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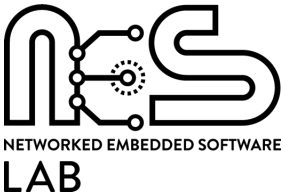


# Node-RED Lab

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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 we just created 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 Exercise 2 seen before so that the last three timestamps appear in the email content
  - Bear in mind: using any form of context requires proper initialization

# Exercise 4

OpenWeather

- Now install the **`node-red-node-openweathermap`** extension
- Configure the node with the following data:
  - API Key: **`2caa90098525566a5c251ebb92abd882`**
  - City: **`Milan`**
  - Country: **`IT`**
- 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

# Building Bots (1/4)

- The exercises coming next use the **`node-red-contrib-chatbot`** extension, which provides a rich set of nodes to build **bots** for Telegram, Facebook Messenger, …
- We use Telegram
  - For configuration, you need to ask **`t.me/BotFather`** to create an API key for your new bot
  - You use the username and API key to configure the nodes

# Building Bots (2/4)

Luca Mottola
/start

BotFather
I can help you create and manage Telegram bots. If you're new to the Bot API, please see the manual.

You can control me by sending these commands:

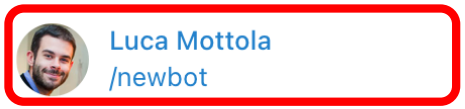
/newbot - create a new bot
/mybots - edit your bots **[beta]**

**Edit Bots**
/setname - change a bot's name
/setdescription - change bot description
/setabouttext - change bot about info
/setuserpic - change bot profile photo
/setcommands - change the list of commands
/deletebot - delete a bot

**Bot Settings**
/token - generate authorization token
/revoke - revoke bot access token
/setinline - toggle inline mode
/setinlinegeo - toggle inline location requests
/setinlinefeedback - change inline feedback settings
/setjoingroups - can your bot be added to groups?
/setprivacy - toggle privacy mode in groups

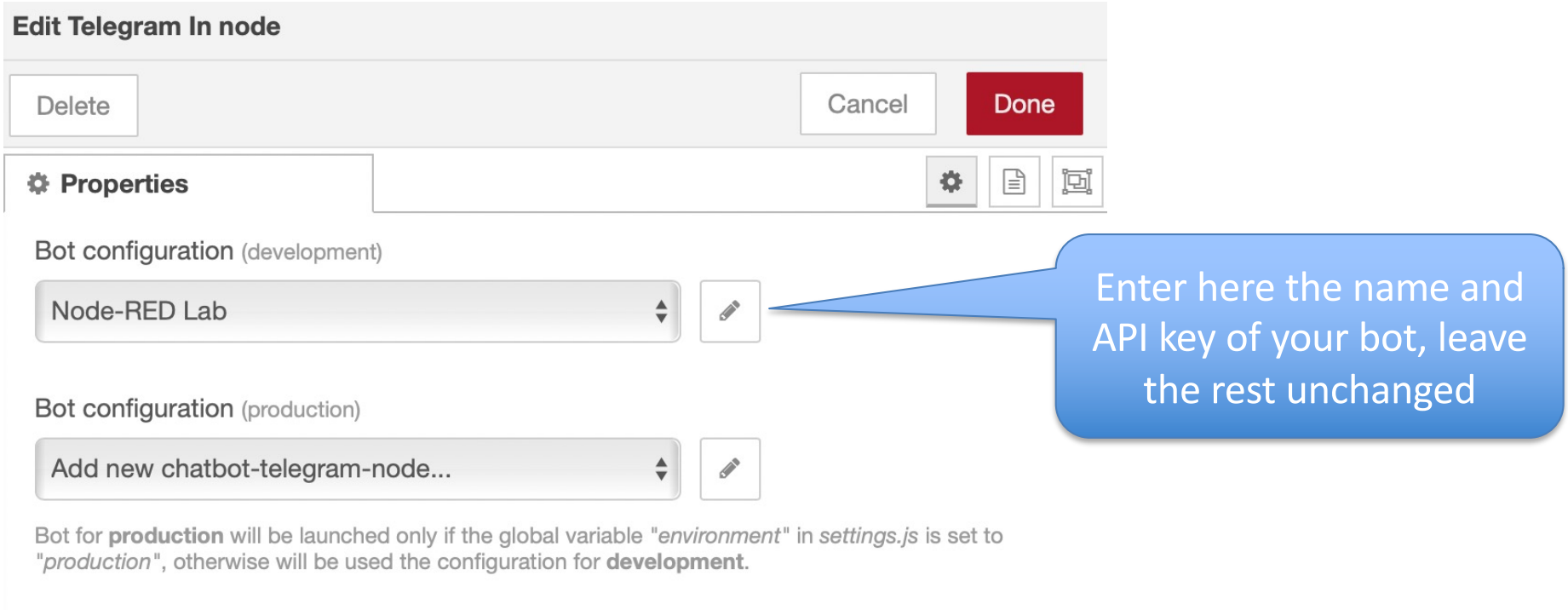
**Games**
/mygames - edit your games **[beta]**
/newgame - create a new game
/listgames - get a list of your games
/editgame - edit a game
/deletegame - delete an existing game

# Building Bots (3/4)



# Building Bots (4/4)

- Dowload the example at **`bit.ly/3ViBg6p`**
- Check the configuration of the Telegram Receiver node



# Exercise 8-1

- Modify the example bot with two more commands that people can use to ask what is the current temperature in Milan or Rome
- Example:
  - User: “What is the temperature in Milan?”
  - Bot: “The current temperature in Milan is 7C”

- Hint: check the documentation of the **Text** node in the extension

# Exercise 8-2

- Now extend the previous solution to
  - Add the ability for the bot to greet back the user
  - Keep a persistent log of all the usernames seen so far
- Example:
  - User: “My name is Luca!”
  - Bot: “Hello Luca!”
  - (while “Luca” is made persistent)