

## Project Development Phase

### Sprint-2

Date	15 November 2022
Team ID	PNT2022TMID08766
Project Name	Project - Real time River water quality monitoring and control system

### Installed necessary libraries in Python:

```
import ibmiotf.application
import ibmiotf.device
import time
import random
import sys
from twilio.rest import Client
account_sid = 'AC18b4d7a136b9a07a181a837c23ad1358'
auth_token = 'adc9782f6520041c84ac4930daad0625 '
client = Client(account_sid, auth_token)

organization = "wbp1fk"
deviceType = "ESP32"
deviceId = "sensor_data_1"
authMethod = "token"
authToken = "prototype_1"

pH = random.randint(1, 14)
turbidity = random.randint(1, 1000)
temperature = random.randint(0, 100)
info=""

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

### Python program to connect IBM Watson Platform is shown below:

```
import ibmiotf.application
```

```
import ibmiotf.device
```

```
import time
```

```
import random
```

```
import sys
```

```
organization = "wbp1fk"
```

```
deviceType = "ESP32"
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deviceId = "sensor_data_1"
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authMethod = "token"
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authToken = "prototype_1"

pH = random.randint(1, 14)
turbidity = random.randint(1, 1000)
temperature = random.randint(0, 100)
info=""

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

deviceCli.connect()

while True:
    pH = random.randint(1, 14)
    turbidity = random.randint(1, 1000)
    temperature = random.randint(0, 100)
    if temperature>70 or pH<6 or pH>8 or turbidity>500:
        print("high")
        info="harmfull to drink"
    else:
        info="capable to drinking"

    data = {'pH': pH, 'turbid': turbidity, 'temp': temperature, 'info':info}

    def myOnPublishCallback():

```

```

        print("Published pH= %s" % pH, "Turbidity:%s" % turbidity,
              "Temperature:%s" % temperature)

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

    if not success:

        print("Not Connected to ibmiot")

    time.sleep(5)

    deviceCli.commandCallback = myCommandCallback

deviceCli.disconnect()

```

**Python Console output is shown below:**

```

===== RESTART: C:\Users\srinath\Desktop\IBM\final.py =====
high2022-11-14 20:03:53,055 ibmiotf.device.Client INFO Connected successfully: d:wbp1fk:ESP32:sensor_data_1

Published pH= 9 Turbidity:595 Temperature:24
high
Published pH= 10 Turbidity:259 Temperature:98
Published pH= 14 Turbidity:163 Temperature:59
high
Published pH= 1 Turbidity:109 Temperature:56
high
Published pH= 8 Turbidity:527 Temperature:7
high
Published pH= 11 Turbidity:874 Temperature:62
Published pH= 9 Turbidity:76 Temperature:40
high
Published pH= 12 Turbidity:478 Temperature:91
high
Published pH= 7 Turbidity:887 Temperature:54
Published pH= 13 Turbidity:18 Temperature:64
Published pH= 13 Turbidity:219 Temperature:47
high
Published pH= 10 Turbidity:764 Temperature:36
high
Published pH= 11 Turbidity:545 Temperature:88

```

Sensor data is uploaded to IBM watson Cloud is shown Below:

IBM Watson IoT Platform

Browse Action Device Types Interfaces

sensor\_data\_1 Connected ESP32 Device Nov 14, 2022 7:57 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
demo	{"pH":8,"turbid":6,"temp":39,"info":"capable to d...	json	a few seconds ago
demo	{"pH":6,"turbid":13,"temp":84,"info":"harmfull to...	json	a few seconds ago
demo	{"pH":1,"turbid":71,"temp":67,"info":"harmfull to...	json	a few seconds ago
demo	{"pH":2,"turbid":961,"temp":66,"info":"harmfull t...	json	a few seconds ago
demo	{"pH":8,"turbid":652,"temp":40,"info":"harmfull t...	json	a few seconds ago

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## Event Payload

Event Name demo

Time Received Nov 17, 2022 9:34 PM

```
1 {  
2   "pH": 11,  
3   "turbid": 920,  
4   "temp": 21,  
5   "info": "harmfull to drink"  
6 }
```