

PYTHON SCRIPT

TOPIC : SIGNS WITH SMART CONNECTIVITY FOR BETTER ROAD SAFETY.

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DATE : 5 NOV 2022.

SOFTWARE USED:

- Python
- IBM Watson IOT.

Developing a python script to communicate between openweather API with IOT platform.

PYTHON CODE:

```
import wiotp.sdk.device
```

```
import time
```

```
import random
```

```
import ibmiotf.application
```

```
import ibmiotf.device
```

```
import requests, json
```

```
myConfig = {  
    "identity": {  
        "orgId": "e4jrbo",  
        "typeId": "SignsWithSmartConnectivity",  
        "deviceId": "12345"  
    },  
    "auth": {
```

```
    "token": "1234567890"
  }
}
```

```
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
```

```
URL =
    "http://api.openweathermap.org/data/2.5/weather?q=Kāraikkudi,IN&units=metric&appid=76e08ef85f6173baed5302d8d21a6d24"
```

```
while True:
    response = requests.get(URL)
    if response.status_code == 200:
        data = response.json()

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

```
vis = (data['visibility'])/1000
```

```
place=data['name']
```

```
wea= data['weather'][0]['main']
```

```
vis_ms=""
```

```
if vis>=10:
```

```
    vis_ms+="Road is visible"
```

```
else:
```

```
    vis_ms+="Visiblity is Low, Drive safely"
```

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

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

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

```
elif speed>=60 and speed<100:
    speedMsg="Moderate Speed"
else:
    speedMsg="Slow and steady"
```

```
if temperature < 24:
    visibility="cold weather, Drive Slow"
elif temperature < 20:
    visibility="Bad Weather, Be Careful"
else:
    visibility="Clear Weather, Safe Journey"
```

```
sign=random.randint(0,6)
if sign==1:
    signMsg="Right Diversion"
elif sign==2:
    signMsg="Speed Breaker"
elif sign==3:
    signMsg="Left Diversion"
elif sign==4:
    signmsg="U Turn"
elif sign==5:
    signMsg="Under Repair"
else:
    signMsg=""
```

```

myData={'Temperature':temperature, 'Visibility':vis, 'temp-msg':visibility,
'Sign_msg':signMsg, 'Vis_msg':vis_ms, 'LM_msg':message,
'Speed_msg':speedMsg, 'Humidity':humidity, 'Place':place, 'Weather':wea}

client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0,
onPublish=None)

print("Published data Successfully:", myData)

client.commandCallback = myCommandCallback

time.sleep(2)

client.disconnect()

```

The image shows a screenshot of a Python script in a Code Editor window and its execution output in a Python Shell window.

Code Editor Window (Code.py):

```

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

myConfig = {
    "identity": {
        "orgId": "d4g3bo",
        "typeId": "SignsWithSmartConnectivity",
        "deviceId": "12345"
    },
    "auth": {
        "token": "1234567890"
    }
}

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

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandler=
client.connect()

#OpenWeatherMap Credentials

URL = "http://api.openweathermap.org/data/2.5/weather?q=Karaikudi"

while True:
    response = requests.get(URL)
    if response.status_code == 200:
        data = response.json()

        main = data['main']
        temperature = main['temp']
        humidity = main['humidity']
        vis = (data['visibility'])/1000
        place=data['name']
        weat= data['weather'][0]['main']

        vis_ms=""
        if vis>=10:
            vis_ms=="Road is visible"
        else:
            vis_ms=="Visibility is Low, Drive safely"

        msg=random.randint(0,5)

```

Python Shell Window:

```

Python 3.6.5 Shell
File Edit Shell Debug Options Window Help
Python 3.6.5 (v3.6.5:f58c0932b4, Mar 28 2018, 17:00:18) [MSC v.1900 64 bit (AMD6
4)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
----- RESTART: C:\Users\abish\Pictures\Code.py -----
2022-11-19 01:08:14,769 wiotp.sdk.device.client.DeviceClient INFO Connecte
d successfully: d4g3bo:SignsWithSmartConnectivity:12345
Published data Successfully: {'Temperature': 21.35, 'Visibility': 10.0, 'temp-ms
g': 'cold weather, Drive Slow', 'Sign_msg': 'Speed Breaker', 'Vis_msg': 'Road is
visible', 'LM_msg': 'NEED HELP, POLICE STATION AHEAD', 'Speed_msg': 'Moderate S
peed', 'Humidity': 83, 'Place': 'Karaikudi', 'Weather': 'Clouds'}
Published data Successfully: {'Temperature': 21.35, 'Visibility': 10.0, 'temp-ms
g': 'cold weather, Drive Slow', 'Sign_msg': 'Right Diversion', 'Vis_msg': 'Road
is visible', 'LM_msg': 'GO SLOW, SCHOOL ZONE AHEAD', 'Speed_msg': 'Slow and stea
dy', 'Humidity': 83, 'Place': 'Karaikudi', 'Weather': 'Clouds'}
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g': 'cold weather, Drive Slow', 'Sign_msg': '', 'Vis_msg': 'Road is visible', 'L
M_msg': 'NEED HELP, POLICE STATION AHEAD', 'Speed_msg': 'Speed Limit Exceeded',
'Humidity': 83, 'Place': 'Karaikudi', 'Weather': 'Clouds'}

```