HO CHI MINH CITY, UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEER

Application Based Internet of Things Report - LAB 1

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Content

1 Introduction

In this first LAB, students are proposed to create a simple Thingsboard backend and Dashboard for an IoT application. Students are supposed to follow steps listed in the Implementation section to finish the first Lab.

2 Implementation

2.1 Step 1: Create account and a device

A refferent video is posted in the link bellow:

https://www.youtube.com/watch?v=kWF5ZSkXfE4

Please login to Thingsboard and create a device, named **IoT Project** for instance.

2.2 Step 2: Implement python source code

In this step, please create a github account and upload your source code to github. The link of your source code is required to present in this report.

https://github.com/HungTuong/IoT

The manual video for this step can be found at:

https://www.youtube.com/watch?v=pJKTgCq_J7Y

At this step, two random values simulated for the temperature and humidity are sent to the server every 10 seconds.

2.3 Step 3: Simple Thingsboard dashboard

Design a simple dashboard with 2 labels to display the values of temperature and humidity. The manual for this step can be found at:

https://www.youtube.com/watch?v=8eQOag5Ymfo

2.4 Step 4: Use advanced UI in Thingsboard

Please use a UI in the Analogue Gause and Digital Gause in your dashboard, to present the value of temperature and humidity.

Publish your dashboard and present the link in this report

https://demo.thingsboard.io/dashboard/d9e01140-7806-11ec-9ed9-f9294d38ab44?publicId=0ec5f3b0-6d09-11ec-8159-03103585248e

A manual video is posted at:

https://www.youtube.com/watch?v=LFEllRi-5iU

2.5 Step 5: Add a map to the dashboard

Finally, add a map to your dashboard. In this case, the **longitude** and **latitude** are required in your python source code. At this step, the latitude and longitude can be set to 10.8231 and 106.6297.

A manual video is posted at:

https://www.youtube.com/watch?v=0XMqH8mdWi0

3 Extra point (1 point)

Dynamic update the current longtitude and latitude. Explain your implementation in python source code such as the library which is used, some main python source code to get the value of longtitude and latitude.

Explanation: In order to get the current longitube and latitude. I implemented the **geocoder** library to get the location of the router which I used to access the Internet.

```
1 import geocoder
2
3 cords = geocoder.ipinfo('me')
4 current_latitude = cords.latlng[0]
5 current_longitude = cords.latlng[1]
```

The line *geocoder.ip('me')* will get the information of my IP address on the geolocation. Then I can get the latitude and the longitude by using the *latlng* attribute.

Another additional feature I used is to get the humidity and temperature of my current city according to the IP address.

```
1 API_KEY = "4256b3de394a56a86ee35e43af6f5c2e"
2 city = cords.city
3 data = requests.get(
4     f"https://api.openweathermap.org/data/2.5/weather?q={city}&units=↩
        metric&APPID={API_KEY}"
5 )
6 current_temp = data.json().get('main')['temp']
7 current_humid = data.json().get('main')['humidity']
```

First, I get the currrent city name according to IP address by using the *city* attribute. Then, I send a request to the API of **Openweathermap** with predefined API_KEY and city name and crawl the temp and humid information in returned response. With that information, I will send to **ThingsBoard** and display in the dasboard.