

Project Development Phase Sprint IV

Date	14 November 2022
Team ID	PNT2022TMID25683
Project Name	Project - Signs with smart connectivity for Better road safety

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

(RandomValues.py)

```
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']
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, 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"
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 :

```
RandomValues.py - E:\IBM\Others\Project Development Phase\Sprint 3\RandomValues.py (3.6.5)
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": "n6rf9n",
        "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']

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```

```
project.py - C:\Users\Madhu Sundaran Nair\OneDrive\Desktop\project\py (3.7.9)
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": "J3pJnk",
        "typeId": "Sign_Board",
        "deviceId": "Board_1"
    },
    #API Key
    "auth": {
        "token": "1234567890"
    }
}

#Receiving callbacks from IBM IOT platform
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 = "Chennai"
URL = BASE_URL + "q=" + CITY + "&units=metric"&"&appid=" + "01df65417ab3968e3fc2a38c4aee27bb"

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']

    #message part
    temperature=random.randint(0,100)
    msg=random.randint(0,5)
    if msg==1:
        message="SLOW DOWN, SCHOOL IS NEAR"
    elif msg==2:
        message="NEED HELP, POLICE STATION AHEAD"
    elif msg==3:
        message="EMERGENCY, HOSPITAL NEARBY"
    else:
        message="DINE IN, RESTAURANT AVAILABLE"

Python 3.7.9 Shell
File Edit Shell Debug Options Window Help

>>>
===== RESTART: C:\Users\Madhu Sundaran Nair\OneDrive\Desktop\project\py =====
2022-11-14 19:07:23.504 wiotp.sdk.device.client.DeviceClient INFO Connecte
d successfully: d39pJnk:Sign_Board:Board_1
Published data Successfully: %s ('Temperature': 77, 'Message': 'SLOW DOWN, SCHOO
L IS NEAR', 'Sign': 'U Turn', 'Speed': 'Slow', 'Visibility': 'Clear Weather')
Published data Successfully: %s ('Temperature': 47, 'Message': 'DINE IN, RESTAUR
ANT AVAILABLE', 'Sign': 'Right Diversion', 'Speed': 'Slow', 'Visibility': 'Clear
Weather')
Published data Successfully: %s ('Temperature': 0, 'Message': 'NEED HELP, POLICE
STATION AHEAD', 'Sign': 'Left Diversion', 'Speed': 'Moderate', 'Visibility': 'Fo
g Ahead, Drive Slow')
Published data Successfully: %s ('Temperature': 84, 'Message': 'NEED HELP, POLIC
E STATION AHEAD', 'Sign': 'Right Diversion', 'Speed': 'Limit Exceeded', 'Visibil
ity': 'Clear Weather')
Published data Successfully: %s ('Temperature': 14, 'Message': 'DINE IN, RESTAUR
ANT AVAILABLE', 'Sign': 'U Turn', 'Speed': 'Limit Exceeded', 'Visibility': 'Fog
Ahead, Drive Slow')
Published data Successfully: %s ('Temperature': 100, 'Message': 'EMERGENCY, HOSPI
TAL NEARBY', 'Sign': 'U Turn', 'Speed': 'Moderate', 'Visibility': 'Clear Weathe
r')
Published data Successfully: %s ('Temperature': 55, 'Message': 'NEED HELP, POLIC
E STATION AHEAD', 'Sign': 'Right Diversion', 'Speed': 'Slow', 'Visibility': 'Clea
r Weather')
Published data Successfully: %s ('Temperature': 66, 'Message': 'DINE IN, RESTAUR
ANT AVAILABLE', 'Sign': 'U Turn', 'Speed': 'Moderate', 'Visibility': 'Clear Weat
her')
Published data Successfully: %s ('Temperature': 25, 'Message': 'DINE IN, RESTAUR
ANT AVAILABLE', 'Sign': 'Right Diversion', 'Speed': 'Limit Exceeded', 'Visibili
ty': 'Clear Weather')
Published data Successfully: %s ('Temperature': 2, 'Message': 'DINE IN, RESTAUR
ANT AVAILABLE', 'Sign': 'Left Diversion', 'Speed': 'Slow', 'Visibility': 'Fog Ahe
ad, Drive Slow')
Published data Successfully: %s ('Temperature': 93, 'Message': 'EMERGENCY, HOSPI
TAL NEARBY', 'Sign': 'Left Diversion', 'Speed': 'Moderate', 'Visibility': 'Clear
Weather')
Published data Successfully: %s ('Temperature': 62, 'Message': 'EMERGENCY, HOSPI
TAL NEARBY', 'Sign': 'Left Diversion', 'Speed': 'Slow', 'Visibility': 'Clear Wea
ther')

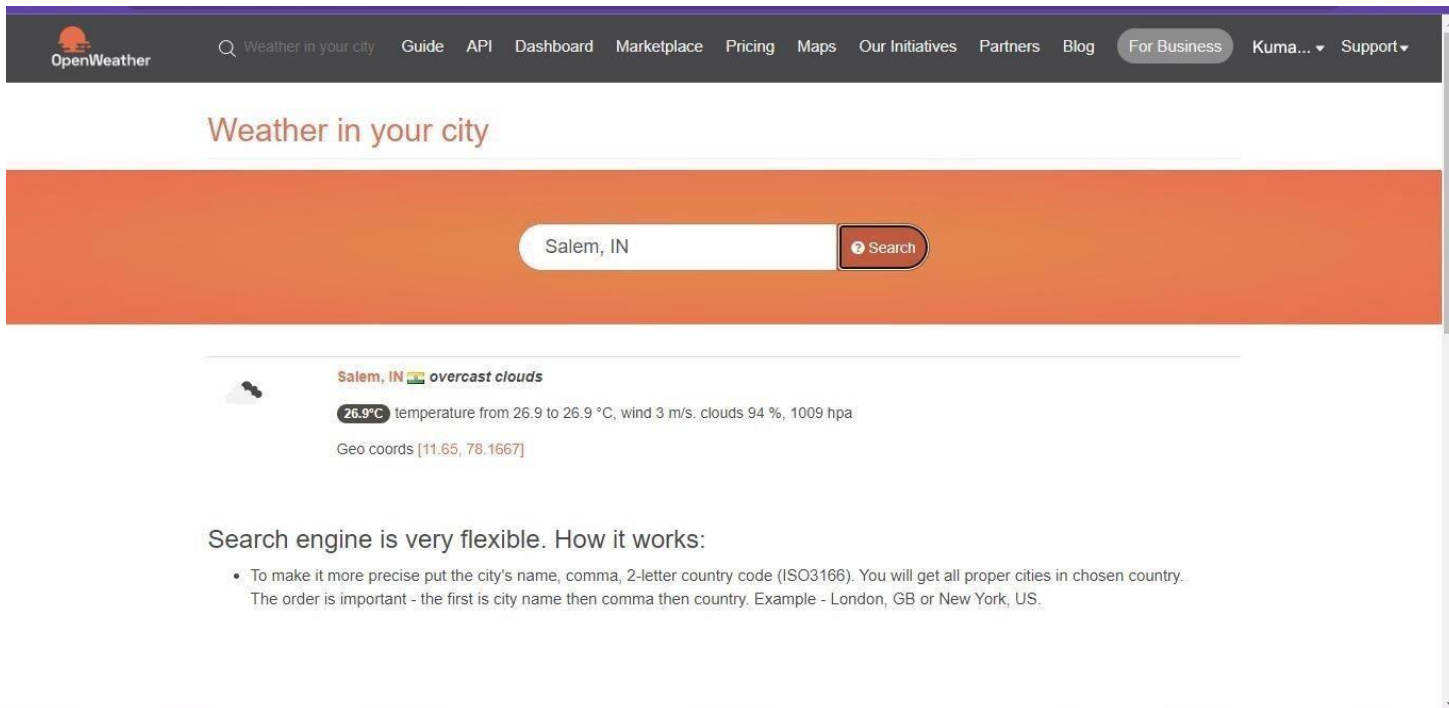
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```

Import wiotp-sdk & ibmiotf :

```
Command Prompt
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 'python -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)
    | 96 kB 294 kB/s
  Preparing metadata (setup.py) ... done
Collecting iso8601>=1.1.12
  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)
    | 153 kB 2.2 MB/s
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)
    | 54 kB 61 kB/s
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<4,>=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
```

```
Command Prompt
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 'python -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)
    | 71 kB 13 kB/s
  Preparing metadata (setup.py) ... done
Requirement already satisfied: iso8601<=0.1.12 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<4,>=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 the OpenWeather logo and various links: Weather in your city, Guide, API, Dashboard, Marketplace, Pricing, Maps, Our Initiatives, Partners, Blog, For Business, Kuma..., and Support. Below the navigation bar, the main heading "Weather in your city" is displayed. A large orange search bar contains the text "Salem, IN" and a "Search" button. Below the search bar, the weather forecast for Salem, IN is shown. It includes a weather icon (overcast clouds), the temperature (26.9°C), and a description (temperature from 26.9 to 26.9 °C, wind 3 m/s, clouds 94 %, 1009 hpa). The geo coordinates [11.65, 78.1667] are also displayed. Below the weather forecast, there is a section titled "Search engine is very flexible. How it works:" which explains that the search engine is flexible and provides examples of how to use it.

Weather in your city

Salem, IN

Search

Salem, IN  overcast clouds

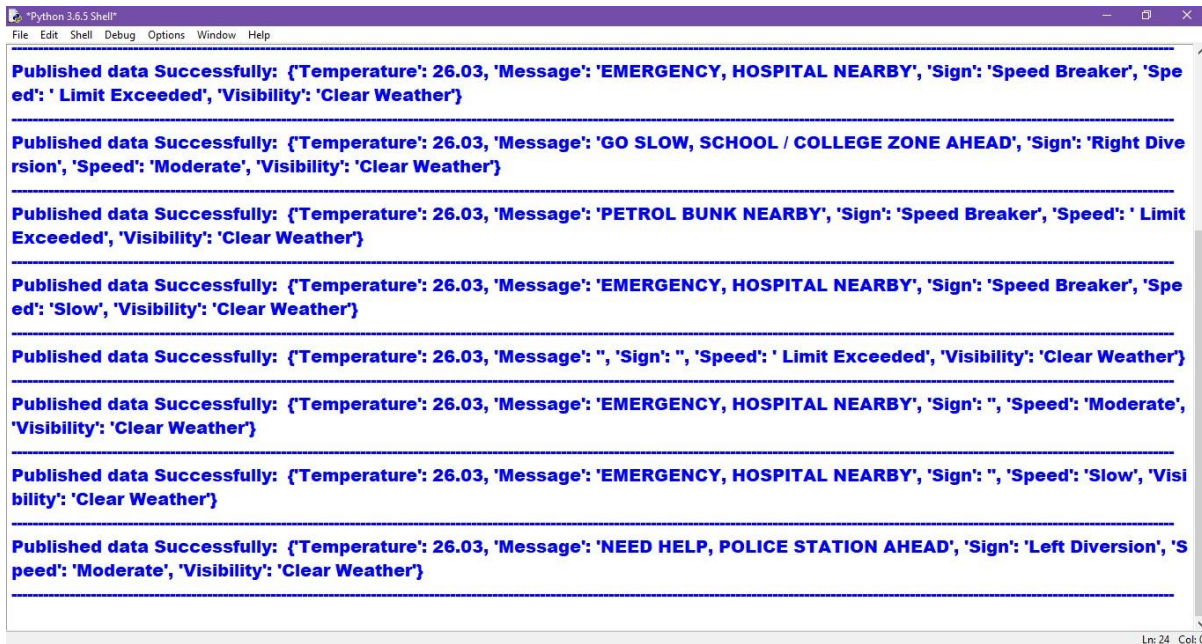
26.9°C temperature from 26.9 to 26.9 °C, wind 3 m/s, clouds 94 %, 1009 hpa

Geo coords [11.65, 78.1667]

Search engine is very flexible. How it works:

- 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 :



The screenshot shows the Python IDLE Shell window. The title bar reads "Python 3.6.5 Shell". The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. The shell displays the output of a script, which consists of several lines of text, each starting with "Published data Successfully:". The output is as follows:

```
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 Diversion', '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 Diversion', 'Speed': 'Moderate', 'Visibility': 'Clear Weather'}
```

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