

Date	08 November 2022
Team ID	PNT2022TMID23823
Project Name	IOT – Smart Farming Application

IOT ENABLED SMART FARMING APPLICATION SPRINT DELIVERY – 4

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 ("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 IoT")

    time.sleep(10)

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

```

```
ibmiotpublishsubscribe.py - C:\Users\ELCOT\Downloads\ibmiotpublishsubscribe.py (3.7.0)
File Edit Format Run Options Window Help

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")

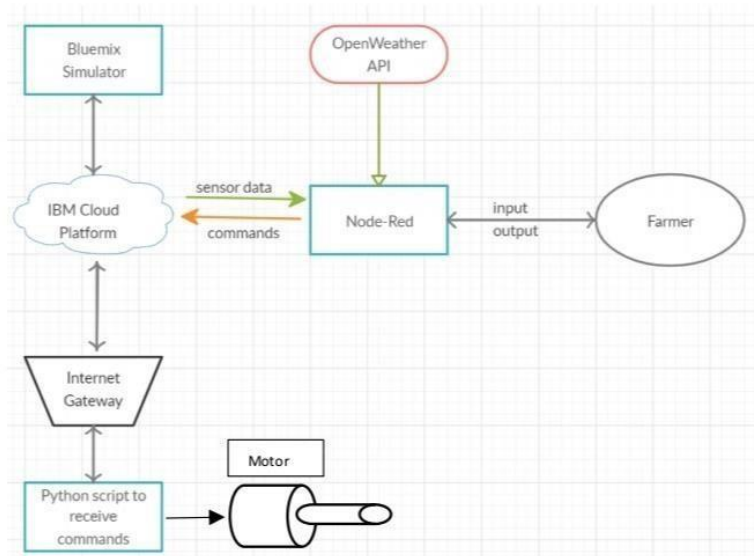
try:
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMe
    deviceCli = ibmiotf.device.Client(deviceOptions)
    #.....

```

```
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 (AMD64)] 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

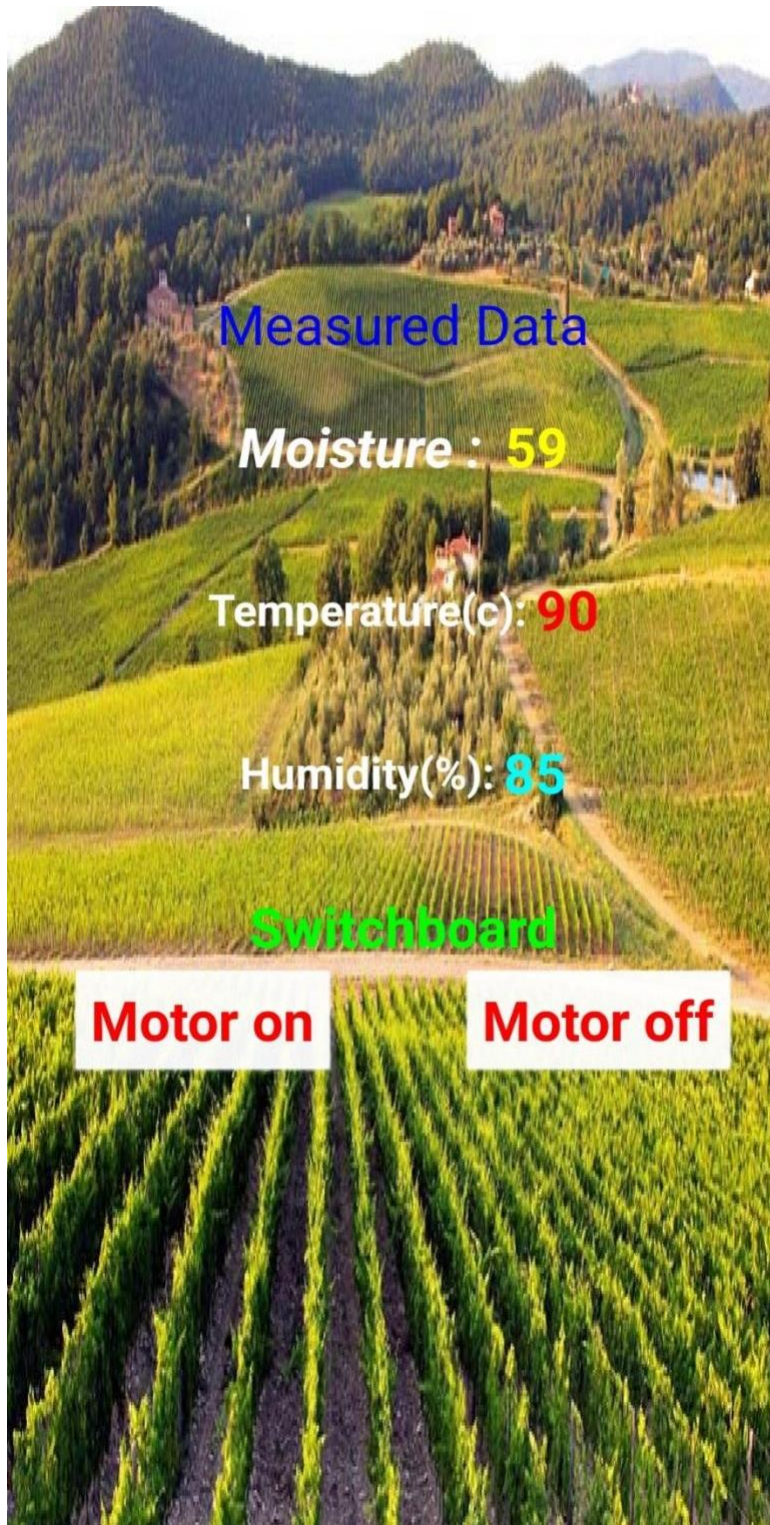
```

Flow Chart

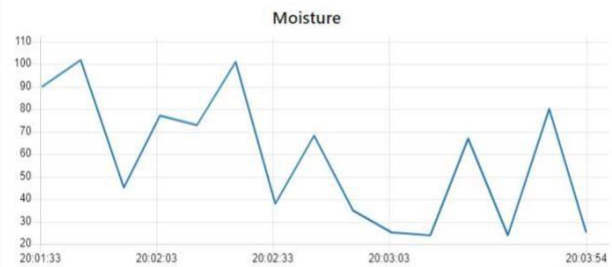
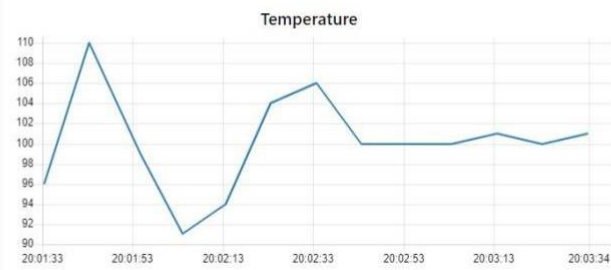


Observations & Results

```
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 (AMD64)] 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 successfully: 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
```



Farming Measure Data



Switchboard

MOTOR SWITCH ON

MOTOR SWITCH OFF

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.

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.

Bibliography IBM cloud reference: <https://cloud.ibm.com/> IoT simulator : <https://watson-iot-sensor-simulator.mybluemix.net/> OpenWeather : <https://openweathermap.org/>