

INTRO TO GOOGLE



Firebase



AGENDA

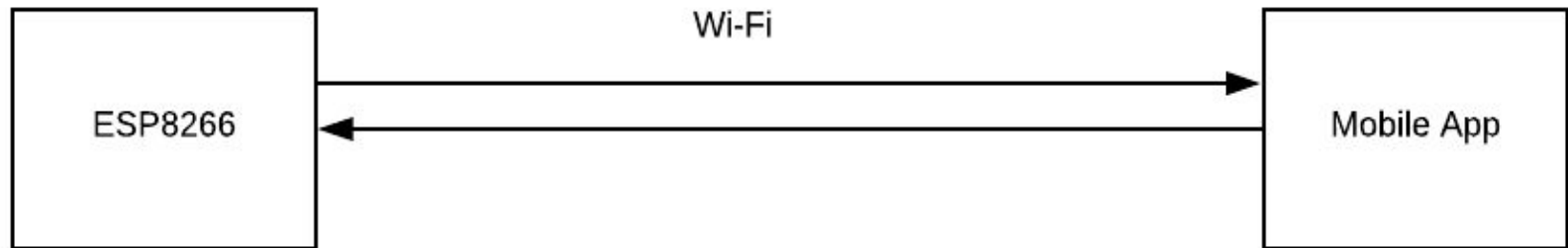
- An example
- Why Firebase (or any cloud service for that matter) ?
- Setting up Firebase RTDB
- FirebaseArduino library
- Three programs
 - Set
 - Push
- Summary

WHY FIREBASE?

- 24x7 data storage
- Storage concerns
- Multiple users

DATA LOSS

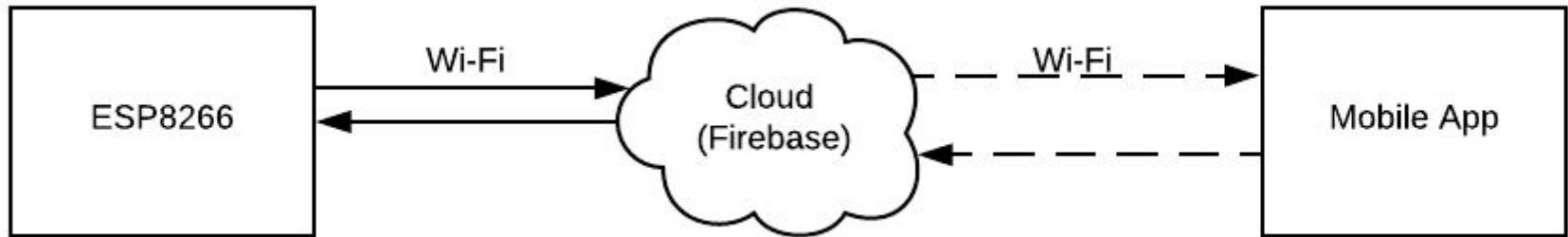
Without Firebase:



One-to-one exchange between ESP8266 and client
Data is lost when the connection is terminated

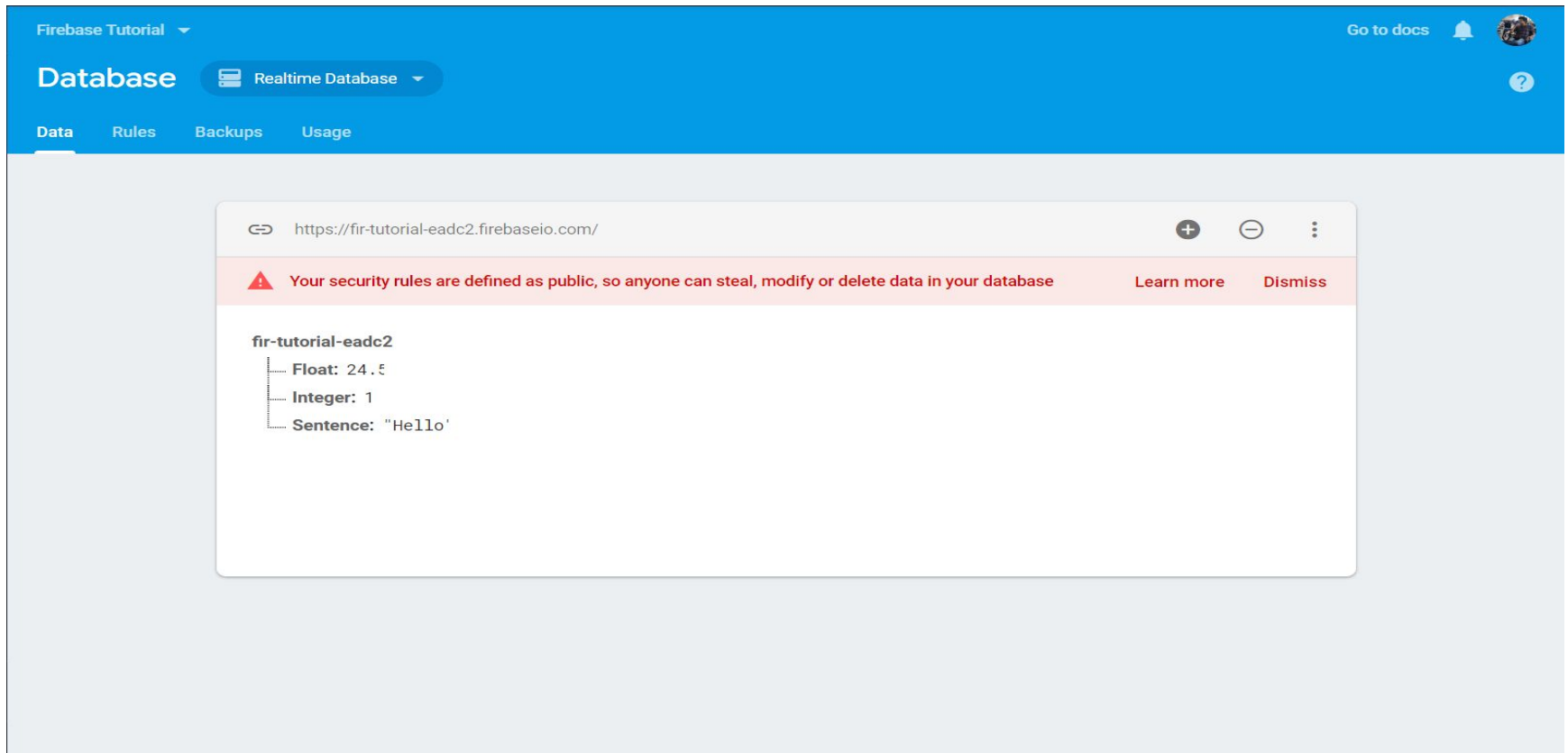
24x7 DATA LOGGING

With Firebase:



One-to-one connection between ESP8266 and Firebase.
Client reads data by accessing the cloud.
Data is always stored in the cloud; no need to maintain connection all the time.

SETTING UP AN RTDB



Firebase console -> Database

Copy the link (without "https://" and trailing slash). This is the FIREBASE_HOST argument.

Example: fir-tutorial-eadc2.firebaseio.com

Firebase

Go to docs

Project settings

Users and permissions

Realtime Database

Backups Usage

Develop

- Authentication
- Database
- Storage
- Hosting
- Functions
- ML Kit

Quality

Crashlytics, Performance, Test Lab

Analytics

- Dashboard
- Events
- Conversions
- Audiences
- Funnel

Spark
Free \$0/month

Upgrade

https://fir-tutorial-eadc2.firebaseio.com/

⚠️ Your security rules are defined as public, so anyone can steal, modify or delete data in your database [Learn more](#) [Dismiss](#)

```
fir-tutorial-eadc2
├── Float: 24.5
├── Integer: 1
└── Sentence: "Hello"
```

https://console.firebase.google.com/u/0/project/fir-tutorial-eadc2/settings/iam

Settings -> User and permissions

The screenshot shows the Firebase console interface. On the left is a dark sidebar with navigation links: Project Overview, Develop (Authentication, Database, Storage, Hosting, Functions, ML Kit), Quality (Crashlytics, Performance, Test Lab), Analytics (Dashboard, Events, Conversions, Audiences, Funnel), and Spark (Free \$0/month, Upgrade). The main content area has a blue header with 'Settings' and tabs for General, Cloud Messaging, Integrations, Service accounts (selected), Data privacy, and Users and permissions. Under 'Service accounts', there are links for 'Manage all service accounts' and 'Database secrets' (selected). The 'Database secrets' section contains a warning message: 'Database secrets are currently deprecated and use a legacy Firebase token generator. Update your source code with the Firebase Admin SDK. Learn more'. Below this is a table with two columns: 'Database' and 'Secret'. The table has one row with the database name 'fir-tutorial-eadc2' and a masked secret '.....'. A 'Show' button is next to the masked secret. An 'Add secret' button is also visible.

Service accounts -> Database secrets -> show

This is the FIREBASE_AUTH argument

GETTING STARTED

Required Library files:

- Install FirebaseArduino library
- Install ArduinoJSON library version 5.13.2

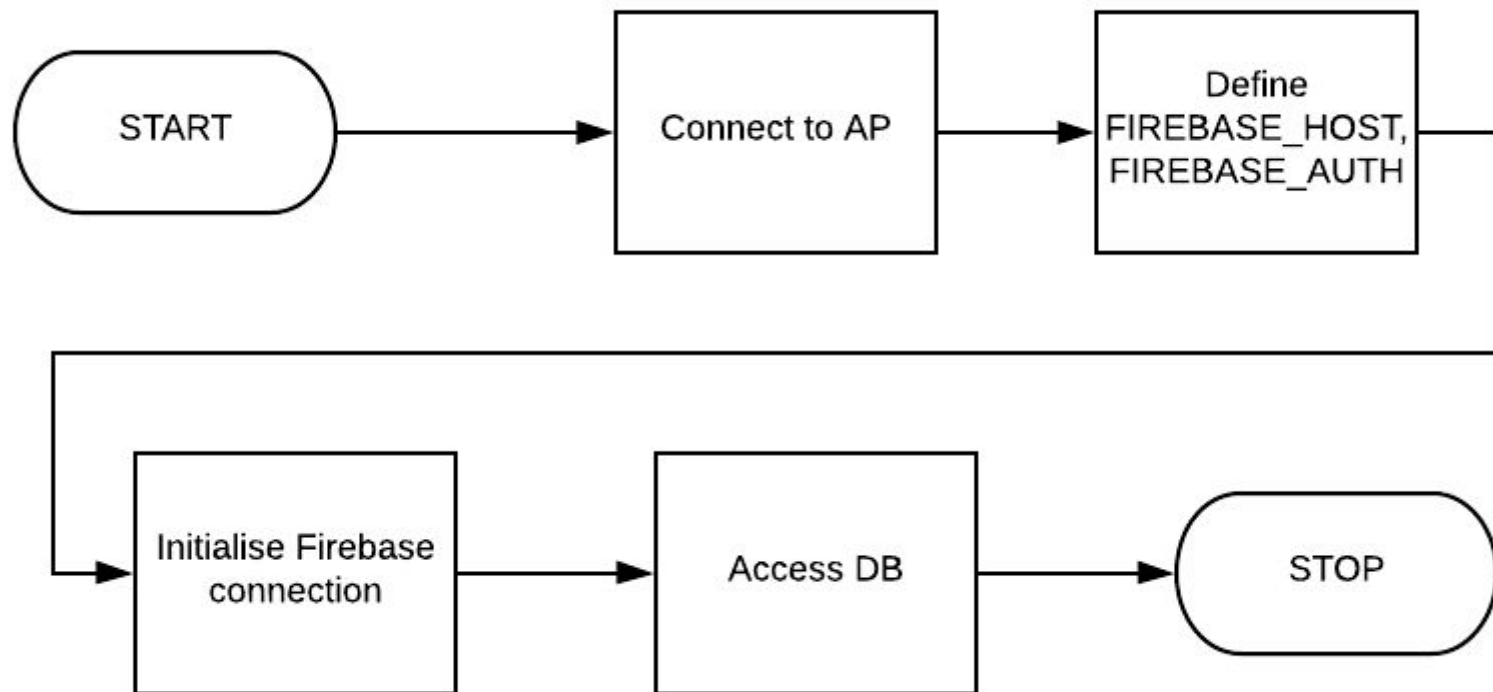
Board select:

Tools -> Board -> NodeMCU 1.0 (ESP-12E)

FirebaseArduino Documentation:

<https://firebase-arduino.readthedocs.io/en/latest/>

FIREBASE CONNECTION: FLOWCHART



SAMPLE CODE

NOTE: Replace <FB_link>, <FB_key> with the link and secret you copied from firebase. Replace <WifiNetwork_name>, <Wifi_pwd> with your WiFi network name and password. Ex: If network name is abcd, the line in the Arduino code should be **#define WIFI_SSID "abcd"**

Verify the results on your Firebase console.

FIREBASE_TUTORIAL_1:

The program reads the "Float" field in the database, increments the value by 1.0 and uploads the data to result to the same "Float" field. ie., the value gets replaced. Only the latest value is stored.

FIERBASE_TUTORIAL_2:

The program appends value to the "Integer" field. The name of the field is generated by firebase and is returned at the end of the function call. This stores all the uploaded data. Name is the parameter we use to access the value.

FIREBASE_TUTORIAL_3:

See for yourself!!

FIREBASE: ADVT

- Real time database - no time restrictions between uploads
- Up to 1GB of data storage
- Up to 10 GB downloads/month
- Well documented - both back end (Arduino) and front end(app, web page)

THANK YOU!!

