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Team ID	PNT2022TMID47456
Project Name	SMART WASTE MANAGEMENT FOR METROPOLITEN CITIESS
Maximum Marks	20 Marks

SPRINT-3

FIG 1&2 : Develop a python script to publish random sensor data such as load cell , IR sensor and GSM/GPS

```
python code.py - C:/Users/mazzm/Downloads/ashwin/python code.py (3.7.0)
File Edit Format Run Options Window Help

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

#Provide your IBM Watson Device Credentials
organization = "241eaul"
deviceType = "Ashwin"
deviceId = "Ashwin"
authMethod = "token"
authToken = "18fvi1s&!t0CkuhsuU"

# Initialize GPIO

def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    status=cmd.data['command']
    if status=="lighton":
        print ("led is on")
    else :
        print ("led is off")
    #print(cmd)

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
deviceCli.connect()

while True:
    #Get Sensor Data from DHT11
```

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

while True:
    #Get Sensor Data from DHT11

    Loadcell=random.randint(0,100)
    IR =random.randint(0,100)
    GSM=random.randint(0,100)

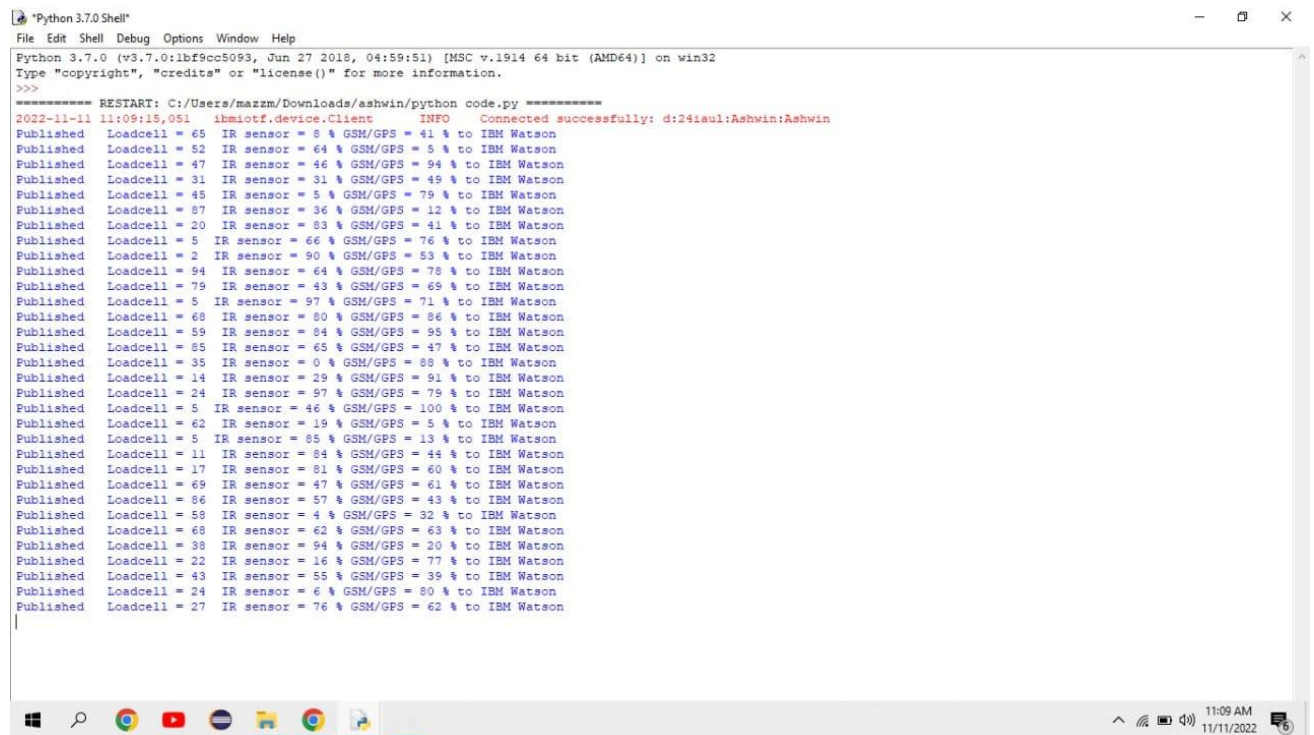
    data = { 'Loadcell': Loadcell, 'IR sensor': IR , 'GSM': GSM }
    #print data
    def myOnPublishCallback():
        print ("Published Loadcell = %s " % Loadcell, "IR sensor = %s %%" % IR , "GSM/GPS = %s %%" % GSM, "to IBM Watson")

    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0, on_publish=myOnPublishCallback)
    if not success:
        print("Not connected to IoT")
    time.sleep(1)

    deviceCli.commandCallback = myCommandCallback

# Disconnect the device and application from the cloud
deviceCli.disconnect()
```

FIG 3: Output for python script



```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (tags/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/mazzm/Downloads/ashwin/python code.py =====
2022-11-11 11:09:15,051 ibmiotf.device.Client INFO Connected successfully: d:24iaul:Ashwin:Ashwin
Published Loadcell = 65 IR sensor = 8 % GSM/GPS = 41 % to IBM Watson
Published Loadcell = 52 IR sensor = 64 % GSM/GPS = 5 % to IBM Watson
Published Loadcell = 47 IR sensor = 46 % GSM/GPS = 94 % to IBM Watson
Published Loadcell = 31 IR sensor = 31 % GSM/GPS = 49 % to IBM Watson
Published Loadcell = 45 IR sensor = 5 % GSM/GPS = 79 % to IBM Watson
Published Loadcell = 87 IR sensor = 36 % GSM/GPS = 12 % to IBM Watson
Published Loadcell = 20 IR sensor = 83 % GSM/GPS = 41 % to IBM Watson
Published Loadcell = 5 IR sensor = 66 % GSM/GPS = 76 % to IBM Watson
Published Loadcell = 2 IR sensor = 90 % GSM/GPS = 53 % to IBM Watson
Published Loadcell = 94 IR sensor = 64 % GSM/GPS = 78 % to IBM Watson
Published Loadcell = 79 IR sensor = 43 % GSM/GPS = 69 % to IBM Watson
Published Loadcell = 5 IR sensor = 97 % GSM/GPS = 71 % to IBM Watson
Published Loadcell = 68 IR sensor = 80 % GSM/GPS = 86 % to IBM Watson
Published Loadcell = 59 IR sensor = 84 % GSM/GPS = 95 % to IBM Watson
Published Loadcell = 85 IR sensor = 65 % GSM/GPS = 47 % to IBM Watson
Published Loadcell = 35 IR sensor = 0 % GSM/GPS = 88 % to IBM Watson
Published Loadcell = 14 IR sensor = 29 % GSM/GPS = 91 % to IBM Watson
Published Loadcell = 24 IR sensor = 97 % GSM/GPS = 79 % to IBM Watson
Published Loadcell = 5 IR sensor = 46 % GSM/GPS = 100 % to IBM Watson
Published Loadcell = 62 IR sensor = 19 % GSM/GPS = 5 % to IBM Watson
Published Loadcell = 5 IR sensor = 85 % GSM/GPS = 13 % to IBM Watson
Published Loadcell = 11 IR sensor = 84 % GSM/GPS = 44 % to IBM Watson
Published Loadcell = 17 IR sensor = 81 % GSM/GPS = 60 % to IBM Watson
Published Loadcell = 69 IR sensor = 47 % GSM/GPS = 61 % to IBM Watson
Published Loadcell = 86 IR sensor = 57 % GSM/GPS = 43 % to IBM Watson
Published Loadcell = 58 IR sensor = 4 % GSM/GPS = 32 % to IBM Watson
Published Loadcell = 68 IR sensor = 62 % GSM/GPS = 63 % to IBM Watson
Published Loadcell = 38 IR sensor = 54 % GSM/GPS = 20 % to IBM Watson
Published Loadcell = 22 IR sensor = 16 % GSM/GPS = 77 % to IBM Watson
Published Loadcell = 43 IR sensor = 55 % GSM/GPS = 39 % to IBM Watson
Published Loadcell = 24 IR sensor = 6 % GSM/GPS = 80 % to IBM Watson
Published Loadcell = 27 IR sensor = 76 % GSM/GPS = 62 % to IBM Watson
```

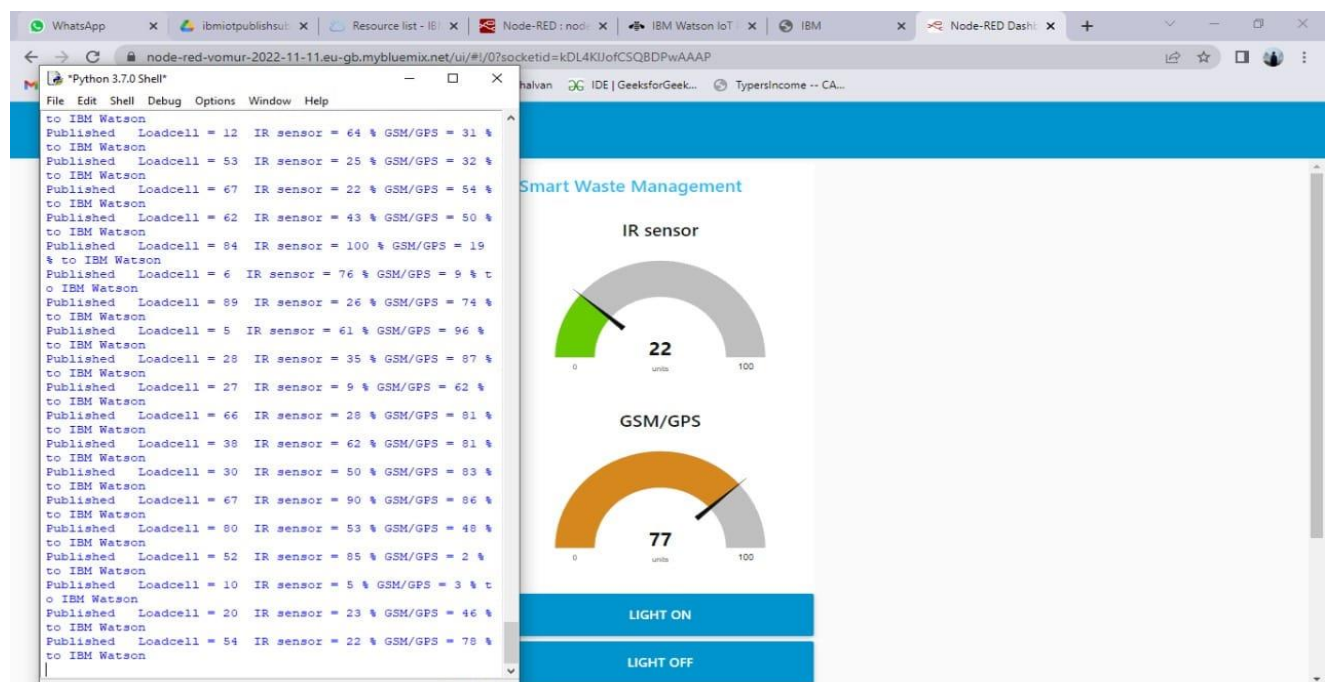


FIG 4: After developing python code , commands are received just print the statements which represent the control of the device

Node-RED interface showing a flow named "Flow 1". The flow includes nodes for IBM IoT, msg payload, loadcell node, IR sensor node, GSM/GPS node, light on, light off, and IBM IoT. The debug console shows messages from the msg payload node, including commands like "light off" and "lighton".

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Published Loadcell = 1 IR sensor = 21 % GSM/GPS = 66 % to IBM Watson
Published Loadcell = 90 IR sensor = 80 % GSM/GPS = 45 % to IBM Watson
Published Loadcell = 71 IR sensor = 70 % GSM/GPS = 61 % to IBM Watson
Published Loadcell = 6 IR sensor = 33 % GSM/GPS = 48 % to IBM Watson
Published Loadcell = 88 IR sensor = 6 % GSM/GPS = 42 % to IBM Watson
Published Loadcell = 48 IR sensor = 63 % GSM/GPS = 22 % to IBM Watson
Published Loadcell = 77 IR sensor = 49 % GSM/GPS = 59 % to IBM Watson
Published Loadcell = 14 IR sensor = 40 % GSM/GPS = 12 % to IBM Watson
Published Loadcell = 36 IR sensor = 98 % GSM/GPS = 3 % to IBM Watson
Published Loadcell = 1 IR sensor = 98 % GSM/GPS = 23 % to IBM Watson
Published Loadcell = 90 IR sensor = 41 % GSM/GPS = 68 % to IBM Watson
Published Loadcell = 49 IR sensor = 47 % GSM/GPS = 27 % to IBM Watson
Published Loadcell = 11 IR sensor = 87 % GSM/GPS = 93 % to IBM Watson
Command received: lighton
led is on
Published Loadcell = 4 IR sensor = 90 % GSM/GPS = 46 % to IBM Watson
Command received: Lighttoff
led is off
Published Loadcell = 93 IR sensor = 32 % GSM/GPS = 52 % to IBM Watson
Command received: lighton
led is on
Published Loadcell = 28 IR sensor = 44 % GSM/GPS = 83 % to IBM Watson
Published Loadcell = 70 IR sensor = 51 % GSM/GPS = 38 % to IBM Watson
Command received: Lighttoff
led is off
Command received: lighton
led is on
Published Loadcell = 61 IR sensor = 11 % GSM/GPS = 34 % to IBM Watson
Published Loadcell = 96 IR sensor = 3 % GSM/GPS = 54 % to IBM Watson
Published Loadcell = 13 IR sensor = 8 % GSM/GPS = 93 % to IBM Watson
Published Loadcell = 4 IR sensor = 96 % GSM/GPS = 98 % to IBM Watson
Published Loadcell = 77 IR sensor = 95 % GSM/GPS = 100 % to IBM Watson
Published Loadcell = 14 IR sensor = 31 % GSM/GPS = 8 % to IBM Watson
Published Loadcell = 41 IR sensor = 21 % GSM/GPS = 14 % to IBM Watson
Published Loadcell = 80 IR sensor = 32 % GSM/GPS = 93 % to IBM Watson
Published Loadcell = 80 IR sensor = 34 % GSM/GPS = 10 % to IBM Watson
Published Loadcell = 96 IR sensor = 38 % GSM/GPS = 19 % to IBM Watson
Published Loadcell = 23 IR sensor = 37 % GSM/GPS = 82 % to IBM Watson
Published Loadcell = 62 IR sensor = 45 % GSM/GPS = 94 % to IBM Watson
Published Loadcell = 37 IR sensor = 31 % GSM/GPS = 91 % to IBM Watson
Published Loadcell = 76 IR sensor = 52 % GSM/GPS = 45 % to IBM Watson
Published Loadcell = 84 IR sensor = 62 % GSM/GPS = 18 % to IBM Watson
Published Loadcell = 11 IR sensor = 11 % GSM/GPS = 55 % to IBM Watson
Ln: 5 Col: 0
```

FIG 6: Publish data to the IBM cloud

