

## PROJECT DEVELOPMENT PHASE

### SPRINT 1

Date	10 November 2022
Team ID	PNT2022TMID38637
Project name	Real –time river water quality monitoring and control system
Maximum marks	2 marks

#### ANALYZE THE PREREQUISITES

Needed prerequisites for real time river water quality monitoring and control system using Internet Of Things (IoT) were

- ❖ IBM Watson IoT Platform
- ❖ Node-RED Service
- ❖ Cloudant DB

#### Python code:

```
#IBM Watson IOT Platform
```

```
import time
```

```
import sys
```

```
import ibmiotf.application
```

```
import ibmiotf.device
```

```
import random
```

```
#provide Your IBM Watson Device Credentials
```

```
organization = "oo25i5"
```

```
deviceType = "gv"
```

```
deviceId = "1607"
```

```
authMethod = "token"
```

```
authToken = "12341607"
```

```
#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" info the cloud as an event
of type"greetings"10 times
deviceCli.connect()

while True:
    #Get sensor Data from DHT11

    temp=random.randint(90,110)
    pH=random.randint(0,14)
    turbidity=random.randint(0,100)

    data = { 'Temperature' : temp, 'pH': pH, 'Turbidity':turbidity }
    #print data
    def myOnPublishCallback():
        print ("published Temperature = %s C" % temp, "pH = is %s %" % pH,
"Turbidity= is %s %" % turbidity,"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()

```

```
python_script.py - C:\Users\vaishnavi G\AppData\Local\Programs\Python\Python37\python_script.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 = "002515"
deviceType = "qv"
deviceId = "1607"
authMethod = "token"
authToken = "12341607"

#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" info the cloud as an event of type" greetings"10 times
deviceCli.connect()

while True:
    #Get sensor Data from DHT11
    temp=random.randint(90,110)
    pH=random.randint(0,14)
    turbidity=random.randint(0,100)

    data = { 'Temperature': temp, 'pH': pH, 'Turbidity':turbidity }
    #print data
    def myPublishCallback():
        print ("published Temperature = %s C" % temp, "pH = is %s %" % pH, "Turbidity= is %s %" % turbidity,"to IBM Watson")

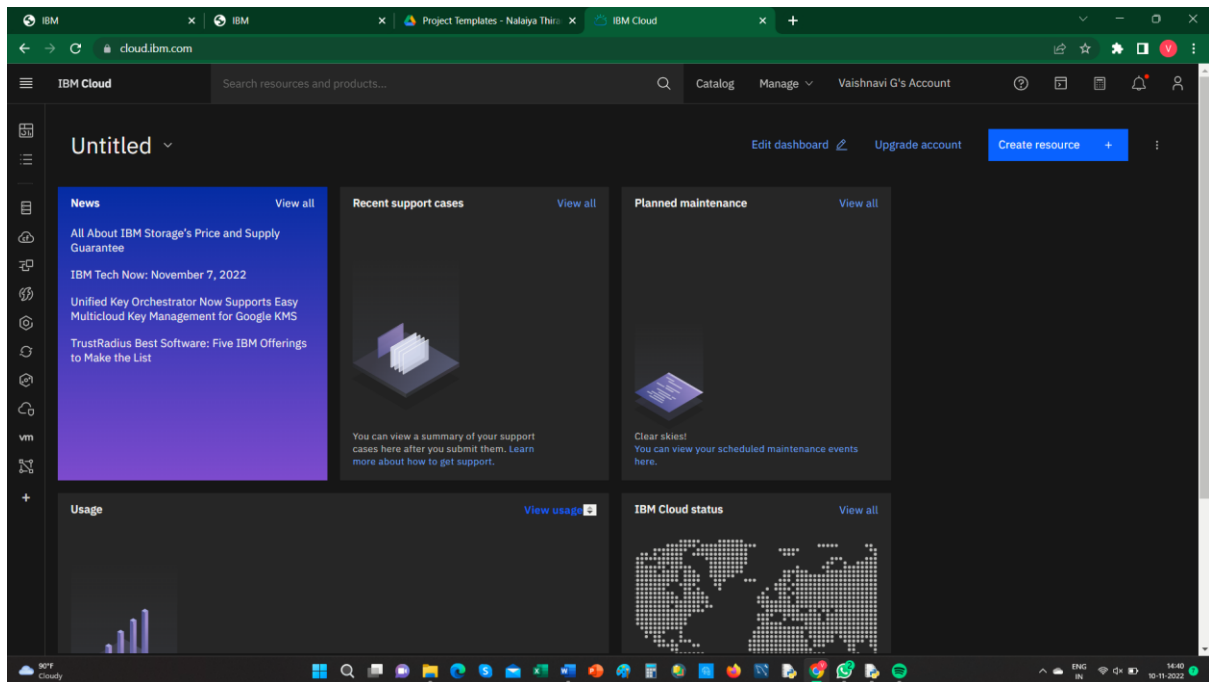
    success = deviceCli.publishEvent("IOTSensor", "json",data,qos=0,on_publish=myOnPublishCallback)
    if not success:
        print("Not connected to IOT")
    time.sleep(10)
```

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help

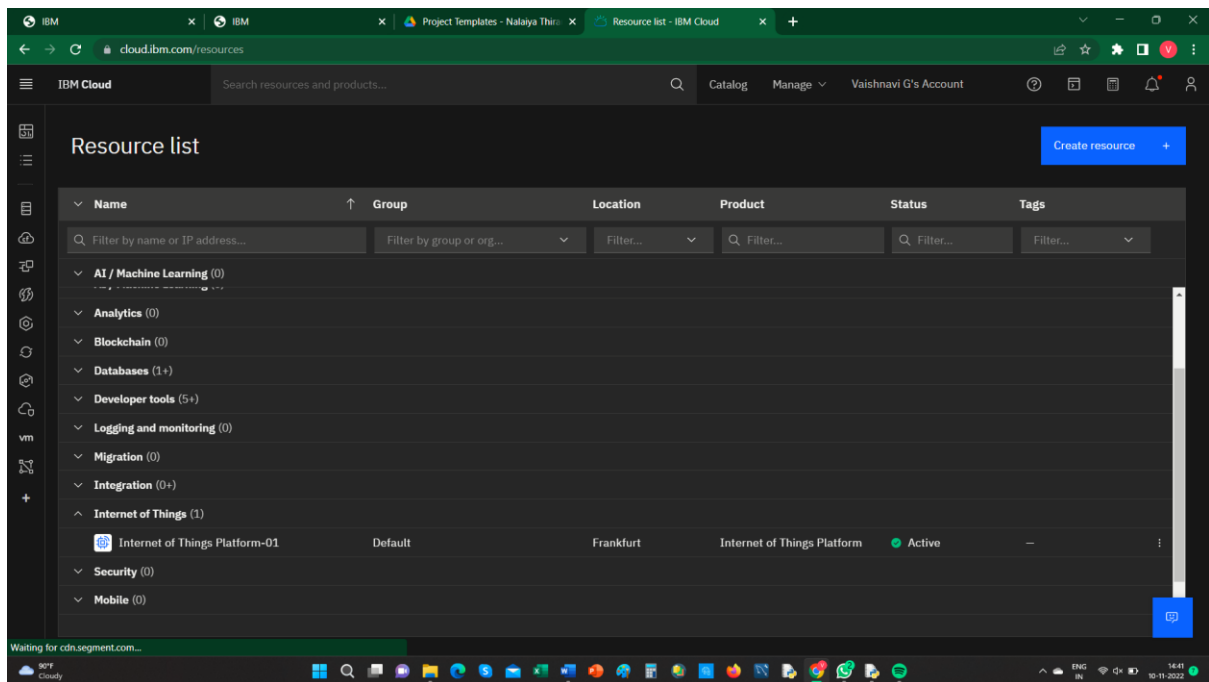
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:\Users\vaishnavi G\AppData\Local\Programs\python\python37\python_script.py
2022-11-05 19:51:06,719 INFO Connected successfully: d002515:qv:1607
published Temperature = 90 C pH = is 7 % Turbidity= is 2 % to IBM Watson
published Temperature = 100 C pH = is 6 % Turbidity= is 17 % to IBM Watson
published Temperature = 95 C pH = is 3 % Turbidity= is 66 % to IBM Watson
published Temperature = 100 C pH = is 9 % Turbidity= is 93 % to IBM Watson
published Temperature = 95 C pH = is 4 % Turbidity= is 34 % to IBM Watson
published Temperature = 92 C pH = is 1 % Turbidity= is 27 % to IBM Watson
published Temperature = 104 C pH = is 2 % Turbidity= is 18 % to IBM Watson
published Temperature = 102 C pH = is 9 % Turbidity= is 39 % to IBM Watson
published Temperature = 94 C pH = is 10 % Turbidity= is 74 % to IBM Watson
published Temperature = 94 C pH = is 5 % Turbidity= is 71 % to IBM Watson
published Temperature = 102 C pH = is 12 % Turbidity= is 100 % to IBM Watson
published Temperature = 91 C pH = is 12 % Turbidity= is 72 % to IBM Watson
published Temperature = 92 C pH = is 8 % Turbidity= is 71 % to IBM Watson
published Temperature = 99 C pH = is 10 % Turbidity= is 31 % to IBM Watson
published Temperature = 106 C pH = is 4 % Turbidity= is 17 % to IBM Watson
published Temperature = 109 C pH = is 0 % Turbidity= is 22 % to IBM Watson
published Temperature = 102 C pH = is 8 % Turbidity= is 20 % to IBM Watson
published Temperature = 90 C pH = is 1 % Turbidity= is 87 % to IBM Watson
published Temperature = 93 C pH = is 9 % Turbidity= is 56 % to IBM Watson
published Temperature = 107 C pH = is 14 % Turbidity= is 73 % to IBM Watson
published Temperature = 98 C pH = is 0 % Turbidity= is 28 % to IBM Watson
published Temperature = 101 C pH = is 11 % Turbidity= is 22 % to IBM Watson
published Temperature = 100 C pH = is 0 % Turbidity= is 90 % to IBM Watson
published Temperature = 90 C pH = is 8 % Turbidity= is 37 % to IBM Watson
published Temperature = 104 C pH = is 9 % Turbidity= is 52 % to IBM Watson
published Temperature = 103 C pH = is 2 % Turbidity= is 88 % to IBM Watson
published Temperature = 102 C pH = is 0 % Turbidity= is 60 % to IBM Watson
published Temperature = 98 C pH = is 4 % Turbidity= is 1 % to IBM Watson
published Temperature = 97 C pH = is 10 % Turbidity= is 58 % to IBM Watson
published Temperature = 101 C pH = is 3 % Turbidity= is 66 % to IBM Watson
published Temperature = 107 C pH = is 6 % Turbidity= is 44 % to IBM Watson
published Temperature = 109 C pH = is 11 % Turbidity= is 47 % to IBM Watson
published Temperature = 102 C pH = is 14 % Turbidity= is 32 % to IBM Watson
published Temperature = 90 C pH = is 10 % Turbidity= is 26 % to IBM Watson
published Temperature = 91 C pH = is 11 % Turbidity= is 77 % to IBM Watson
published Temperature = 96 C pH = is 12 % Turbidity= is 86 % to IBM Watson
published Temperature = 95 C pH = is 6 % Turbidity= is 20 % to IBM Watson
published Temperature = 92 C pH = is 0 % Turbidity= is 51 % to IBM Watson
published Temperature = 95 C pH = is 3 % Turbidity= is 70 % to IBM Watson
published Temperature = 104 C pH = is 11 % Turbidity= is 98 % to IBM Watson
published Temperature = 91 C pH = is 8 % Turbidity= is 39 % to IBM Watson
published Temperature = 103 C pH = is 1 % Turbidity= is 99 % to IBM Watson
published Temperature = 101 C pH = is 6 % Turbidity= is 56 % to IBM Watson
published Temperature = 94 C pH = is 7 % Turbidity= is 27 % to IBM Watson
published Temperature = 90 C pH = is 4 % Turbidity= is 52 % to IBM Watson
published Temperature = 107 C pH = is 10 % Turbidity= is 73 % to IBM Watson
published Temperature = 110 C pH = is 9 % Turbidity= is 22 % to IBM Watson
published Temperature = 92 C pH = is 3 % Turbidity= is 80 % to IBM Watson
```

Code runs successfully and random output values are generated

## Creation of IBM cloud



## Procedure for the creation of IBM IOT watson



## Device creation

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Add Device

### Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1607	Disconnected	gv	Device	Oct 23, 2022 11:33 AM	

Items per page 50 | 1-1 of 1 Item

1 of 1 page

0 Simulations running

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Add Device

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Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1607	Disconnected	gv	Device	Oct 23, 2022 11:33 AM	

Items per page 50 | 1-1 of 1 Item

0 Simulations running

Identity

Device ID: 1607

Device Type: gv

Date Added: Oct 23, 2022 11:33 AM

Added By: 420419106028@smartinternz.com

Connection Status: Disconnected

Last Connected: Nov 5, 2022 10:18 PM

Client Address: 110.224.91.27 SecureToken

Duration: 2 hours

Data Transferred: 59.8 KB

## Generation of random values in IBM Watson

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes tabs for 'Service Details', 'IBM', and 'Node-RED'. The main header shows the user's email '420419106028@smartinternz.com' and ID 'oo25f5'. The left sidebar contains icons for various platform features. The main content area shows a list of devices, with one device selected and its details expanded. The 'Recent Events' tab is active, displaying a table of live data streams.

Device ID: 1607, Status: Disconnected, Device Type: gv, Date Added: Oct 23, 2022 11:33 AM

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	{"Temperature":90,"pH":6,"Turbidity":37}	json	a few seconds ago
IOTSensor	{"Temperature":109,"pH":7,"Turbidity":34}	json	a few seconds ago
IOTSensor	{"Temperature":90,"pH":7,"Turbidity":3}	json	a few seconds ago
IOTSensor	{"Temperature":105,"pH":9,"Turbidity":37}	json	a few seconds ago
IOTSensor	{"Temperature":107,"pH":6,"Turbidity":34}	json	a few seconds ago

Items per page 50 | 1-1 of 1 item

0 Simulations running