

Develop The Python Script Publishing the Data to Cloud

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|--------------|---|
| Date | 11 November 2022 |
| Team ID | PNT2022TMID47383 |
| Project Name | Real-Time River Water Quality Monitoring and Control System |

The screenshot shows a Python IDE with a script on the left and a Python 3.7.0 Shell window on the right. The script is a Python program that interacts with an IBM Watson IoT client to publish sensor data and send alerts. The shell window shows the execution output, including connection status, published data points, and alert messages.

```

original.py - E:/IBM/Codes/original.py (3.7.0)
File Edit Format Run Options Window Help

    print('Published alert3 : ', "Turbidity_level(%) Directly used without fi
    print("")
    else:
        print("Switched to Ro and sedimentation process")
        print("")
if (OPTOD_sensor < 2):
    print("Low level of dissolved oxygen in river water")
    success = deviceCli.publishEvent("Alert3", "json", { 'alert4' : "Oxygen_level(%)
    sleep(1)
if success:
    print('Published alert4 : ', "Oxygen_level(%) Freshwater creatures may be dying
    print("Alert is send marine department")
else:
    if (OPTOD_sensor > 8):
        print("High oxygen content present")
        success = deviceCli.publishEvent("Alert4", "json", { 'alert3' : "Oxygen_level(%)
        sleep(1)
        if success:
            print('Published alert4 : ', "Oxygen_level(%) good to consume since it is fr
            print("")
        else:
            print("Permissible level to sustain minimum no of creatures in water")
            print("")
if (TOC_sensor > 900):
    print("High amount of organic carbon")
    success = deviceCli.publishEvent("Alert1", "json", { 'alert1' : "Orgcarbon_level(%)
    sleep(1)
if success:
    print('Published alert1 : ', "Orgcarbon_level(%) Authorities alerted prevented
    print("")
else:
    print("Water consumption is stopped")
    print("")
if (water_rate > 180):
    print("Sludge gates are opened")
    success = deviceCli.publishEvent("Alert6", "json", { 'alert6' : "water_rate(%) Res
    sleep(1)
if success:
    print('Published alert6 : ', "water_rate(%) water rate is high so it indicates ra
    print("")
else:
    print("Sludge is opened")
    print("")
deviceCli.commandCallback = myCommandCallback
deviceCli.disconnect()

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 (AMD6
4)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: E:/IBM/Codes/original.py =====
2022-11-11 15:44:48,566 ibmiotf.device.Client INFO Connected successfu
lly: d:39hari:NodeMCU:ESP32
.....publis h ok.....
Published Temperature = 13.19 C to IBM Watson
Published PHLevel = 13.489 to IBM Watson
Published Turbidity_level = 510.1 to IBM Watson
Published Oxygen_level = 6.1 to IBM Watson
Published Orgcarbon_level = 1832.4628 to IBM Watson
Published Water_rate = 226.75 C3 to IBM Watson
Published alert1 : Temperature(13.19) is high, Intake to plant is closed to IBM
Watson
Impurities too high diversion to Industrial use
Published alert3 : Turbidity_level(510.1) the filtration process to IBM Watson
Published alert4 : Oxygen_level(6.1) Freshwater creatures may be dying required
help to IBM Watson
Alert is send marine department
high amount of organic carbon
Published alert1 : Orgcarbon_level(1832.4628) Authorities alerted prevented los
s in lives to IBM Watson
sludge gates are opened
Published alert6 : water_rate(226.75) water rate is high so it indicates rain o
r reserviour release of water into the stream to IBM Watson
.....publis h ok.....
Published Temperature = 3.69 C to IBM Watson
Published PHLevel = 4.296 to IBM Watson
), qos=0)
Ln:5 Col:0
  
```

The screenshot shows a command prompt window displaying the output of a Python script. The output includes connection status, published data points, and alert messages, matching the content shown in the Python IDE screenshot.

```

C:\windows\py.exe
2022-11-11 16:09:49,481 ibmiotf.device.Client INFO Connected successfully: d:39hari:NodeMCU:ESP32
.....publis h ok.....
Published Temperature = 24.63 C to IBM Watson
Published PHLevel = 2.254 to IBM Watson
Published Turbidity_level = 802.25 to IBM Watson
Published Oxygen_level = 9.8 to IBM Watson
Published Orgcarbon_level = 2586.1287 to IBM Watson
Published Water_rate = 282.384 C3 to IBM Watson

Published alert1 : Temperature(24.63) is high, Intake to plant is closed to IBM Watson

Impurities too high diversion to Industrial use
Published alert3 : Turbidity_level(802.25) the filtration process to IBM Watson

Published alert4 : Oxygen_level(9.8) Freshwater creatures may be dying required help to IBM Watson
Alert is send marine department
high amount of organic carbon
Published alert1 : Orgcarbon_level(2586.1287) Authorities alerted prevented loss in lives to IBM Watson

sludge gates are opened
Published alert6 : water_rate(282.384) water rate is high so it indicates rain or reserviour release of water into the stream to IBM W
.....publis h ok.....
Published Temperature = 39.01 C to IBM Watson
Published PHLevel = 4.796 to IBM Watson
Published Turbidity_level = 321.48 to IBM Watson
Published Oxygen_level = 2.1 to IBM Watson
Published Orgcarbon_level = 221.4432 to IBM Watson
Published Water_rate = 171.929 C3 to IBM Watson

Intake to Filtration is Closed
  
```

The above given is python exe file output and the below is execution of it in python IDE and its data updating in the cloud.

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IBM Watson IoT Platform

https://39hari.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Device ID Status Device Type Class ID

ESP32 Connected NodeMCU Device

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 |
|------------------|--|--------|
| Alert1 | {"alert1": "Temperature(14.88) is high, Intake is p..."} | json |
| Flowrate sen... | {"Water_rate": 81.53} | json |
| TOC sensor | {"Orgcarbon_level": 710.638} | json |
| optod sensor | {"Oxygen_level": 2.9} | json |
| Turbidity sen... | {"Turbidity_level": 571.03} | json |

Python 3.7.0 Shell

File Edit Shell Debug Options Window Help

2022-11-11 15:47:48,477 ibmiotf.device.Client INFO Connected successfully: d:39hari:NodeMCU:ESP32

Published Temperature = 37.74 C to IBM Watson
Published PHLevel = 4.869 to IBM Watson
Published Turbidity_level = 862.47 to IBM Watson
Published Oxygen_level = 1.0 to IBM Watson
Published Orgcarbon_level = 1686.9192 to IBM Watson
Published Water_rate = 350.297 C3 to IBM Watson

Intake to Filtration is Closed
Published alert1 : Temperature(37.74) is high, Intake to plant is closed to IBM Watson

Impurities too high diversion to Industrial use
Published alert3 : Turbidity_level(862.47) the filtration process to IBM Watson

low level of dissolved oxygen in river water
Published alert4 : Oxygen_level(1.0) Freshwater creatures may be dying required help to IBM Watson

alert is send marine department
high amount of organic carbon
Published alert1 : Orgcarbon_level(1686.9192) Authorities alerted prevented loss in lives to IBM Watson

sludge gates are opened
Published alert6 : water_rate(350.297) water rate is high so it indicates rain or reservoir release of Water into the stream to IBM Watson

Published Temperature = 14.88 C to IBM Watson
Published PHLevel = 11.67 to IBM Watson
Published Turbidity_level = 571.03 to IBM Watson
Published Oxygen_level = 2.9 to IBM Watson
Published Orgcarbon_level = 710.638 to IBM Watson
Published Water_rate = 81.53 C3 to IBM Watson

Ln: 5 Col: 0

0 Simulations running

File Edit View History Bookmarks Tools Help

IBM Watson IoT Platform

https://39hari.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Search by Device ID

Device Simulator

Add Device

Device ID Status Device Type Class ID Date Added Descriptive Location

ESP32 Connected NodeMCU Device Nov 11, 2022 11:59 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 |
|-----------------|--|--------|-------------------|
| PH sensor | {"PHLevel": 12.566} | json | a few seconds ago |
| Temperature ... | {"Temperature": 56.28} | json | a few seconds ago |
| Alert1 | {"alert1": "Orgcarbon_level(2316.6651) Water n..."} | json | a few seconds ago |
| Alert3 | {"alert3": "Turbidity_level(757.2) Water industrial..."} | json | a few seconds ago |
| Alert1 | {"alert1": "Temperature(28.68) is high, Intake is p..."} | json | a few seconds ago |

0 Simulations running