ECOLE NATIONALE SUPÉRIEURE D'INFORMATIQUE

LAB   N°10
IoT System based Platform
Broker MQTT - Node Red

I.   THEORY: (max 01 pages)

a)   Node-Red:

Introduce the basics of Node-RED, including its visual programming interface, how to use nodes to read and process data from IoT sensors, and how to display that data in real-time using a dashboard and compare it to other IoT platforms and examples: **with Openhab for instance.**

b)   MQTT

A theoretical study on the MQTT protocol and its equivalents.

II.   ACTIVITY: (max 04 pages)

> In this activity, details and clarity are required: Do it as a tutorial and integrate all the programs and comments.

A. Node-Red Broker

Given an Arduino-based system that uses GPIO to capture data from at least two sensors, such as Force and Light (LDR) sensors.

a) Use an Arduino-based **client MQTT** and a cloud **Mosquito server (cloud)** to submit and retrieve data.

b) Use a **broker** such as **Mosquito** installed on Raspberry Pi, with multiple topics.

c) Install and use **Node-RED** on Raspberry to display the values (accessible via PC/Mobile or Raspberry Pi).

d) Discuss other configurations if there are.

B. Stand-Alone platforms

Choose a platform among OpenHAB, Home Assistant, or Jeedom, install it on Raspberry Pi, and control the previous system (PC-Mobile).

III.   CONCLUSION