

Sprint-3

Team ID	PNT2022TMID46736
Project Name	IOT Based Smart Crop Protection System For Agriculture

S.NO	Tools & Technology Used
1	Python 3.7.0
2	IBM Cloud
3	Node-Red

Python Script:

```
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random

#Provide your IBM Watson Device Credentials
organization = "x0fxss" #replace the ORG ID |
deviceType = "Testing"#replace the Device type wi
deviceId = "Testdevice1"#replace Device ID
authMethod = "token"
authToken = "123456789" #Replace the authtoken
# Initialize GPIO

#Receives Command from Node-red
def myCommandCallback(cmd):
    print ("Command received: %s" % cmd.data['command'])
    status=cmd.data['command']
    if status=="motoron":
        print ("motor is on")
    elif status == "motoroff" :
        print ("motor is off")
    elif status == "motor30" :
        print ("motor is on for 30 minutes")

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()

# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type "greeting" 10 times
deviceCli.connect()

while True:
    #Get Sensor Data from DHT11

    temp=random.randint(0,100)
    Humid=random.randint(0,100)
    soilmoisture=random.randint(0,100)

    data = { 'temp' : temp, 'Humid': Humid, 'soilmoisture': soilmoisture }
    #print data
    def myOnPublishCallback():
        print ("Published Temperature = %s C" % temp, "Humidity = %s %" % Humid, "soilmoisture = %s %"
        %soilmoisture, "to IBM Watson")

    success = deviceCli.publishEvent("IoTsensor", "json", data, qos=0, on_publish=myOnPublishCallback)
    if not success:
        print("Not connected to IoT")
        time.sleep(5)

    deviceCli.commandCallback = myCommandCallback

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

```

OUTPUT:

We are running python script to send data to IBM cloud and data is displayed in web-ui by using node-red.

```

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\charu\Downloads\ibmiotpublishsubscribe.py =====
2022-11-11 15:56:49,907 ibmiotf.device.Client INFO Connected successfully: d:x0fxss:Testing:Testdevice1
Published Temperature = 8 C Humidity = 44 % soilmoisture = 3 % to IBM Watson
Published Temperature = 13 C Humidity = 95 % soilmoisture = 43 % to IBM Watson
Published Temperature = 78 C Humidity = 83 % soilmoisture = 83 % to IBM Watson
Published Temperature = 100 C Humidity = 52 % soilmoisture = 60 % to IBM Watson
Published Temperature = 45 C Humidity = 93 % soilmoisture = 16 % to IBM Watson
Published Temperature = 53 C Humidity = 12 % soilmoisture = 59 % to IBM Watson
Published Temperature = 15 C Humidity = 49 % soilmoisture = 32 % to IBM Watson
Published Temperature = 37 C Humidity = 73 % soilmoisture = 25 % to IBM Watson

```

IBM Cloud:

IBM Watson IoT Platform

312819106035@smartinternz.com
ID: x0fss

Browse

Action

Device Types

Interfaces

Add Device

1234

Disconnected

Noder

Device

24 Oct 2022 09:50

Testdevice1

Connected

Testing

Device

11 Nov 2022 15:08

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
IoTSensor	{ "temp":59,"Humid":96,"soilmoisture":100 }	json	a few seconds ago
IoTSensor	{ "temp":26,"Humid":59,"soilmoisture":99 }	json	a few seconds ago
IoTSensor	{ "temp":74,"Humid":13,"soilmoisture":96 }	json	a few seconds ago
IoTSensor	{ "temp":79,"Humid":24,"soilmoisture":28 }	json	a few seconds ago

Node-RED:

Node-RED

Deploy

filter nodes

tcp out

tcp request

udp in

udp out

input

ibmiot in

output

ibmiot out

sequence

split

join

sort

Flow 1

Flow 1

IBM IoT

Humidity

temp

Soil Moisture

Motor ON

Motor OFF

Motor for 30 minutes

IBM IoT

debug 2

Humidity Gauge

Temperature Gauge

Soil Moisture Gauge

debug

current flow

11/11/2022, 4:00:06 PM node: debug 2
iot-2/type/Testing/Id/Testdevice1/ev/IoTSensorfmt/json :
msg.payload : Object
{ temp: 61, Humid: 10, soilmoisture: 54 }

11/11/2022, 4:00:06 PM node: debug 2
iot-2/type/Testing/Id/Testdevice1/ev/IoTSensorfmt/json :
msg.payload : Object
{ temp: 61, Humid: 73, soilmoisture: 38 }

11/11/2022, 4:00:06 PM node: debug 2
iot-2/type/Testing/Id/Testdevice1/ev/IoTSensorfmt/json :
msg.payload : Object
{ temp: 4, Humid: 82, soilmoisture: 10 }

11/11/2022, 4:00:06 PM node: debug 2
iot-2/type/Testing/Id/Testdevice1/ev/IoTSensorfmt/json :
msg.payload : Object
{ temp: 56, Humid: 26, soilmoisture: 48 }

11/11/2022, 4:00:12 PM node: debug 2
iot-2/type/Testing/Id/Testdevice1/ev/IoTSensorfmt/json :
msg.payload : Object
{ temp: 13, Humid: 23, soilmoisture: 19 }

Output:

