



 **MQTT**



firebase



Node-RED

IoT Bootcamp #3

Pandega Abyan Zumarsyah

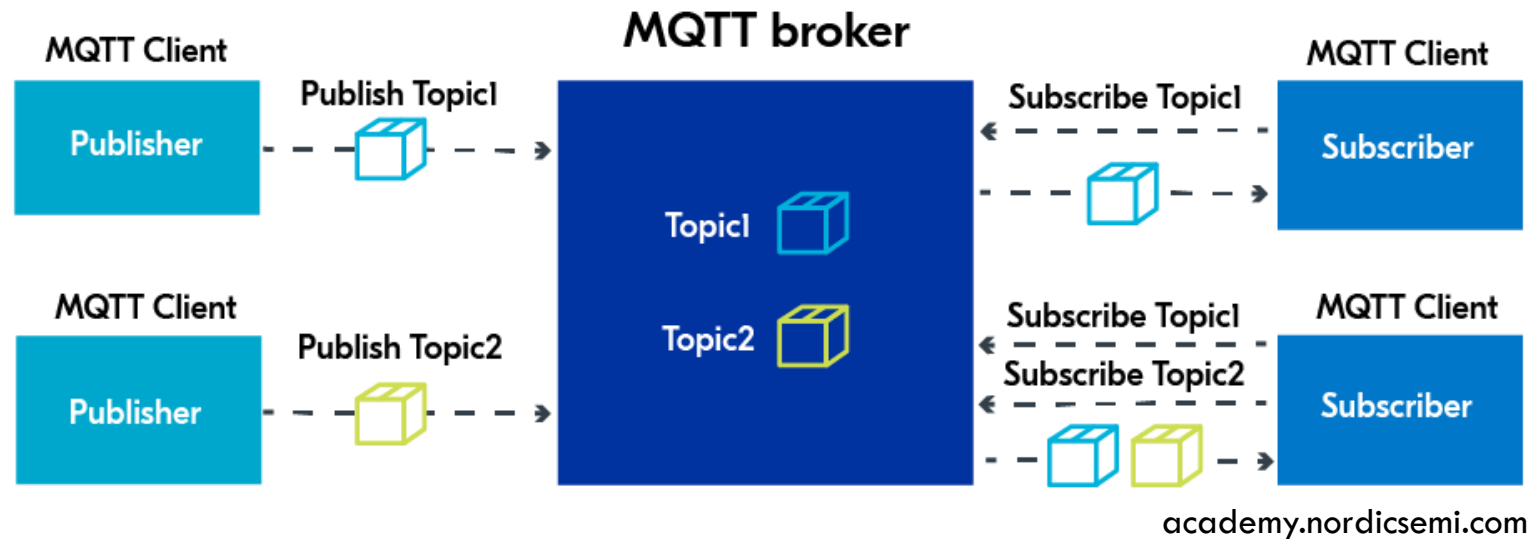


Intro to MQTT and Implementation in ESP32

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Apa itu MQTT ?

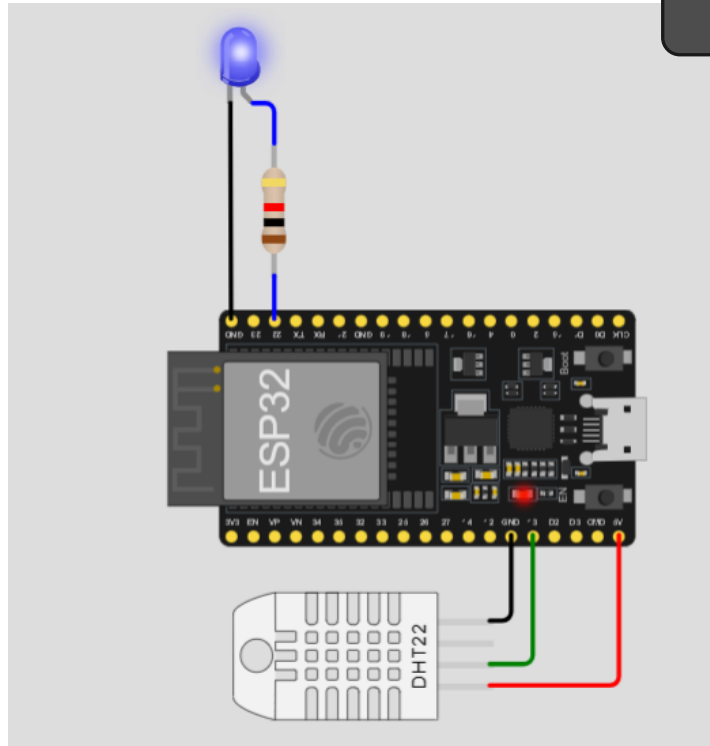
MQTT is a **lightweight, publish-subscribe**, machine to machine **network protocol** for **message queue** service (wikipedia.com)



- Ada client yang **publish** ke **topic** tertentu, ada pula client lain yang **subscribe** ke **topic** itu
- Satu client bisa **publish** ke suatu **topic** dan **subscribe** ke **topic** lainnya, tidak harus publish saja atau subscribe saja
- **MQTT Broker** jadi server yang menjembatani clients, bisa pakai broker online atau install broker sendiri di lokal

Let's Try MQTT

Target



```
MQTT connecting ... Connected with id: ESP32Client-0
Message received: ESP32/control
Payload: 1
Status: ON
Humidity: 40.000000 %, Temperature: 24.000000 C
Humidity: 40.000000 %, Temperature: 24.000000 C
```

Topic: ESP32/control QoS: 0

1

2024-01-18 08:27:05:768

Topic: ESP32/status QoS: 0

ON

2024-01-18 08:27:08:043

Topic: ESP32/temperature QoS: 0

24.0

2024-01-18 08:27:08:275

Topic: ESP32/humidity QoS: 0

40.0

2024-01-18 08:27:08:289

Topic: ESP32/humidity QoS: 0

40.0

2024-01-18 08:27:28:776

Topic: ESP32/temperature QoS: 0

24.0

Let's Develop in VS Code



Intro to Firebase and Implementation in ESP32

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Apa itu Firebase ?

Firestore is a set of **backend cloud computing services** and **application development platforms** provided by Google. It hosts databases, services, authentication, and integration for a variety of applications, including Android, iOS, JavaScript, Java, and C++ (wikipedia.com)

Develop & test your app



Realtime Database
Store and sync app data in milliseconds



Authentication
Authenticate users simply and securely



Cloud Storage
Store and serve files at Google scale



Test Lab for Android
Test your app on devices hosted by Google



Crash Reporting
Find and prioritize bugs; fix them faster



Cloud Functions
Run mobile backend code without managing servers



Hosting
Deliver web app assets with speed and security



Performance Monitoring
Gain insight into your app's performance

Grow & engage your audience



Google Analytics
Get free and unlimited app analytics



Dynamic Links
Drive growth by using deep links with attribution



Invites
Make it easy to share your app and content



AdMob
Maximize revenue with in-app ads



Cloud Messaging
Send targeted messages and notifications



Remote Config
Modify your app without deploying a new version



App Indexing
Drive search traffic to your mobile app



AdWords
Drive installs with targeted ad campaigns

Firestore Service yang akan Digunakan

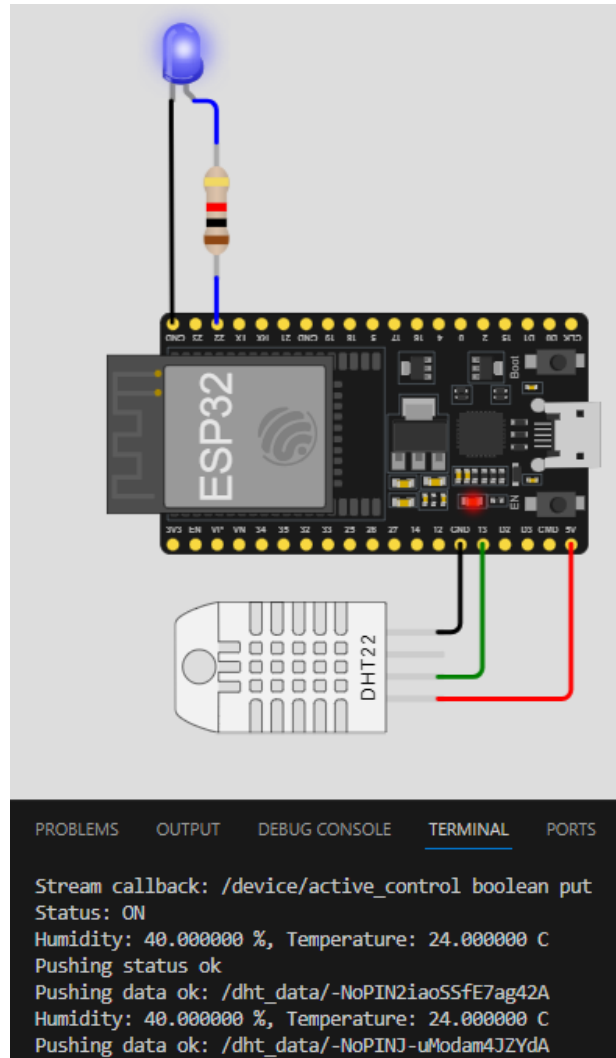


- Aplikasi yang terhubung ke Firebase perlu Authentication
- Ada banyak cara, tapi di sini kita pilih cara paling mudah dan paling sederhana saja



- Ada dua jenis database di Firebase: Realtime Database (RTDB) & Cloud Firestore
- Keduanya mirip, sama-sama real-time & document-based
- Secara umum, Firestore lebih recommended, tapi di sini kita pilih RTDB karena lebih mudah dan lebih sederhana

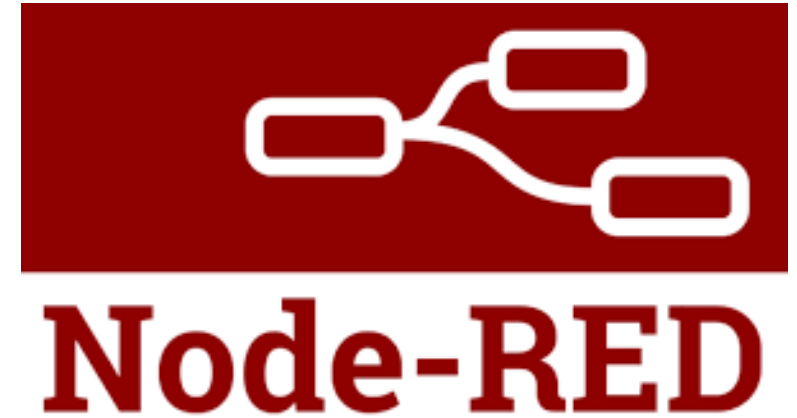
[Let's Try Firebase](#)



Target

```
▼ device
  active_control: true
  active_status: false
▼ dht_data
  ▼ -Nn1TbvXxrHuBJrAN_U4
    humidity: 40
    temperature: 24
    timestamp: 1704858386847
  ▶ -Nn1TciTi9h1q2Gj6KG9
  ▶ -Nn1TdVVKrR0bSU3HR-A
  ▶ -Nn1TfcN0YDtFTu0YqPS
```

Let's Develop in VS Code



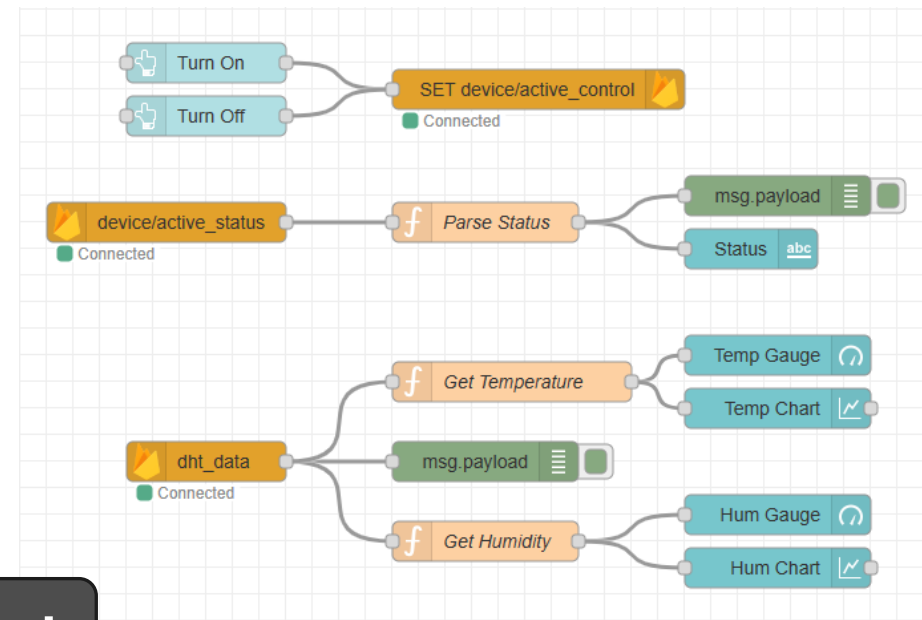
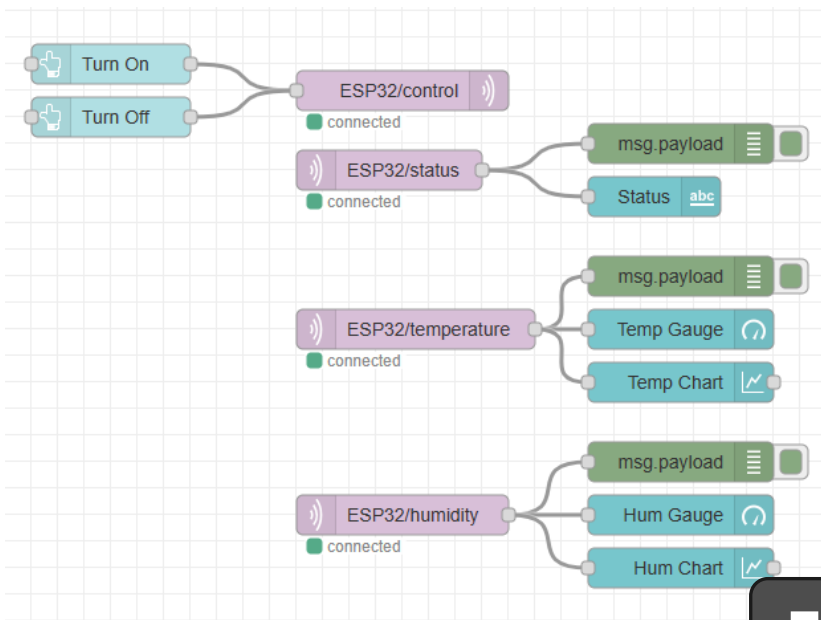
Intro to Node-RED and Implementation with MQTT & Firebase

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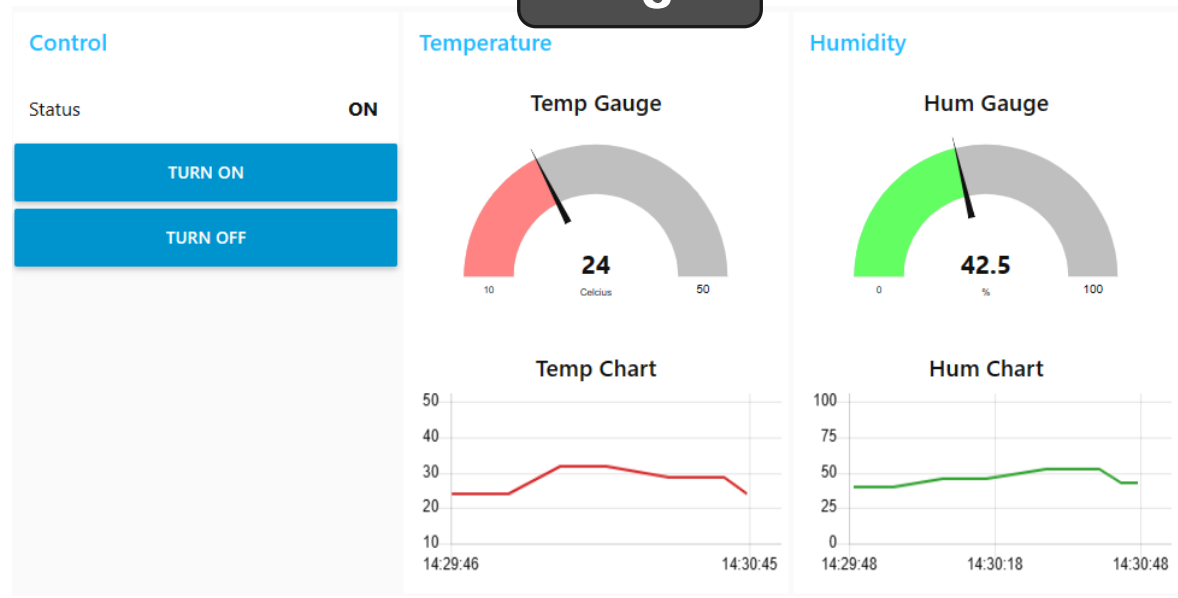
Apa itu Node-RED ?

Node-RED is a **flow-based, low-code** development tool for **visual programming** developed originally by IBM for wiring together devices, APIs and online services as part of the IoT (wikipedia.com)





Target



Let's Develop in Node-RED