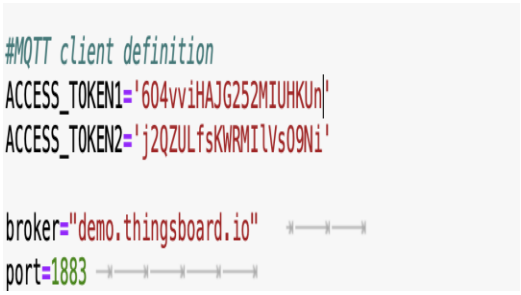
HENIL VEDANT ASSIGNMENT 2: IoT. MSc. Cyber Security 495670888

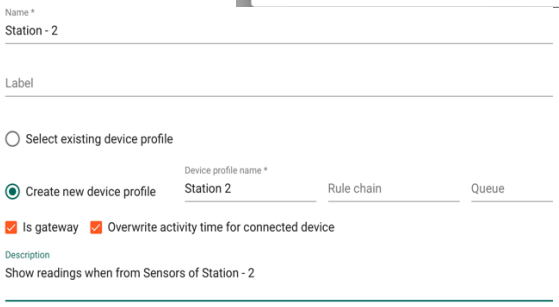
USE CASE: A station (at least one out of two) retrieves values (such as temperature, humidity...) from different sensors, and publish its state by an* MQTT Broker*, hosted by the Cloud Platform (Thingsboard dashboard).

Make account on thingsboard to create stations and the cloud service that shows sensor values from mqtt:

Created time ↓	Name	Device profile	Label
2023-04-12 08:55:59	wind - henil	default	
2023-04-12 08:55:50	rain henil	default	
2023-04-12 08:55:37	co2 henil	default	
2023-04-12 08:55:25	wind henil	default	
2023-04-12 08:55:14	Temperature- Henil	default	Temp

Create 2 station and their unique token and port should be open and configured for you to see dashboard. Match the access token here with the token in code, check for port number and token 2 and broker where your dashboard is going to be hosted are active and public.





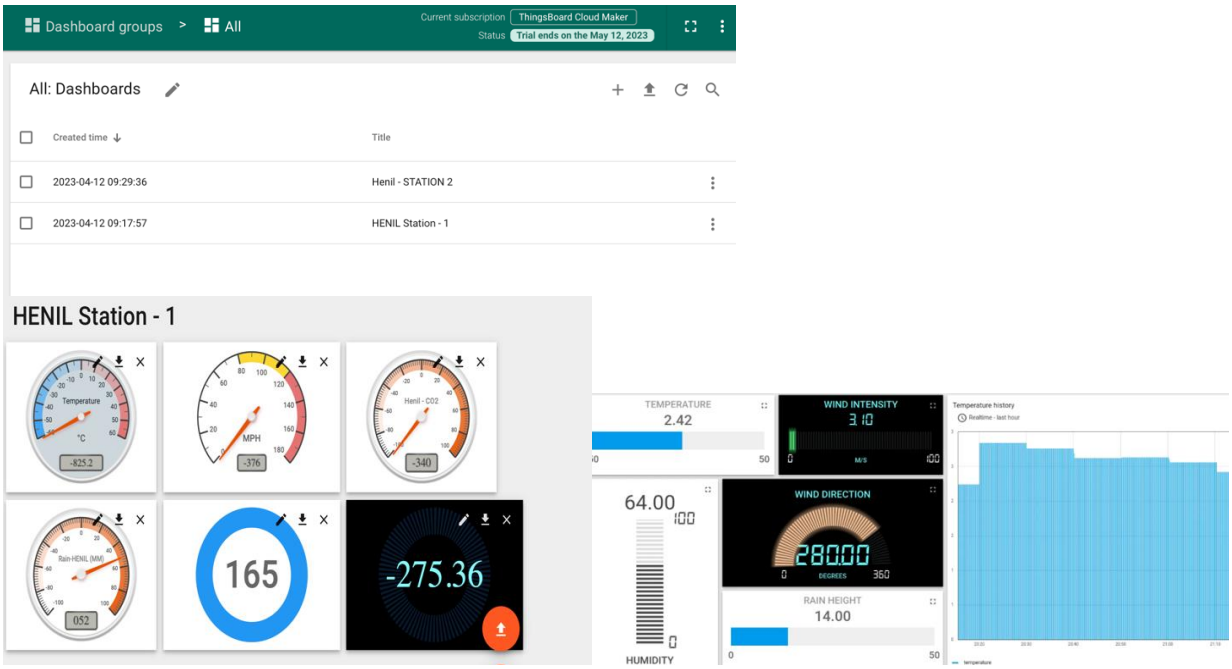
Generate payload and deploy: It is created using python and sent in JSON format, We can start the connection between the client and our broker using host:"demo.thingsboard.io", port:1883 and topic:"v1/devices/me/telemetry".
To complete the connection we need to paste our access token in "username" on line. It is important to have remote connection and only then will payload show active data and readings on dashboard.
Also download necessary libraries to facilitate the connection with cloud service.

```
    pass
def get_temperature():
    return '%.2f'%rnd.uniform(-50,50) + " Celsius"

def get_humidity():
    return '%.2f'%rnd.uniform(0,100) + "%"

def get_wind_direction():
    return str(rnd.randrange(0,360)) + " degrees"

def get_wind_intensity():
    return str(rnd.randrange(0,100)) + " m/s"

def get_rain_height():
    return str(rnd.randrange(0,50)) + " mm/h"

def get_payload():
    payload = '{"Temperature":"'
    payload += get_temperature()
    payload += '", "Humidity":"'
    payload += get_humidity()
    payload += '", "Wind direction":"'
    payload += get_wind_direction()
    payload += '", "Wind intensity":"'
    payload += get_wind_intensity()
    payload += '", "Rain height":"'
    payload += get_rain_height()
    payload += '"}'
    return payload
```

Key	Value
humidity	46%
rainHeight	13 mm/h
temperature	-31°C
windDirection	354 degrees
windIntensity	84 m/s

Websocket API and its authorization is needed for real time changes which can be derived from: X-Authorization token with this bash script: curl -X POST --header 'Content-Type: application/json' --header 'Accept: application/json' -d '{"username":"assignment2hhv@thingsboard.org", "password":"henil"}' 'http://demo.thingsboard.io/api/auth/login.

View on Dashboard from station 1 or station 2:



Henil Station (1) and Henil Station (2) alongside.

Github Link: https://github.com/Henilv/IoT-assignment-2

HENIL V. (MS cybersecurity).