

TEAM ID	PNT2022TMID47365
PROJECT	Smart Waste Management System For Metropolitan Cities

SPRINT DELIVERY 2:

Python script:

```

import random
import ibmiotf.application
import ibmiotf.device
import time
from time import sleep
import sys

#IBM Watson Device Credentials.
organization = "sl1jtd"
deviceType = "abcde"
deviceId = "08"
authMethod = "token"
authToken = "830119106008"

def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    status = cmd.data['command']
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()

deviceCli.connect()
while True:
    distance= random.randint(10,70)
    loadcell= random.randint(5,15)
    data= {'dist':distance,'load':loadcell}

    #weight of the bin
    if loadcell <= 13 and loadcell >= 15:
        load = "90 %"

    elif loadcell <= 10 and loadcell >= 12:
        load = "75 %"

    elif loadcell <= 8 and loadcell >= 10:
        load = "75 %"

    elif loadcell <= 4 and loadcell >= 7:
        load = "45 %"
```

```

else:
    load = "20 %"

#empty distance in the bin
if distance <= 15:
    dist = '90 %'

elif distance <= 30 and distance >= 16:
    dist = '75 %'

elif distance <= 45 and distance >= 31 :
    dist = '60 %'

elif distance <= 60 and distance >= 46:
    dist = '45 %'

else:
    dist = '25 %'

#alert and warning for garbage level and weight

if load == "90 %" or dist == "90 %":
    warn = 'alert : Garbage level in the trash can is going to be full, Time to collect '

elif load == "75 %" or dist == "75 %":
    warn = 'alert : Garbage level is above 75%'

elif load == "60 %" or dist == "60 %":
    warn = 'alert : Garbage level is above 60%'

else :
    warn = 'alert : ' 'No need to collect right now '

def myOnPublishCallback(lat=10.677849504740825,long=78.59966411452089):
    print("Sethurapatti, Trichy")
    print("distance = %s " %distance,"loadcell:%s " %loadcell,"lon = %s " %long,"lat = %s"
%lat)
    print(load)
    print(dist)
    print(warn)

time.sleep(5)

success=deviceCli.publishEvent ("IoTSensor","json",warn,qos=0,on_publish=
myOnPublishCallback)

success=deviceCli.publishEvent ("IoTSensor","json",data,qos=0,on_publish=
myOnPublishCallback)

if not success:
    print("not connected to ibmiot")

```

```
time.sleep(20)
```

```
deviceCli.commandCallback=myCommandCallback
```

```
#disconnect the device
```

```
deviceCli.disconnect
```

OUTPUT:

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Sethurapatti, Trichy
distance = 24 loadcell:5 lon = 78.59966411452089 lat = 10.677849504740825
20 %
75 %
alert : Garbage level is above 75%
Sethurapatti, Trichy
distance = 24 loadcell:5 lon = 78.59966411452089 lat = 10.677849504740825
20 %
75 %
alert : Garbage level is above 75%
Sethurapatti, Trichy
distance = 53 loadcell:13 lon = 78.59966411452089 lat = 10.677849504740825
20 %
45 %
alert :No need to collect right now
Sethurapatti, Trichy
distance = 53 loadcell:13 lon = 78.59966411452089 lat = 10.677849504740825
20 %
45 %
alert :No need to collect right now
Sethurapatti, Trichy
distance = 51 loadcell:7 lon = 78.59966411452089 lat = 10.677849504740825
20 %
45 %
alert :No need to collect right now
Sethurapatti, Trichy
distance = 51 loadcell:7 lon = 78.59966411452089 lat = 10.677849504740825
20 %
45 %
alert :No need to collect right now
Sethurapatti, Trichy
distance = 43 loadcell:7 lon = 78.59966411452089 lat = 10.677849504740825
20 %
60 %
alert : Garbage level is above 60%
Sethurapatti, Trichy
distance = 43 loadcell:7 lon = 78.59966411452089 lat = 10.677849504740825
20 %
60 %
alert : Garbage level is above 60%
```

IBM WATSON:

IBM Watson IoT Platform

ganaemilson@gmail.com
ID: sl1jtd

Browse Action Device Types Interfaces

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

Event	Value	Format	Last Received
IoTSensor	{"dist":57,"load":10}	json	a few seconds ago
IoTSensor	{"type":"Buffer","data":[34,97,108,101,114,116,...	json	a few seconds ago
IoTSensor	{"dist":27,"load":11}	json	a few seconds ago
IoTSensor	{"type":"Buffer","data":[34,97,108,101,114,116,...	json	a few seconds ago
IoTSensor	{"dist":66,"load":14}	json	a minute ago

smartwaste123 Disconnected smartwaste

0 Simulations running

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NODE RED

The screenshot shows the Node-RED web interface in a browser. The top bar includes tabs for 'IBM Watson IoT Platform', 'WhatsApp', 'Node-RED: node-red', 'Node-RED Dashboard', 'Welcome to Project!', and 'IBM'. The address bar shows the URL: `node-red-hxasi-2022-11-10.eu-gb.mybluemix.net/red/#flow/8dfa8767bf2c3bbb`. The main workspace displays a flow diagram for 'Flow 1'. It starts with an 'IBM IoT' node (connected), which branches into three paths: 1) a 'msg payload' node, 2) a 'Distance' function node followed by a 'Distance' output node, and 3) a 'Weight' function node followed by a 'Weight' output node. The left sidebar contains a 'filter nodes' search bar and a list of nodes including 'switch', 'slider', 'numeric', 'text input', 'date picker', 'colour picker', 'text', 'form', 'audio out', 'chart', 'gauge', 'notification', 'ui control', and 'template'. The right sidebar shows a 'debug' console with a list of messages. The messages include alerts and JSON payloads:
- Alert: "No need to collect right now"
- Payload: `{ dist: 67, load: 5 }`
- Alert: "Garbage level is above 60%"
- Payload: `{ dist: 44, load: 9 }`
- Alert: "No need to collect right now"
- Payload: `{ dist: 59, load: 8 }`
The bottom of the screen shows a Windows taskbar with a search bar and various application icons.

The screenshot shows the 'Smart Waste Management' dashboard in a browser. The top bar includes tabs for 'IBM Watson IoT Platform', 'WhatsApp', 'Node-RED: node-red', 'Node-RED Dashboard', 'Welcome to Project!', and 'IBM'. The address bar shows the URL: `node-red-hxasi-2022-11-10.eu-gb.mybluemix.net/ui/#/l/0?socketid=ebbSllaMWXQQD7m9AAAB`. The dashboard has a blue header with the title 'Smart Waste Management'. The main content area displays two gauges under the heading 'Distance and Load'. The 'Weight' gauge shows a value of 8 units on a scale from 0 to 15, with a yellow arc. The 'Distance' gauge shows a value of 59 units on a scale from 0 to 70, with a green arc. The bottom of the screen shows a Windows taskbar with a search bar and various application icons.