

# Mini-Project

**‘Standalone webserver’,  
‘Data visualization’  
using Flask and Grafana**

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# Requirements

## **-Devices:**

**ESP32**

**DHT11**

**RaspberryPi -3B**

## **-Databases:**

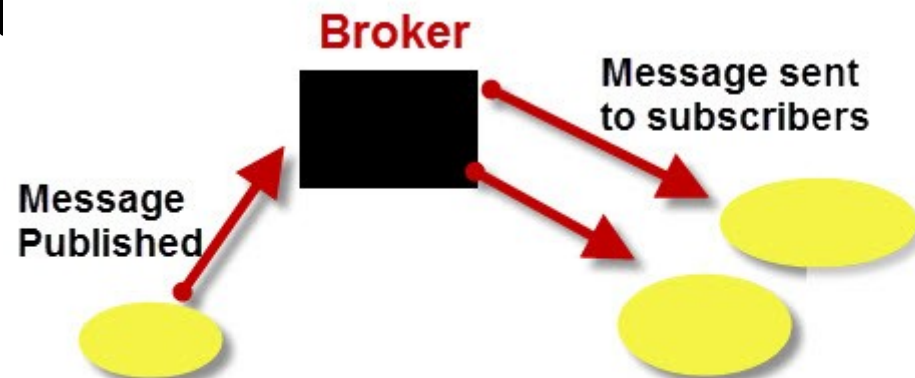
**SQLite**

**MYSQL**

- Data visualization on 'Grafana'**

# MQTT

- Light weight PubSub messaging protocol
- Runs on 1883 / 8883(SLL)
- Low overhead for low network bandwidth application
- Runs on connection-oriented TCP
- Uses 'mosquitto' as a broker



MQTT- Publish Subscribe Model

# SQLite

- Embedded sql database engine
- Serverless – access disk directly
- Cross platform architecture
- Python supports an in-built support for sqlite

# Flask

- A open source micro-framework for python
- Web Server Gateway Interface (WSGI)
  - ‘WSGI is adopted as standard for python web application development’
- Easy configure and code



# SQLite

localhost:6500 - Chromium

localhost:6500

RPi Web Server

## RPi Web Server - ESP32 SQLite Data

ID	Temperature	Humidity	Date	Time	Device
896	25.38	95	2019-06-28	08:51:33	ESP32
895	25.38	95	2019-06-28	08:51:33	ESP32
894	25.27	95	2019-06-28	08:51:23	ESP32
893	25.27	95	2019-06-28	08:51:22	ESP32
892	25.27	95	2019-06-28	08:51:13	ESP32
891	25.27	95	2019-06-28	08:51:12	ESP32
890	25.27	95	2019-06-28	08:49:42	ESP32
889	25.27	95	2019-06-28	08:49:42	ESP32
888	25.27	95	2019-06-28	08:49:33	ESP32
887	25.27	95	2019-06-28	08:49:32	ESP32
886	25.27	95	2019-06-28	08:49:23	ESP32
885	25.27	95	2019-06-28	08:49:22	ESP32
884	25.27	95	2019-06-28	08:49:13	ESP32

File Edit Tabs Help

\* pi@slave: ~ x pi@slave: ~/... x

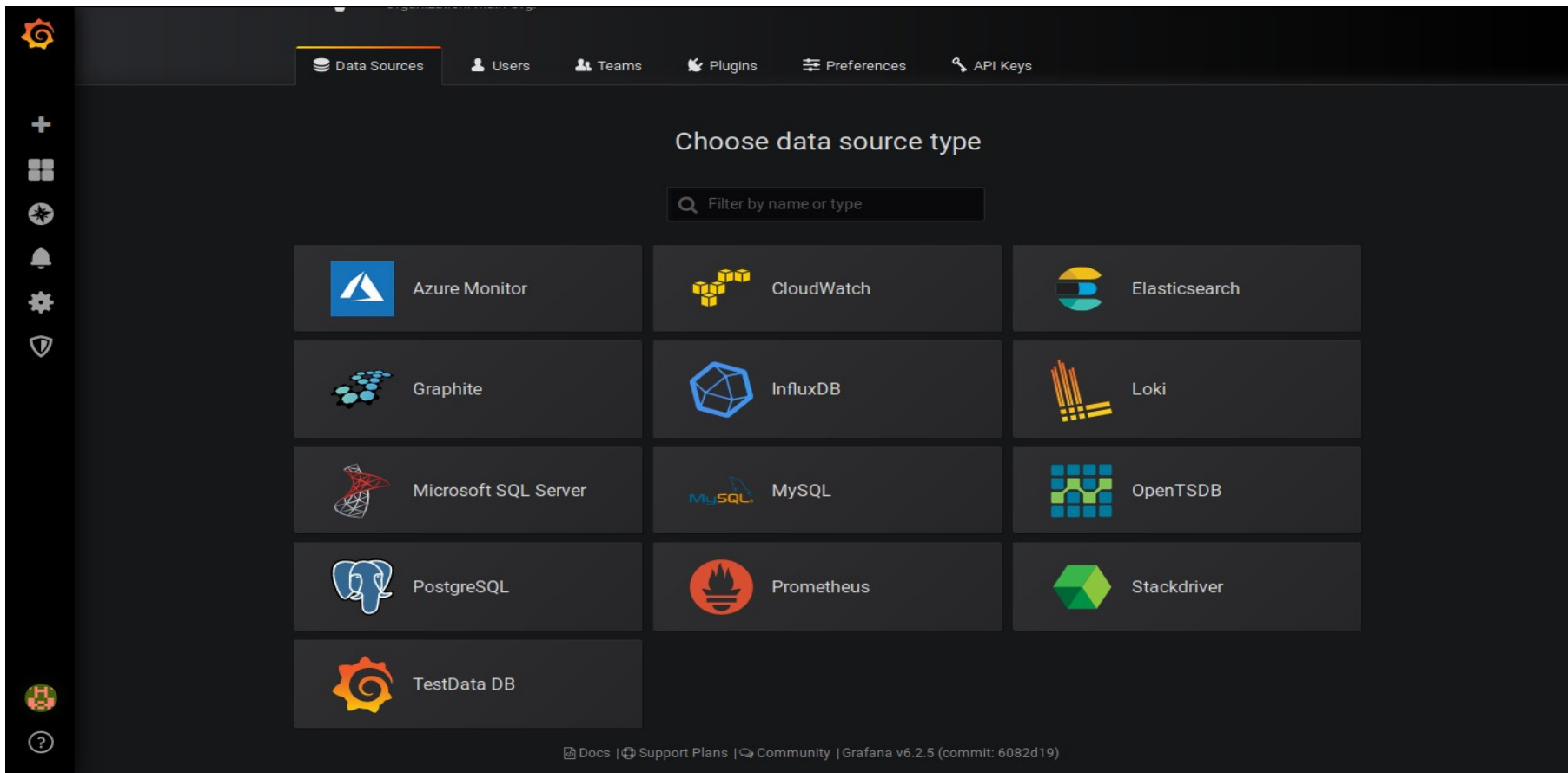
```
sqlite> table
dhtreadings
sqlite> select * from dhtreadings
...>
1|25.37|82|2019-06-24|15:18:30|esp8266
2|25.15|82|2019-06-24|15:18:40|esp8266
3|25.26|82|2019-06-24|15:18:50|esp8266
4|25.37|82|2019-06-24|15:19:00|esp8266
5|25.06|83|2019-06-24|15:19:10|esp8266
6|25.26|82|2019-06-24|15:19:20|esp8266
7|25.39|83|2019-06-24|15:19:30|esp8266
8|25.39|83|2019-06-24|15:19:40|esp8266
9|25.28|83|2019-06-24|15:19:50|esp8266
10|25.28|83|2019-06-24|15:21:30|esp8266
11|25.17|83|2019-06-24|15:21:40|esp8266
12|25.28|83|2019-06-24|15:21:50|esp8266
13|25.22|85|2019-06-24|15:27:34|esp8266
14|25.22|85|2019-06-24|15:27:44|esp8266
15|25.22|85|2019-06-24|15:27:54|esp8266
16|25.33|85|2019-06-24|15:28:04|esp8266
17|25.33|85|2019-06-24|15:29:54|esp8266
18|25.33|85|2019-06-24|15:29:54|esp8266
19|25.33|85|2019-06-24|15:30:04|esp8266
20|25.33|85|2019-06-24|15:30:04|esp8266
21|25.33|85|2019-06-24|15:30:14|esp8266
22|25.33|85|2019-06-24|15:30:14|esp8266
23|25.44|85|2019-06-24|15:30:24|esp8266
24|25.44|85|2019-06-24|15:30:24|esp8266
25|25.03|86|2019-06-24|15:31:34|esp8266
26|25.03|86|2019-06-24|15:31:34|esp8266
27|25.36|86|2019-06-24|15:31:44|esp8266
28|25.36|86|2019-06-24|15:31:44|esp8266
29|25.36|86|2019-06-24|15:31:54|esp8266
30|25.36|86|2019-06-24|15:31:54|esp8266
31|25.36|86|2019-06-24|15:32:04|esp8266
32|25.36|86|2019-06-24|15:32:04|esp8266
33|25.25|86|2019-06-24|15:32:14|esp8266
34|25.25|86|2019-06-24|15:32:14|esp8266
35|25.25|86|2019-06-24|15:32:24|esp8266
36|25.25|86|2019-06-24|15:32:24|esp8266
37|25.47|86|2019-06-24|15:32:34|esp8266
```

# Grafana

- **open source** software for time series analytics
- Advanced and rich metrics dashboard than chronograf
- Better visualization
- **Alert notification** feature
- Runs on port **3000**



# Database support





# MySQL

