

SPRINT-1

| | |
|---------------|---|
| Date | 29 October 2022 |
| Team ID | PNT2022TMID46939 |
| Project Name | IoT Based Smart Crop Protection System For Agriculture |
| Maximum Marks | 20 Marks |

Python Code

```
import sys
```

```
import ibmiotf.application
```

```
import ibmiotf.device
```

```
import random
```

```
#Provide your IBM Watson Device Credentials
```

```
authMethod = "token"
```

```
organization = "yet4pm"
```

```
authToken = "12345678910"
```

```
deviceType1 = "Sensor"
```

```
deviceId1 = "DHT"
```

```
deviceType3 = "Actuator"
```

```
deviceId3 = "Water_pump"
```

```
deviceType2 = "Sensor1"
```

```
deviceId2 = "soil_moisture"
```

```
# Initialize GPIO
```

```
def myCommandCallback(cmd):
```

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

```
    status=cmd.data['command']
```

```
    if status=="Waterpump_on":
```

```
        print ("Water Pump is Turned ON \n")
```

```
    else :
```

```
        print ("Water pump is off")
```

```
    #print(cmd)
```

```
try:
```

```
    deviceOptions1 = {"org": organization, "type": deviceType1, "id": deviceId1, "auth-  
method": authMethod, "auth-token":...
```

```
try:
```

```
    deviceOptions1 = {"org": organization, "type": deviceType1, "id": deviceId1, "auth-  
method": authMethod, "auth-token": authToken}
```

```
    deviceCli1 = ibmiotf.device.Client(deviceOptions1)
```

```
deviceOptions2 = {"org": organization, "type": deviceType2, "id": deviceId2, "auth-  
method": authMethod, "auth-token": authToken}
```

```
deviceCli2 = ibmiotf.device.Client(deviceOptions2)
```

```
deviceOptions3 = {"org": organization, "type": deviceType3, "id": deviceId3, "auth-  
method": authMethod, "auth-token": authToken}
```

```
deviceCli3 = ibmiotf.device.Client(deviceOptions3)
```

```
#.....
```

```
except Exception as e:
```

```
print("Caught exception connecting device: %s" % str(e))
```

```
sys.exit()
```

```
# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type  
"greeting" 10 times
```

```
deviceCli1.connect()
```

```
deviceCli2.connect()
```

```
deviceCli3.connect()
```

```
while True:
```

```
    #Get Sensor Data from esp32
```

```
    temp=random.randint(0,45)
```

```

Humid=random.randint(0,100)

data1 = { 'Temperature' : temp , 'Humidity': Humid}

#print data

def myOnPublishCallback():

    print ("Published Temperature = %s C" % temp, "Humidity = %s %" % Humid,"to
IBM Watson \n")

    success1 = deviceCli1.publishEvent("DHT Sensor", "json", data1, qos=0,
on_publish=myOnPublishCallback)

    if not success1:

        print("Not connected to IoT\n")

    time.sleep(1)

Soil_moisture=random.randint(0,100)

data2 = { 'Soil_moisture' : Soil_moisture}

def myOnPublishCallback2():

    print ("Published Soil_moisture = %s %" % temp, "to IBM Watson")

    success2 = deviceCli2.publishEvent("Soil Moisture Sensor", "json", data2, qos=0,
on_publish=myOnPublishCallback2)

    if not success2:

        print("Not connected to IoT")

    time.sleep(1)

```

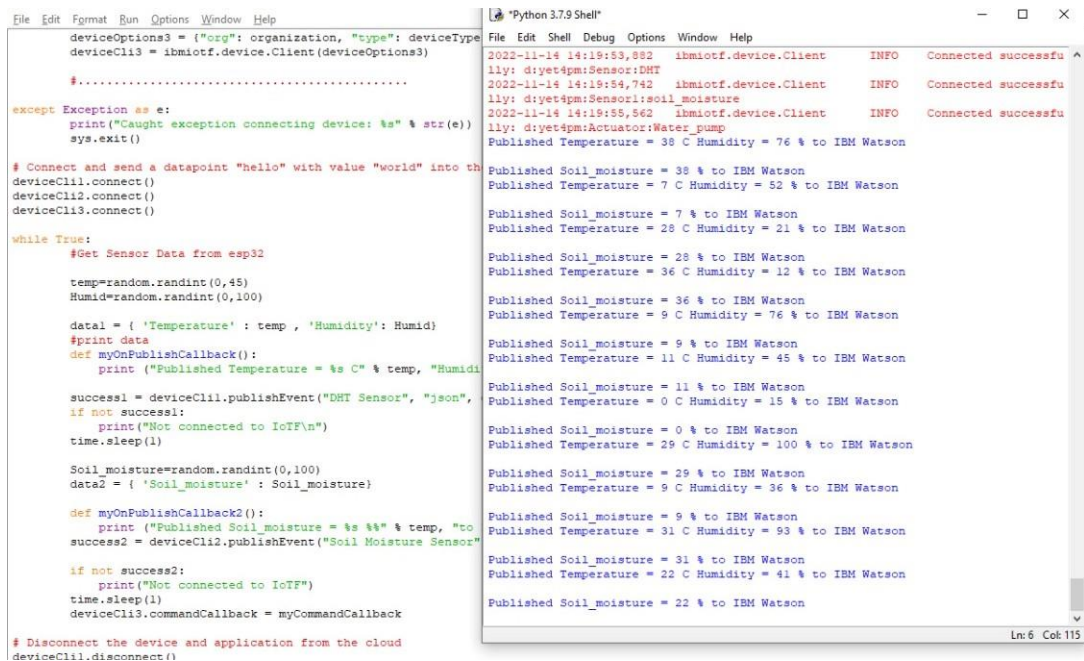
```
deviceCli3.commandCallback = myCommandCallback
```

```
# Disconnect the device and application from the cloud
```

```
deviceCli1.disconnect()
```

```
deviceCli2.disconnect()
```

Output



```
File Edit Format Run Options Window Help
deviceOptions3 = {"org": organization, "type": deviceType}
deviceCli3 = ibmiotf.device.Client(deviceOptions3)

# .....

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

# Connect and send a datapoint "hello" with value "world" into the cloud
deviceCli1.connect()
deviceCli2.connect()
deviceCli3.connect()

while True:
    #Get Sensor Data from esp32
    temp=random.randint(0,45)
    Humid=random.randint(0,100)

    data1 = { 'Temperature' : temp , 'Humidity': Humid}
    #print data
    def myOnPublishCallback1():
        print ("Published Temperature = %s C" % temp, "Humidity = %s" % Humid)
    success1 = deviceCli1.publishEvent("DHT Sensor", "json",
    if not success1:
        print("Not connected to IoTF\n")
        time.sleep(1)

    Soil_moisture=random.randint(0,100)
    data2 = { 'Soil_moisture' : Soil_moisture}
    def myOnPublishCallback2():
        print ("Published Soil_moisture = %s" % Soil_moisture, "Temperature = %s C" % temp, "Humidity = %s" % Humid)
    success2 = deviceCli2.publishEvent("Soil Moisture Sensor", "json",
    if not success2:
        print("Not connected to IoTF\n")
        time.sleep(1)
    deviceCli3.commandCallback = myCommandCallback

# Disconnect the device and application from the cloud
deviceCli1.disconnect()
```

```
File Edit Shell Debug Options Window Help
2022-11-14 14:19:53,882 ibmiotf.device.Client INFO Connected successfully
11y: d:yet4pm:Sensor:DHT
2022-11-14 14:19:54,742 ibmiotf.device.Client INFO Connected successfully
11y: d:yet4pm:Sensor1:soil_moisture
2022-11-14 14:19:55,562 ibmiotf.device.Client INFO Connected successfully
11y: d:yet4pm:Actuator:Water_pump
Published Temperature = 38 C Humidity = 76 % to IBM Watson
Published Soil_moisture = 38 % to IBM Watson
Published Temperature = 7 C Humidity = 52 % to IBM Watson
Published Soil_moisture = 7 % to IBM Watson
Published Temperature = 28 C Humidity = 21 % to IBM Watson
Published Soil_moisture = 28 % to IBM Watson
Published Temperature = 36 C Humidity = 12 % to IBM Watson
Published Soil_moisture = 36 % to IBM Watson
Published Temperature = 9 C Humidity = 76 % to IBM Watson
Published Soil_moisture = 9 % to IBM Watson
Published Temperature = 11 C Humidity = 45 % to IBM Watson
Published Soil_moisture = 11 % to IBM Watson
Published Temperature = 0 C Humidity = 15 % to IBM Watson
Published Soil_moisture = 0 % to IBM Watson
Published Temperature = 29 C Humidity = 100 % to IBM Watson
Published Soil_moisture = 29 % to IBM Watson
Published Temperature = 9 C Humidity = 36 % to IBM Watson
Published Soil_moisture = 9 % to IBM Watson
Published Temperature = 31 C Humidity = 93 % to IBM Watson
Published Soil_moisture = 31 % to IBM Watson
Published Temperature = 22 C Humidity = 41 % to IBM Watson
Published Soil_moisture = 22 % to IBM Watson
Ln: 6 Col: 115
```

```
*Python 3.7.9 Shell
File Edit Shell Debug Options Window Help
2022-11-14 14:19:53,882 ibmiotf.device.Client INFO Connected successfu
lly: d:yet4pm:Sensor:DHT
2022-11-14 14:19:54,742 ibmiotf.device.Client INFO Connected successfu
lly: d:yet4pm:Sensor1:soil_moisture
2022-11-14 14:19:55,562 ibmiotf.device.Client INFO Connected successfu
lly: d:yet4pm:Actuator:Water_pump
Published Temperature = 38 C Humidity = 76 % to IBM Watson

Published Soil_moisture = 38 % to IBM Watson
Published Temperature = 7 C Humidity = 52 % to IBM Watson

Published Soil_moisture = 7 % to IBM Watson
Published Temperature = 28 C Humidity = 21 % to IBM Watson

Published Soil_moisture = 28 % to IBM Watson
Published Temperature = 36 C Humidity = 12 % to IBM Watson

Published Soil_moisture = 36 % to IBM Watson
Published Temperature = 9 C Humidity = 76 % to IBM Watson

Published Soil_moisture = 9 % to IBM Watson
Published Temperature = 11 C Humidity = 45 % to IBM Watson

Published Soil_moisture = 11 % to IBM Watson
Published Temperature = 0 C Humidity = 15 % to IBM Watson

Published Soil_moisture = 0 % to IBM Watson
Published Temperature = 29 C Humidity = 100 % to IBM Watson

Published Soil_moisture = 29 % to IBM Watson
Published Temperature = 9 C Humidity = 36 % to IBM Watson

Published Soil_moisture = 9 % to IBM Watson
Published Temperature = 31 C Humidity = 93 % to IBM Watson

Published Soil_moisture = 31 % to IBM Watson
Published Temperature = 22 C Humidity = 41 % to IBM Watson

Published Soil_moisture = 22 % to IBM Watson
```

IBM WATSON SCREENSHOTS

← → ↻ yet4pm.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform 821919104023@smartinternz.com ID: yet4pm

Browse Action Device Types Interfaces Add Device +

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 |
|---|---------------|-----------|-------------|----------|----------------------|
| > | DHT | Connected | Sensor | Device | Nov 13, 2022 8:44 PM |
| > | Water_pump | Connected | Actuator | Device | Nov 13, 2022 8:50 PM |
| > | soil_moisture | Connected | Sensor1 | Device | Nov 13, 2022 8:48 PM |

Items per page 50 | 1-3 of 3 items 1 of 1 page < 1 >

DEVICE OUTPUT

← → ↻ yet4pm.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform 821919104023@smartinternz.com ID: yet4pm

Browse Action Device Types Interfaces Add Device +

▼ DHT Connected Sensor Device Nov 13, 2022 8:44 PM → ...

Identity Device Information Recent Events State Logs X

The recent events listed show the live stream of data that is coming and going from this device.

| Event | Value | Format | Last Received |
|------------|----------------------------------|--------|-------------------|
| DHT Sensor | {"Temperature":23,"Humidity":65} | json | a few seconds ago |
| DHT Sensor | {"Temperature":17,"Humidity":14} | json | a few seconds ago |
| DHT Sensor | {"Temperature":43,"Humidity":45} | json | a few seconds ago |
| DHT Sensor | {"Temperature":45,"Humidity":55} | json | a few seconds ago |
| DHT Sensor | {"Temperature":40,"Humidity":10} | | |

0 Simulations running

← → ↺

yet4pm.internetofthings.ibmcloud.com/dashboard/devices/browse

821919104023@smartinternz.com

ID: yet4pm

IBM Watson IoT Platform

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821919104023@smartinternz.com

ID: yet4pm

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⚙️

Browse

Action

Device Types

Interfaces

Add Device

soil_moisture

Connected

Sensor1

Device

Nov 13, 2022 8:48 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 |
|------------------|----------------------|--------|-------------------|
| Soil Moisture... | {"Soil_moisture":84} | json | a few seconds ago |
| Soil Moisture... | {"Soil_moisture":81} | json | a few seconds ago |
| Soil Moisture... | {"Soil_moisture":90} | json | a few seconds ago |
| Soil Moisture... | {"Soil_moisture":80} | json | a few seconds ago |
| Soil Moisture... | {"Soil_moisture":48} | json | a few seconds ago |

0 Simulations running