Node-RED web Application

Team ID	PNT2022TMID11760
Project Name	Smart Waste Management System for Metropolitan Cities

OBJECTIVE:

To develop the web Application using Node-RED service. Also display the Bin location on the Node-RED web UI.

STEP 1:

Develop a python code to display the location of the bin along with the bin status.

PYTHON CODE:

```
import wiotp.sdk.device
import time
import random
import requests
import urllib.parse
# The address variable contains the location where the Smart bins are installed.
address= ['Kodambakkam','T.nagar','West mambalam','vadapalani','ekkattuthangal']
myConfig = {
 "identity": {
 "orgId": "dluuhi",
 "typeId": "SWMS",
 "deviceId":"6032"
 },
 "auth": {
 "token": "311519106032"
 }
}
def myCommandCallback(cmd):
 print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
```

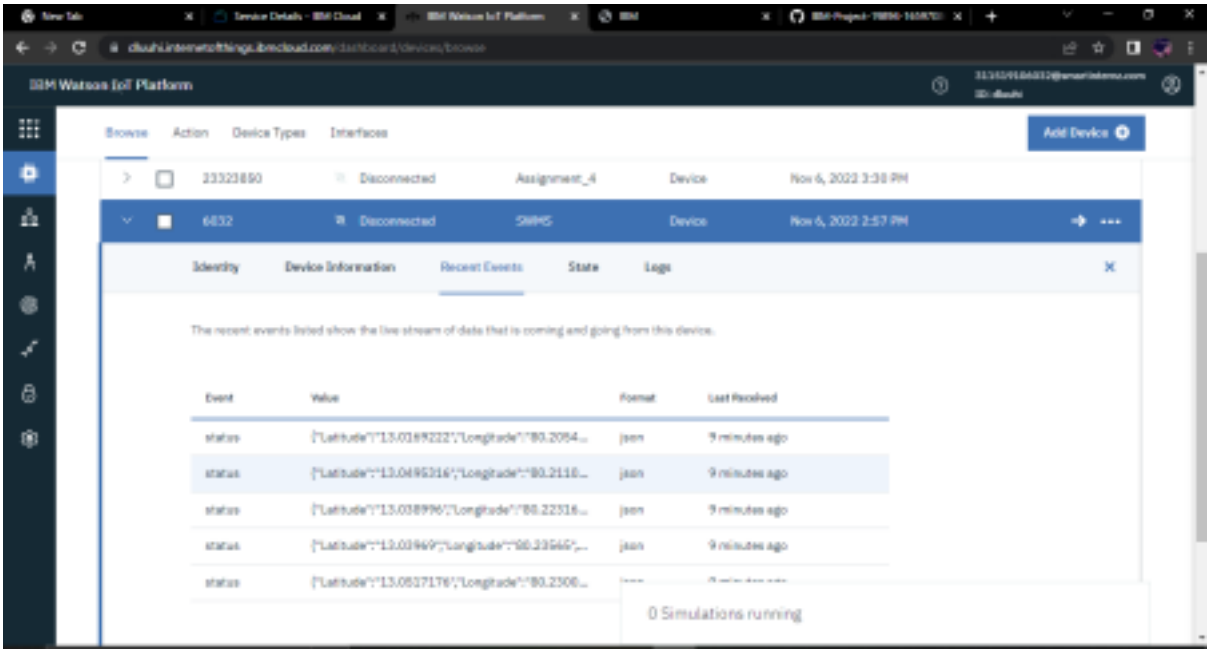
```
m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig,

logHandlers=None) client.connect()

for x in address:

 url = 'https://nominatim.openstreetmap.org/search/' + urllib.parse.quote(x) +'?format=json'

response = requests.get(url).json()

 a = response[1]["lat"] # a variable contains the latitude of the particular Smart bin  b =

response[1]["lon"] # b variable contains the longitude of the particular Smart bin

bin_stat = random.randint(0,100)

 In_percent = str(bin_stat)+ "%"

# The above random.randint() function generate the random bin values which are then published to
#the IBM Watson cloud Platform

 myData={'Latitude':a, 'Longitude':b,"Bin Status":In_percent}

 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()
```

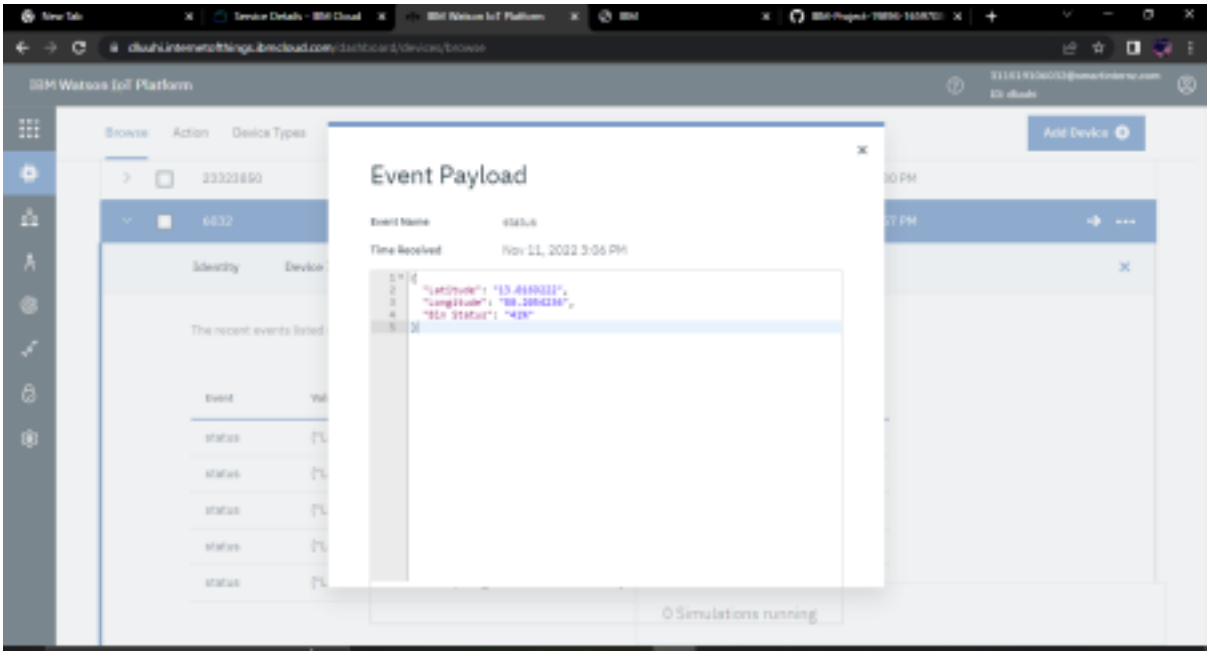
OUTPUT:

STEP 2:

View the output in IBM Watson Iot Cloud Platform.

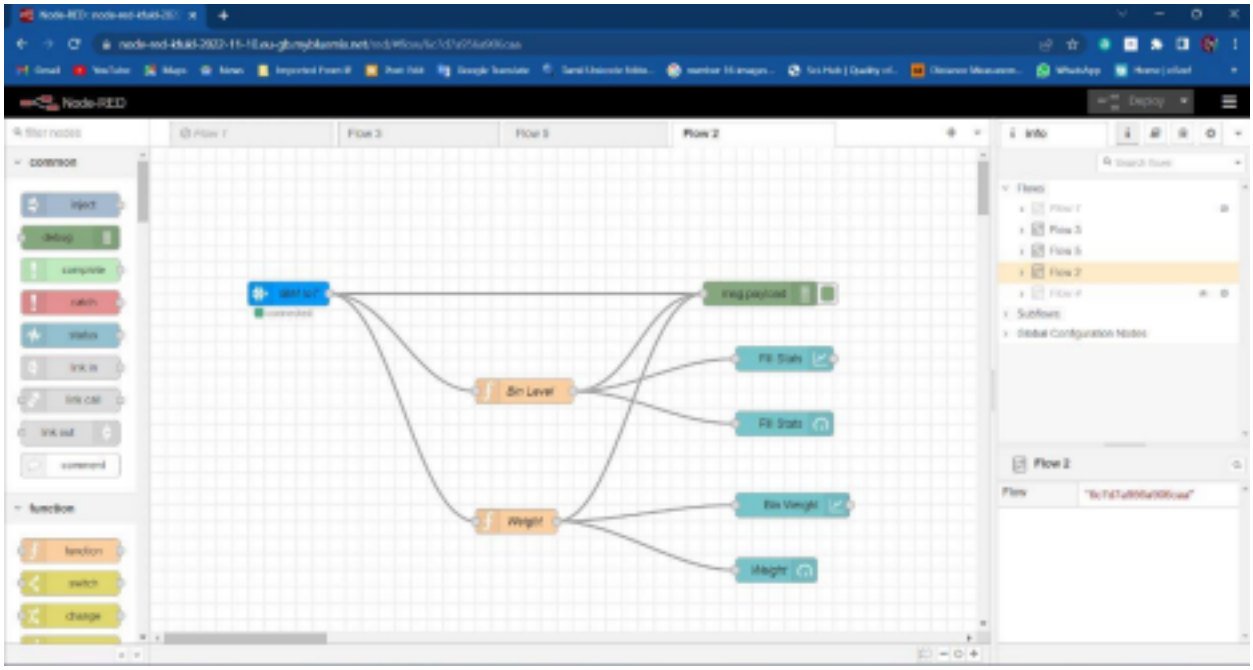
IBM Watson Iot Platform:

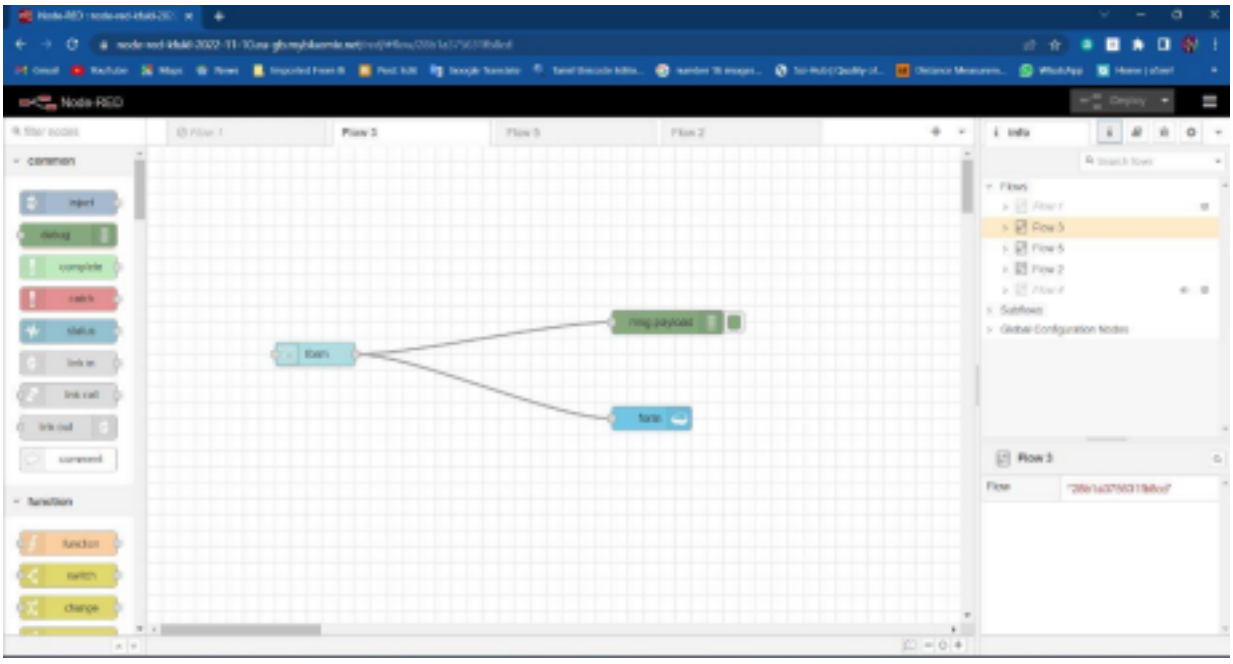


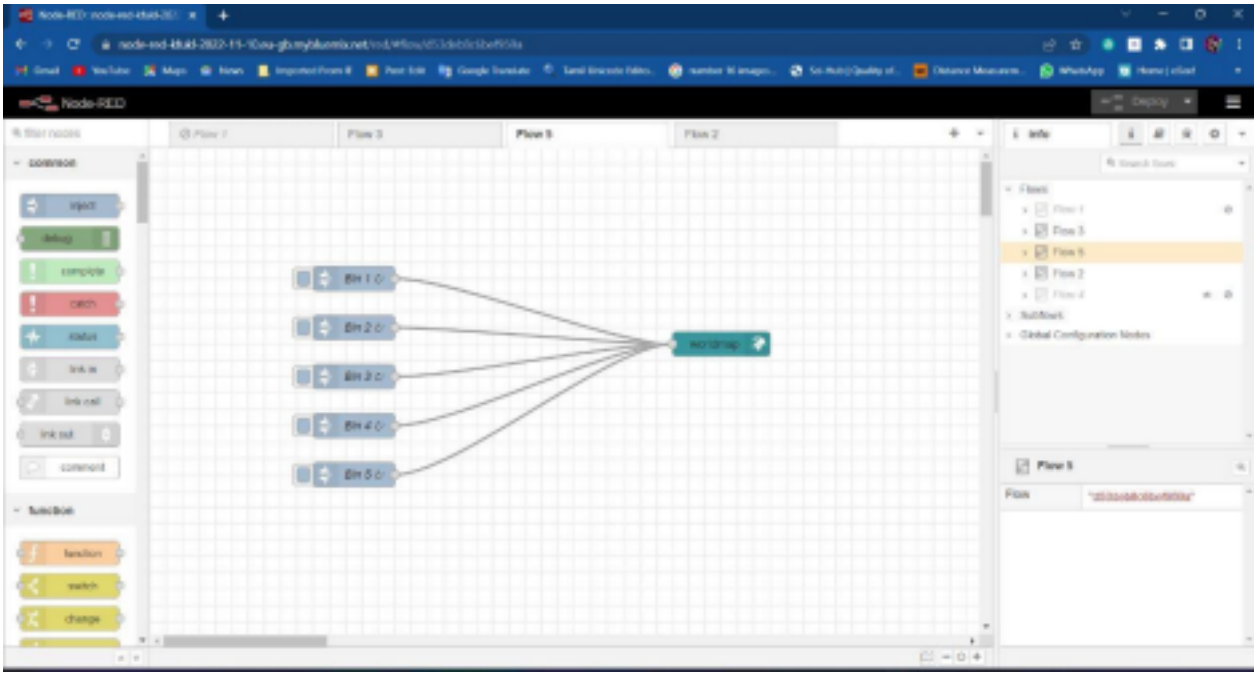


STEP 3:

Creating a Node-red UI to view data in graphical form.


Node-RED
Flow 2
Bin Level
Weight
msg.payload
Fill State
Fill State
Bin Weight
Weight

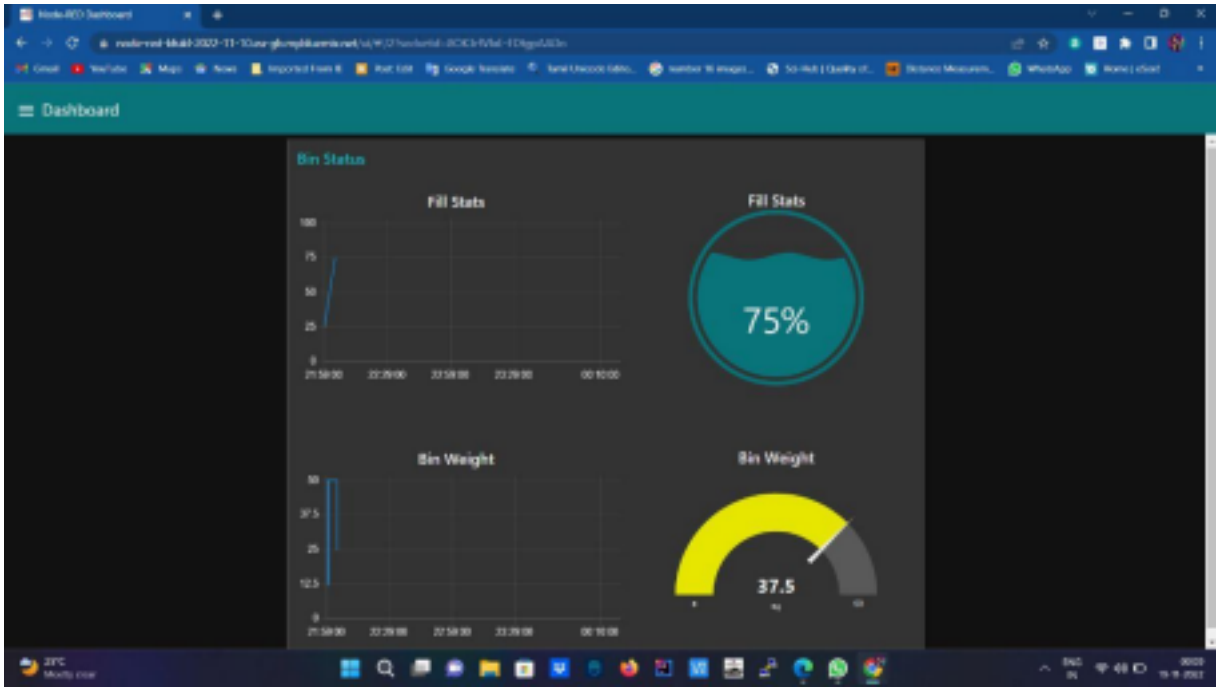

Node-RED
Flow 3
Bin%
msg.payload
Bin%



STEP 4:

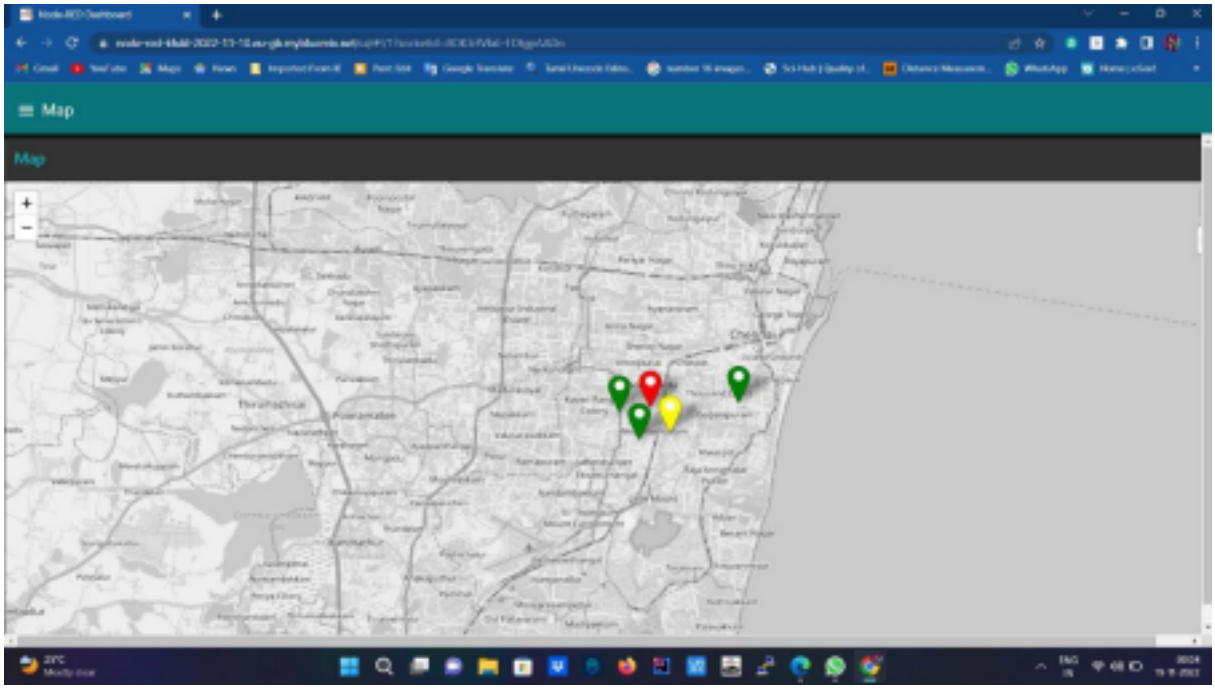
- Display the location on the Map in Node-RED Web UI
- Send the notification if the bin value crosses the threshold value

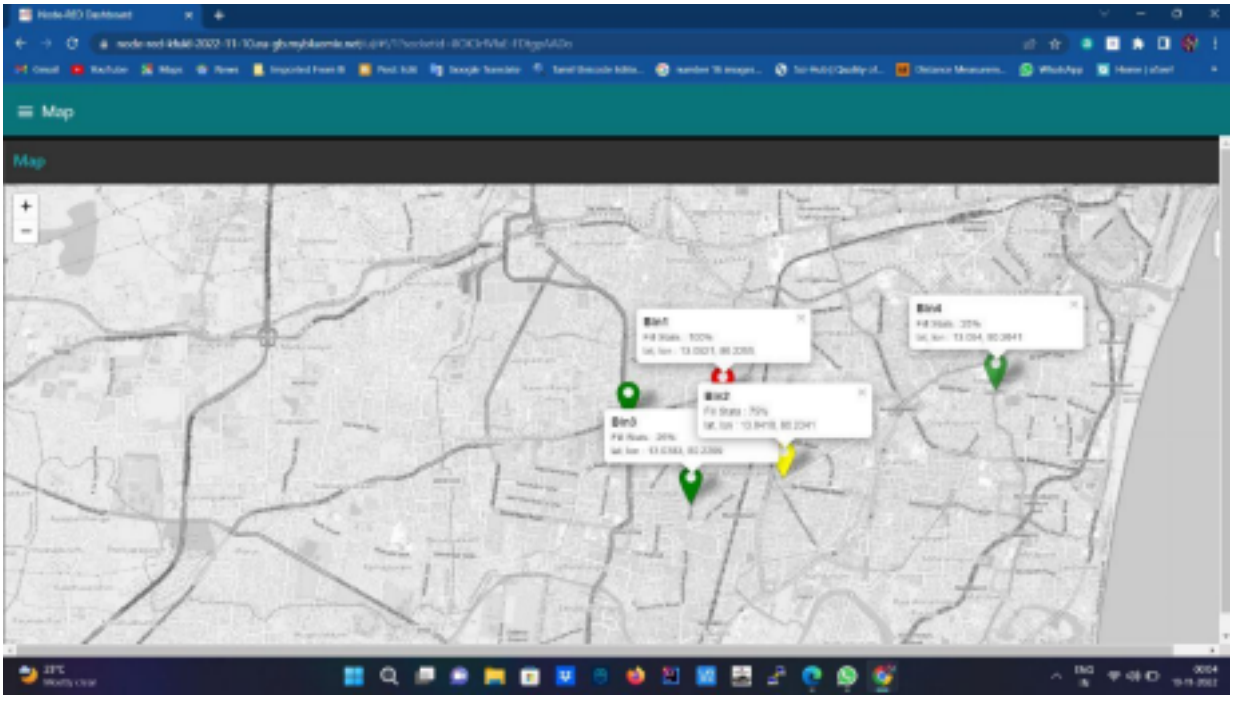
Node-RED Dashboard:



NOTE:

The result above indicates that the Fill status is 75% full, meaning that if any further trash is deposited to the smart bin, it will reach its threshold value. The fill status then changes its colour to red.


Map
Map


Map
Map
Bin1
Bin2
Bin3
Bin4