

## DEVELOP A PYTHON SCRIPT TO PUBLISH AND SUBSCRIBE TO IBM IOT PLATFORM

Team ID	PNT2022TMID52856
Project Name	SmartFarmer - IoT Enabled Smart Farming Application

### PYTHON 3.7 - CODE:

```
import wiotp.sdk.device
import time
import os
import datetime
import random

#IBM CREDENTIALS
myConfig = {
    "identity": {
        "orgId":"94ab7c",
        "typeId":"Node",
        "deviceId": "esp2"
    },
    "auth": {
        "token": "ChVhYc0Dz(AD*rSw9A"
    } }

client = wiotp.sdk.device.DeviceClient (config=myConfig,logHandlers=None)
client.connect ()

#Commands received through App/node red
def myCommandCallback (cmd) :
    print ("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']
    if (m=="Motor_on"):
        print ("Motor is switched on")
    elif (m=="Motor_off"):
        print ("Motor is switched OFF")
    print (" ")

while True:
    #Generate random sensor values
    soil=random.randint (1,100)
```

```

temp=random.randint (-10,60)
ldr=random.randint (0, 1023)
rain=random.randint (0, 1023)
ph=random.randint (5, 9)
#Publish and subscribe to IBM IoT platform
myData={'Temperature':temp,'Soil_moisture': soil ,'Ambient_Light_LDR' :ldr,'
        Rain_sensor':rain,'pH_sensor':ph}
client.publishEvent (eventId="status", msgFormat="json", data=myData, qos=0 ,
onPublish=None)
print ("Published data Successfully: ", myData)
time.sleep (2)
client.commandCallback = myCommandCallback
client.disconnect ()

```

python\_watson\_publish.py - C:/Users/DELL/AppData/Local/Programs/Python/Python37/python\_watson\_publish.py (3.7.0)

File Edit Format Run Options Window Help

```

import wiotp.sdk.device
import time
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import datetime
import random

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        "orgId": "94ab7c",
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    print (" ")

while True:
    #Generate random sensor values
    soil=random.randint (1,100)
    temp=random.randint (-10,60)
    ldr=random.randint (0, 1023)
    rain=random.randint (0, 1023)
    ph=random.randint (5, 9)
    #Publish and subscribe to IBM IoT platform
    myData={'Temperature':temp, 'Soil_moisture': soil, 'Ambient_Light_LDR':ldr, 'Rain_sensor':rain, 'pH_sensor':ph}
    client.publishEvent (eventId="status", msgFormat="json", data=myData, qos=0 , onPublish=None)
    print ("Published data Successfully: ", myData)
    time.sleep (2)
    client.commandCallback = myCommandCallback
client.disconnect ()

```

# IBM IOT WATSON AND NODE-RED SERVICE SETUP:

IBM Watson IoT Platform

1904106ece@cit.edu.in  
ID: 94ab7c

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

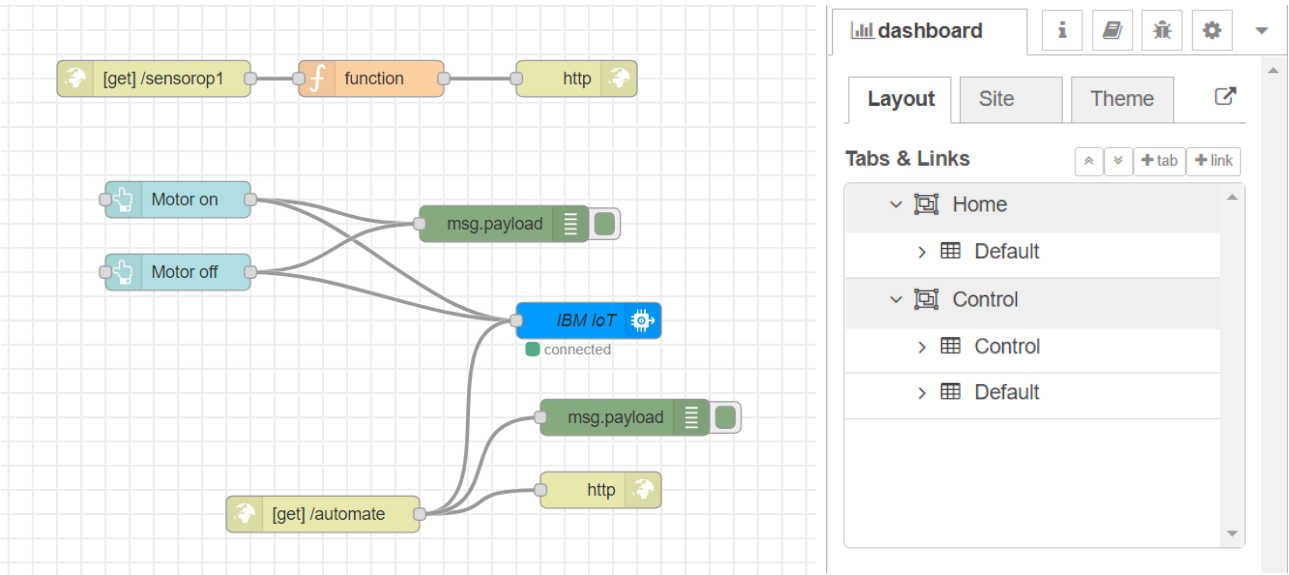
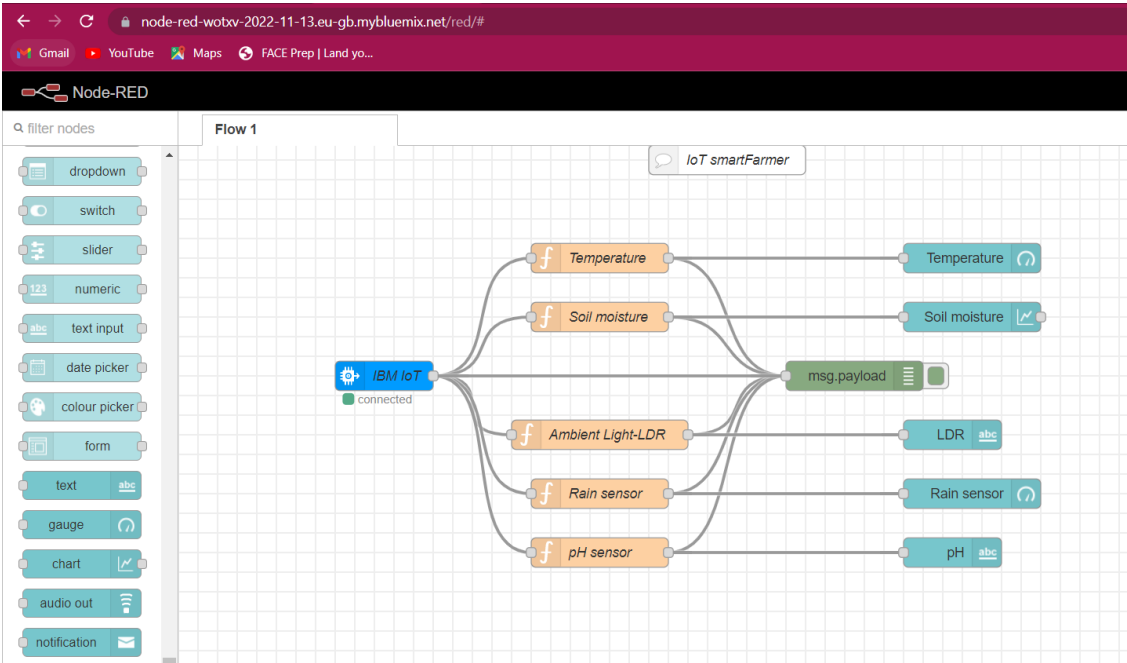
Device Simulator

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
>	Rk44	Disconnected	esp32_node	Device	Nov 1, 2022 10:50 PM	
>	esp2	Disconnected	Node	Device	Nov 13, 2022 2:13 PM	

Items per page 50

1-2 of 2 items

1 of 1 page



# PYTHON CODE EXECUTION AND OUTPUT:

## IDLE OUTPUT:

```
*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/DELL/AppData/Local/Programs/Python/Python37/python_watson_publish.py
2022-11-18 00:30:29,592 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:94ab7c:Node:esp2Published data Successfully
{'Temperature': 13, 'Soil_moisture': 31, 'Ambient_Light_LDR': 162, 'Rain_sensor': 412, 'pH_sensor': 7}
Published data Successfully: {'Temperature': -7, 'Soil_moisture': 82, 'Ambient_Light_LDR': 775, 'Rain_sensor': 649, 'pH_sensor': 9}
Published data Successfully: {'Temperature': 32, 'Soil_moisture': 7, 'Ambient_Light_LDR': 383, 'Rain_sensor': 264, 'pH_sensor': 6}
Published data Successfully: {'Temperature': 59, 'Soil_moisture': 3, 'Ambient_Light_LDR': 336, 'Rain_sensor': 893, 'pH_sensor': 5}
Published data Successfully: {'Temperature': 16, 'Soil_moisture': 18, 'Ambient_Light_LDR': 260, 'Rain_sensor': 955, 'pH_sensor': 6}
Published data Successfully: {'Temperature': 2, 'Soil_moisture': 5, 'Ambient_Light_LDR': 769, 'Rain_sensor': 1019, 'pH_sensor': 7}
Published data Successfully: {'Temperature': 38, 'Soil_moisture': 71, 'Ambient_Light_LDR': 518, 'Rain_sensor': 57, 'pH_sensor': 8}
Published data Successfully: {'Temperature': -3, 'Soil_moisture': 100, 'Ambient_Light_LDR': 770, 'Rain_sensor': 326, 'pH_sensor': 8}
Published data Successfully: {'Temperature': 48, 'Soil_moisture': 9, 'Ambient_Light_LDR': 304, 'Rain_sensor': 776, 'pH_sensor': 7}
Published data Successfully: {'Temperature': 33, 'Soil_moisture': 24, 'Ambient_Light_LDR': 581, 'Rain_sensor': 158, 'pH_sensor': 6}
Published data Successfully: {'Temperature': 53, 'Soil_moisture': 80, 'Ambient_Light_LDR': 618, 'Rain_sensor': 874, 'pH_sensor': 6}
Published data Successfully: {'Temperature': 25, 'Soil_moisture': 54, 'Ambient_Light_LDR': 746, 'Rain_sensor': 537, 'pH_sensor': 6}
Published data Successfully: {'Temperature': -5, 'Soil_moisture': 89, 'Ambient_Light_LDR': 482, 'Rain_sensor': 738, 'pH_sensor': 9}
Published data Successfully: {'Temperature': 12, 'Soil_moisture': 25, 'Ambient_Light_LDR': 290, 'Rain_sensor': 953, 'pH_sensor': 9}
Published data Successfully: {'Temperature': -9, 'Soil_moisture': 44, 'Ambient_Light_LDR': 583, 'Rain_sensor': 637, 'pH_sensor': 8}
Published data Successfully: {'Temperature': 9, 'Soil_moisture': 64, 'Ambient_Light_LDR': 609, 'Rain_sensor': 330, 'pH_sensor': 7}
Published data Successfully: {'Temperature': 11, 'Soil_moisture': 69, 'Ambient_Light_LDR': 261, 'Rain_sensor': 445, 'pH_sensor': 8}
Published data Successfully: {'Temperature': 48, 'Soil_moisture': 73, 'Ambient_Light_LDR': 966, 'Rain_sensor': 135, 'pH_sensor': 5}
Message received from IBM IoT Platform: Motor_on
Motor is switched on

Published data Successfully: {'Temperature': -10, 'Soil_moisture': 41, 'Ambient_Light_LDR': 429, 'Rain_sensor': 296, 'pH_sensor': 7}
Published data Successfully: {'Temperature': 53, 'Soil_moisture': 77, 'Ambient_Light_LDR': 465, 'Rain_sensor': 152, 'pH_sensor': 5}
Published data Successfully: {'Temperature': 35, 'Soil_moisture': 48, 'Ambient_Light_LDR': 446, 'Rain_sensor': 152, 'pH_sensor': 5}
Published data Successfully: {'Temperature': 42, 'Soil_moisture': 20, 'Ambient_Light_LDR': 894, 'Rain_sensor': 547, 'pH_sensor': 5}
Published data Successfully: {'Temperature': 26, 'Soil_moisture': 41, 'Ambient_Light_LDR': 212, 'Rain_sensor': 529, 'pH_sensor': 8}
Published data Successfully: {'Temperature': 58, 'Soil_moisture': 43, 'Ambient_Light_LDR': 709, 'Rain_sensor': 256, 'pH_sensor': 6}
Message received from IBM IoT Platform: Motor_off
Motor is switched OFF

Published data Successfully: {'Temperature': 7, 'Soil_moisture': 33, 'Ambient_Light_LDR': 897, 'Rain_sensor': 976, 'pH_sensor': 8}
Published data Successfully: {'Temperature': 60, 'Soil_moisture': 11, 'Ambient_Light_LDR': 157, 'Rain_sensor': 841, 'pH_sensor': 9}
Published data Successfully: {'Temperature': 26, 'Soil_moisture': 83, 'Ambient_Light_LDR': 1018, 'Rain_sensor': 207, 'pH_sensor': 9}
Published data Successfully: {'Temperature': 30, 'Soil_moisture': 39, 'Ambient_Light_LDR': 836, 'Rain_sensor': 311, 'pH_sensor': 5}
```

## IBM IoT WATSON :

IBM Watson IoT Platform

1904106ece@clt.edu.in  
ID: 94ab7c

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Browse

Action

Device Types

Interfaces

Add Device +

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
> <input type="checkbox"/>	Rk44	Disconnected	esp32_node	Device	Nov 1, 2022 10:50 PM	
▼ <input checked="" type="checkbox"/>	esp2	Connected	Node	Device	Nov 13, 2022 2:13 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
status	{"Temperature":33,"Soil_moisture":17,"Ambient...	json	a few seconds ago
status	{"Temperature":54,"Soil_moisture":43,"Ambient...	json	a few seconds ago
status	{"Temperature":44,"Soil_moisture":86,"Ambient...	json	a few seconds ago
status	{"Temperature":59,"Soil_moisture":14,"Ambient...	json	a few seconds ago
status	{"Temperature":8,"Soil_moisture":73,"Ambient_...	json	a few seconds ago

**NODE-RED:**

← → ↻ [node-red-wotxv-2022-11-13.eu-gb.mybluemix.net/automate?command=Motor\\_off](https://node-red-wotxv-2022-11-13.eu-gb.mybluemix.net/automate?command=Motor_off)

{"command": "Motor\_off"}

← → ↻ [node-red-wotxv-2022-11-13.eu-gb.mybluemix.net/sensorop1](https://node-red-wotxv-2022-11-13.eu-gb.mybluemix.net/sensorop1)

{"Temperature":44,"Soil\_moisture":79,"Rain\_sensor":328,"pH\_sensor":6,"Ambient\_Light\_LDR":914}

debug

all nodes

all

11/18/2022, 12:33:52 AM node: f2f2649a.0d0d98

iot-2/type/Node/id/esp2/evt/status/fmt/json :

msg.payload : Object

Temperature: 44, Soil\_moisture: 79, Ambient\_Light\_LDR: 914, Rain\_sensor: 328, pH\_sensor: 6 }

11/18/2022, 12:33:52 AM node: f2f2649a.0d0d98

iot-2/type/Node/id/esp2/evt/status/fmt/json :

msg.payload : number

44

11/18/2022, 12:33:52 AM node: f2f2649a.0d0d98

iot-2/type/Node/id/esp2/evt/status/fmt/json :

msg.payload : number

79

11/18/2022, 12:33:52 AM node: f2f2649a.0d0d98

iot-2/type/Node/id/esp2/evt/status/fmt/json :

msg.payload : number

914

11/18/2022, 12:33:52 AM node: f2f2649a.0d0d98

iot-2/type/Node/id/esp2/evt/status/fmt/json :

msg.payload : number

328

11/18/2022, 12:33:52 AM node: f2f2649a.0d0d98

iot-2/type/Node/id/esp2/evt/status/fmt/json :

msg.payload : number

6

