Sprint Delivery – 3

Date	14 November 2022
Team ID	PNT2022TMID43416
Project Name	Project - SMART WASTE MANAGEMENT SYSTEM

In the last sprint phase(sprint - 2), a node-MCU device is created in Watson IOT Platform and randomly generated.

Now, using PYTHON CODE, we need to generate random values for Garbage weight, Level and Location of the Bin.

For that we need Python 3.7.0 IDLE. First of all, require the ibmiotf package using this command in the command prompt : **pip install ibmiotf.**

The required library files are included in the code ,then functions are written

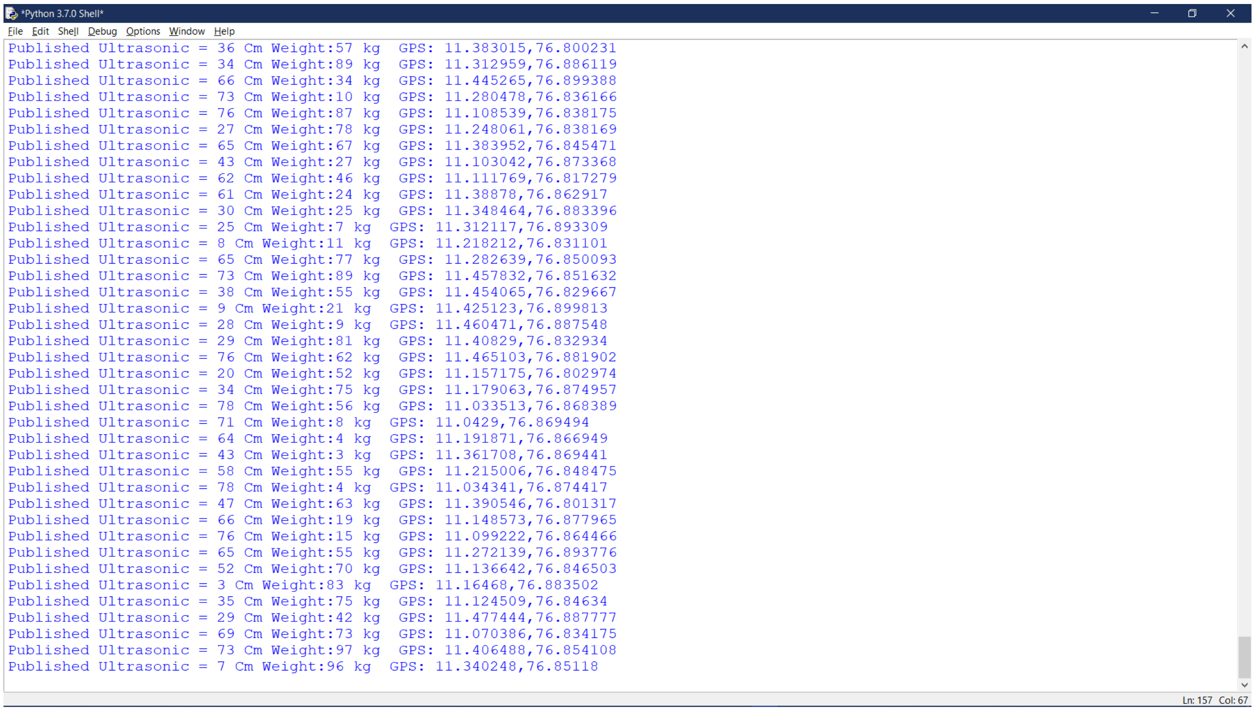
CODE:

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

#Provide your IBM Watson Device Credentials
organization = "8wd932"
deviceType = "Node_Mcu"
deviceId = "123456789"
authMethod = "token"
authToken = "123456789"

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

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
        time.sleep(5)
        ult_son=random.randint(0,80)
        weight=random.randint(0,100)
        lat = round(random.uniform(11.03, 11.50), 6)
        long = round(random.uniform(76.80, 76.90), 6)
        gps = str(lat) + str(',') + str(long)
        data = {'Ultrasonic' : ult_son, 'Weight' : weight , 'GPS' : gps}
        #print data
        def myOnPublishCallback():
            print ("Published Ultrasonic = %s Cm" %ult_son, "Weight:%s kg" %weight, "GPS: %s" %gps)
```

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

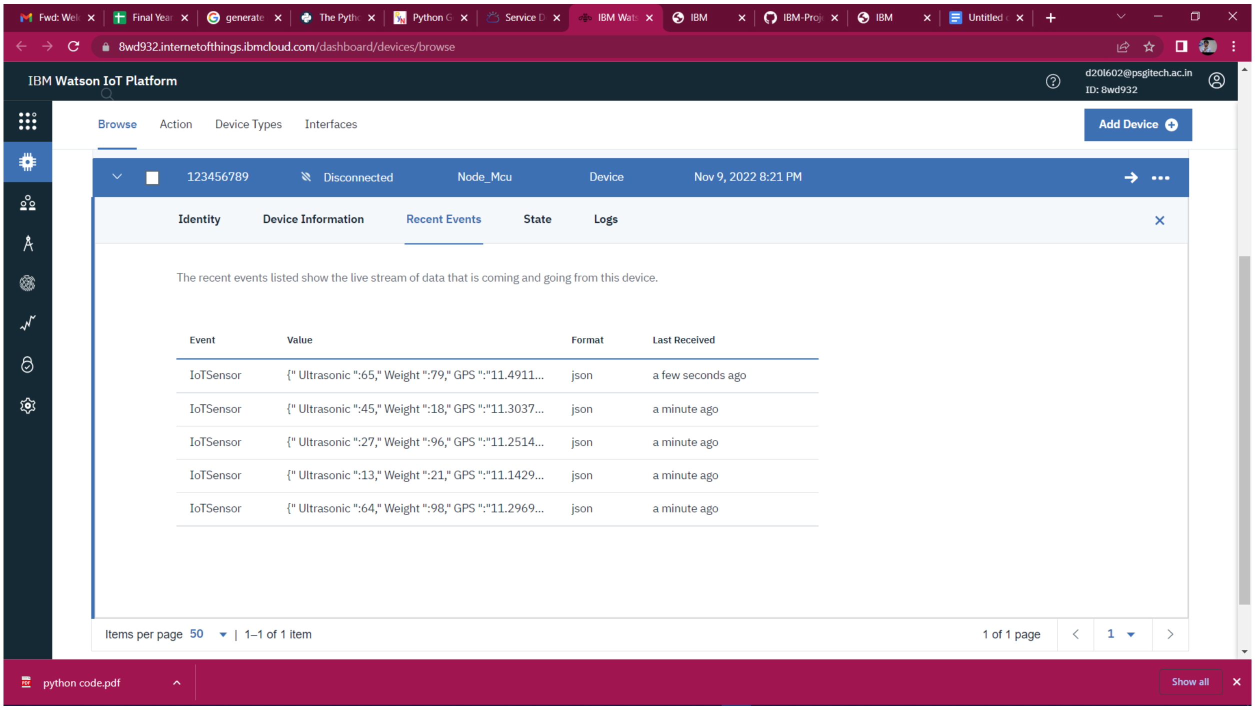
```
# Disconnect the device and application from the cloud
deviceCli.disconnect()
```

OUTPUT:



```
Published Ultrasonic = 36 Cm Weight:57 kg  GPS: 11.383015,76.800231
Published Ultrasonic = 34 Cm Weight:89 kg  GPS: 11.312959,76.886119
Published Ultrasonic = 66 Cm Weight:34 kg  GPS: 11.445265,76.899388
Published Ultrasonic = 73 Cm Weight:10 kg  GPS: 11.280478,76.836166
Published Ultrasonic = 76 Cm Weight:87 kg  GPS: 11.108539,76.838175
Published Ultrasonic = 27 Cm Weight:78 kg  GPS: 11.248061,76.838169
Published Ultrasonic = 65 Cm Weight:67 kg  GPS: 11.383952,76.845471
Published Ultrasonic = 43 Cm Weight:27 kg  GPS: 11.103042,76.873368
Published Ultrasonic = 62 Cm Weight:46 kg  GPS: 11.111769,76.817279
Published Ultrasonic = 61 Cm Weight:24 kg  GPS: 11.38878,76.862917
Published Ultrasonic = 30 Cm Weight:25 kg  GPS: 11.348464,76.883396
Published Ultrasonic = 25 Cm Weight:7 kg  GPS: 11.312117,76.893309
Published Ultrasonic = 8 Cm Weight:11 kg  GPS: 11.218212,76.831101
Published Ultrasonic = 65 Cm Weight:77 kg  GPS: 11.282639,76.850093
Published Ultrasonic = 73 Cm Weight:89 kg  GPS: 11.457832,76.851632
Published Ultrasonic = 38 Cm Weight:55 kg  GPS: 11.454065,76.829667
Published Ultrasonic = 9 Cm Weight:21 kg  GPS: 11.425123,76.899813
Published Ultrasonic = 28 Cm Weight:9 kg  GPS: 11.460471,76.887548
Published Ultrasonic = 29 Cm Weight:81 kg  GPS: 11.40829,76.832934
Published Ultrasonic = 76 Cm Weight:62 kg  GPS: 11.465103,76.881902
Published Ultrasonic = 20 Cm Weight:52 kg  GPS: 11.157175,76.802974
Published Ultrasonic = 34 Cm Weight:75 kg  GPS: 11.179063,76.874957
Published Ultrasonic = 78 Cm Weight:56 kg  GPS: 11.033513,76.868389
Published Ultrasonic = 71 Cm Weight:8 kg  GPS: 11.0429,76.869494
Published Ultrasonic = 64 Cm Weight:4 kg  GPS: 11.191871,76.866949
Published Ultrasonic = 43 Cm Weight:3 kg  GPS: 11.361708,76.869441
Published Ultrasonic = 58 Cm Weight:55 kg  GPS: 11.215006,76.848475
Published Ultrasonic = 78 Cm Weight:4 kg  GPS: 11.034341,76.874417
Published Ultrasonic = 47 Cm Weight:63 kg  GPS: 11.390546,76.801317
Published Ultrasonic = 66 Cm Weight:19 kg  GPS: 11.148573,76.877965
Published Ultrasonic = 76 Cm Weight:15 kg  GPS: 11.099222,76.864466
Published Ultrasonic = 65 Cm Weight:55 kg  GPS: 11.272139,76.893776
Published Ultrasonic = 52 Cm Weight:70 kg  GPS: 11.136642,76.846503
Published Ultrasonic = 3 Cm Weight:83 kg  GPS: 11.16468,76.883502
Published Ultrasonic = 35 Cm Weight:75 kg  GPS: 11.124509,76.84634
Published Ultrasonic = 29 Cm Weight:42 kg  GPS: 11.477444,76.887777
Published Ultrasonic = 69 Cm Weight:73 kg  GPS: 11.070386,76.834175
Published Ultrasonic = 73 Cm Weight:97 kg  GPS: 11.406488,76.854108
Published Ultrasonic = 7 Cm Weight:96 kg  GPS: 11.340248,76.85118
```

These randomly generated values can be seen in the IBM Watson IOT Platform which is the IBM Cloud in the area of device recent events with the help of IBM ibmiotf package and the device credentials.



8wd932.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

d20l602@psgitech.ac.in
ID: 8wd932

Browse Action Device Types Interfaces

Add Device

123456789	Disconnected	Node_Mcu	Device	Nov 9, 2022 8:21 PM

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
IoTSensor	{" Ultrasonic ":65," Weight ":79," GPS ":"11.4911...	json	a few seconds ago
IoTSensor	{" Ultrasonic ":45," Weight ":18," GPS ":"11.3037...	json	a minute ago
IoTSensor	{" Ultrasonic ":27," Weight ":96," GPS ":"11.2514...	json	a minute ago
IoTSensor	{" Ultrasonic ":13," Weight ":21," GPS ":"11.1429...	json	a minute ago
IoTSensor	{" Ultrasonic ":64," Weight ":98," GPS ":"11.2969...	json	a minute ago

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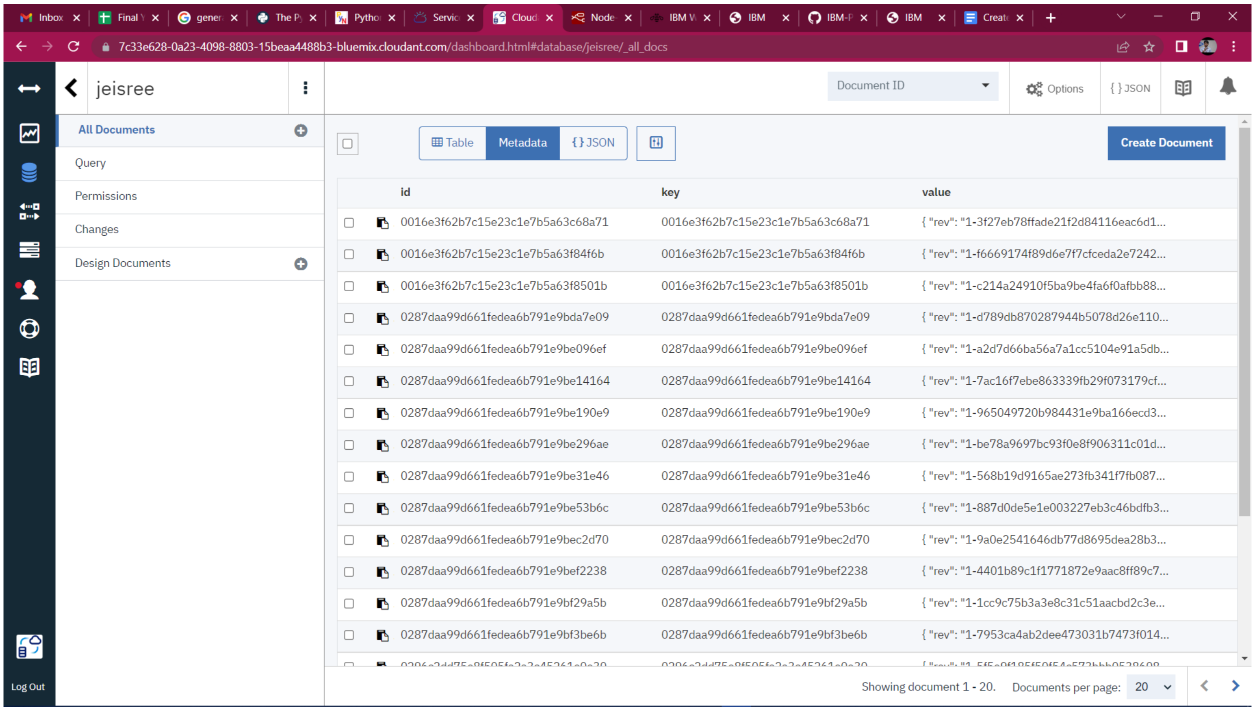
python code.pdf Show all

The values are stored in the IBM Cloudant database

Storing data in cloud:



7c33e628-0a23-4098-8803-15beaa4488b3-bluemix.cloudant.com/dashboard.html#database/jeisree/_all_docs

jeisree

All Documents
Query
Permissions
Changes
Design Documents

Document ID Options { } JSON

Table Metadata { } JSON Create Document

id	key	value
0016e3f62b7c15e23c1e7b5a63c68a71	0016e3f62b7c15e23c1e7b5a63c68a71	{ "rev": "1-3f27eb78ffade21f2d84116eac6d1...
0016e3f62b7c15e23c1e7b5a63f84f6b	0016e3f62b7c15e23c1e7b5a63f84f6b	{ "rev": "1-f6669174f89d6e7f7cfceda2e7242...
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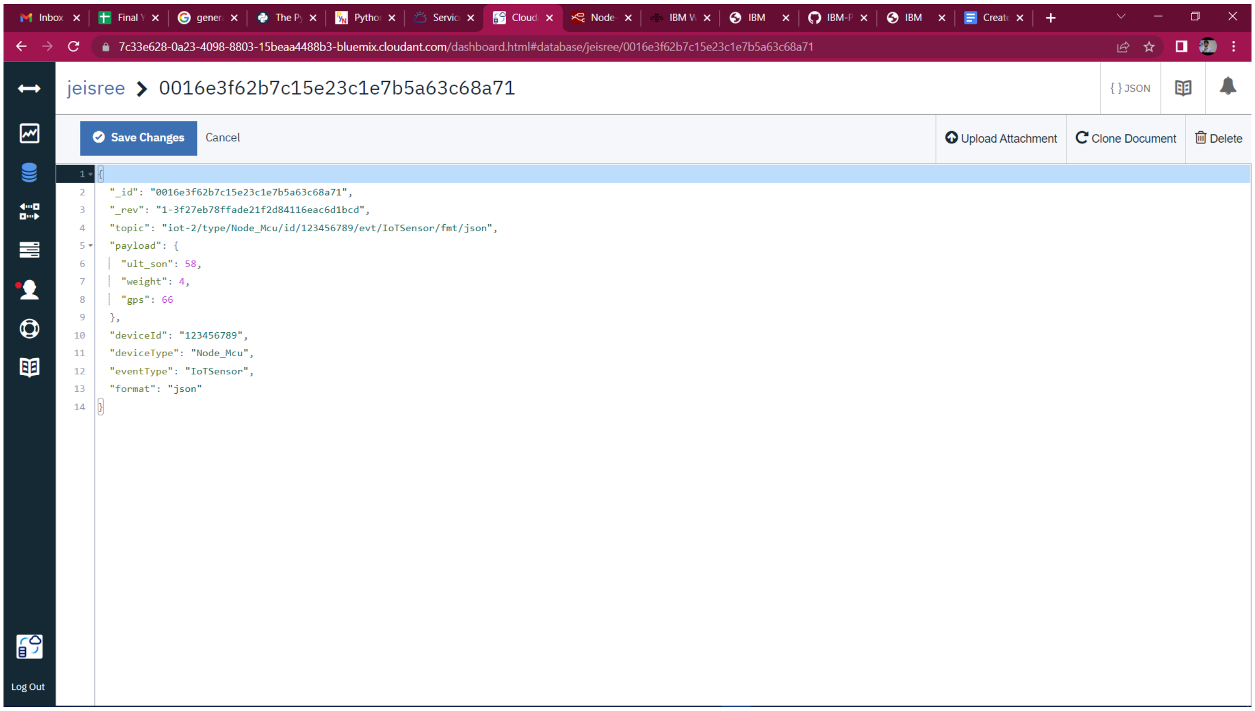
0287daa99d661fedea6b791e9bda7e09	0287daa99d661fedea6b791e9bda7e09	{ "rev": "1-d789db870287944b5078d26e110...
0287daa99d661fedea6b791e9be096ef	0287daa99d661fedea6b791e9be096ef	{ "rev": "1-a2d7d66ba56a7a1cc5104e91a5db...
0287daa99d661fedea6b791e9be14164	0287daa99d661fedea6b791e9be14164	{ "rev": "1-7ac16f7ebe863339fb29f073179cf...
0287daa99d661fedea6b791e9be190e9	0287daa99d661fedea6b791e9be190e9	{ "rev": "1-965049720b984431e9ba166ecd3...
0287daa99d661fedea6b791e9be296ae	0287daa99d661fedea6b791e9be296ae	{ "rev": "1-be78a9697bc93f0e8f906311c01d...
0287daa99d661fedea6b791e9be31e46	0287daa99d661fedea6b791e9be31e46	{ "rev": "1-568b19d9165ae273fb341f7fb087...
0287daa99d661fedea6b791e9be53b6c	0287daa99d661fedea6b791e9be53b6c	{ "rev": "1-887d0de5e1e003227eb3c46bdfb3...
0287daa99d661fedea6b791e9bec2d70	0287daa99d661fedea6b791e9bec2d70	{ "rev": "1-9a0e2541646db77d8695dea28b3...
0287daa99d661fedea6b791e9bef2238	0287daa99d661fedea6b791e9bef2238	{ "rev": "1-4401b89c1f1771872e9aac8ff89c7...
0287daa99d661fedea6b791e9bf29a5b	0287daa99d661fedea6b791e9bf29a5b	{ "rev": "1-1cc9c75b3a3e8c31c51aacbd2c3e...
0287daa99d661fedea6b791e9bf3be6b	0287daa99d661fedea6b791e9bf3be6b	{ "rev": "1-7953ca4ab2dee473031b7473f014...

Log Out

Showing document 1 - 20. Documents per page: 20

Actual Json format stored in cloud:



Inbox
Final Y
gener
The Py
Pytho
Servic
Cloud
Node
IBM W
IBM
IBM-P
IBM
Create
7c33e628-0a23-4098-8803-15beaa4488b3-bluemix.cloudant.com/dashboard.html#database/jeisree/0016e3f62b7c15e23c1e7b5a63c68a71
jeisree
0016e3f62b7c15e23c1e7b5a63c68a71
{ } JSON
Save Changes
Cancel
Upload Attachment
Clone Document
Delete
Log Out

```
{
  "_id": "0016e3f62b7c15e23c1e7b5a63c68a71",
  "_rev": "1-3f27eb78ffade21f2d84116eac6d1bcd",
  "topic": "iot-2/type/Node_Mcu/id/123456789/evt/IoTSensor/fmt/json",
  "payload": {
    "ult_son": 58,
    "weight": 4,
    "gps": 66
  },
  "deviceId": "123456789",
  "deviceType": "Node_Mcu",
  "eventType": "IoTSensor",
  "format": "json"
}
```