

Project Development Phase

Sprint – IV

Date	14 November 2022
Team id	PNT2022TMID51172
Project name	Signs with smart connectivity for better road safety

Coding to print the random Road signs, Speed limit, Message and temperature :

randomSensordata.py:

```
import wiotp.sdk.device
import time
import random
import ibmiotf.application
import ibmiotf.device
import requests, json

myConfig = {
    #Configuration
    "identity": {
        "orgId": "q536ty",
        "typeId": "Sample_one",
        "deviceId": "4054"
    },
    #API Key
    "auth": {
```

```
    "token": "953719104054"
}
}
```

```
def myCommandCallback(cmd):
```

```
    print("Message received from IBM IoT Platform: %s"%
```

```
cmd.data['command'])
```

```
    m=cmd.data['command']
```

```
client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
```

```
client.connect()
```

```
#OpenWeatherMap Credentials
```

```
BASE_URL="https://api.openweathermap.org/data/2.5/weather?"
```

```
CITY = "Bengaluru, IN"
```

```
URL = BASE_URL + "q=" + CITY + "&units=metric"+"&appid="
+"76d24dec9915b133df9bdef90b7c215a"
```

```
while True:
```

```
    response = requests.get(URL)
```

```
    if response.status_code == 200:
```

```
        data = response.json()
```

```
        main = data['main']
```

```
        temperature = main['temp']
```

```
        humidity = main['humidity']
```

```
pressure = main['pressure']
```

```
report = data['visibility']
```

```
#messge part
```

```
msg=random.randint(0,5)
```

```
if msg==1:
```

```
    message="GO SLOW, SCHOOL ZONE AHEAD"
```

```
elif msg==2:
```

```
    message="NEED HELP, POLICE STATION AHEAD"
```

```
elif msg==3:
```

```
    message="EMERGENCY, HOSPITAL NEARBY"
```

```
elif msg==4:
```

```
    message="DINE IN, RESTAURENT AVAILABLE"
```

```
elif msg==5:
```

```
    message="PETROL BUNK NEARBY"
```

```
else:
```

```
    message=""
```

```
#Speed Limit part
```

```
speed=random.randint(0,150)
```

```
if speed>=100:
```

```
    speedMsg=" Limit Exceeded"
```

```
elif speed>=60 and speed<100:
```

```
    speedMsg="Moderate"
```

```
else:
```

```
speedMsg="Slow"
```

```
#Diversion part
```

```
sign=random.randint(0,5)
```

```
if sign==1:
```

```
    signMsg="Right Diversion"
```

```
elif sign==2:
```

```
    signMsg="Speed Breaker"
```

```
elif sign==3:
```

```
    signMsg="Left Diversion"
```

```
elif sign==4:
```

```
    signmsg="U Turn"
```

```
else:
```

```
    signMsg=""
```

```
#Visibility
```

```
if temperature < 24:
```

```
    visibility="Fog Ahead, Drive Slow"
```

```
else:
```

```
    visibility="Clear Weather"
```

```
myData={'Temperature':temperature, 'Message':message, 'Sign':signMsg, 'Speed':speedMsg,  
'Visibility':visibility}
```

```
client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0,  
onPublish=None) #PUBLISHING TO IOT WATSON
```

```
print("Published data Successfully: ", myData)
```

```
client.commandCallback = myCommandCallback
```

```
time.sleep(5)
```

```
client.disconnect()
```

Python simulation:

```
randomsensordata.py - C:/Users/Sri/AppData/Local/Programs/Python/Python39/randomsensordata.py (3.9.8)
File Edit Format Run Options Window Help

import wiotp.sdk.device
import time
import random
import ibmiotf.application
import ibmiotf.device
import requests, json

myConfig = {
    #Configuration
    "identity": {
        "orgId": "q536ty",
        "typeId": "Sample_one",
        "deviceId": "4954"
    },
    #API Key
    "auth": {
        "token": "953719104054"
    }
}

def myCommandCallback(cmd):
    print("Message received from IBM IoT Platform: %s"%
    cmd.data['command'])
    m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

#OpenWeatherMap Credentials
BASE_URL = "https://api.openweathermap.org/data/2.5/weather?"
CITY = "Bengaluru, IN"
URL = BASE_URL + "q=" + CITY + "&units=metric"&"&appid=" + "76d24dec9915b133df9bdef90b7c215a"

while True:
    response = requests.get(URL)
    if response.status_code == 200:
        data = response.json()
        main = data['main']
        temperature = main['temp']
        humidity = main['humidity']
        pressure = main['pressure']
        ...

Ln: 16 Col: 0
```

Import wiotp-sdk & ibmiotf :

```
C:\Windows\System32\cmd.exe
(c) Microsoft Corporation. All rights reserved.

C:\Users\Sri\AppData\Local\Programs\Python\Python39\Scripts>pip install wiotp-sdk
Requirement already satisfied: wiotp-sdk in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (0.11.0)
Requirement already satisfied: iso8601>=0.1.12 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from wiotp-sdk) (1.1.0)
Requirement already satisfied: pytz>=2018.9 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from wiotp-sdk) (2022.6)
Requirement already satisfied: pyyaml>=3.13 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from wiotp-sdk) (6.0)
Requirement already satisfied: paho-mqtt>=1.5.0 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from wiotp-sdk) (1.6.1)
Requirement already satisfied: requests>=2.21.0 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from wiotp-sdk) (2.28.1)
Requirement already satisfied: requests-toolbelt>=0.8.0 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from wiotp-sdk) (0.10.1)
Requirement already satisfied: charset-normalizer<3,>=2 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.21.0->wiotp-sdk) (2.1.1)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.21.0->wiotp-sdk) (2022.9.24)
Requirement already satisfied: idna<4,>=2.5 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.21.0->wiotp-sdk) (3.4)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.21.0->wiotp-sdk) (1.26.12)
WARNING: You are using pip version 21.2.4; however, version 22.3.1 is available.
You should consider upgrading via the 'C:\Users\Sri\AppData\Local\Programs\Python\Python39\python.exe -m pip install --upgrade pip' command.

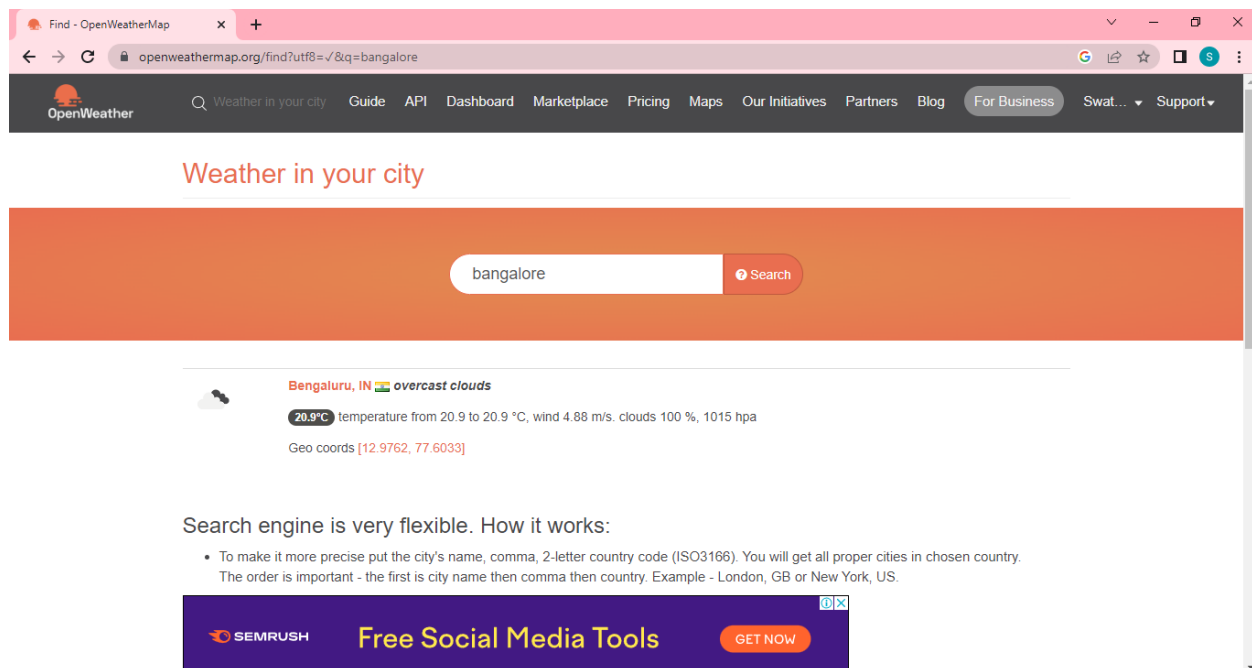
C:\Users\Sri\AppData\Local\Programs\Python\Python39\Scripts>
```

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19042.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Sri\AppData\Local\Programs\Python\Python39\Scripts>pip install ibmiotf
Collecting ibmiotf
  Downloading ibmiotf-0.4.0.tar.gz (71 kB)
    |#####| 71 kB 13 kB/s
Requirement already satisfied: iso8601>=0.1.12 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from ibmiotf) (1.1.0)
Requirement already satisfied: pytz>=2017.3 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from ibmiotf) (2022.6)
Requirement already satisfied: paho-mqtt>=1.3.1 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from ibmiotf) (1.6.1)
Requirement already satisfied: requests>=2.18.4 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from ibmiotf) (2.28.1)
Requirement already satisfied: requests_toolbelt>=0.8.0 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from ibmiotf) (0.10.1)
Requirement already satisfied: idna<4,>=2.5 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.18.4->ibmiotf) (3.4)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.18.4->ibmiotf) (2022.9.24)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.18.4->ibmiotf) (1.26.12)
Requirement already satisfied: charset-normalizer<3,>=2 in c:\users\sri\appdata\local\programs\python\python39\lib\site-packages (from requests>=2.18.4->ibmiotf) (2.1.1)
Using legacy 'setup.py install' for ibmiotf, since package 'wheel' is not installed.
Installing collected packages: ibmiotf
  Running setup.py install for ibmiotf ... done
Successfully installed ibmiotf-0.4.0
WARNING: You are using pip version 21.2.4; however, version 22.3.1 is available.
You should consider upgrading via the 'C:\Users\Sri\AppData\Local\Programs\Python\Python39\python.exe -m pip install --upgrade pip' command.

C:\Users\Sri\AppData\Local\Programs\Python\Python39\Scripts>
```

OpenWeatherMap - (Ex., Bengaluru, IN) :



The screenshot shows the OpenWeatherMap website interface. At the top, there's a navigation bar with the OpenWeather logo and various links like 'Weather in your city', 'Guide', 'API', 'Dashboard', 'Marketplace', 'Pricing', 'Maps', 'Our Initiatives', 'Partners', 'Blog', 'For Business', 'Swat...', and 'Support'. Below the navigation bar, the main heading 'Weather in your city' is displayed. A search bar with the text 'bangalore' and a 'Search' button is prominent. The search results show 'Bengaluru, IN' with a weather icon of overcast clouds. The current temperature is 20.9°C, and the forecast indicates a temperature range from 20.9 to 20.9 °C, wind speed of 4.88 m/s, 100% clouds, and a pressure of 1015 hpa. The geo-coordinates are listed as [12.9762, 77.6033]. Below the weather information, there's a section titled 'Search engine is very flexible. How it works:' with a bullet point explaining that users can provide a city name, a comma, and a 2-letter country code (ISO3166) to get more precise results. An example is given: 'London, GB' or 'New York, US'. At the bottom, there's a SEMRUSH advertisement for 'Free Social Media Tools' with a 'GET NOW' button.

```
https://api.openweathermap.org/ x Resource list - IBM Cloud x IBM Watson IoT Platform x Find - OpenWeatherMap x +
api.openweathermap.org/data/2.5/weather?q=Bengaluru,%20IN&appid=76d24dec9915b133df9bdef90b7c215a
{"coord":{"lon":77.6033,"lat":12.9762},"weather":[{"id":804,"main":"Clouds","description":"overcast clouds","icon":"04n"}],"base":"stations","main":{"temp":29.00,"feels_like":29.21,"temp_min":29.05,"temp_max":29.08,"pressure":1014,"humidity":99,"sea_level":1014,"grnd_level":913},"visibility":10000,"wind":{"speed":3.03,"deg":72,"gust":5.19},"clouds":{"all":100},"dt":1668522483,"sys":{"type":2,"id":2036502,"country":"IN","sunrise":1668473293,"sunset":1668514814},"timezone":19800,"id":1277333,"name":"Bengaluru","cod":200}
```

Python IDLE Output :

```
"IDLE Shell 3.9.8"
File Edit Shell Debug Options Window Help
Published data Successfully: ('Temperature': 24.93, 'Message': 'EMERGENCY, HOSPITAL NEARBY', 'Sign': 'Left Diversion', 'Speed': ' Limit Exceeded', 'Visibility': 'Clear Weather')
```