

<b>Team ID</b>	PNT2022TMID27921
<b>Project Name</b>	Project - Real-Time River Water Quality Monitoring and Control System

## USING PYTHON

### PYTHON IDLE 3.7.0:

### SOURCE CODE:

```
import ibmiotf.application
import ibmiotf.device

import time
import random
import sys
import requests
import json
import urllib.request
import urllib.parse

url="https://www.fast2sms.com/dev/bulkV2"

organization = "swz5ou"

deviceType = "abcd"

deviceId = "12"

authMethod = "token"

authToken = "12345678"


def sms(ph,temp,turbidity):

    message='Water quality degraded PH value:'+str(ph)+'temperature value:'+str(temp)+'tubidity
value:'+str(turbidity)

    my_data = {

        'sender_id': 'TXTIND',

        'message': message,

        'language': 'english',

        'route': 'p',

        'numbers': '9150661026, 6369521344,9840981094'

    }

    headers = {
```

```

    'authorization':
'cjsHQ2uY05KWVOxSDndGMNyvAmR6rgzfUpI3Pe8JkE49ZXIBbwq2plfEB6IZ31CjywSchzNtRQkixOV0',

    'Content-Type': "application/x-www-form-urlencoded",

    'Cache-Control': "no-cache"

}

response = requests.request("POST",url,data=my_data,headers=headers)

returned_msg = json.loads(response.text)

print(returned_msg['message'])

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 pH<6 or temperature >120 or turbidity > 500:

        alert = 1

    else:

        alert = 0

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

    def myOnPublishCallback():

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

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

```

if not success:

```
print("Not Connected to ibmiot")
```

```
time.sleep(1)
```

```
deviceCli.disconnect()
```

## PYTHON SOURCE CODE-OUTPUT:

```
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:\IBM\new source code.py =====
2022-11-19 11:27:36,018 ibmiotf.device.Client INFO Connected successfully: d:swz5ou:abcd:12
Published pH= 8 Turbidity:270 Temperature:75
Published pH= 5 Turbidity:7 Temperature:83
Published pH= 3 Turbidity:931 Temperature:11
Published pH= 2 Turbidity:657 Temperature:7
Published pH= 7 Turbidity:410 Temperature:47
Published pH= 14 Turbidity:353 Temperature:25
Published pH= 3 Turbidity:968 Temperature:60
Published pH= 12 Turbidity:751 Temperature:86
Published pH= 3 Turbidity:80 Temperature:89
Published pH= 4 Turbidity:814 Temperature:41
Published pH= 1 Turbidity:401 Temperature:96
Published pH= 9 Turbidity:389 Temperature:53
Published pH= 4 Turbidity:294 Temperature:9
Published pH= 11 Turbidity:838 Temperature:76
Published pH= 6 Turbidity:739 Temperature:60
Published pH= 12 Turbidity:661 Temperature:44
Published pH= 13 Turbidity:744 Temperature:31
Published pH= 11 Turbidity:963 Temperature:13
Published pH= 12 Turbidity:117 Temperature:93
Published pH= 12 Turbidity:855 Temperature:39
Published pH= 4 Turbidity:242 Temperature:100
Published pH= 4 Turbidity:190 Temperature:16
Published pH= 12 Turbidity:509 Temperature:92
Published pH= 14 Turbidity:50 Temperature:93
Published pH= 8 Turbidity:688 Temperature:71
Published pH= 7 Turbidity:969 Temperature:52
Published pH= 8 Turbidity:517 Temperature:89
Published pH= 8 Turbidity:461 Temperature:83
```

## IBM IOT WATSON:

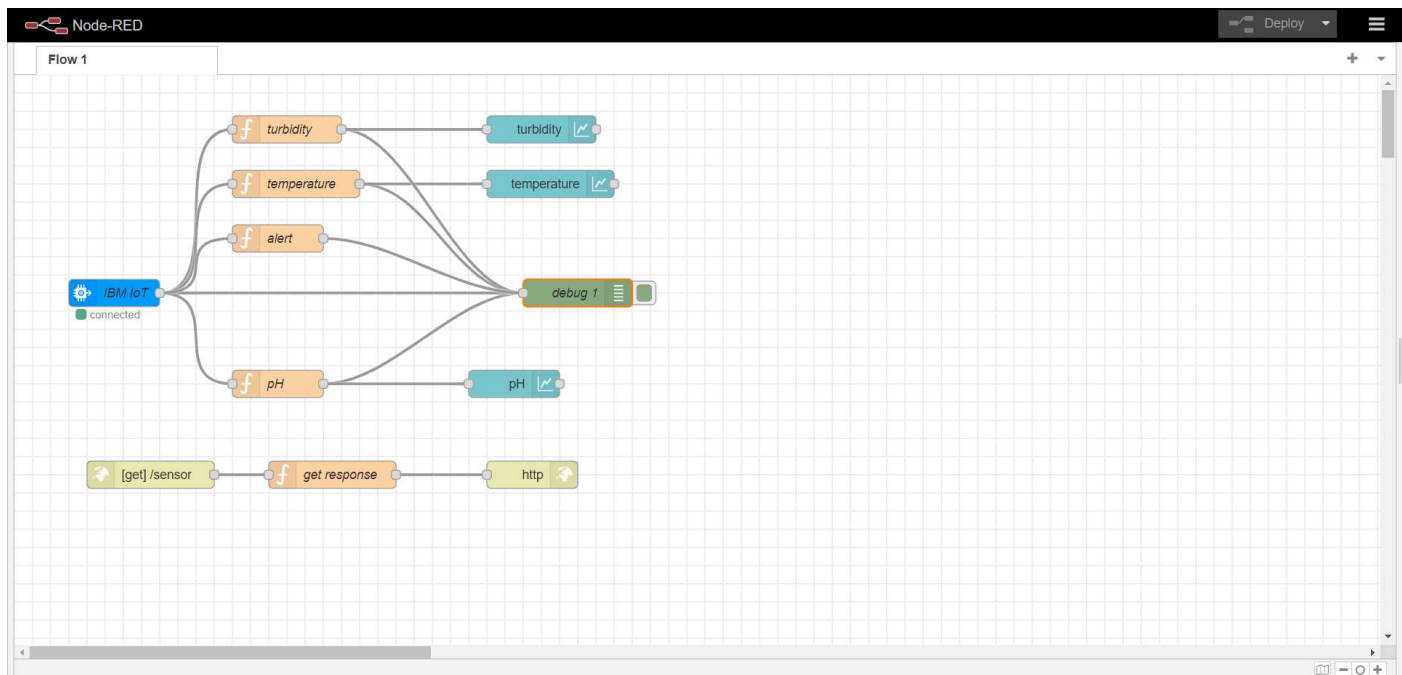
## PUBLISHING DATA TO IBM IOT WATSON:

The screenshot displays the IBM Watson IoT Platform web interface. The top navigation bar includes the platform name, a help icon, a user profile icon, and the email address 311519106066@smartinternz.com with ID: swz5ou. Below the navigation bar, there are tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area shows details for a device named 'abcd' with ID '12', which is in a 'Connected' state. The 'Recent Events' tab is selected, displaying a table of live data events. The table has columns for 'Event', 'Value', 'Format', and 'Last Received'. The events listed are 'water monito...' with JSON values for pH, turbidity, temperature, and alert status, all in 'json' format and received 'a few seconds ago'.

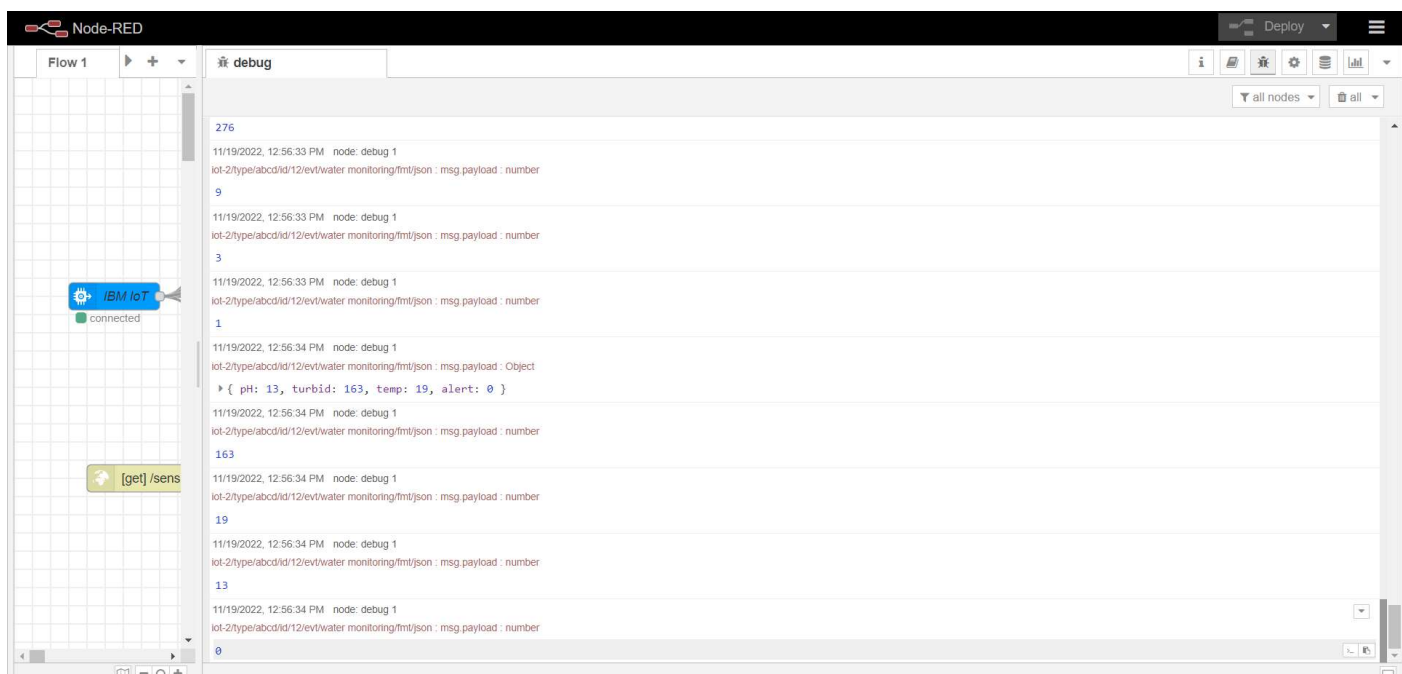
Event	Value	Format	Last Received
water monito...	{"pH":8,"turbid":381,"temp":19,"alert":0}	json	a few seconds ago
water monito...	{"pH":13,"turbid":775,"temp":26,"alert":1}	json	a few seconds ago
water monito...	{"pH":11,"turbid":425,"temp":94,"alert":0}	json	a few seconds ago
water monito...	{"pH":11,"turbid":900,"temp":46,"alert":1}	json	a few seconds ago
water monito...	{"pH":7,"turbid":426,"temp":47,"alert":0}	json	a few seconds ago

## NODE-RED:

### NODE-RED FLOW DIAGRAM:



### PUBLISHING DATA FROM IBM IOT WATSON TO NODE-RED:



### SOURCE CODE:

```
msg.payload = {"temp":global.get('t'),"pH":global.get('pH'),"turbid":global.get('tur'),"alert":global.get('a')}
```

```
return msg;
```

## HTTP REQUEST USING NODE RED:

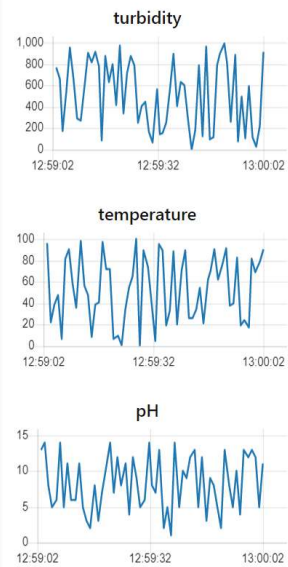
← → ↻ 169.51.206.144:30925/sensor

```
{"temp":78,"ph":10,"turbid":666,"alert":1}
```

## GENERATING THE OUTPUT FOR RECENT EVENTS:

NodeMCU

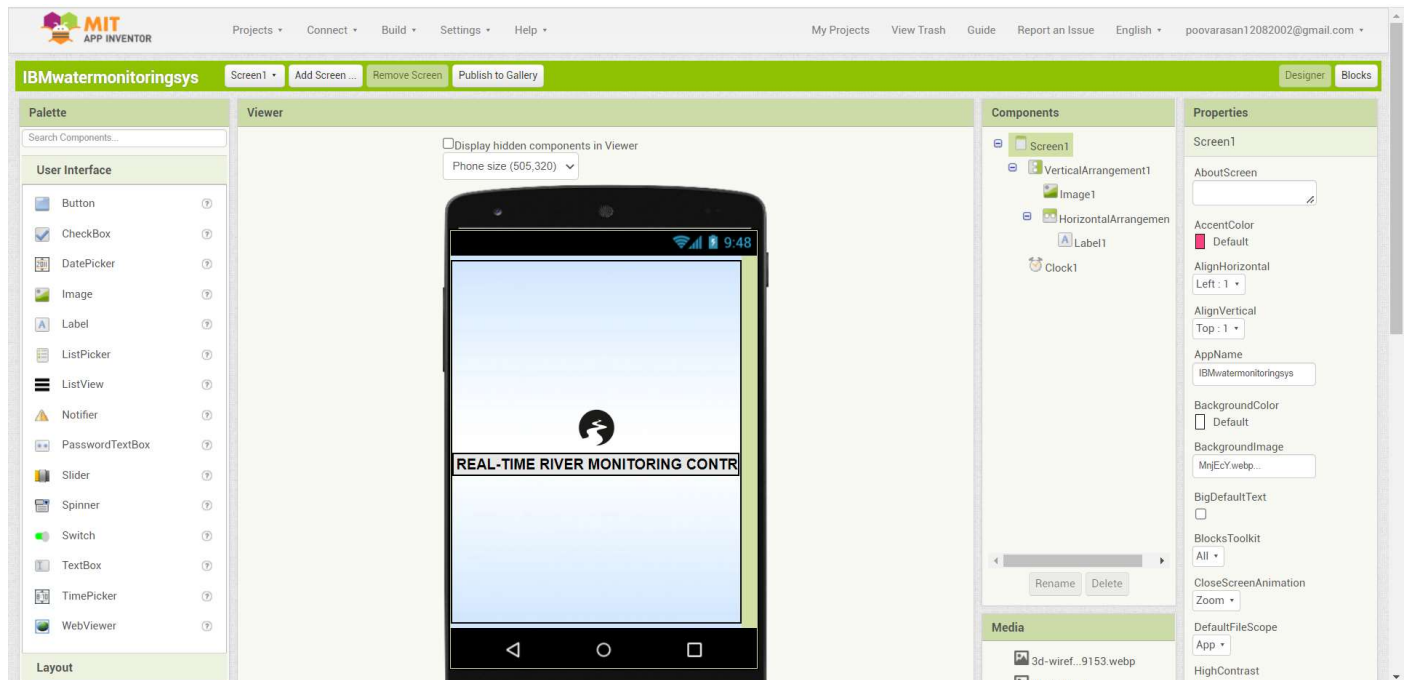
### River Water Monitoring



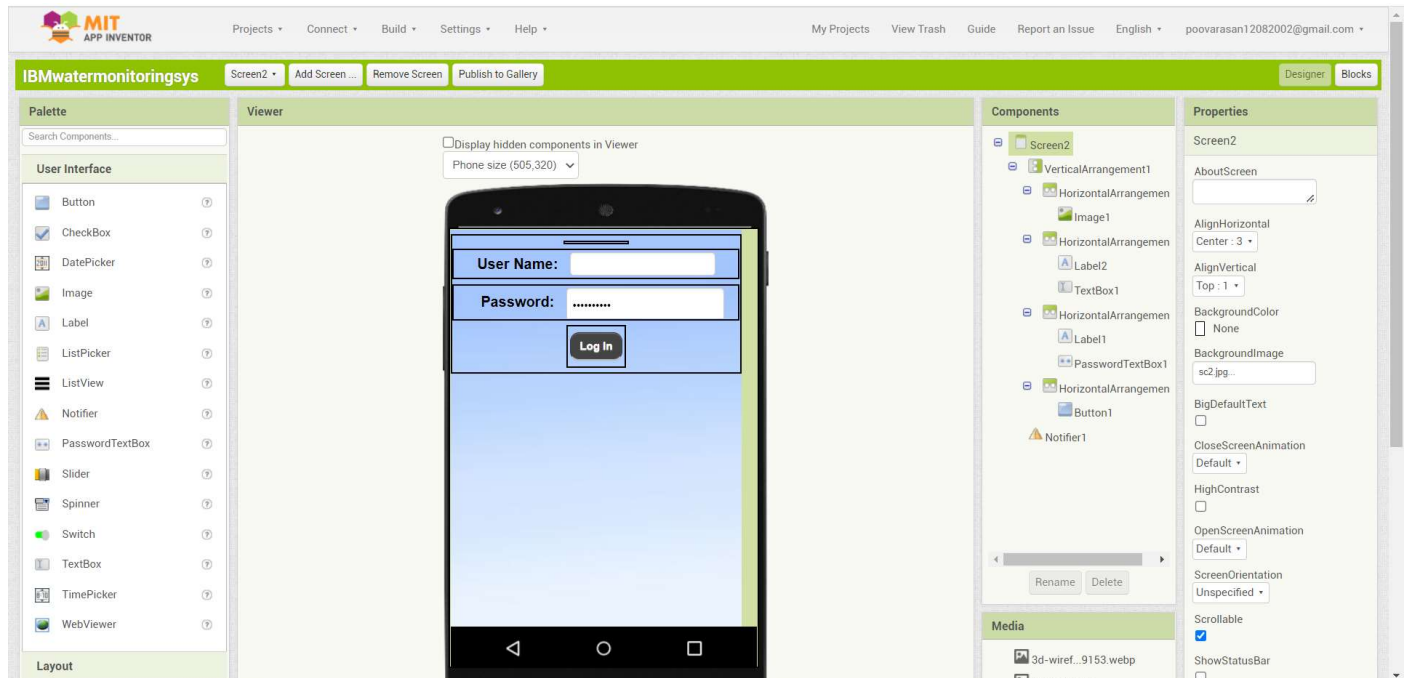
# MIT APP INVENTOR:

## FRONT END:

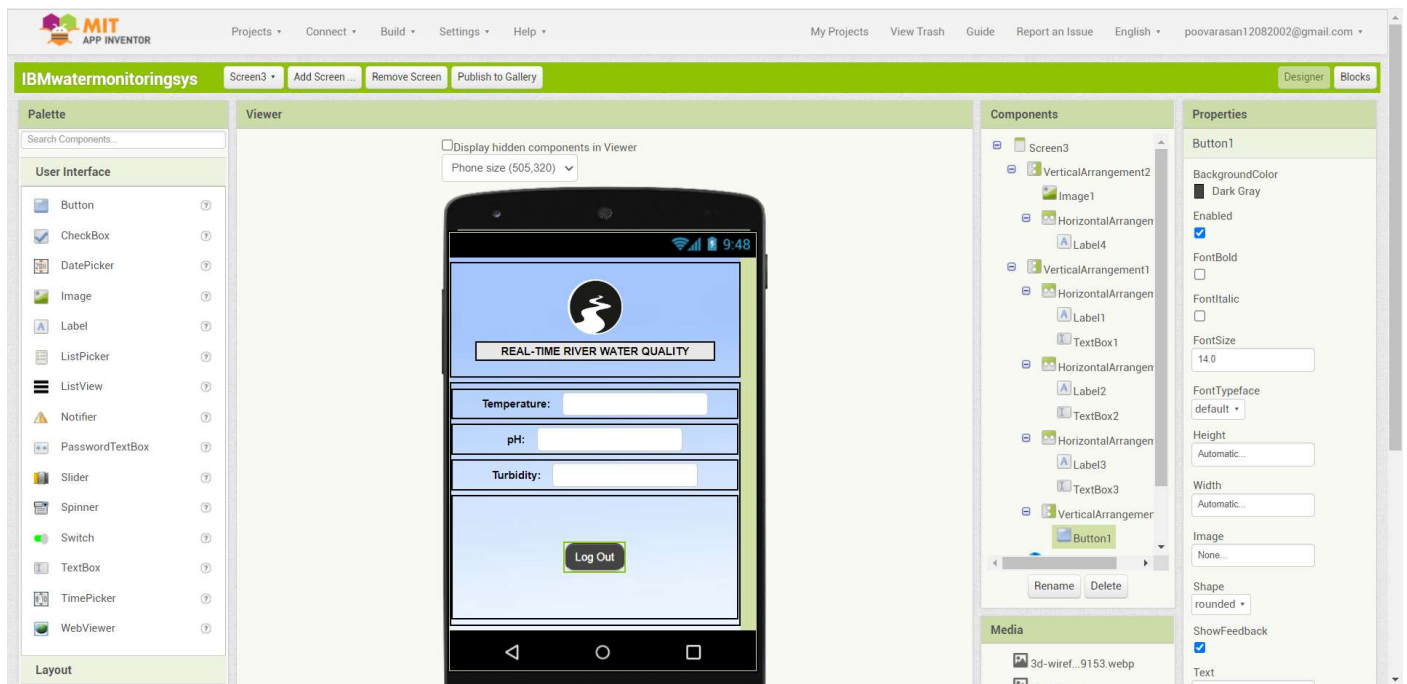
### SCREEN-1:



### SCREEN-2:

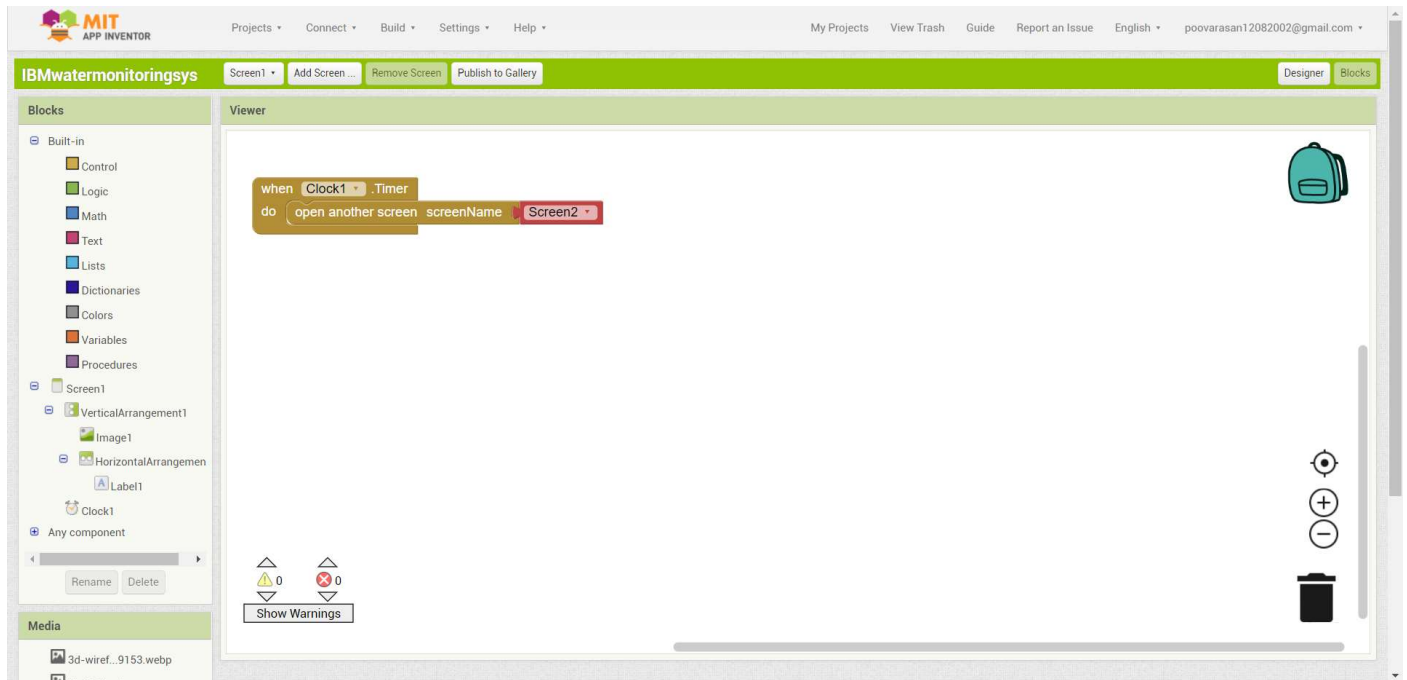


## SCREEN-3:



## BACK END:

## SCREEN-1:





## SCREEN-2:

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English poovarasani2082002@gmail.com

IBMwatermonitoringsys Screen2 Add Screen Remove Screen Publish to Gallery Designer Blocks

Blocks

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- Screen2
  - VerticalArrangement1
    - HorizontalArrangement1
      - Image1
      - HorizontalArrangement2
        - Label2
        - TextBox1

Media

- 3d-wiref...9153.webp
- ...

Viewer

when Button1 Click

do

if

TextBox1.Text = 'abcd' or TextBox1.Text = 'efgh' and PasswordTextBox1.Text = '1234'

then

open another screen screenName Screen3

else

call Notifier1 ShowAlert

notice 'User Name or Password is incorrect!'

Show Warnings

## SCREEN-3:

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English poovarasani2082002@gmail.com

IBMwatermonitoringsys Screen3 Add Screen Remove Screen Publish to Gallery Designer Blocks

Blocks

- Built-in
  - Control
  - Logic
  - Math
  - Text
  - Lists
  - Dictionaries
  - Colors
  - Variables
  - Procedures
- Screen3
  - VerticalArrangement2
    - Image1
    - HorizontalArrangement1
      - Label4
      - VerticalArrangement1

Media

- 3d-wiref...9153.webp
- ...

Viewer

when Notifier1 AfterChoosing

choice

if

Yes = get choice

then

open another screen screenName Screen2

when Button1 Click

do

call Notifier1 ShowChooseDialog

message 'Are you sure to LOG OUT!'

title ALERT1

button1Text Yes

button2Text No

cancelable true

when Clock1 Timer

do

set Web1 Uri to http://169.51.206.144:30925/sensor

call Web1 Get

when Web1 GotText

uri responseCode responseType responseContent

do

set TextBox1 Text to look up in pairs key temp

call Web1 JsonTextDecode

jsonText get responseContent

Event indicating that a request has finished

not found not found

set TextBox2 Text to look up in pairs key pH

call Web1 JsonTextDecode

jsonText get responseContent

not found not found

set TextBox3 Text to look up in pairs key turbid

call Web1 JsonTextDecode

jsonText get responseContent

not found not found

call Notifier1 ShowAlert

notice

if

1 = look up in pairs key alert

call Web1 JsonTextDecode

jsonText get responseContent

not found not found

then

The water quality is not good

else

Safe for usage

Show Warnings

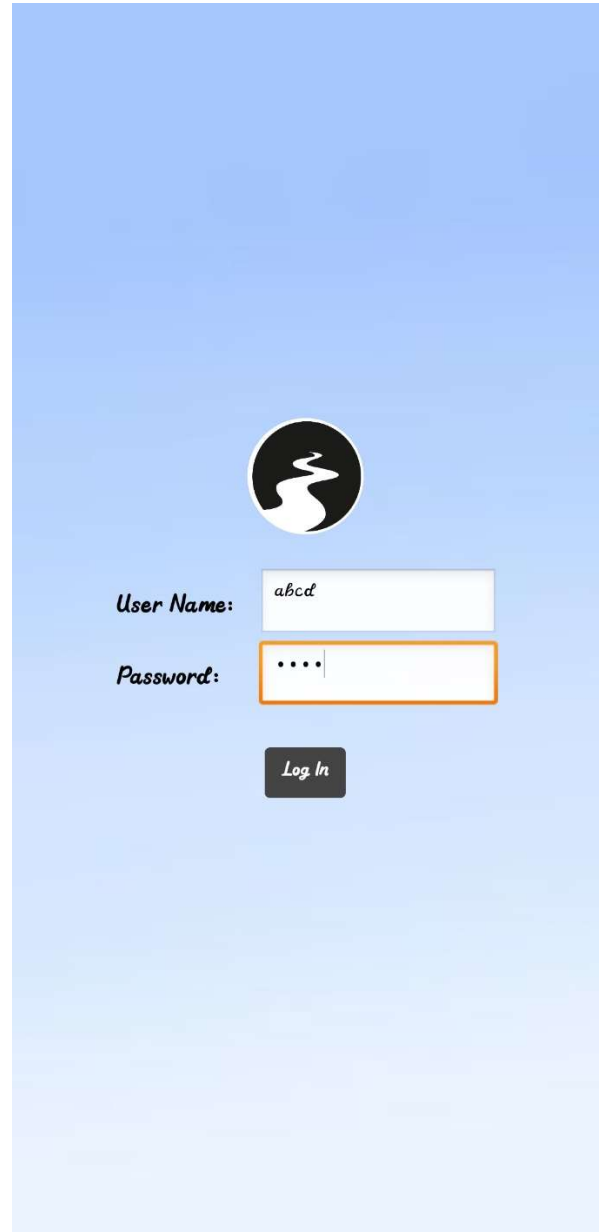


## MIT APP INVERTOR OUTPUT-MOBILE PHONE:

### SCREEN-1:



### SCREEN-2(LOG IN PAGE)



### SCREEN-3:

If temperature > 120, pH > 6 and turbidity < 500.

The app shows “**SAFE FOR USAGE**”.

If temperature < 120, Ph < 6 and turbidity > 500.

The app shows “**THE WATER QUALITY IS NOT GOOD**”.




REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

Temperature:	<input type="text" value="71"/>
pH:	<input type="text" value="8"/>
Turbidity:	<input type="text" value="9"/>

*Safe for usage*

[Log Out](#)



REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM



Temperature:	<input type="text" value="72"/>
pH:	<input type="text" value="10"/>
Turbidity:	<input type="text" value="385"/>


*The water quality is not good*

[Log Out](#)

## LOG OUT PAGE:

7:02 PM | 2.1KB/s





REAL-TIME RIVER WATER QUALITY MONITORING AND  
CONTROL SYSTEM

Temperature:

22

pH:

8

ALERT

Are you sure to LOG OUT!

Yes

No

Cancel

Log Out