

## SPRINT 4

Date	15 November 2022
Team ID	PNT2022TMID43127
Project Name	Smart Waste Management System for Metropolitan Cities
Story Point	20

### Python code (To Connect IBM Watson)

#### Ultrasonic:

```
import wiotp.sdk.device
import time
import random

myConfig = {
    "identity": {
        "orgId": "x3lifo",
        "typeId": "Bin_3",
        "deviceId": "1234"
    },
    "auth": {
        "token": "12345678"
    }
}

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:
```

```
    level=random.randint(0,10)
```

```
    weight=random.randint(0,10)
```

```
    myData={ 'name': 'Bin_3', 'lat': 15.092677, 'lon': 79.188314 , 'Level':level, 'Weight':weight }
```

```
    if weight == 10:
```

```
        print ('ALERT !! Weight is HIGH')
```

```
    if level == 10:
```

```
        print ('ALERT !! Level is HIGH')
```

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

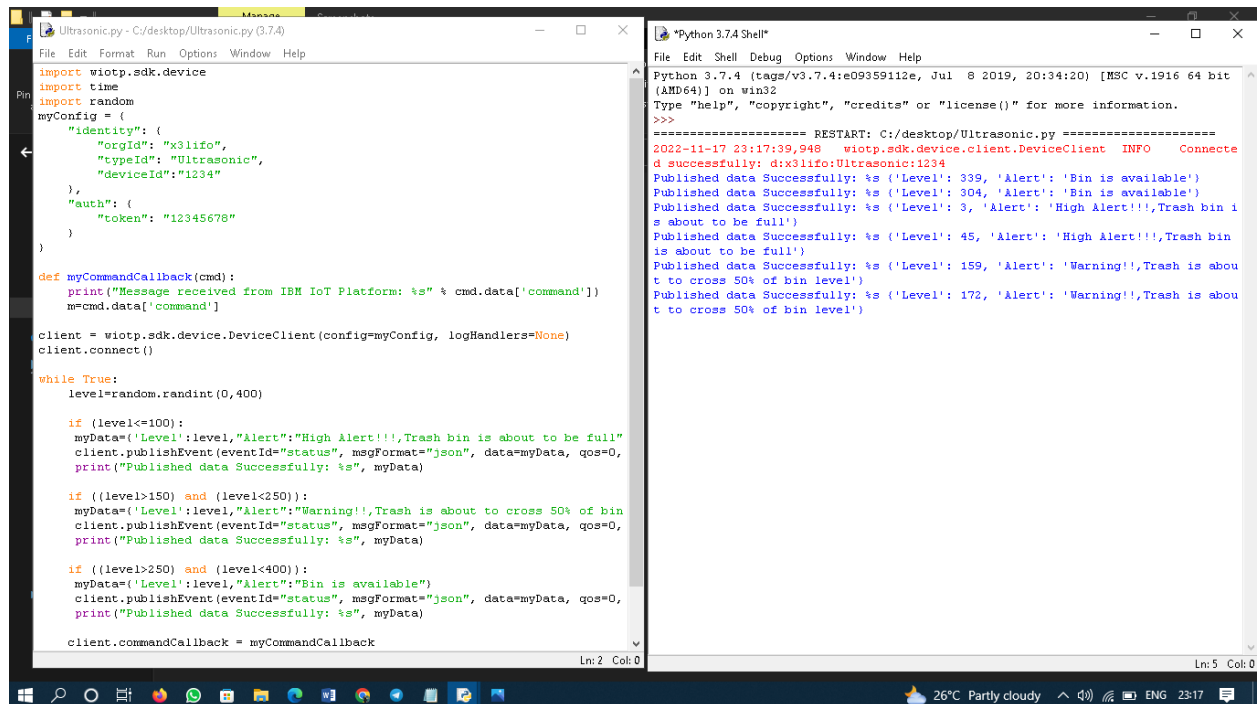
```
    print ("Published data Successfully: %s", myData)
```

```
    client.commandCallback = myCommandCallback
```

```
    time.sleep(2)
```

```
client.disconnect()
```

## Output in python IDLE:



```
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:re09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit
(AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/desktop/Ultrasonic.py =====
2022-11-17 23:17:39,948   wiotp.sdk.device.client.DeviceClient  INFO    Connecte
d successfully: d:\x31lifo:Ultrasonic:1234
Published data Successfully: %s ('Level': 339, 'Alert': 'Bin is available')
Published data Successfully: %s ('Level': 304, 'Alert': 'Bin is available')
Published data Successfully: %s ('Level': 3, 'Alert': 'High Alert!!!,Trash bin i
s about to be full')
Published data Successfully: %s ('Level': 45, 'Alert': 'High Alert!!!,Trash bin
is about to be full')
Published data Successfully: %s ('Level': 159, 'Alert': 'Warning!!!,Trash is abou
t to cross 50% of bin level')
Published data Successfully: %s ('Level': 172, 'Alert': 'Warning!!!,Trash is abou
t to cross 50% of bin level')
```

## IBM Watson IoT platform:

The screenshot shows the IBM Watson IoT Platform dashboard. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area displays a table of recent events for a device with ID 1234. The table has columns for 'Event', 'Value', 'Format', and 'Last Received'. Below the table, it indicates '0 Simulations running'.

Event	Value	Format	Last Received
status	{"Level":200,"Alert":"Warning!!","Trash is about t...	json	a few seconds ago
status	{"Level":330,"Alert":"Bin is available"}	json	a few seconds ago
status	{"Level":168,"Alert":"Warning!!","Trash is about t...	json	a few seconds ago
status	{"Level":299,"Alert":"Bin is available"}	json	a few seconds ago
status	{"Level":372,"Alert":"Bin is available"}	json	a few seconds ago

## Monitoring all the bins in the same dashboard

The screenshot shows the IBM Watson IoT Platform dashboard with a summary of all devices. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area displays a table of all devices, including their ID, status, device type, class ID, date added, and descriptive location. Below the table, it indicates '0 Simulations running'.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1234	Connected	Bin_1	Device	Nov 16, 2022 8:03 PM	
1234	Connected	Bin_2	Device	Nov 16, 2022 8:04 PM	
1234	Connected	Bin_3	Device	Nov 17, 2022 9:52 AM	
1234	Connected	Ultrasonic	Device	Nov 16, 2022 8:05 PM	
43127device	Disconnected	b11m3edevicetype	Device	Nov 2, 2022 9:04 PM	

## Node Red platform:

Node-RED interface showing a flow with two parallel processing paths for BIN 1 and BIN 2. The flow includes function nodes for `Bin_level` and `Bin_weight`, followed by `msg payload` and `worldmap` nodes. The debug console on the right shows the following JSON payloads:

```

{ "name": "Bin_1", "lat": 13.492577, "lon": 80.188334, "Level": 7, "Height": 6 }
{ "name": "Bin_2", "lat": 15.492577, "lon": 79.188334, "Level": 5, "Height": 0 }
{ "name": "Bin_3", "lat": 15.492577, "lon": 79.188334, "Level": 3, "Height": 3 }
{ "name": "Bin_4", "lat": 14.492577, "lon": 81.188334, "Level": 9, "Height": 4 }
{ "name": "Bin_5", "lat": 13.492577, "lon": 80.188334, "Level": 9, "Height": 3 }
{ "name": "Bin_6", "lat": 15.492577, "lon": 79.188334, "Level": 3, "Height": 3 }
{ "name": "Bin_7", "lat": 14.492577, "lon": 81.188334, "Level": 9, "Height": 9 }

```

Node-RED interface showing a flow with two parallel processing paths for BIN 2 and BIN 3. The flow includes function nodes for `Bin_level` and `Bin_weight`, followed by `msg payload` and `worldmap` nodes. The debug console on the right shows the following JSON payloads:

```

{ "name": "Bin_2", "lat": 15.492577, "lon": 79.188334, "Level": 4, "Height": 5 }
{ "name": "Bin_3", "lat": 14.492577, "lon": 81.188334, "Level": 3, "Height": 7 }
{ "name": "Bin_4", "lat": 15.492577, "lon": 80.188334, "Level": 8, "Height": 5 }
{ "name": "Bin_5", "lat": 13.492577, "lon": 80.188334, "Level": 8, "Height": 5 }
{ "name": "Bin_6", "lat": 15.492577, "lon": 79.188334, "Level": 6, "Height": 0 }
{ "name": "Bin_7", "lat": 14.492577, "lon": 81.188334, "Level": 7, "Height": 3 }
{ "name": "Bin_8", "lat": 13.492577, "lon": 80.188334, "Level": 5, "Height": 7 }

```

**Output in Node Red:**

