Workshop on IoT session 3

MQTT and Cayenne

## Exercise 1:

Install mosquitto on your machine. On Ubuntu Linux this can very easily be accomplished with apt. On Windows it is almost as easy. For details see

<http://www.steves-internet-guide.com/install-mosquitto-broker/>

Try the *mosquitto* communication:

* Start the mosquitto broker
* Start mosquitto\_sub subscribing to the “AFNOG19” topic
* Start mosquitto\_pub publishing some message to the topic “AFNOG19”
* observe the message being seen in mosquitto\_sub

## Exercise 2:

Write you own MQTT client in Python publishing a message to “AFNOG19” every 2 s.

Have a look at the [umqtt.simple class](https://github.com/micropython/micropython-lib/tree/master/umqtt.simple) to see how to accomplish this. Write the program and start it with thonny. You must know the IP address of the machine on which your mosquitto broker is running. Use *ifconfig* to find out.

Subscribe to the “AFNOG19” topic with mosquitto\_sub and observe that the messages are arriving.

Write an MQTT client that subscribes to the “AFNOG19” topic and that prints messages coming in.

Write a program controlling a LED as we did during the lectures.

## Exercise 3:

Register a user on <https://mydevices.com/cayenne/signup>.

Watch the introductory film and have a look at the documentation pages.

Add a device by clicking on “Bring Your Own Thing”. Have a look at your Cayenne credentials.

## Exercise 4:

Write a program connecting to Cayenne. Observe that the dashboard is coming up.

## Exercise 5:

Write a program that sends a dummy voltage value to Cayenne on channel 0. The voltage values should range from 0 to 3300 mV (the voltages on the ESP8266). Wait for 2 s minimum between each value.

Observe the widget coming up on the dashboard.

Fix the widget on the dashboard and change the widget parameters (e.g. the name).

## Exercise 6:

Add a gauge widget with ranges 0 .. 1V, 1V .. 2V, 2V .. 3.3V. Run your program sending the dummy voltages and observe how the dashboard displays them.

## Exercise 7:

Add a dummy measurement on atmospheric pressure to your program. The normal air pressure is around 950 hPa (hecto Pascal).

## Exercises 8:

Create a slider and a push button on your dashboard.