

Project Development Phase Sprint IV

Date	18 November 2022
Team ID	PNT2022TMID38378
Project Name	Project - Signs with smart connectivity for better road safety

Code for printing the random temperature, Road signs, Speed limit, and Message :

(RandomValues.py)

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

myConfig = {
    #Configuration
    "identity": {
        "orgId": "fvh76j",
        "typeId": "NodeMCU",
        "deviceId": "621319106312"
    },
    #API Key
    "auth": {
        "token": "9876543210"
    }
}

#Receiving callbacks from IBM IOT platformdef
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 =
"Salem, IN"

URL = BASE_URL + "q=" + CITY + "&units=metric"+"&appid=" + "f58e4720c739a54c439aba9b05176839"

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, RESTAURANT 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"elif

temperature < 20:

visibility="Bad Weather"else:

visibility="Clear Weather"

else:

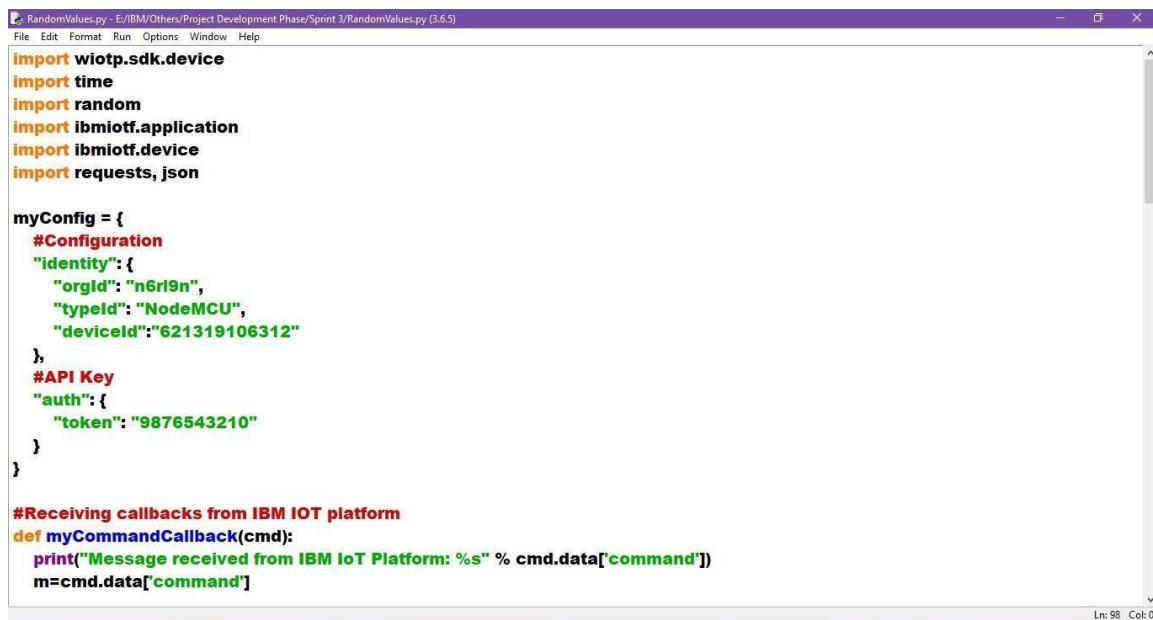
print("Error in the HTTP request")

```

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)
print("-----")
-----")
client.commandCallback = myCommandCallback
time.sleep(5)
client.disconnect()

```

Python Simulation :



```

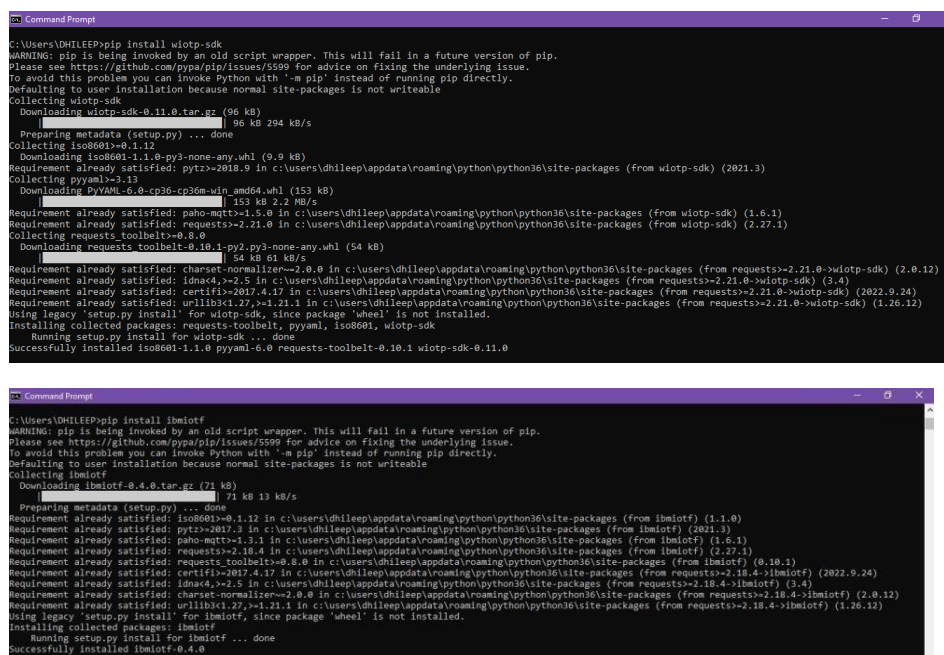
import wiotp.sdk.device
import time
import random
import ibmiotf.application
import ibmiotf.device
import requests, json

myConfig = {
    #Configuration
    "identity": {
        "orgId": "n6r19n",
        "typeId": "NodeMCU",
        "deviceId": "621319106312"
    },
    #API Key
    "auth": {
        "token": "9876543210"
    }
}

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

```

Import wiotp-sdk & ibmiotf :



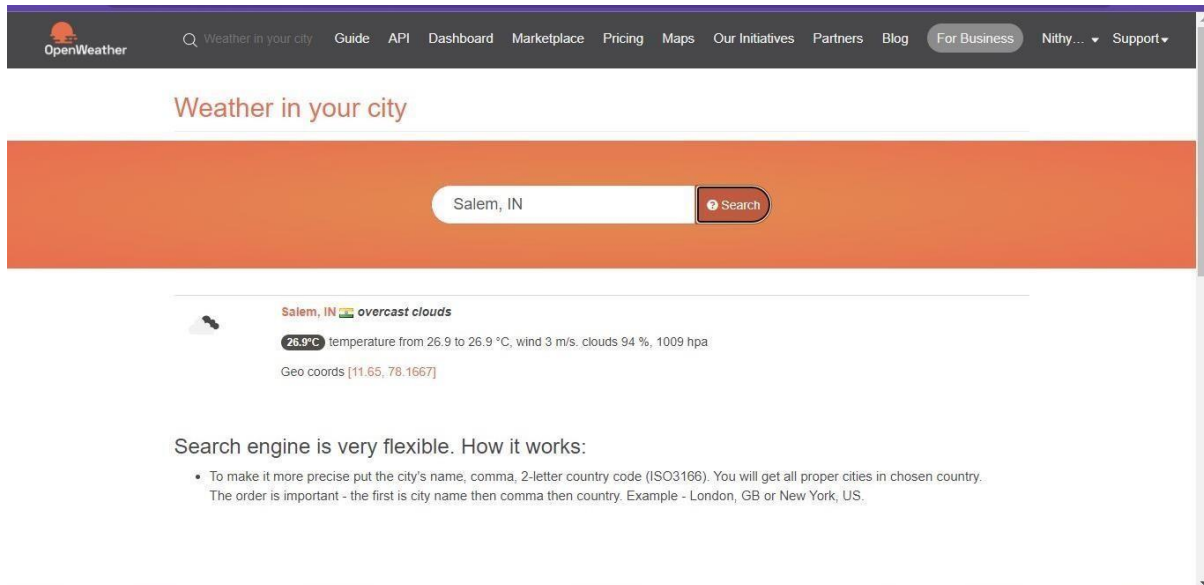
```

C:\Users\DHILEEP>pip install wiotp-sdk
WARNING: pip is being invoked by an old script wrapper. This will fail in a future version of pip.
Please see https://github.com/pypa/pip/issues/5599 for advice on fixing the underlying issue.
To avoid this problem you can invoke Python with '-m pip' instead of running pip directly.
Defaulting to user installation because normal site-packages is not writeable
Collecting wiotp-sdk
  Downloading wiotp-sdk-0.11.0.tar.gz (96 kB)
    Preparing metadata (setup.py) ... done
Collecting iso8601>=1.1.0
  Downloading iso8601-1.1.0-py3-none-any.whl (9.9 kB)
Requirement already satisfied: pytz>=2018.9 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from wiotp-sdk) (2021.3)
Collecting pyyaml>=3.13
  Downloading PyYAML-6.0-cp36-cp36m-win_amd64.whl (153 kB)
Requirement already satisfied: paho-mqtt>=1.5.0 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from wiotp-sdk) (1.6.1)
Requirement already satisfied: requests>=2.21.0 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from wiotp-sdk) (2.27.1)
Collecting requests-toolbelt>=0.8.0
  Downloading requests-toolbelt-0.10.1-py2.py3-none-any.whl (54 kB)
Requirement already satisfied: charset-normalizer<=2.0.0 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.21.0->wiotp-sdk) (2.0.12)
Requirement already satisfied: idna<=2.5 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.21.0->wiotp-sdk) (3.4)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.21.0->wiotp-sdk) (2022.9.24)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.21.0->wiotp-sdk) (1.26.12)
Using legacy 'setup.py install' for wiotp-sdk, since package 'wheel' is not installed.
Installing collected packages: requests-toolbelt, pyyaml, iso8601, wiotp-sdk
Running setup.py install for wiotp-sdk ... done
Successfully installed iso8601-1.1.0 pyyaml-6.0 requests-toolbelt-0.10.1 wiotp-sdk-0.11.0

C:\Users\DHILEEP>pip install ibmiotf
WARNING: pip is being invoked by an old script wrapper. This will fail in a future version of pip.
Please see https://github.com/pypa/pip/issues/5599 for advice on fixing the underlying issue.
To avoid this problem you can invoke Python with '-m pip' instead of running pip directly.
Defaulting to user installation because normal site-packages is not writeable
Collecting ibmiotf
  Downloading ibmiotf-0.4.0.tar.gz (71 kB)
    Preparing metadata (setup.py) ... done
Requirement already satisfied: iso8601>=1.1.2 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from ibmiotf) (1.1.0)
Requirement already satisfied: pytz>=2017.3 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from ibmiotf) (2021.3)
Requirement already satisfied: paho-mqtt>=1.3.1 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from ibmiotf) (1.6.1)
Requirement already satisfied: requests>=2.18.4 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from ibmiotf) (2.27.1)
Requirement already satisfied: requests-toolbelt>=0.8.0 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from ibmiotf) (0.10.1)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.18.4->ibmiotf) (2022.9.24)
Requirement already satisfied: idna<=2.5 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.18.4->ibmiotf) (3.4)
Requirement already satisfied: charset-normalizer<=2.0.0 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.18.4->ibmiotf) (2.0.12)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\dhileep\appdata\roaming\python\python36\site-packages (from requests>=2.18.4->ibmiotf) (1.26.12)
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

```

OpenWeatherMap - (Ex., Salem, IN) :



The screenshot shows the OpenWeatherMap website interface. At the top, there is a navigation bar with links: OpenWeather, Weather in your city, Guide, API, Dashboard, Marketplace, Pricing, Maps, Our Initiatives, Partners, Blog, For Business, Nithy..., and Support. Below the navigation bar, the main heading is "Weather in your city". A search bar contains the text "Salem, IN" and a "Search" button. Below the search bar, the weather data for Salem, IN is displayed: "Salem, IN overcast clouds", "26.9°C temperature from 26.9 to 26.9 °C, wind 3 m/s, clouds 94 %, 1009 hpa", and "Geo coords [11.65, 78.1667]". Below the weather data, there is a section titled "Search engine is very flexible. How it works:" with a bullet point: "To make it more precise put the city's name, comma, 2-letter country code (ISO3166). You will get all proper cities in chosen country. The order is important - the first is city name then comma then country. Example - London, GB or New York, US."

Python IDLE Output :



```
Python 3.6.5 Shell
File Edit Shell Debug Options Window Help

Published data Successfully: {'Temperature': 26.03, 'Message': 'EMERGENCY, HOSPITAL NEARBY', 'Sign': 'Speed Breaker', 'Speed': 'Limit Exceeded', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': 'GO SLOW, SCHOOL / COLLEGE ZONE AHEAD', 'Sign': 'Right Division', 'Speed': 'Moderate', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': 'PETROL BUNK NEARBY', 'Sign': 'Speed Breaker', 'Speed': 'Limit Exceeded', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': 'EMERGENCY, HOSPITAL NEARBY', 'Sign': 'Speed Breaker', 'Speed': 'Slow', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': '', 'Sign': '', 'Speed': 'Limit Exceeded', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': 'EMERGENCY, HOSPITAL NEARBY', 'Sign': '', 'Speed': 'Moderate', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': 'EMERGENCY, HOSPITAL NEARBY', 'Sign': '', 'Speed': 'Slow', 'Visibility': 'Clear Weather'}

Published data Successfully: {'Temperature': 26.03, 'Message': 'NEED HELP, POLICE STATION AHEAD', 'Sign': 'Left Division', 'Speed': 'Moderate', 'Visibility': 'Clear Weather'}

Ln: 24 Col: 0
```