

SPRINT-2

Date	06 November 2022
Project Name	Smart Waste Management System for Metropolitan Cities
TEAM ID	PNT2022TMID15126

PROCEDURE:

- Install IDLE Python 3.9.8
- Open python idle and import wiotp.sdk.device , time , random libraries.
Open Command prompt and install the packages for wiotp.sdk
- In myConfig function we have given all the credential details about user device type.
- Device client from wiotp.sdk.device library is passes myConfig function as parameter into config attribute and taken in variable named as client.
- At while loop statement the values of bin weight, garbage level, latitude, longitude these values will be sent through the message to the user.

Interfacing IBM Watson with IDLE Shell

```
Smartbin.py - C:\Users\DLIP\AppData\Local\Programs\Python\Python39\Smartbin.py (3.9.8)
File Edit Format Run Options Window Help

#Project: Smart Waste Management System for Metropolitan cities
#Team ID: FWT2022TMD15126

#Installing libraries
import wiotp.sdk.device
import time
import random
import requests
import math

#Configuration details for connecting python script to IBM Watson IoTPlatform
myConfig = {
    "identity": {
        "orgId": "2w8m6v",
        "typeId": "Smart_bin-01.",
        "deviceId": "123"
    },
    "auth": {
        "token": "drTgldnFscKZlwk0"
    }
}

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()

while True:
    res = requests.get('https://ipinfo.io/')
    data = res.json()
    loc = data['loc'].split(',')
    theta = random.uniform(0,2*math.pi)
    area = (0.05**2)*math.pi
    radius = math.sqrt(random.uniform(0,area/math.pi))
    latitude,longitude = (float(loc[0])+radius*math.cos(theta), float(loc[1])+radius*math.sin(theta))
    binlevel=random.randint(10,100)
    binweight = random.randint(50,1500)

    if binweight>1000 and binlevel>80:
        myData={'latitude':latitude, 'longitude':longitude, 'binlevel':binlevel, 'binweight':binweight}
        client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
        #print("Published data Successfully: %s" % myData)
        print("BIN IS FULL..TIME TO EMPTY IT!!!!\n",myData)
        client.commandCallback = myCommandCallback
        time.sleep(2)
    #break
```

Installing the packages for Watson IoT

```
cmd Command Prompt
operable program or batch file.

C:\Users\DLIP\KUMAR>pip install wiotp-sdk
Collecting wiotp-sdk
  Downloading wiotp-sdk-0.11.0.tar.gz (96 kB)
    Collecting iso8601>=0.1.12
      Downloading iso8601-1.1.0-py3-none-any.whl (9.9 kB)
    Collecting pytz>=2018.9
      Downloading pytz-2022.6-py2.py3-none-any.whl (498 kB)
    Collecting pyyaml>=3.13
      Downloading PyYAML-6.0-cp39-cp39-win_amd64.whl (151 kB)
    Collecting paho-mqtt>=1.5.0
      Downloading paho-mqtt-1.6.1.tar.gz (99 kB)
    Collecting requests>=2.21.0
      Downloading requests-2.28.1-py3-none-any.whl (62 kB)
    Collecting requests-toolbelt>=0.8.0
      Downloading requests-toolbelt-0.10.1-py2.py3-none-any.whl (54 kB)
    Collecting charset-normalizer>=2
      Downloading charset-normalizer-2.1.1-py3-none-any.whl (49 kB)
    Collecting idna>=2.5
      Downloading idna-3.4-py3-none-any.whl (61 kB)
    Collecting urllib3>=1.21.1
      Downloading urllib3-1.26.12-py2.py3-none-any.whl (140 kB)
    Collecting certifi>=2017.4.17
      Downloading certifi-2022.9.24-py3-none-any.whl (161 kB)
Using legacy 'setup.py install' for wiotp-sdk, since package 'wheel' is not installed.
Using legacy 'setup.py install' for paho-mqtt, since package 'wheel' is not installed.
Installing collected packages: urllib3, idna, charset-normalizer, certifi, requests, requests-toolbelt, pyyaml, pytz, paho-mqtt, iso8601, wiotp-sdk
Running setup.py install for paho-mqtt ... done
Successfully installed certifi-2022.9.24 charset-normalizer-2.1.1 idna-3.4 iso8601-1.1.0 paho-mqtt-1.6.1 pytz-2022.6 pyyaml-6.0 requests-2.28.1 requests-toolbelt-0.10.1 urllib3-1.26.12 wiotp-sdk-0.11.0
WARNING: You are using pip version 21.2.4; however, version 22.3.1 is available.
You should consider upgrading via the 'C:\Users\DLIP\KUMAR\AppData\Local\Programs\Python\Python39\python.exe -m pip install --upgrade pip' command.

C:\Users\DLIP\KUMAR>
```

Message received from IoT Platform

The screenshot displays the IBM Watson IoT Platform dashboard. A modal window titled "Event Payload" is open, showing details for an event named "event_1" received on Nov 19, 2022 at 6:51 PM. The event payload is a JSON object with the following structure:

```
{  "Bin Weight": 5,  "Garbage level": 63,  "Latitude": "13.0827° N",  "Longitude": "80.2782° E"}
```

In the background, the dashboard shows a list of recent events for device 123. The table below represents the data visible in the "Recent Events" section:

Event	Value
event_1	{"Bin Weight":5,"
event_1	{"Bin Weight":62
event_1	{"Bin Weight":36
event_1	{"Bin Weight":64
event_1	{"Bin Weight":66

The dashboard also indicates "1 Simulation running" at the bottom right.