ECAM
BRUSSELS ENGINEERING SCHOOL

Winter 2020
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IT301μ From IoT Devices to the Cloud with the IBM Node-RED Tool

Project 2: From hardware sensors to the cloud

This assessment evaluates the following competencies:

- *IT102 – Write and launch a program with the Node-RED tool* *(+1)*
- *WP501 – Define, launch and test an HTTP API server* *(+2)*
- *WP502 – Test an HTTP API server with Postman* *(+2)*

You may also be assessed on the following competencies:

- *IT501 – Debug and test a Node-RED program* *(+1)*
- *IT121 – Define JavaScript functions blocks to transform data* *(+1)*

In this project assessment, you have to write an application that connects to an Arduino, in one way, to retrieve data captured by the Arduino on a hardware sensor regularly. The Arduino has to query the sensor regularly and then push an event message to the Node-RED application with a serial communication. The Node-RED application has then to store the received measure, with the corresponding timestamp, in a global variable. Then, to make the measures available to the cloud, you have to develop an HTTP endpoint `GET/api/measures` that returns all the measures stored so far. To succeed the assessment, you have to:

1. Write an Arduino code to capture data from a hardware sensor and send with a serial communication.
2. Write the Node-RED application that collects and store data from the Arduino and that deploys an HTTP endpoint to make the data available.
3. Build your application in front of your teacher and prepare a short demonstration.
4. Explain to the teacher the structure of your code and answer his/her questions about how your program is working.

To help you test your project, you can use the following simple Python program that queries at regular interval a GET HTTP endpoint: https://github.com/ukonline/uCourse/blob/master/IT301%C2%B5/code/sensormon.py.