

SPRINT 2

Aim:

To create python script and establish Node-RED

Requirements:

- Python 3.7
- IBM Cloud Account (IoT Platform and Node RED App)

Activities:

- Make sure IBM Watson IoT Platform and Node RED App is created in cloud account
- In IBM Watson IoT Platform, create device and cards
- Develop python script for generating water parameters
- In Node RED App, install necessary node
- To retrieve data from IoT Platform use IBMIoT node from node column on left and once double click select the necessary properties
- Place function nodes to get the values, then type code and connect them to IBMIoT node
- Place debug node and connect them to the function nodes to view the data in debug column

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar labeled 'Search by Device ID' is present. Below the navigation bar, a table lists devices with columns for 'Device ID', 'Status', 'Device Type', 'Class ID', and 'Date Added'. Two devices are shown: one with ID 1234 and another with ID 2468. The device with ID 2468 is selected, and its details are shown in a modal window. The modal window has tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, showing a table of events with columns for 'Event', 'Value', 'Format', and 'Last Received'. The events are from 'IoTSensor' and contain JSON data. A status message at the bottom of the modal indicates '0 Simulations running'.

Device ID	Status	Device Type	Class ID	Date Added
1234	Disconnected	qwert	Device	Nov 14, 2022 12:11 PM
2468	Disconnected	check	Device	Nov 15, 2022 7:31 PM

Event	Value	Format	Last Received
IoTSensor	{"temp":13,"ph":9,"ppm":3,"flow":140}	json	an hour ago
IoTSensor	{"temp":39,"ph":13,"ppm":724,"flow":140}	json	an hour ago
IoTSensor	{"temp":93,"ph":12,"ppm":623,"flow":140}	json	an hour ago

0 Simulations running

Application Details - IBM Cloud x Node-RED : node-red-ksbzz-202 x Node-RED Dashboard x IBM Watson IoT Platform x

node-red-ksbzz-2022-11-15.eu-gb.mybluemix.net/red/#flow/b5c19006337010cf

Node-RED

filter nodes

qasnooara

- button
- dropdown
- slider
- switch
- numeric
- text input
- date picker
- colour picker
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- chart
- audio out
- notification

Flow 1

msg payload

temp

ph

ppm

flow

debug

all nodes

11/15/2022, 9:22:23 PM node: f506799c76a135e4
iot-2/type/checkId/2468/evt/IoTSensorRfMtljson :
msg.payload : number
19

11/15/2022, 9:22:25 PM node: f506799c76a135e4
iot-2/type/checkId/2468/evt/IoTSensorRfMtljson :
msg.payload : number
194

11/15/2022, 9:22:32 PM node: f506799c76a135e4
iot-2/type/checkId/2468/evt/IoTSensorRfMtljson :
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iot-2/type/checkId/2468/evt/IoTSensorRfMtljson :
msg.payload : number
537

11/15/2022, 9:22:33 PM node: f506799c76a135e4
iot-2/type/checkId/2468/evt/IoTSensorRfMtljson :
msg.payload : number
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Edit iotlib in node

Delete Cancel Done

Properties

Authentication API Key

API Key 89e38420cf652cd66

Input Type Device Event

Device Type ☒ All or +

Device Id ☐ All or device id e.g. ab12cd231a21

Event ☒ All or +

Format ☐ All or json

QoS 0

Name IBM IoT

Service registered

Enabled

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Edit function node

Delete Cancel Done

Properties

Name temp

Setup On Start On Message On Stop

1 msg.payload=msg.payload.temp
2 return msg;

Enabled

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IBM IoT connected

Edit function node

Delete Cancel Done

Properties

Name: ph

Setup On Start On Message On Stop

```
1 msg.payload=msg.payload.ph
2 return msg;
```

Enabled

debug

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IBM IoT connected

Edit function node

Delete Cancel Done

Properties

Name: ppm

Setup On Start On Message On Stop

```
1 msg.payload=msg.payload.ppm
2 return msg;
```

Enabled

debug

all nodes

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IBM IoT connected

Edit function node

Delete Cancel Done

Properties

Name: flow

Setup On Start On Message On Stop

```
1 msg.payload=msg.payload.flow
2 return msg;
```

Enabled

debug

all nodes

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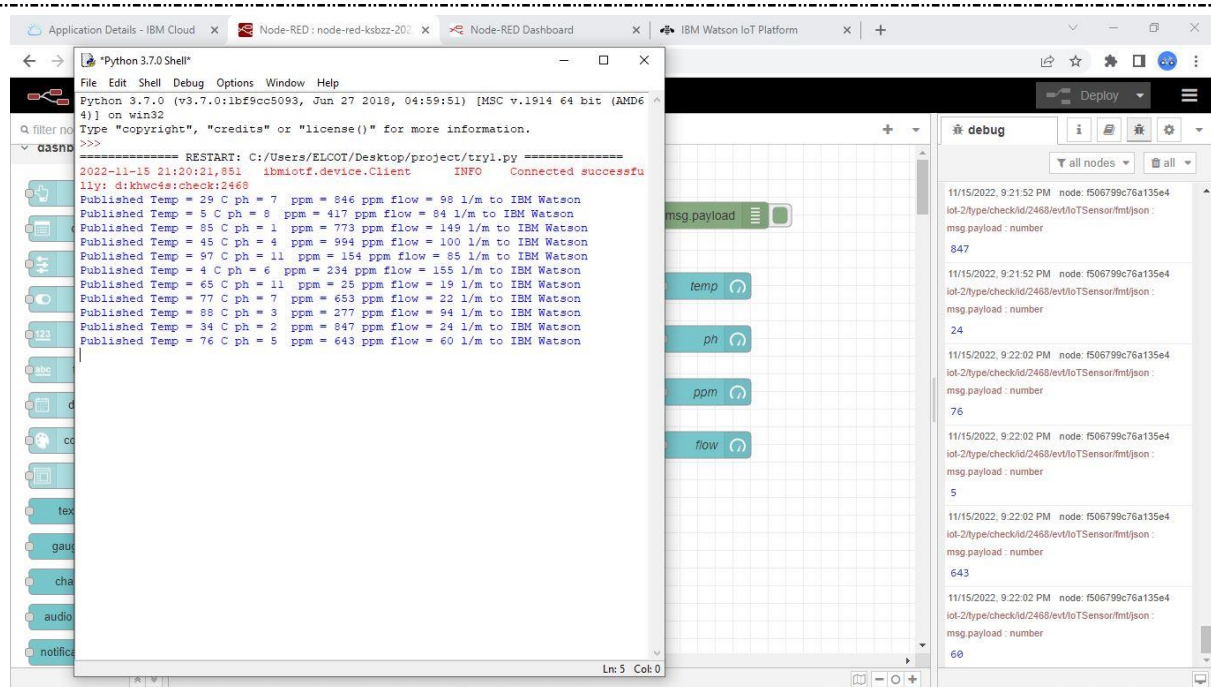
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Python script:

```
import time
```

```
import sys
```

```
import ibmiotf
```

```
import ibmiotf.device
```

```
import random
```

#Provide your IBM Watson Device Credentials

```
organization = "khwc4s"
```

```
deviceType = "check"
```

```
deviceId = "2468"
```

```
authMethod = "token"
```

```
authToken = "09876543"
```

Initialize GPIO

```
def myCommandCallback(cmd):
```

```
    print("Command received: %s" % cmd.data['command'])
```

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

```
    if status=="lighton":
```

```
        print ("led is on")
```

```
    elif status == "lightoff":
```

```
        print ("led is off")
```

```
    else :
```

```
        print ("please send proper 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()

# 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

    temp=random.randint(0,100)
    ph=random.randint(0,14)
    ppm=random.randint(0,1000)
    flow=random.randint(0,200)

    data = { 'temp' : temp, 'ph': ph,'ppm':ppm,'flow':flow }
    #print data
    def myOnPublishCallback():
        print ("Published Temp = %s C" % temp, "ph = %s " %
ph,"ppm = %s ppm" % ppm,"flow = %s l/m" % flow, "to IBM
Watson")

        success = deviceCli.publishEvent("IoTSensor", "json", data,
qos=0, on_publish=myOnPublishCallback)
        if not success:
            print("Not connected to IoTF")
            time.sleep(10)

    deviceCli.commandCallback = myCommandCallback

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

```