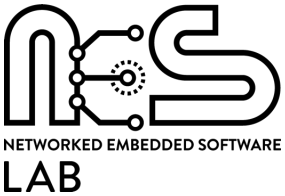
POLITECNICO
MILANO 1863



Node-RED Lab 1/2

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(version 0.1)

SMTP Server

- In some of the exercises, you are required to use the **`node-red-node-email`** node
- Unless you prefer to use your own SMTP server, you can use
  - Server: **`smtps.aruba.it`**
  - Userid: **`nodered@neslab.it`**
  - Password: **`Node22$$`**
  - Port: 465
  - Authentication: password with secure connection

Exercise 1

- Find here an example code to start from: **`bit.ly/3AS5mFG`**
- Change the example flow to use a custom subject and a CC address
  - To do that, check the documentation of the email node **`flows.nodered.org/node/node-red-node-email`**

Exercise 2

- Starts from the solution of Exercise 1…
- Replace the delay node with a function node that swaps “to” and “cc” fields
- Use the function node in the previous point to insert the content of the ”to” field in the email content
  - Example email content:
    Hello World luca.mottola@polimi.it!
- Further modify the function node to send email when the timestamp is even, or dump the message on the debug window otherwise

Exercise 3

- Modify the solution to Exercise 2 so that the last three timestamps appear in the email content
  - Bear in mind: using any form of context requires proper initialization

Exercise 4

- Now install the **`node-red-node-openweathermap`** extension
- Configure the node with the following data:
  - API Key: **`2caa90098525566a5c251ebb92abd882`**
  - City: **`Milan`**
  - Country: **`IT`**
- **Important**: get your API key before the evaluation lab!
- First, inspect the output of the node when triggered
- Next, develop a flow that creates a file log of the Celsius temperature every minute

Exercise 5

- Extend the solution to Exercise 4 to read the entire log from the file every minute
- Note: this may be implemented as a separate flow, or as part of the flow of Exercise 4

Exercise 6

- A UDP **Echo server** is a UDP application that simply bounces back whatever data it gets to the original sender
- Find here a simple Node-RED implementation of an Echo server: **`bit.ly/3GRQ1ZK`**
- Create a flow that sends to the Echo server an object with two properties:
  - A string “The temperature in Milan is”
  - A number with the current temperature as reported by OpenWeahtherMap
- Wait for the reply on port 5555
  - …and verify the data is the same sent earlier!

MQTT Server

- The exercises coming next use an MQTT server bridging from sensor.community
  - Server name: **`mqtt.neslab.it`**
  - Port: 3200
  - No client ID
  - No authentication

Exercise 7

- Using MQTT, subscribe to `/smartcity/milan` to receive data from `sensor.community`
- Use a debug node to show the highest value received so far for
  - Temperature
  - Humidity
  - P2.5 (indicated as `P2`)
  - PM10 (indicated as `P1`)
- Note: assume these measures cannot be lower than 0