

Smart Farmer-IOT Enabled Smart Farming Application

IBM NALAIYATHIRAN

Delivery of Sprint

TITLE	Smart Farmer-IOT Enabled Smart Farming Application
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 Credentials

```
organization = "157uf3"
deviceType = "abcd"
deviceId = "7654321"
authMethod = "token"
authToken = "87654321"
```

Initialize GPIO

```
def myCommandCallback(cmd):

    print("Commandreceived: %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)
File Edit Format Run Options Window Help

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

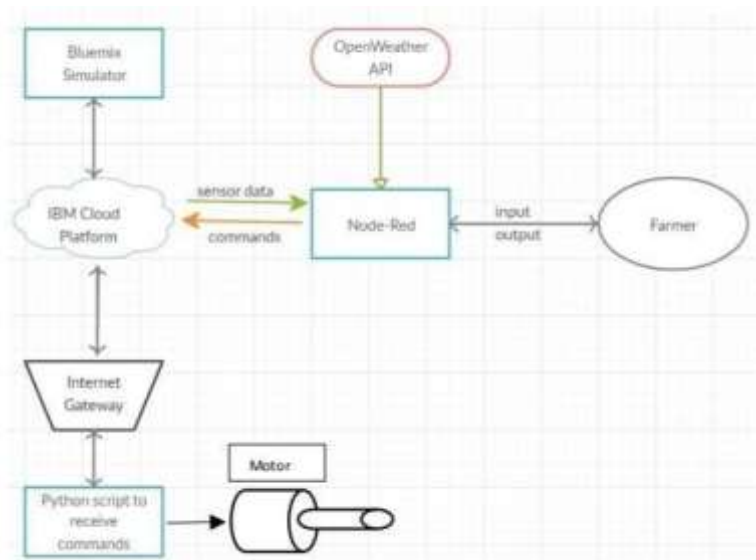
#Provide your IBM Watson Device Credentials
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try:
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMe
    deviceCli = ibmiotf.device.Client(deviceOptions)
    #.....
```

```
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 2019, 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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Published Moisture = 90 deg C Temperature = 96 C Humidity = 76 % to IBM Watson
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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
```

The screenshot shows a Python 3.7.0 Shell window with the output of a script. The script successfully connects to the IBM Watson IoT platform and publishes sensor data (Moisture, Temperature, and Humidity) to it. It also receives commands from the platform to turn the motor on and off. The output shows the motor being turned on and then off, with corresponding sensor data being published.

Measured Data

Moisture : 59

Temperature(c): 90

Humidity(%): 85

Switchboard

Motor on

Motor 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.

10. Bibliography

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

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

OpenWeather : <https://openweathermap.org/>