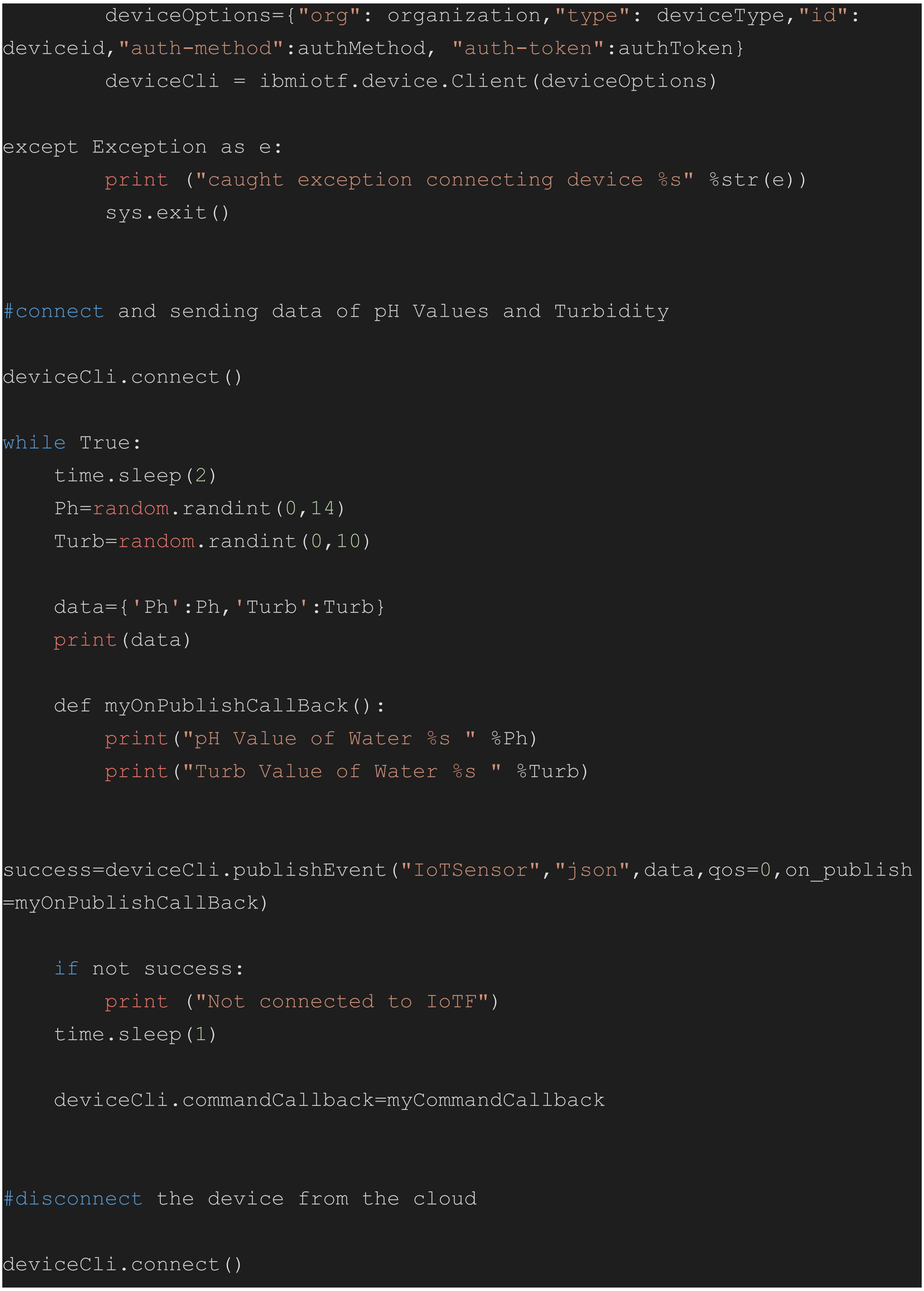
Project Development Phase

Sprint 3

Date	13 November 2022
Team ID	PNT2022TMID43379
Project Name	River Water Quality Monitoring and Control System

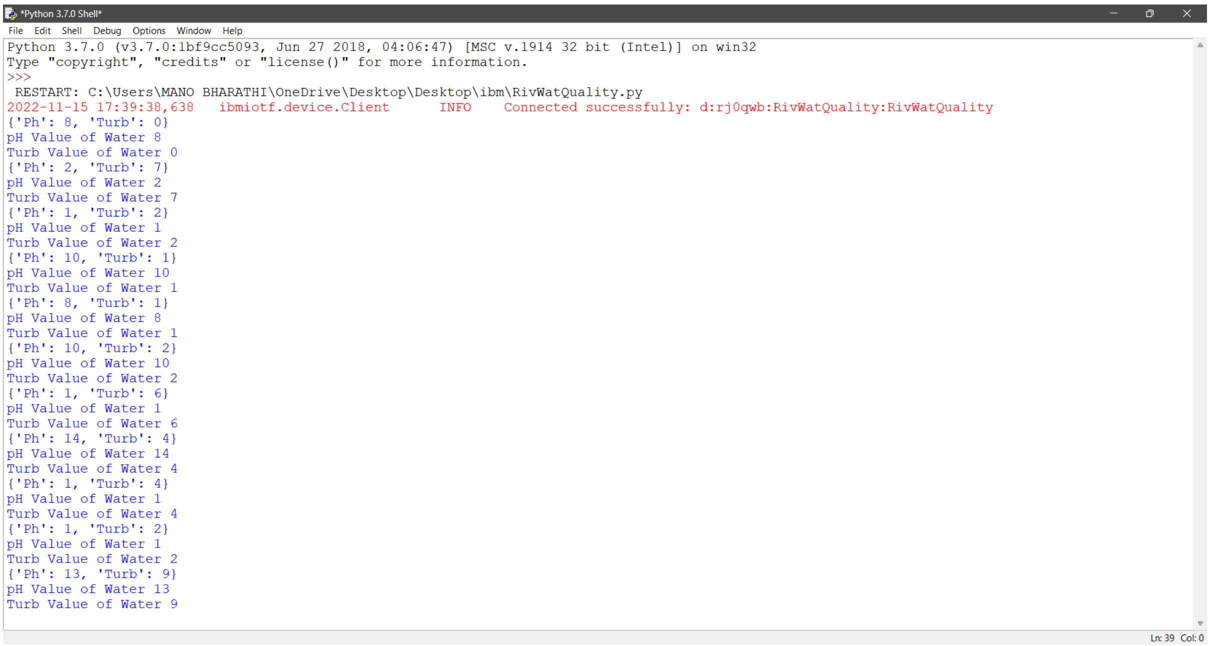
Python Code:

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

#ibm watson device credentials

organization="rj0qwb"
deviceType="RivWatQuality"
deviceid="RivWatQuality"
authMethod="token"
authToken="UFT_PB+dHA3k)0_pA7"

def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    status=cmd.data['command']
    if status =="MotorON":
        print("Motor Turned ON")
    else :
        print ("Motor Turned OFF")


#generate random values for pH and turbity


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



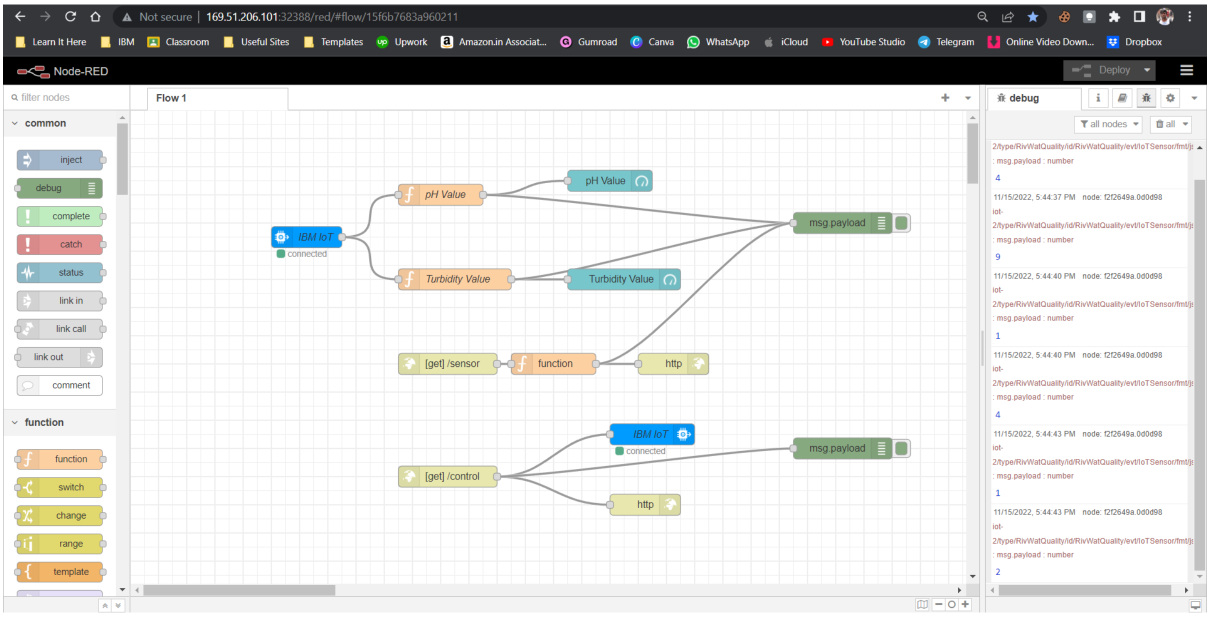
```
        deviceOptions={"org": organization,"type": deviceType,"id":
deviceid,"auth-method":authMethod, "auth-token":authToken}
        deviceCli = ibmiotf.device.Client(deviceOptions)

except Exception as e:
        print ("caught exception connecting device %s" %str(e))
        sys.exit()


#connect and sending data of pH Values and Turbidity

deviceCli.connect()

while True:
    time.sleep(2)
    Ph=random.randint(0,14)
    Turb=random.randint(0,10)

    data={'Ph':Ph,'Turb':Turb}
    print(data)

    def myOnPublishCallBack():
        print("pH Value of Water %s " %Ph)
        print("Turb Value of Water %s " %Turb)


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 from the cloud

deviceCli.connect()
```

2. Executing the Python Code to send values to IBM Watson Platform by MQTT Protocol



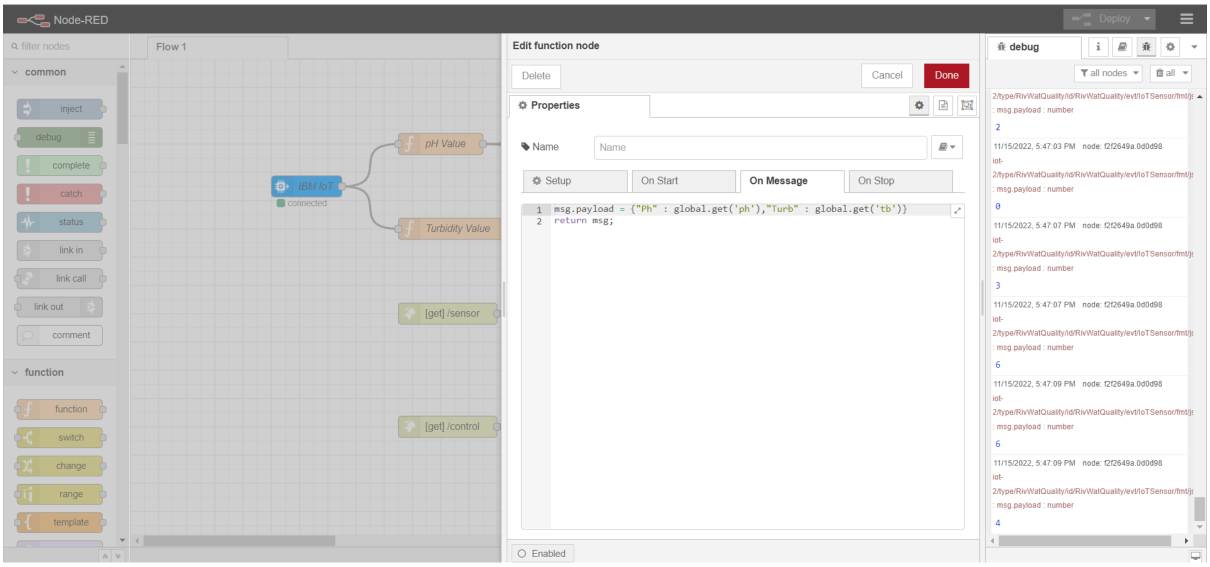
```
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\MANO BHARATHI\OneDrive\Desktop\Desktop\ibm\RivWatQuality.py
2022-11-15 17:39:38,638   ibmiotf.device.Client      INFO    Connected successfully: d:rj0qwb:RivWatQuality:RivWatQuality
{'Ph': 8, 'Turb': 0}
pH Value of Water 8
Turb Value of Water 0
{'Ph': 2, 'Turb': 7}
pH Value of Water 2
Turb Value of Water 7
{'Ph': 1, 'Turb': 2}
pH Value of Water 1
Turb Value of Water 2
{'Ph': 10, 'Turb': 1}
pH Value of Water 10
Turb Value of Water 1
{'Ph': 8, 'Turb': 1}
pH Value of Water 8
Turb Value of Water 1
{'Ph': 10, 'Turb': 2}
pH Value of Water 10
Turb Value of Water 2
{'Ph': 1, 'Turb': 6}
pH Value of Water 1
Turb Value of Water 6
{'Ph': 14, 'Turb': 4}
pH Value of Water 14
Turb Value of Water 4
{'Ph': 1, 'Turb': 4}
pH Value of Water 1
Turb Value of Water 4
{'Ph': 1, 'Turb': 2}
pH Value of Water 1
Turb Value of Water 2
{'Ph': 13, 'Turb': 9}
pH Value of Water 13
Turb Value of Water 9
```

3. Sending obtained Values to Web UI Dashboard and Mobile App



```
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
4
11/15/2022, 5:44:37 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
9
11/15/2022, 5:44:40 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
1
11/15/2022, 5:44:40 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
4
11/15/2022, 5:44:43 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
1
11/15/2022, 5:44:43 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
2
```

4. Payload Defined to send values to Mobile App

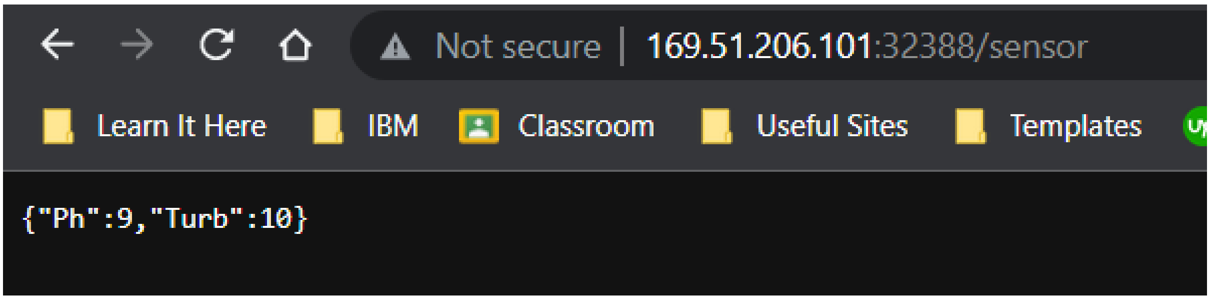


Name: Name

```
msg.payload = {"Ph" : global.get('ph'),"Turb" : global.get('tb')}
return msg;
```

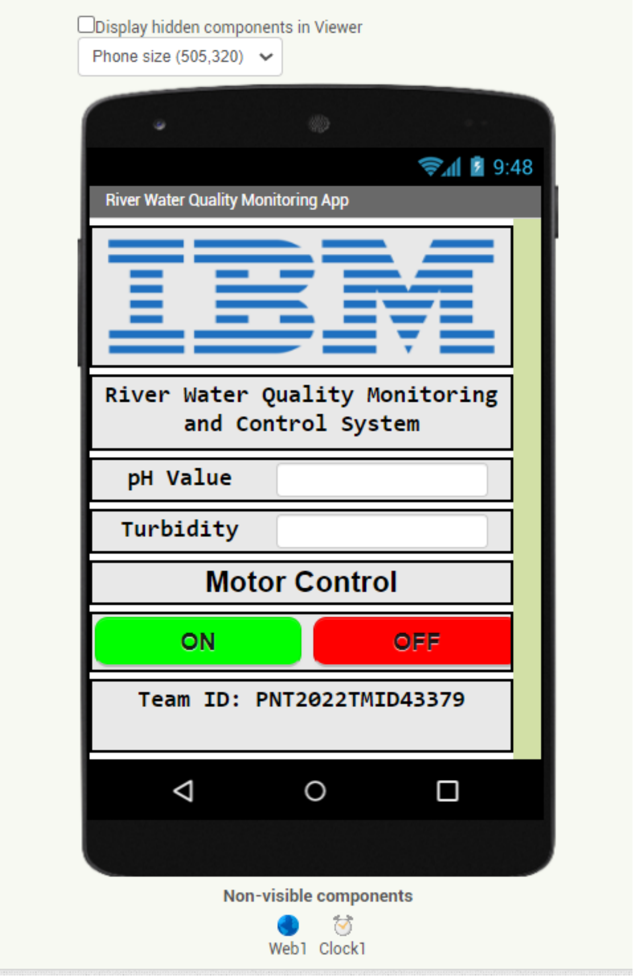
```
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
2
11/15/2022, 5:47:03 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
0
11/15/2022, 5:47:07 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
3
11/15/2022, 5:47:07 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
6
11/15/2022, 5:47:09 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
6
11/15/2022, 5:47:09 PM   node: f2f2649a.0d0d98
iot-
2/type/RivWatQuality/id/RivWatQuality/evt/IoTSensor/fmt/js
: msg.payload : number
4
```

5. JSON Object Obtained using URL



```
{"Ph":9,"Turb":10}
```

6. Mobile App to Receive data from Node Red

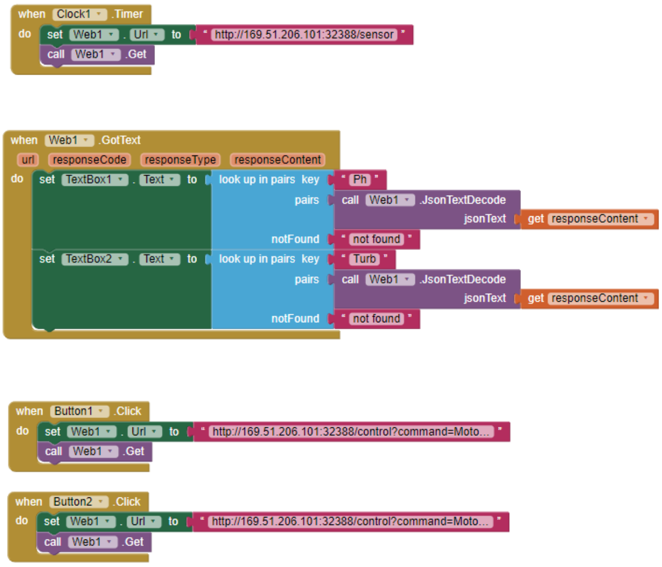


□Display hidden components in Viewer

Phone size (505,320)

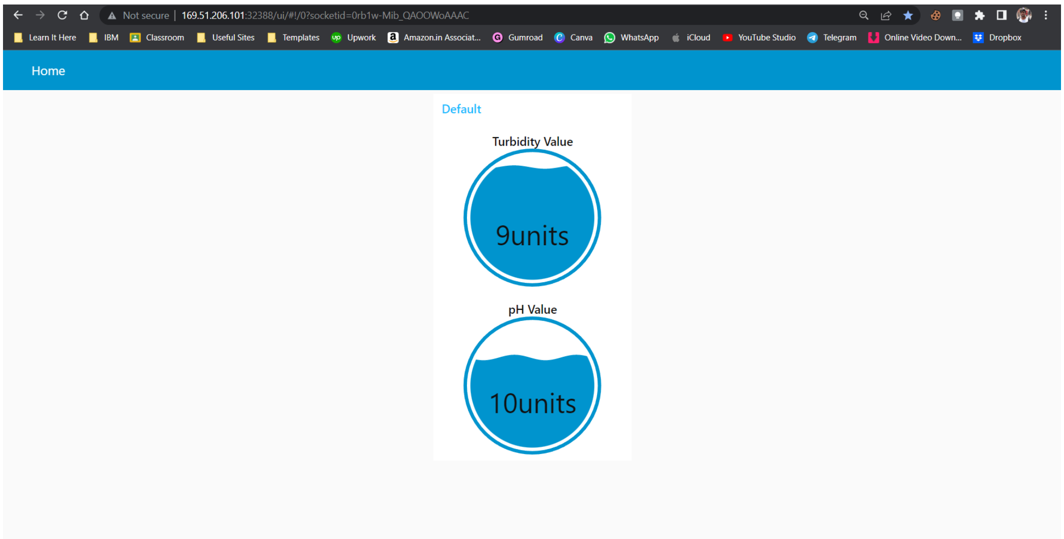
9:48
River Water Quality Monitoring App
IBM
River Water Quality Monitoring and Control System
pH Value
Turbidity
Motor Control
ON
OFF
Team ID: PNT2022TMID43379
Non-visible components
Web1
Clock1

6. Configuring Mobile App Backend to receive data from Node Red



```
when Clock1 .Timer
do  set Web1 . Url to "http://169.51.206.101:32388/sensor"
    call Web1 .Get

when Web1 .GotText
 url  responseCode  responseType  responseContent
do  set TextBox1 . Text to  look up in pairs key "Ph"
                                           pairs call Web1 .JsonTextDecode
                                                          jsonText get responseContent
                                        notFound "not found"
    set TextBox2 . Text to  look up in pairs key "Turb"
                                           pairs call Web1 .JsonTextDecode
                                                          jsonText get responseContent
                                        notFound "not found"

when Button1 .Click
do  set Web1 . Url to "http://169.51.206.101:32388/control?command=Moto..."
    call Web1 .Get

when Button2 .Click
do  set Web1 . Url to "http://169.51.206.101:32388/control?command=Moto..."
    call Web1 .Get
```

7. Web UI Dashboard



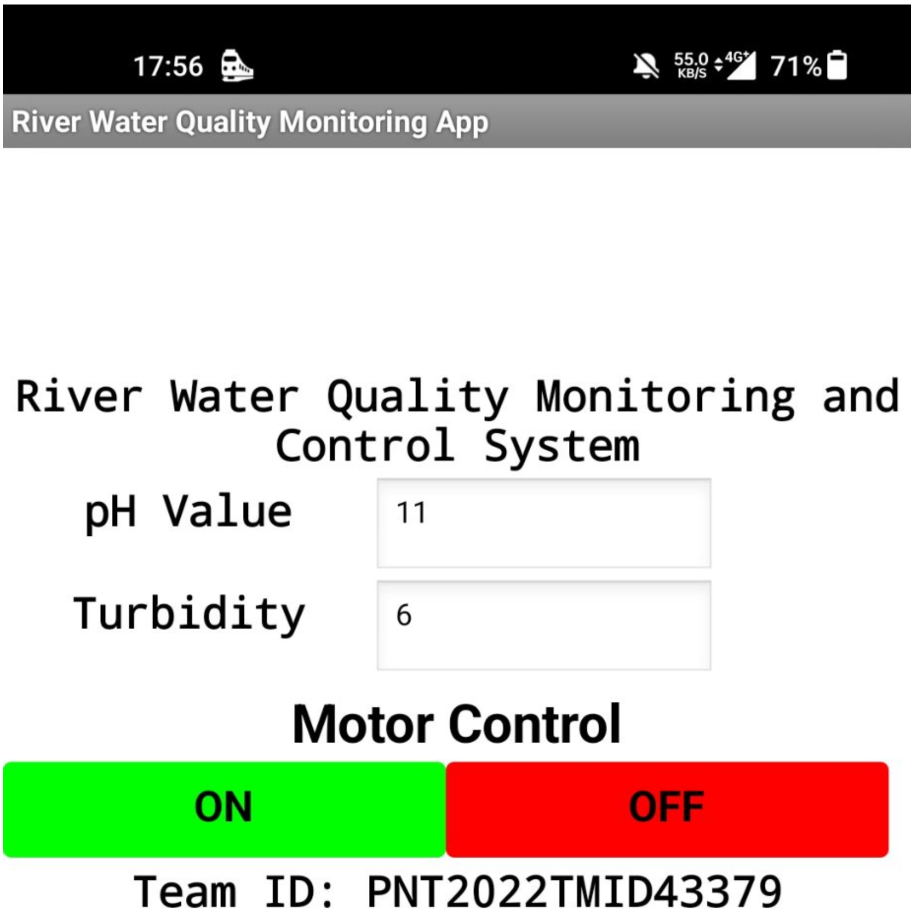
Turbidity Value

9units

pH Value

10units

8. Monitoring the Values in Mobile App sent from Node-Red:



River Water Quality Monitoring App

River Water Quality Monitoring and Control System

pH Value 11

Turbidity 6

Motor Control

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