

SPRINT DELIVERY – 4

TITLE	Smart Farmer-IOT Enabled Smart FarmingApplication
DOMAIN NAME	INTERNET OF THINGS
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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
```

```
Credentialsorganization = "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
:
    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
aneventof type "greeting" 10 times deviceCli.connect()

while True:
    #Get Sensor Data
fromDHT11
temp=random.randint(90,1
10)
Humid=random.randint(60

```

,100)Mois=random.

Randint(20,120)

data = { 'temp' : temp, 'Humid':

Humid , 'Mois': Mois}

#print data defmyOnPublishCallback(

):

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:

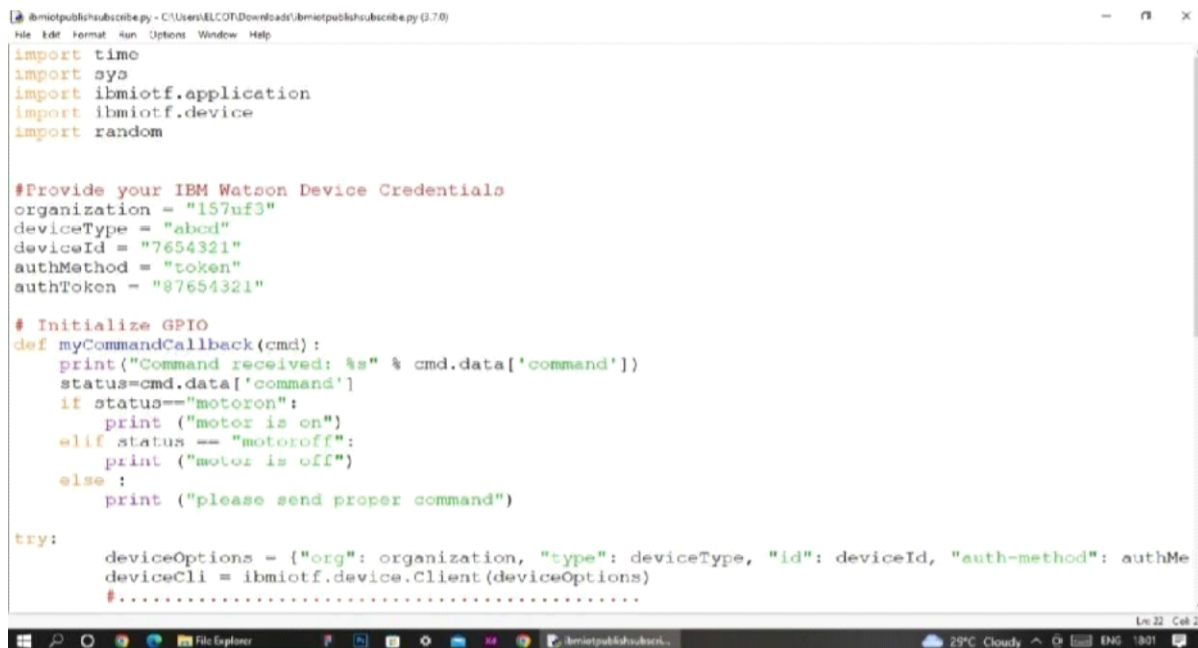
print("Not connected to IoTF")

time.sleep(10)

deviceCli.commandCallback = myCommandCallback #

Disconnect the device and application from the cloud

deviceCli.disconnect()

A screenshot of a code editor window showing a Python script. The script imports time, sys, ibmiotf.application, ibmiotf.device, and random. It defines IBM Watson credentials (organization, deviceType, deviceId, authMethod, authToken) and initializes GPIO. A function myCommandCallback is defined to handle incoming commands, printing the command and its status, and controlling a motor. The script then attempts to connect to the IBM Watson IoT platform using the provided credentials and device options. The code is written in a mix of black and red text, likely for syntax highlighting. The editor window has a title bar and standard menu options (File, Edit, Format, Run, Options, Window, Help). The status bar at the bottom shows the file name, line number (Ln: 22), and column number (Col: 21).

```
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"

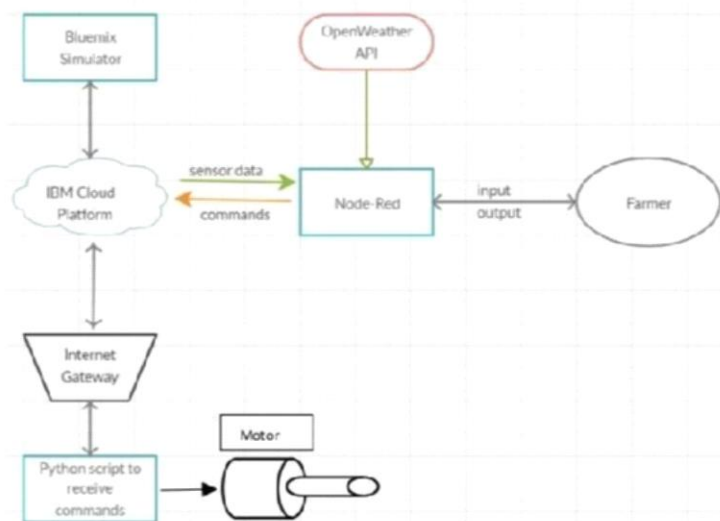
# Initialize GPIO
def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    status=cmd.data['command']
    if status=="motoron":
        print ("motor is on")
    elif status == "motoroff":
        print ("motor is off")
    else :
        print ("please send proper command")

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 successfully: d1:157a13:abed: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

```
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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
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>>>
===== RESTART: C:\Users\ELCOT\Downloads\ibmiotpublishsubscribe.py =====
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Command received: motoron
motor is on
Published Moisture = 77 deg C Temperature = 91 C Humidity = 85 % to IBM Watson
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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





- **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.

10.Bibliography

IBM cloud reference: <https://cloud.ibm.com/>

IoT simulator : <https://watson-iot-sensor-simulator.mybluemix.net/>OpenWeather :

<https://openweathermap.org/>