

**PROJECT DEVELOPMENT PHASE**  
**SPRINT – 2 (USN-3)**

<b>DATE</b>	<b>05 – NOVEMBER-2022</b>
<b>TEAM ID</b>	<b>PNT2022TMID42239</b>
<b>PROJECT NAME</b>	<b>SIGNS WITH SMART CONNECTIVITY FOR BETTER ROAD SAFETY</b>

**PYTHON CODE :**

#OPENWEATHER MAP(SPRINT 2)

import wiotp.sdk.device #importing library files for connecting with  
CLOUD,sdk=software developement kit

import requests #for API request

import json #converting it to json(key:values)

myConfig = {

    "identity": {

        "orgId": "7f5hee",

        "typeId": "testdevicetype",   #configuration wit CLOUD,finding identity

        "deviceId":"12345"

    },

    "auth": {

        "token": "AQCLi6rYJrcoiDpW6?"   #authenticating with cloud device

    }

}

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

#initialising device client with above myconfig detail

client.connect()

while True:

    print("=====")

```
weatherData =  
requests.get('https://api.openweathermap.org/data/2.5/weather?q=Chennai,%20IN&appid=b966927276060e981c650a5ca4409f8b&units=metric')
```

```
a=weatherData.text
```

```
b=json.loads(a)
```

```
temp = b["main"]["temp"]
```

```
humi = b["main"]["humidity"]
```

```
main = b["weather"][0]["main"]    #0th index is taken from the object
```

```
description = b["weather"][0]["description"]
```

```
visibility = b["visibility"]
```

```
TemperatureRecommendation = ""
```

```
SpeedRecommendation = ""
```

```
RecommendationForVisibilty= ""
```

```
#print("Temperature(celcius) :",b["main"]["temp"])
```

```
if (temp>33):
```

```
    TemperatureRecommendation="Temperature is higher than ideal value"
```

```
    #print("Temperature is higher than ideal value")
```

```
elif (temp<19):
```

```
    TemperatureRecommendation="Temperature is lower than ideal value"
```

```
    #print("Temperature is lower than ideal value")
```

```
else:
```

```
    TemperatureRecommendation="Temperature is ideal"
```

```
    #print("Temperature is ideal ")
```

```

#print("Humidity :",b["main"]["humidity"])
#print("WeatherCondition",(b["weather"][0]["main"]))
if (main == "Rain"):
    rain = b["rain"]["1h"]
    SpeedRecommendation = "30KM/HR ,ROAD WILL BE SLIPPERY"
    #print("Rain:",b["rain"]["1h"])
    #print("SPEED RECOMMENDATION : 30KM/HR ,ROAD WILL BE SLIPPERY")
elif (main == "Drizzle"):
    SpeedRecommendation = "30KM/HR"
    #print("SPEED RECOMMENDATION : 30KM/HR")
elif (main == "Mist"):
    SpeedRecommendation = "30KM/HR and switch on the headlight"
    #print("SPEED RECOMMENDATION : 30KM/HR and switch on the Headlight")

#print("Description of weather :", (b["weather"][0]["description"]))
#print("visibility", (b["visibility"]))
if (visibility<1000):
    RecommendationForVisibilty = "SPEED RECOMMENDATION : 30KM/HR and SWITCH ON THE HEAD LIGHT"
else:
    RecommendationForVisibilty = "visibility range is ideal for vechicles"

#print("SPEED RECOMMENDATION : 30KM/HR and SWITCH ON THE HEAD LIGHT")

mydata={"temperature":temp,
"TemperatureRecommendation":TemperatureRecommendation,"humidity":humidity,"WeatherCondition":main,"SpeedRecommendation":SpeedRecommendation

```

```
,"DescriptionOfWeather":description,"visibility":visibility,"RecommendationForVisibilty":RecommendationForVisibilty}
```

```
print(mydata)
```

```
client.publishEvent("12345","json",mydata)
```

## CODE IN PYTHON IDLE

```
openweatherupdate.py - D:\BM\python\openweatherupdate.py (3.9.0)
File Edit Format Run Options Window Help
1 | #OPENWEATHER MAP(SPRINT I)
2 | import wiotp.sdk.device #importing library files for connecting with CLOUD,sdk=software development kit
3 | import requests #for API request
4 | import json #converting it to json(key:values)
5 | myConfig = {
6 |     "identity": {
7 |         "orgId": "7f5hee",
8 |         "typeId": "testdevicetype", #configuration wit CLOUD,finding identity
9 |         "deviceId": "12345"
10 |     },
11 |     "auth": {
12 |         "token": "AQCLi6rVJrcoidpW6?" #authenticating with cloud device
13 |     }
14 | }
15 | client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None) #initialising device client with above myconfig detail
16 | client.connect()
17 | while True:
18 |     print("=====")
19 |     weatherData = requests.get('https://api.openweathermap.org/data/2.5/weather?q=Chennai,%20IN&appid=b966927276060e981c650a5ca4409f8b&units=metric')
20 |     a=weatherData.text
21 |     b=json.loads(a)
22 |     temp = b["main"]["temp"]
23 |     humi = b["main"]["humidity"]
24 |     main = b["weather"][0]["main"] #0th index is taken from the object
25 |     description = b["weather"][0]["description"]
26 |     visibility = b["visibility"]
27 |
28 |
29 |
30 | TemperatureRecommendation = ""
31 | SpeedRecommendation = ""
32 | RecommendationForVisibilty= ""
33 |
34 | #print("Temperature(celcius) :",b["main"]["temp"])
35 | if (temp>33):
36 |     TemperatureRecommendation="Temperature is higher than ideal value"
37 |     #print("Temperature is higher than ideal value")
38 | elif (temp<19):
39 |     TemperatureRecommendation="Temperature is lower than ideal value"
40 |     #print("Temperature is lower than ideal value")
41 | else:
42 |     TemperatureRecommendation="Temperature is ideal"
43 |     #print("Temperature is ideal ")
44 |
45 | #print("Humidity :",b["main"]["humidity"])
46 | #print("WeatherCondition",b["weather"][0]["main"])
47 | if (main == "Rain"):
48 |     rain = b["rain"]["1h"]
49 |     SpeedRecommendation = "30KM/HR ,ROAD WILL BE SLIPPERY"
50 |     #print("Rain:",b["rain"]["1h"])
51 |     #print("SPEED RECOMMENDATION : 30KM/HR ,ROAD WILL BE SLIPPERY")
52 | elif (main == "Drizzle"):
53 |     SpeedRecommendation = "30KM/HR"
54 |     #print("SPEED RECOMMENDATION : 30KM/HR")
55 | elif (main == "Mist"):
56 |     SpeedRecommendation = "30KM/HR and switch on the headlight"
57 |     #print("SPEED RECOMMENDATION : 30KM/HR and switch on the Headlight")
58 |
59 | #print("Description of weather :",b["weather"][0]["description"])
60 | #print("visibility",b["visibility"])
61 | if (visibility<1000):
62 |     RecommendationForVisibilty = "SPEED RECOMMENDATION : 30KM/HR and SWITCH ON THE HEAD LIGHT"
63 | else:
64 |     RecommendationForVisibilty = "visibility range is ideal for vehicles"
65 |
66 | #print("SPEED RECOMMENDATION : 30KM/HR and SWITCH ON THE HEAD LIGHT")
67 | mydata={"temperature":temp, "TemperatureRecommendation":TemperatureRecommendation,"humidity":humi,"WeatherCondition":main,"SpeedRecommendation":SpeedRecommendation ,"DescriptionOfWeather":description,"visibility":visibility,"RecommendationForVisibilty":RecommendationForVisibilty}
68 | print(mydata)
69 | client.publishEvent("12345","json",mydata)
70 |
71 |
72 |
73 |
74 |
75 |
```

## OUTPUT (TAKEN IN PYTHON)

```
Python 3.9.0 Shell
File Edit Shell Debug Options Window Help
Python 3.9.0 (tags/v3.9.0:9cf6752, Oct 5 2020, 15:34:40) [MSC v.1927 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
----- RESTART: D:\IBM\python\openweatherupdate.py -----
2022-11-12 00:11:14,002  wiotp.sdk.device.client.DeviceClient  INFO    Connected successfully: d:7f5hee:testdevicetype:12345
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
[{'temperature': 26.99, 'TemperatureRecommendation': 'Temperature is ideal', 'humidity': 94, 'WeatherCondition': 'Drizzle', 'SpeedRecommendation': '30KM/HR', 'DescriptionOfWeather': 'light intensity drizzle', 'visibility': 2500, 'RecommendationForVisibility': 'visibility range is ideal for vehicles'}]
=====
```

## ESTABLISHING THE OPENWEATHERMAP CODE TO CLOUD TO EASY ACCESSING BY CREATING A DEVICE IN IBM WATSON WITH THE CONFIGURATION DETAILS :

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main content area shows a table of devices with columns for Device ID, Status, Device Type, Class ID, Date Added, and Descriptive Location. A device with ID '12345' and status 'Connected' is highlighted. Below the table, the 'Recent Events' tab is selected, showing a list of events with columns for Event, Value, Format, and Last Received. The events are JSON data points. A notification at the bottom right states '2 Simulations running'.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Connected	testdevicetype	Device	Nov 5, 2022 3:15 PM	

Event	Value	Format	Last Received
12345	[{"temperature":26.99,"TemperatureRecommend...	json	a few seconds ago
12345	[{"temperature":26.99,"TemperatureRecommend...	json	a few seconds ago
12345	[{"temperature":26.99,"TemperatureRecommend...	json	a few seconds ago
12345	[{"temperature":26.99,"TemperatureRecommend...	json	a few seconds ago
12345	[{"temperature":26.99,"TemperatureRecommend...	json	a few seconds ago

## REQUIRED DATA COLLECTED FROM THE OPEN WEATHER MAP API :

The screenshot displays the IBM Watson IoT Platform dashboard. A modal window titled "Event Payload" is open, showing the following details:

- Event Name: 12345
- Time Received: Nov 12, 2022 12:15 AM

The payload data is shown in a code editor format:

```
1 {  
2   "temperature": 26.99,  
3   "TemperatureRecommendation": "Temperature is ideal",  
4   "humidity": 94,  
5   "WeatherCondition": "Drizzle",  
6   "SpeedRecommendation": "300M/HR",  
7   "DescriptionOfWeather": "light intensity drizzle",  
8   "visibility": 2500,  
9   "RecommendationForVisibility": "visibility range is ideal for vehicles"  
10 }
```

The background dashboard shows a table with columns "Event" and "Value", and a status indicator "2 Simulations running".