

Project Development phase

Date	16 November 2022
Team ID	PNT2022TMID41308
Project Name	Project – SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES
Maximum Marks	4 Marks

Delivering of Sprint-4

IBM Cloud service

- Python code for sending location (latitude, longitude) along with the bin status
- Sending the data to the IBM Watson
- Node-Red is used to connect the IBM IOT platform and User interface

Python code test code:

```
import time

import sys

import ibmiotf.application

import ibmiotf.device

import random

from geopy.geocoders import Nominatim


# initialize Nominatim API

geolocator = Nominatim(user_agent="geoapiExercises")

#Provide your IBM Watson Device Credentials

organization = "pb6xw8"

deviceType = "efgh"

deviceId = "1234"

authMethod = "token"
```

```
authToken = "12345678"
```

```
try:
```

```
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId,  
"auth-method": authMethod, "auth-token": authToken}
```

```
    deviceCli = ibmiotf.device.Client(deviceOptions)
```

```
    #.....
```

```
except Exception as e:
```

```
    print("Caught exception connecting device: %s" % str(e))
```

```
    sys.exit()
```

```
# Connect and send a datapoint "hello" with value "world" into the cloud as an  
event of type "greeting" 10 times
```

```
print("checking connection to wasion iot ..")
```

```
deviceCli.connect()
```

```
time.sleep(1)
```

```
while True:
```

```
    name='bin'
```

```
    level=random.randint(1,100)
```

```
    weight=random.randint(1,100)
```

```
    latitude=random.uniform(12.867342,13.043514)
```

```
    longitude=random.uniform(77.477635,77.695109)
```

```
    Latitude=str(latitude)
```

```
    Longitude=str(longitude)
```

```
    location = geolocator.reverse(Latitude+", "+Longitude)
```

```
address = location.raw['address']
```

```
city = address.get('city', '')
```

```
print('City : ', str(city))
```

```
#STATUS OF GARBAGE CAN
```

```
if(level<30):
```

```
    level_status="low level"
```

```
    print("level_status=low level garbage")
```

```
elif(level>30)and(level<80):
```

```
    level_status="medium level garbage"
```

```
    print("level_status=low level garbage")
```

```
else:
```

```
    level_status="high level garbage"
```

```
    print("level_status=high level garbage")
```

```
if (weight<30):
```

```
    weight_status="low level"
```

```
    print("weight_status=low level garbage")
```

```
elif(weight>30)and(weight<80):
```

```
    weight_status="medium level garbage"
```

```
    print("weight_status=low level garbage")
```

```
else:
```

```
    weight_status="high level garbage"
```

```
    print("weight_status=high level garbage")
```

```
data = { 'name' : name, 'level' : level, 'level_status':level_status, 'weight':  
weight, 'weight_status':weight_status, 'lat': Latitude, 'lon':Longitude, 'city':str(city)}  
#print data  
  
def myOnPublishCallback():  
    print ("Published weight = %s kg" % weight, "level=%s m" %level, "latitude =  
%s %" % latitude, "longitude = %s %" % longitude, "city=%s" %city, "to IBM  
Watson")  
  
success = deviceCli.publishEvent("project", "json", data, qos=0,  
on_publish=myOnPublishCallback)  
  
if not success:  
    print("Not connection lost from sensor to ibm iot")  
    time.sleep(10)  
  
# Disconnect the device and application from the cloud  
deviceCli.disconnect()
```

Python 3.7.0 Shell

```
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/91934/Documents/PYTHON/smartwastemanagement.py =====
checking connection to waston iot...
2022-11-10 13:28:30,354 ibmiotf.device.Client INFO Connected successfully
lly: d:pb6xw8:efgh:1234
City : Bengaluru
level_status=low level garbage
weight_status=low level garbage
Published weight = 54 kg level=58 m latitude = 13.004686220188193 % longitude = 77.66501956000818 % city=Bengaluru to IBM Watson
City : Bengaluru
level_status=low level garbage
weight_status=low level garbage
Published weight = 56 kg level=57 m latitude = 12.982720495374544 % longitude = 77.51427277819398 % city=Bengaluru to IBM Watson
City : Bengaluru
level_status=low level garbage
weight_status=low level garbage
Published weight = 36 kg level=35 m latitude = 12.882526197360793 % longitude = 77.57496741648336 % city=Bengaluru to IBM Watson
City : Bengaluru
level_status=low level garbage
weight_status=low level garbage
Published weight = 33 kg level=33 m latitude = 12.912084802748902 % longitude = 77.60890353424664 % city=Bengaluru to IBM Watson
City : Bengaluru
level_status=low level garbage
weight_status=low level garbage
Published weight = 23 kg level=68 m latitude = 12.976870833403341 % longitude = 77.62184275243061 % city=Bengaluru to IBM Watson
```

IBM Watson IoT Platform

1234 Disconnected elgh Device 4 Nov 2022 11:10

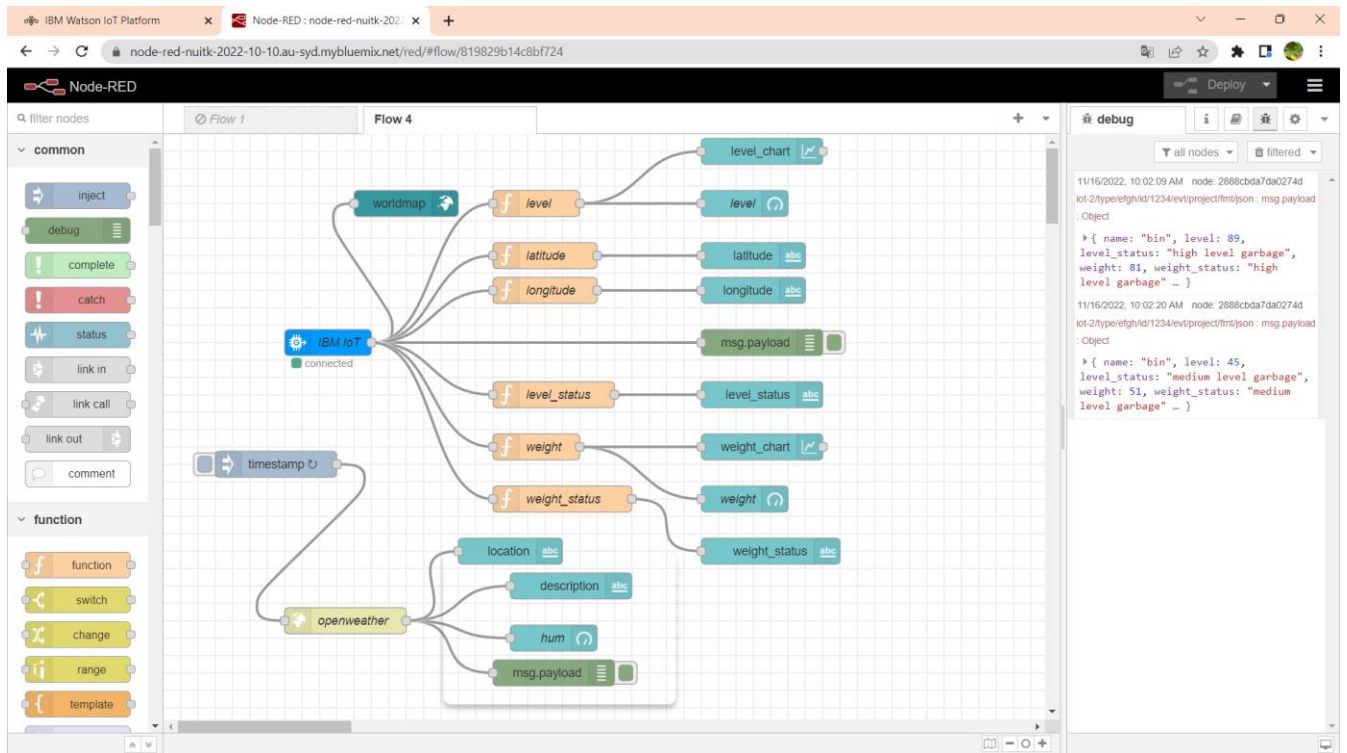
Identity Device Information Recent Events State Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
project	{"name":"bin","level":48,"level_status":"medium ...	json	a few seconds ago
project	{"name":"bin","level":68,"level_status":"medium ...	json	a few seconds ago
project	{"name":"bin","level":33,"level_status":"medium ...	json	a few seconds ago
project	{"name":"bin","level":35,"level_status":"medium ...	json	a few seconds ago
project	{"name":"bin","level":57,"level_status":"medium ...	json	a few seconds ago

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IBM Watson IoT Platform x Node-RED : node-red-nuitk-2022 x Node-RED Dashboard x

node-red-nuitk-2022-10-10-au-syd.mybluemix.net/ui/#/?socketid=mT3nYVWsj73gzkAAAD

