Smart Farmer-IOT Enabled Smart Farming Application

SPRINT – 4

TITLE	**Smart Farmer-IOT Enabled Smart Farming Application**
DOMAIN NAME	INTERNET OF THINGS
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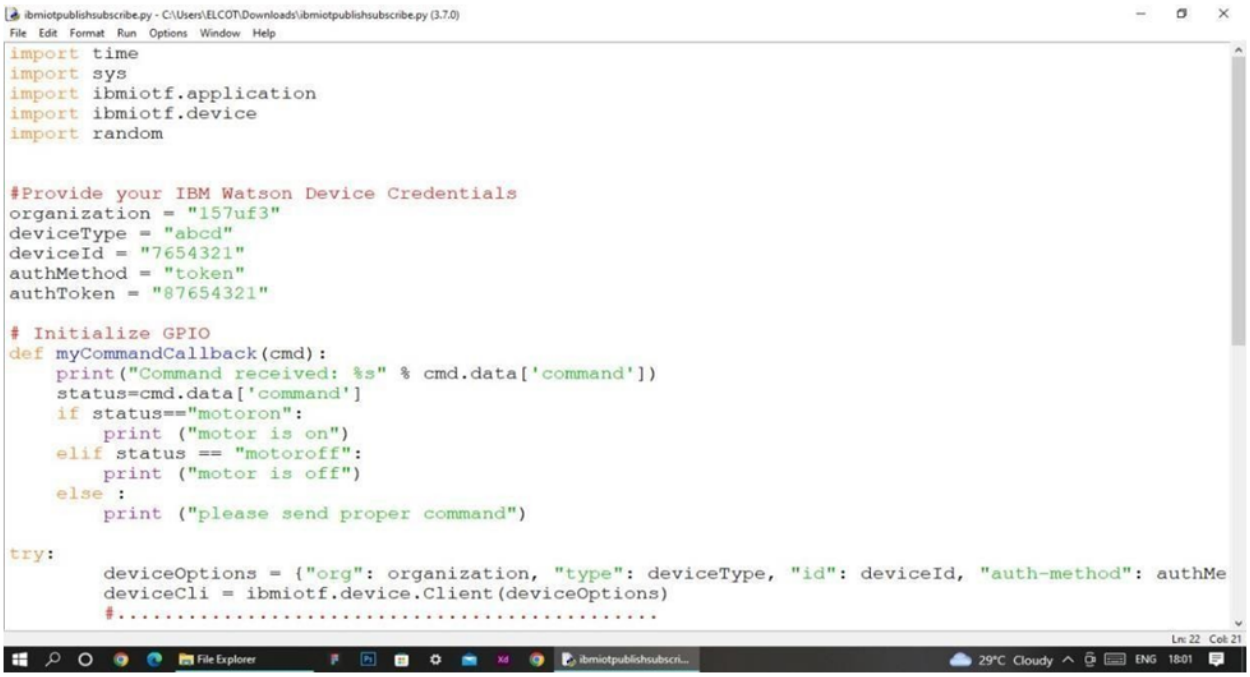
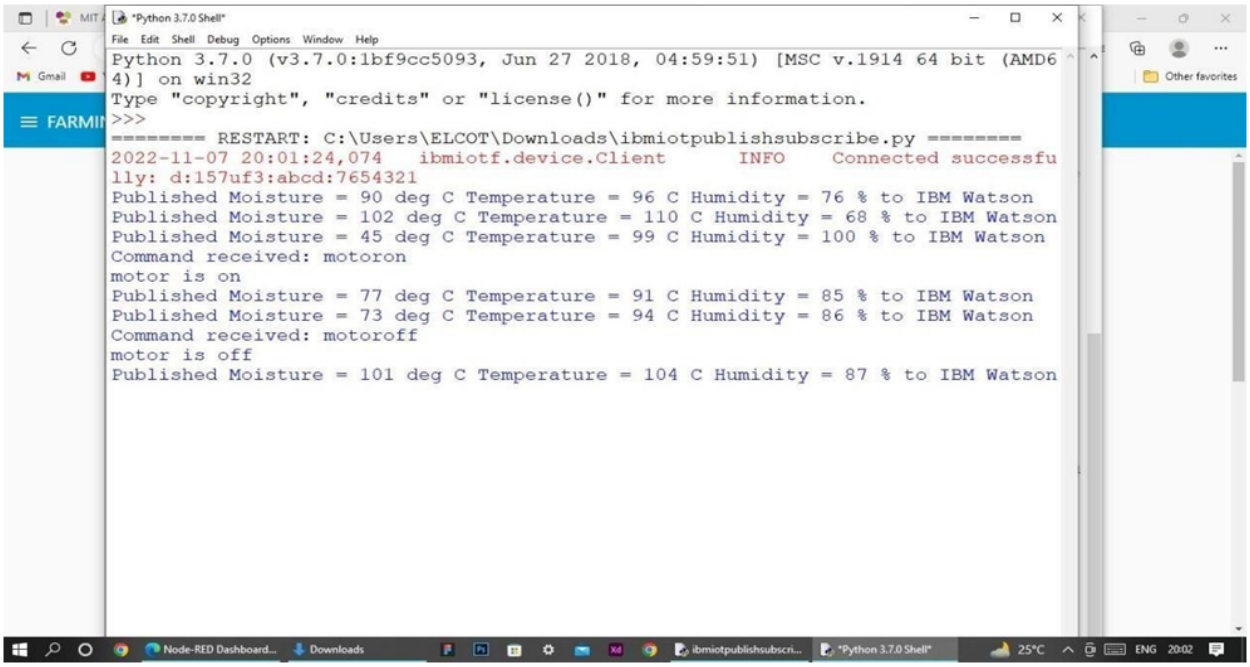
Receiving commands from IBM cloud using Python program

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

#Provide your IBM Watson Device Credentials
```

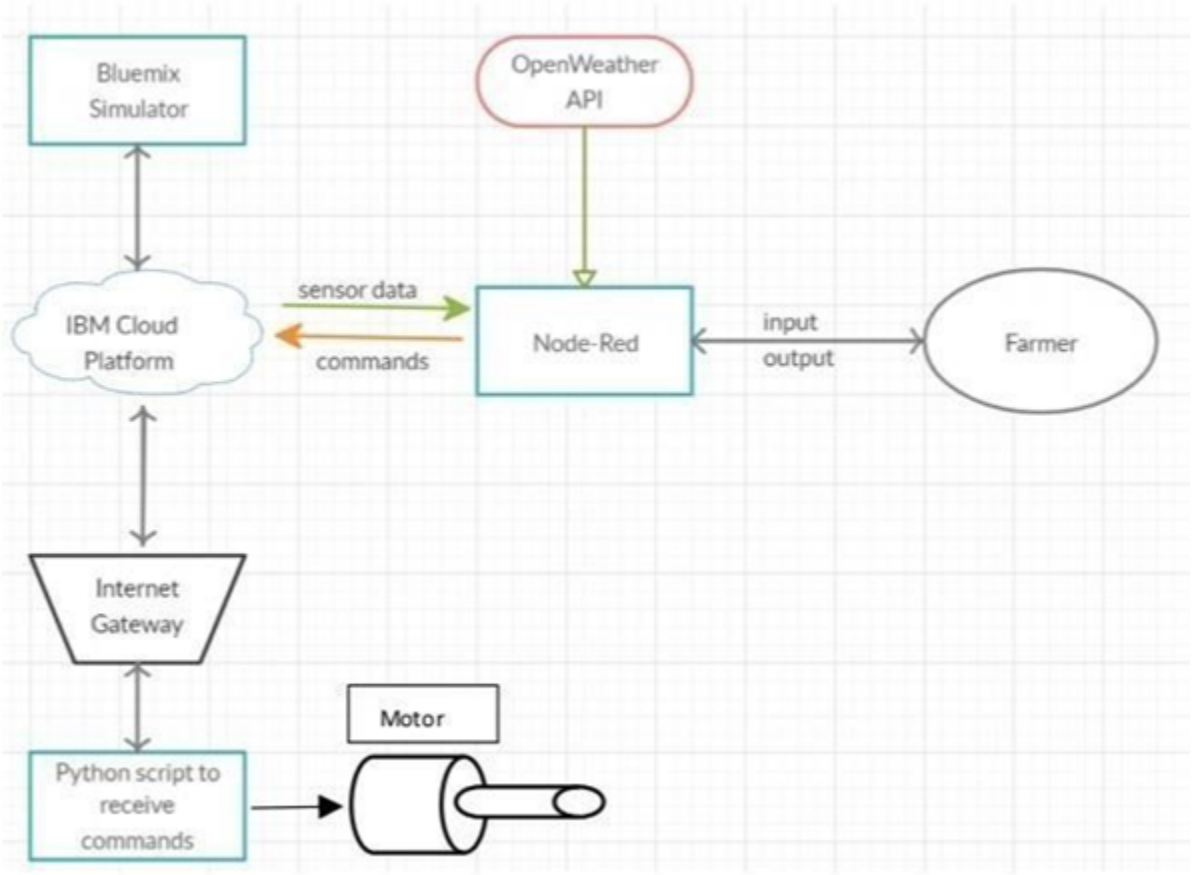
```
organization = "157uf3"
 deviceType = "IOT_DEV"
deviceId = "1911073"
authMethod = "token"
authToken = "1911073abcdefgh"

# 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 IoTF") time.sleep(10)
    deviceCli.commandCallback = myCommandCallback
# Disconnect the device and application from the cloud deviceCli.disconnect()
```

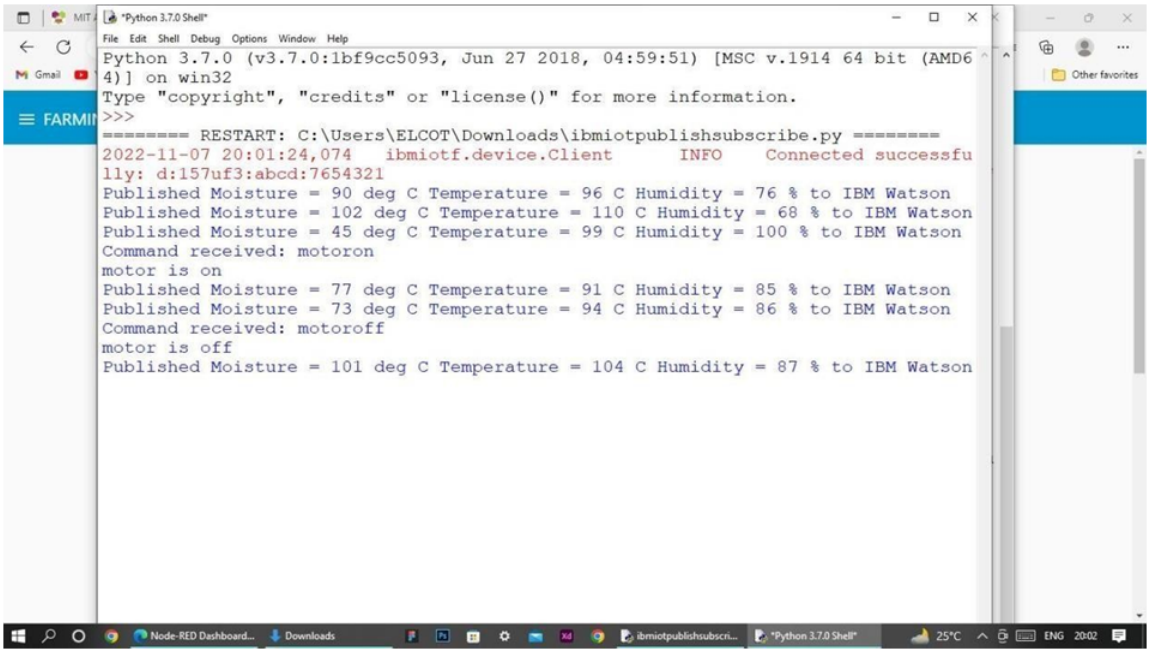


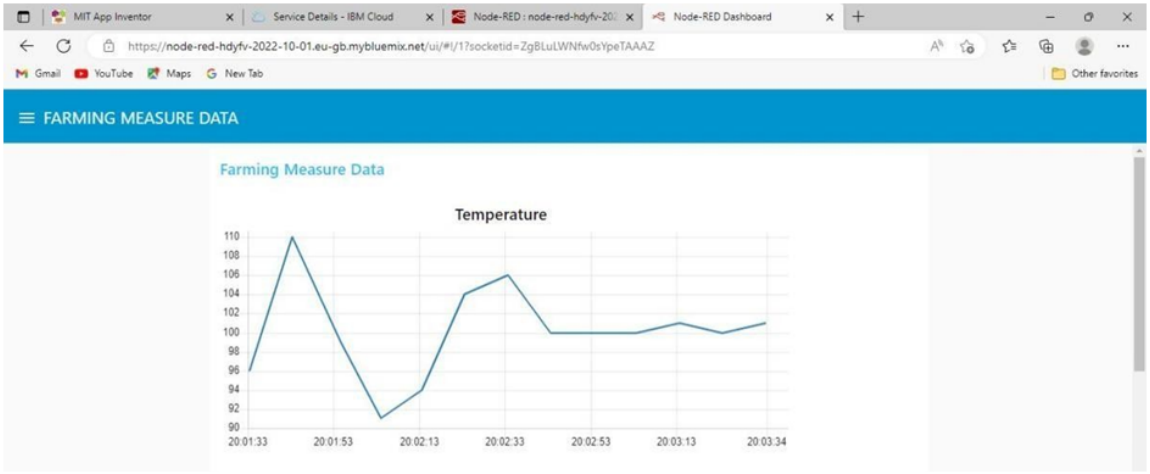

Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
======== RESTART: C:\Users\ELCOT\Downloads\ibmiotpublishsubscribe.py ========
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

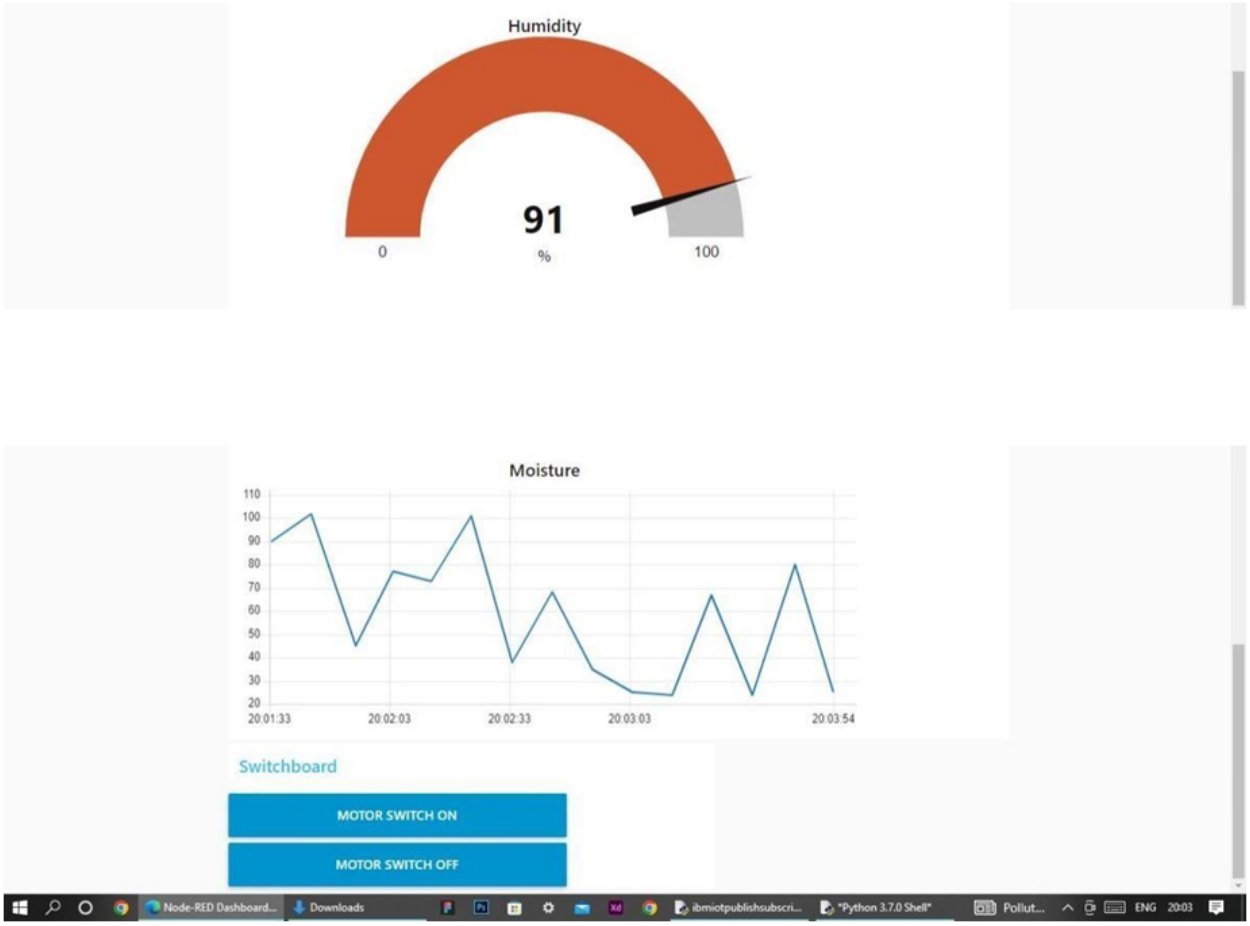
Flow chart


Bluemix Simulator
OpenWeather API
IBM Cloud Platform
sensor data
commands
Node-Red
input
output
Farmer
Internet Gateway
Motor
Python script to receive commands

OBSERVATIONS AND RESULTS







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/