SPRINT DELIVERY – 4

Team ID	PNT2022TMID06254
Project Name	IoT Enabled Smart Farming Application
Date	9 November 2022

5.5 Receiving commands from IBM cloud using Python program

import time import sys

import ibmiotf.application import

ibmiotf.device import random

#Provide your IBM Watson Device Credentials organization

= "157uf3" deviceType = "abcd" deviceId = "7654321"

authMethod = "token" authToken = "87654321"

Initialize GPIO

def myCommandCallback(cmd):   print("Command

 received: %s" % cmd.data['command'])

 status=cmd.data['command'] if status=="motoron": print

```python
    ("motor is on")
elif status == "motoroff":
    print ("motor is off")
else :
    print ("please send proper command")


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(90,110)
Humid=random.randint(60,100)
Mois=random. Randint(20,120) data = {
'temp' : temp, 'Humid': Humid , 'Mois':
Mois}
```

#print data def myOnPublishCallback():

print ("Published Temperature = %s C" % temp, "Humidity = %s %%" % Humid, "Moisture =%s deg c" % Mois "to IBM Watson") success =
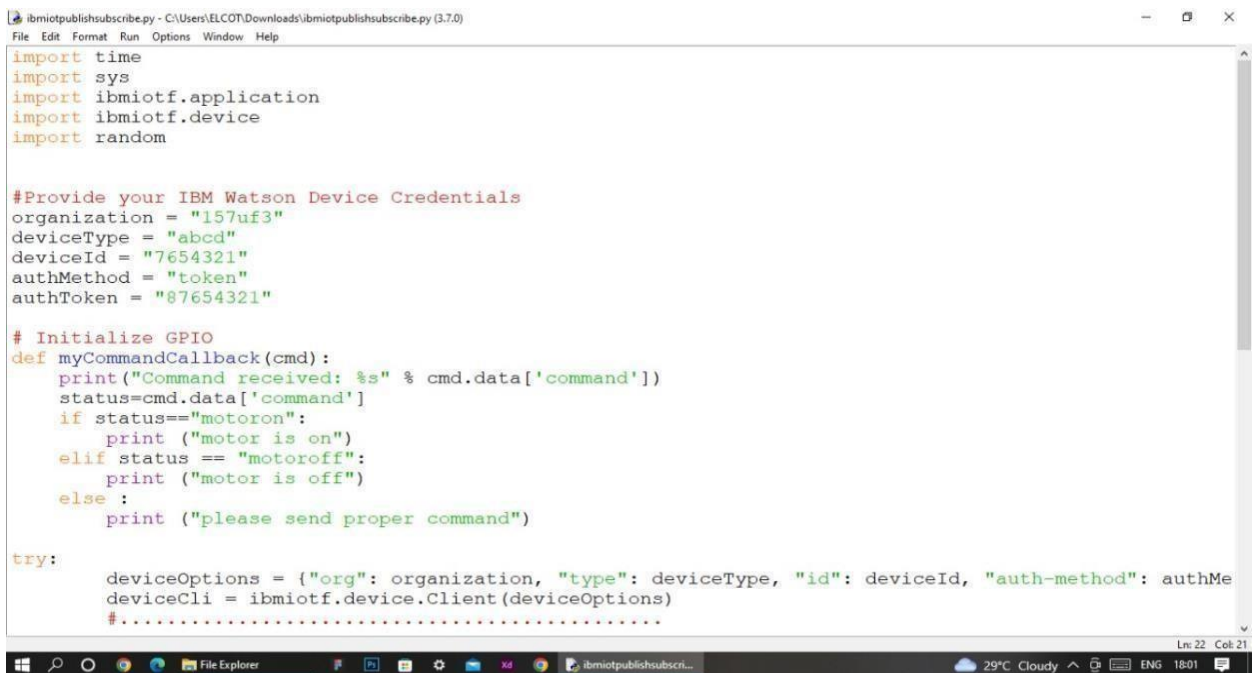
deviceCli.publishEvent("IoTSensor", "json", data, qos=0,

on_publish=myOnPublishCallback)   if not success: print("Not connected to IoTF")

time.sleep(10)   deviceCli.commandCallback   = myCommandCallback #

Disconnect the device and

application from the cloud deviceCli.disconnect()

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


#Provide your IBM Watson Device Credentials
organization = "157uf3"
deviceType = "abcd"
deviceId = "7654321"
authMethod = "token"
authToken = "87654321"

# Initialize GPIO
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")
    else :
        print ("please send proper command")

try:
        deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMe
        deviceCli = ibmiotf.device.Client(deviceOptions)
        #........................................
```
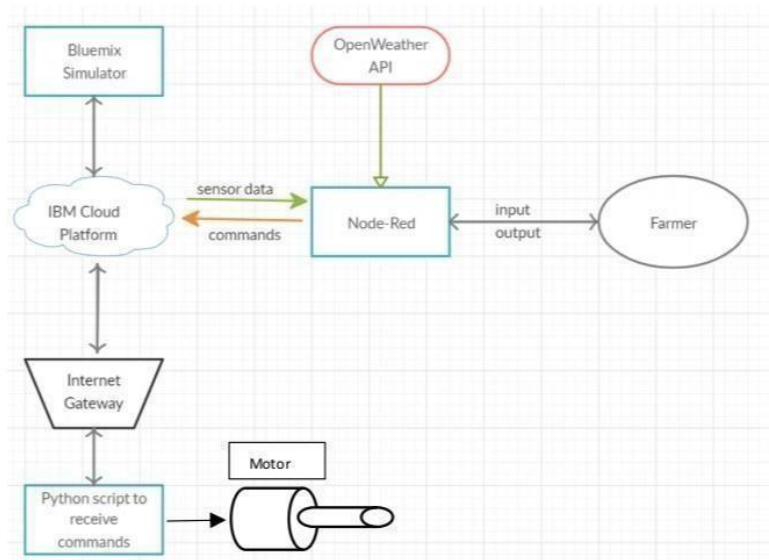
```
Python 3.7.0 Shell
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD6
4)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
======== RESTART: C:\Users\ELCOT\Downloads\ibmiotpublishsubscribe.py ========
2022-11-07 20:01:24,074    ibmiotf.device.Client       INFO    Connected successfu
lly: d:157uf3:abcd:7654321
Published Moisture = 90 deg C Temperature = 96 C Humidity = 76 % to IBM Watson
Published Moisture = 102 deg C Temperature = 110 C Humidity = 68 % to IBM Watson
Published Moisture = 45 deg C Temperature = 99 C Humidity = 100 % to IBM Watson
Command received: motoron
motor is on
Published Moisture = 77 deg C Temperature = 91 C Humidity = 85 % to IBM Watson
Published Moisture = 73 deg C Temperature = 94 C Humidity = 86 % to IBM Watson
Command received: motoroff
motor is off
Published Moisture = 101 deg C Temperature = 104 C Humidity = 87 % to IBM Watson
```

6. Flow Chart

7. Observations & Results

```
*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: C:\Users\ELCOT\Downloads\ibmiotpublishsubscribe.py =========
2022-11-07 20:01:24,074   ibmiotf.device.Client      INFO     Connected successfu
lly: d:157uf3:abcd:7654321
Published Moisture = 90 deg C Temperature = 96 C Humidity = 76 % to IBM Watson
Published Moisture = 102 deg C Temperature = 110 C Humidity = 68 % to IBM Watson
Published Moisture = 45 deg C Temperature = 99 C Humidity = 100 % to IBM Watson
Command received: motoron
motor is on
Published Moisture = 77 deg C Temperature = 91 C Humidity = 85 % to IBM Watson
Published Moisture = 73 deg C Temperature = 94 C Humidity = 86 % to IBM Watson
Command received: motoroff
motor is off
Published Moisture = 101 deg C Temperature = 104 C Humidity = 87 % to IBM Watson
```

Measured Data

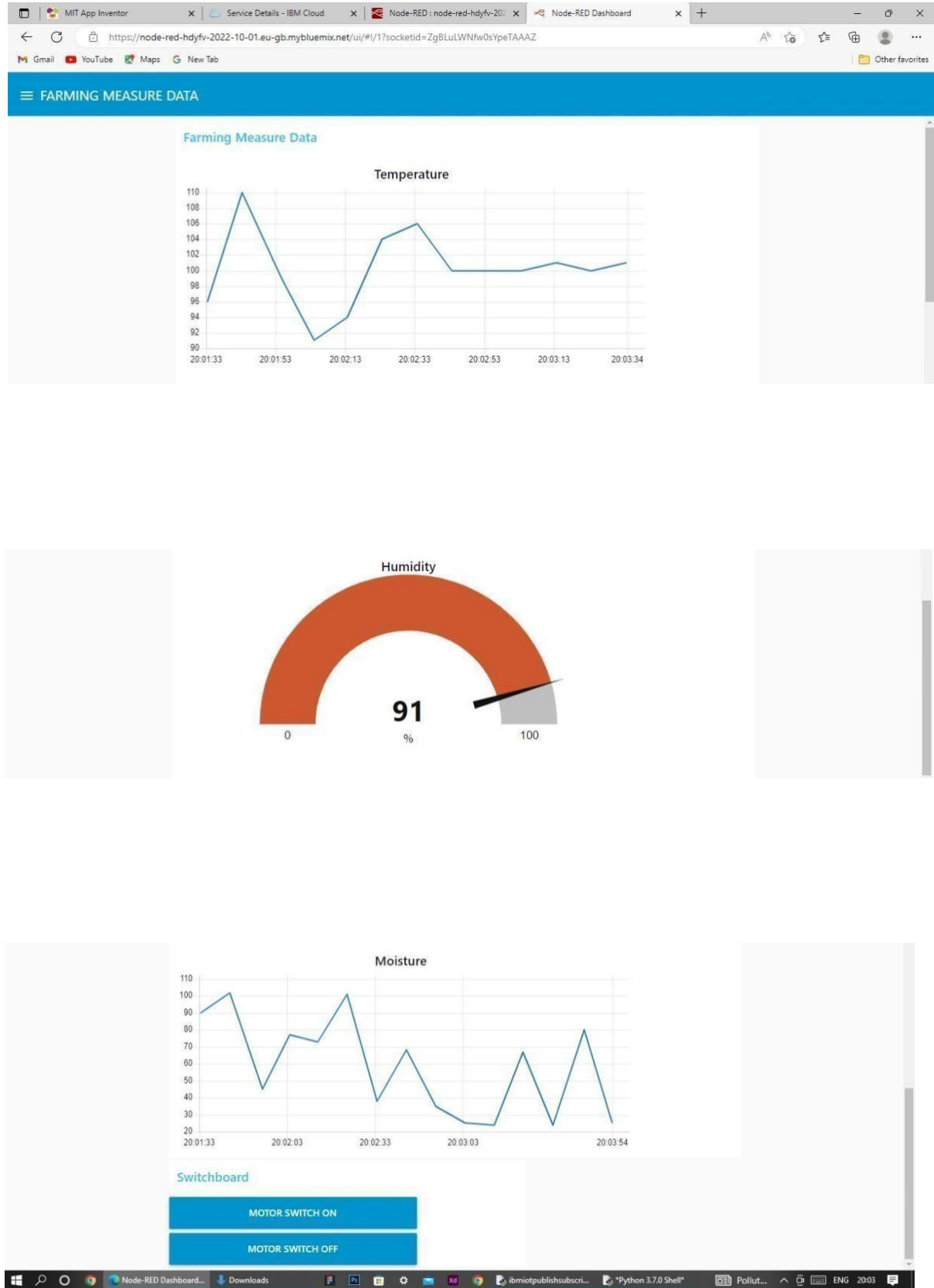### Moisture : 59

Temperature(c): 90

Humidity(%): 85

Switchboard

Motor on   **Motor off**

☰ FARMING MEASURE DATA

Farming Measure Data

Temperature

Humidity

91
%

Moisture

Switchboard

MOTOR SWITCH ON

MOTOR SWITCH OFF

8. Advantages & Disadvantages Advantages:

• Farms can be monitored and controlled remotely.

• Increase in convenience to farmers.

• Less labor cost.

• Better standards of living.

Disadvantages:

• Lack of internet/connectivity issues.

• Added cost of internet and internet gateway infrastructure.

• Farmers wanted to adapt the use of Mobile App.

9.Conclusion

Thus the objective of the project to implement an IOT system in order to help farmers to control and monitor their farms has been implemented successfully.