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

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    #Publish and subscribe to IBM IoT platform
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    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 ()
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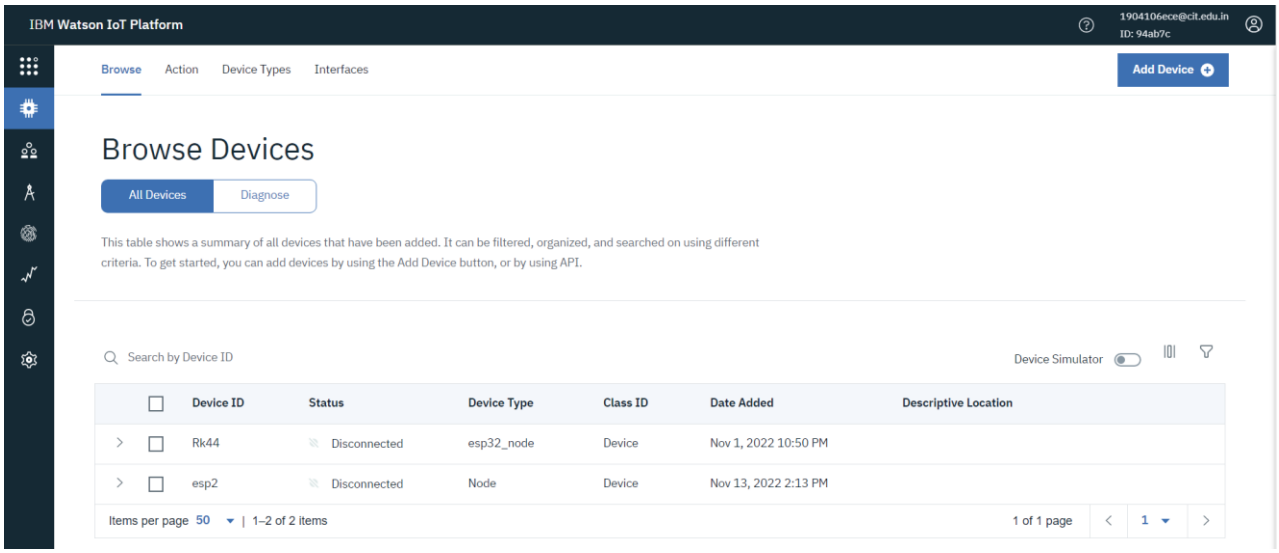
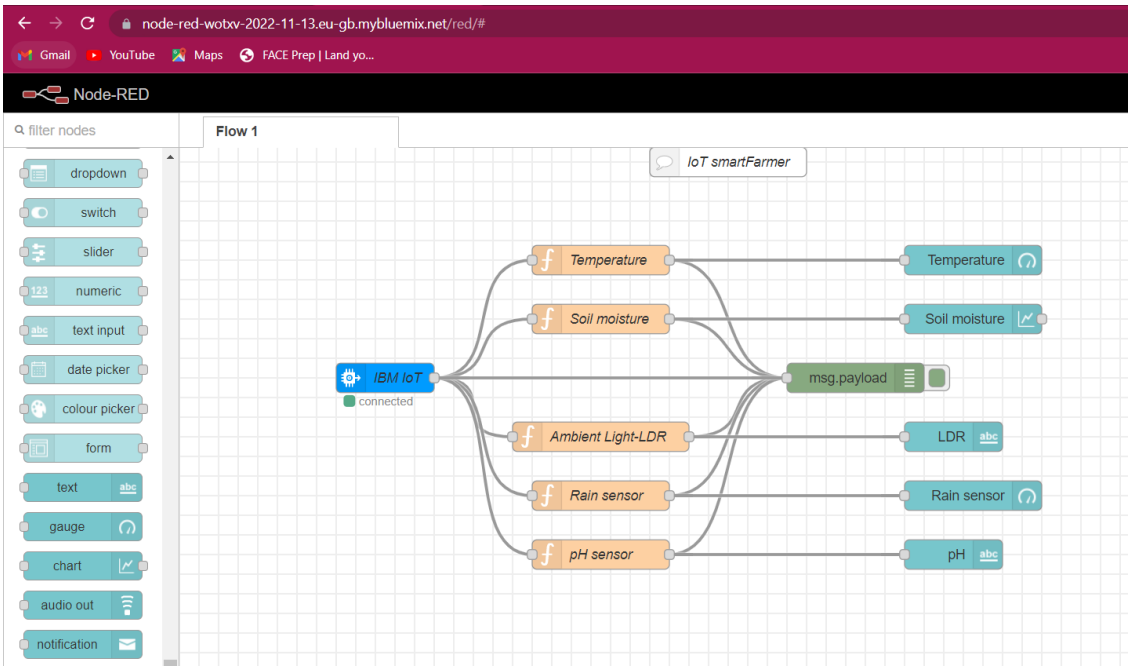
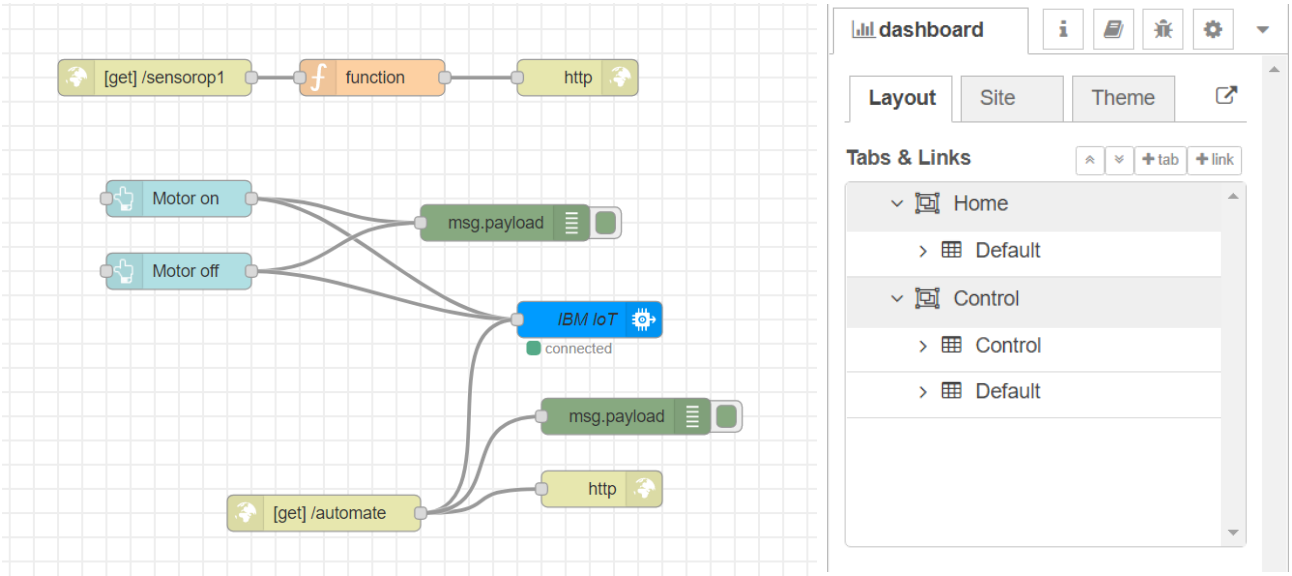
IBM IOT WATSON AND NODE-RED SERVICE SETUP:





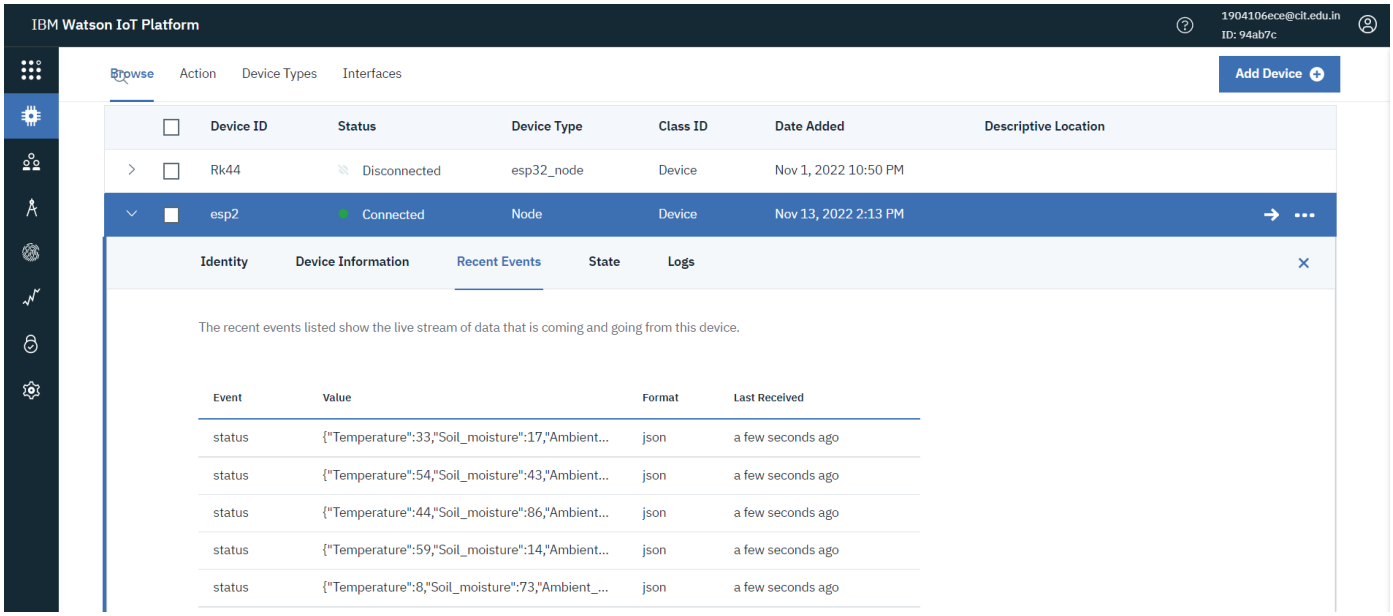


PYTHON CODE EXECUTION AND OUTPUT:

IDLE OUTPUT:

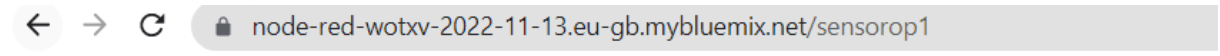
```
*Python 3.7.0 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:/Users/DELL/AppData/Local/Programs/Python/Python37/python_watson_publish.py
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 :



NODE-RED:


```
{"command":"Motor_off"}
```


```
{"Temperature":44,"Soil_moisture":79,"Rain_sensor":328,"pH_sensor":6,"Ambient_Light_LDR":914}
```