubahan pada board nya. Sehingga ada nya perubahan yang di sesuaikan dengan board nya. Hasil nya ketika sensor mengirimkan data jarak air nya, maka LED akan menyala atau meti sesuai dengan data yang di terima.