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Challenge 02 – Internet of Things

First, we created a new channel in ThingSpeak with the requested fields (field1, field2, field5) and a new MQTT device that we used to make node-red communicate with the channel. In the channel we added the requested visualizations: a chart for each field and a lamp for each field.

Then we created a new flow in Node-Red with the following nodes:

- Timestamp: an inject manual node, used only to start the process
- /home/user/Downloads/iot-feeds.csv: it is an input file node used to retrieve the csv file from which we read the values. Warning: before executing the Node-Red flow change the path with the actual path where the file is in the user's computer
- Csv: this is a csv node that takes as input the csv file and outputs a message for each row of the file. We specify in the column field of the node all the fields of the files and we filter them later with a function node ("mqtt_creation" to send the MQTT messages and "field5_function" to produce the chart in Node-Red). We specified columns code (for debugging and later filtering), field1, field2 (requested), field3, field4 (necessary otherwise it would have read field3 and field4 from the file and assign them another name, i.e., field5), field5 (requested). We didn't specify field6 and field7 since they are not requested and they don't create problems like field3/field4
- Create_messages: this is a function node to filter only the 100 requested rows of the csv file. This is done by checking the code field.
- Limit 2 msg/m: this is a limiter node used to slow down the rate with which the messages are sent to MQTT channel and to the Node-Red chart
- Field5_function: this is a function node used to filter only the field5 of the message in order to produce the RSSI chart in Node-Red
- Mqtt_creation: this is a function node used to set all the parameters needed to create each mqtt message (topic and payload). Here we used variables field1, field2, field5 to set them in the payload since these are the requested fields.
- Mqtt: mqtt node where we set up userid and password obained from the creation of the MQTT device in ThingSpeak
- Msg.payload: debug node used to see if we set "create_messages" correctly to output only the 100 requested messages (codes from 6081 to 6180)
- RSSI: chart node requested. It produces a chart taking as input field5
- Msg: debug node used to see if we set "mqtt_creation" correctly with all the requested mqtt message fields