SPRINT – 4

Date	15 NOVEMBER 2022
Team ID	PNT2022TMID04663
Project Name	Smart Farmer-IoT Enabled smartFarming Application

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 = "yy3qcm"
deviceType = "ibm22"
deviceId = "123"
authMethod = "token"
authToken = "12345678"

# 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("enter crt command")

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

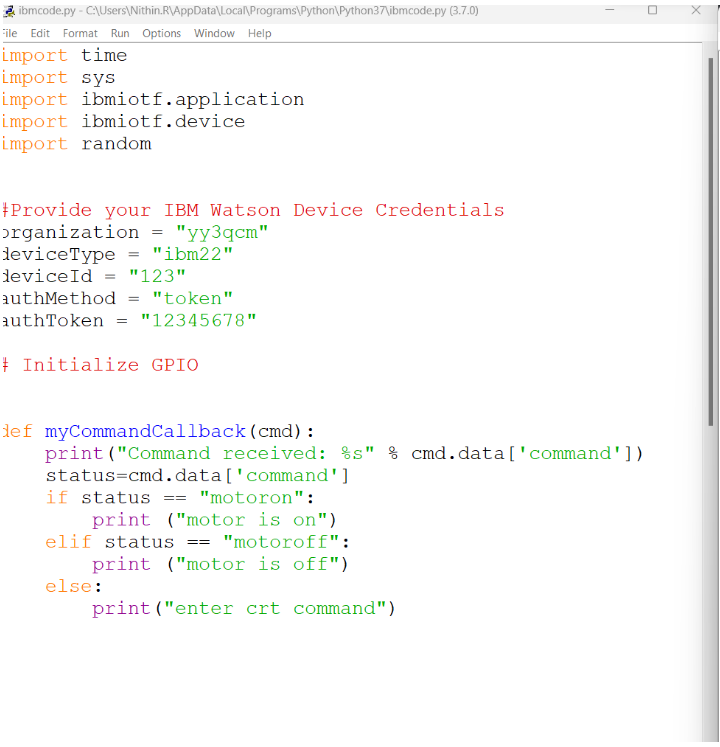
except Exception as e:
            print("Caught exception connecting device: %s" % str(e))
            sys.exit()

# 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(0,100)
        Humid=random.randint(0,100)
        moisture=random.randint(0,100)
        data = { 'temp' : temp, 'Humid': Humid , 'moisture' : moisture }
        #print data
        def myOnPublishCallback():
            print ("Published Temperature = %s C" % temp, "Humidity = %s %%" % Humid,"moisture = %s %%" % moisture, "to IBM Watson")
        success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0, on_publish=myOnPublishCallback)
        if not success:
            print("Not connected to IoTF")
        time.sleep(3)
        deviceCli.commandCallback = myCommandCallback

# Disconnect the device and application from the cloud
deviceCli.disconnect()
```

- DATA SEND FROM PYTHON PROGRAM :


ibmcode.py - C:\Users\Nithin.R\AppData\Local\Programs\Python\Python37\ibmcode.py (3.7.0)
File Edit Format Run Options Window Help

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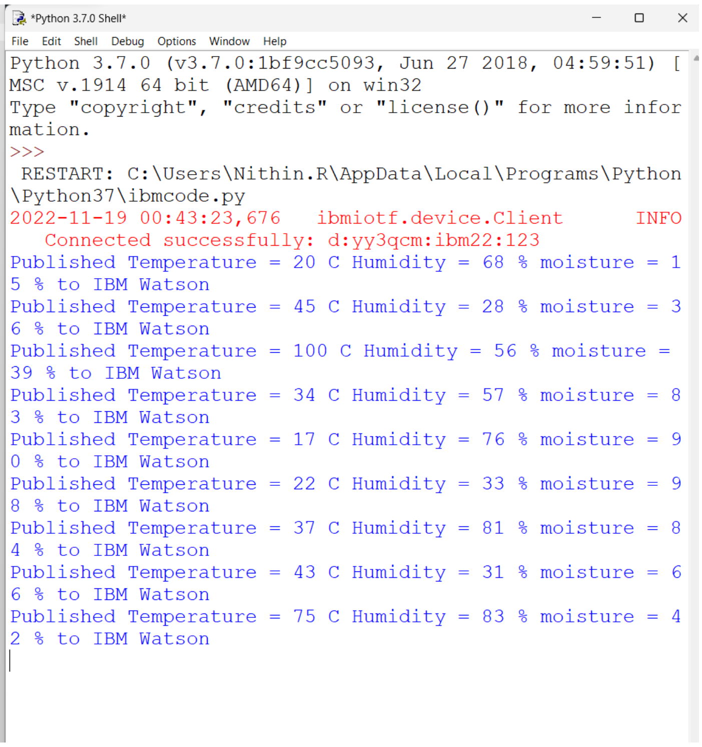
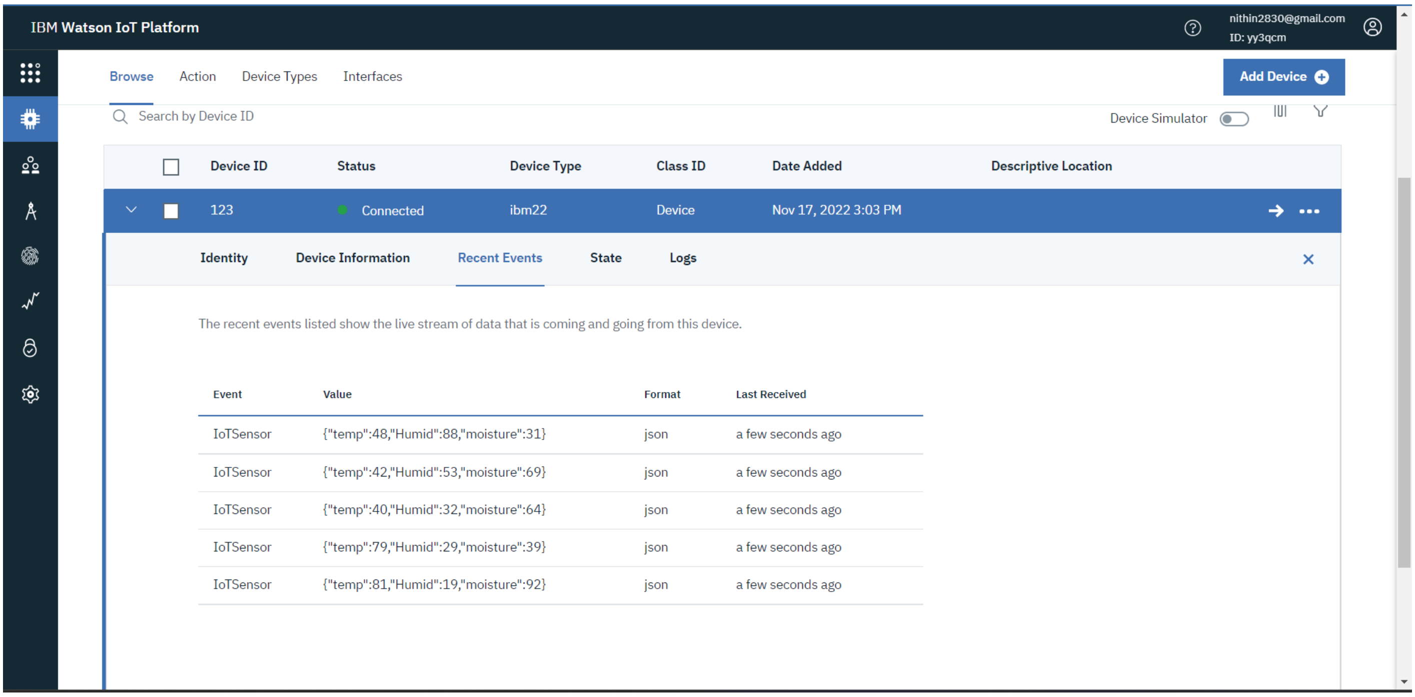


```
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [
MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more infor
mation.
>>>
 RESTART: C:\Users\Nithin.R\AppData\Local\Programs\Python
\Python37\ibmcode.py
2022-11-19 00:43:23,676   ibmiotf.device.Client      INFO
   Connected successfully: d:yy3qcm:ibm22:123
Published Temperature = 20 C Humidity = 68 % moisture = 1
5 % to IBM Watson
Published Temperature = 45 C Humidity = 28 % moisture = 3
6 % to IBM Watson
Published Temperature = 100 C Humidity = 56 % moisture =
39 % to IBM Watson
Published Temperature = 34 C Humidity = 57 % moisture = 8
3 % to IBM Watson
Published Temperature = 17 C Humidity = 76 % moisture = 9
0 % to IBM Watson
Published Temperature = 22 C Humidity = 33 % moisture = 9
8 % to IBM Watson
Published Temperature = 37 C Humidity = 81 % moisture = 8
4 % to IBM Watson
Published Temperature = 43 C Humidity = 31 % moisture = 6
6 % to IBM Watson
Published Temperature = 75 C Humidity = 83 % moisture = 4
2 % to IBM Watson
```

- DATA RECEIVED IN IBM CLOUD :

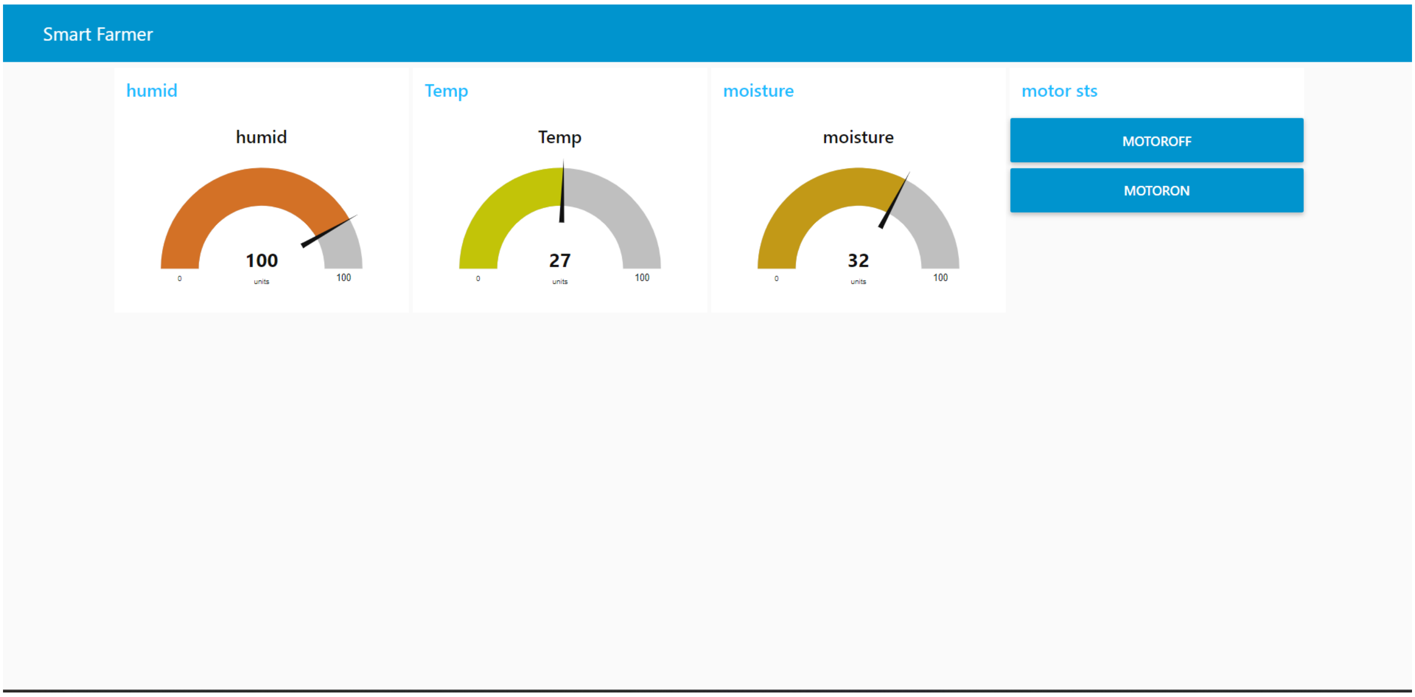


	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
□	123	● Connected	ibm22	Device	Nov 17, 2022 3:03 PM	

The recent events listed show the live stream of data that is coming and going from this device.

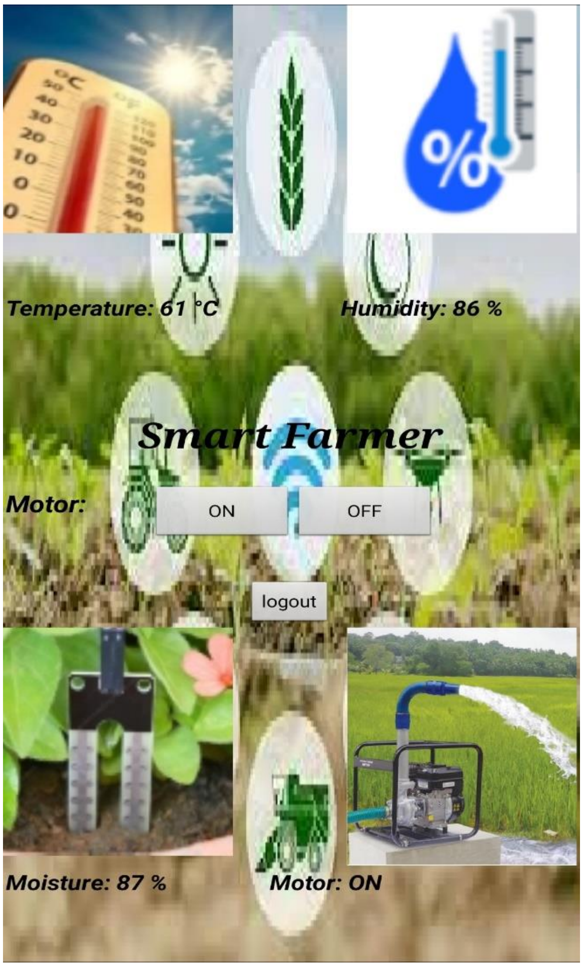
Event	Value	Format	Last Received
IoTSensor	{"temp":48,"Humid":88,"moisture":31}	json	a few seconds ago
IoTSensor	{"temp":42,"Humid":53,"moisture":69}	json	a few seconds ago
IoTSensor	{"temp":40,"Humid":32,"moisture":64}	json	a few seconds ago
IoTSensor	{"temp":79,"Humid":29,"moisture":39}	json	a few seconds ago
IoTSensor	{"temp":81,"Humid":19,"moisture":92}	json	a few seconds ago

- DATA RECEIVED IN NODE – RED DASHBOARD (WEB UI)



Smart Farmer

- DATA RECEIVED IN MOBILE APP



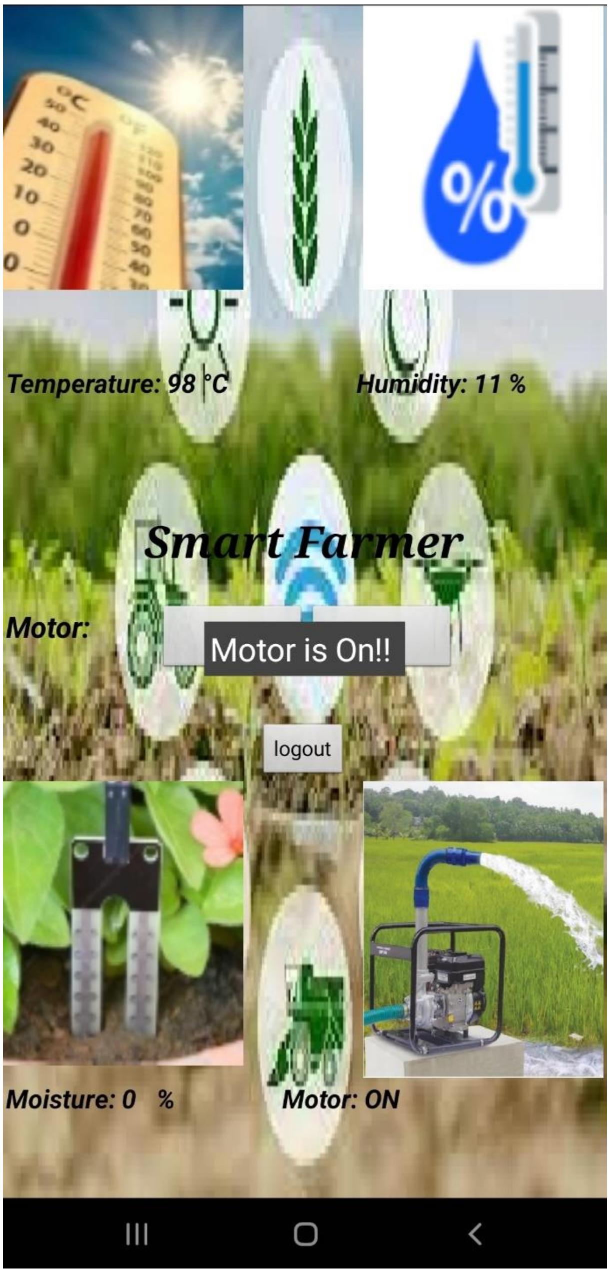
Temperature: 61 °C

Humidity: 86 %

Moisture: 87 %

Motor: ON

- COMMAND RECEIVED FROM WEB UI AND MOBILE APP
    - MOTOR ON COMMAND



Temperature: 98 °C

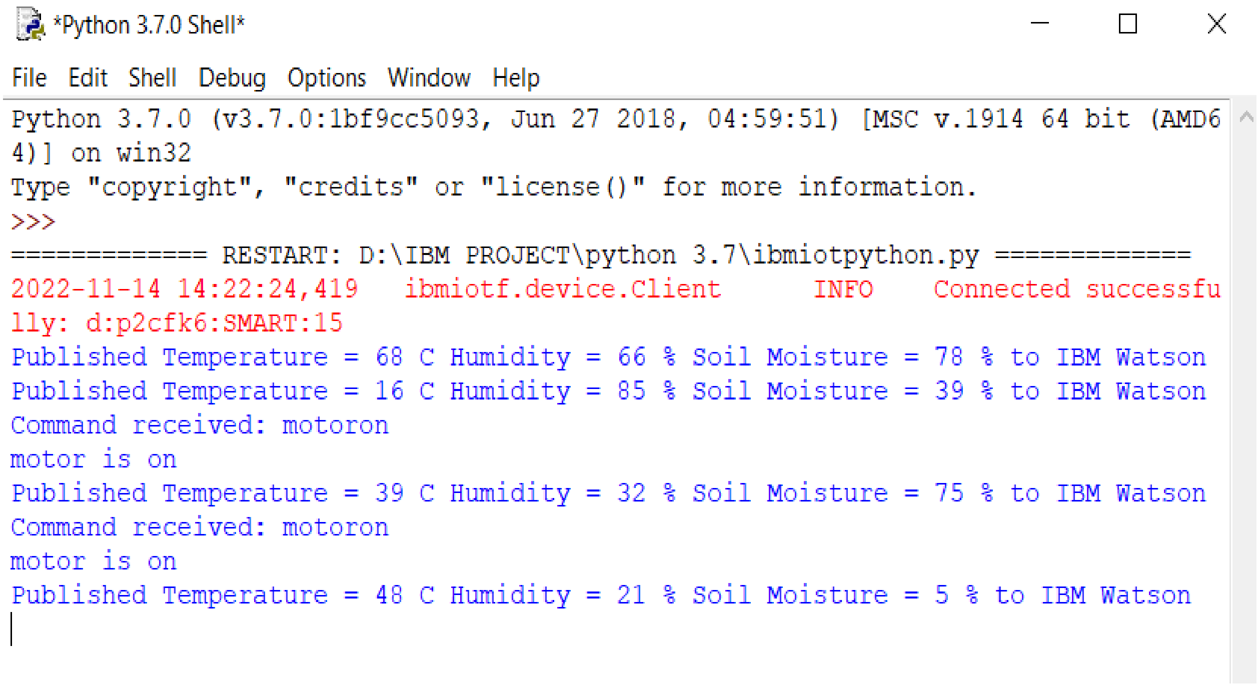
Humidity: 11 %

Motor:

Motor is On!!

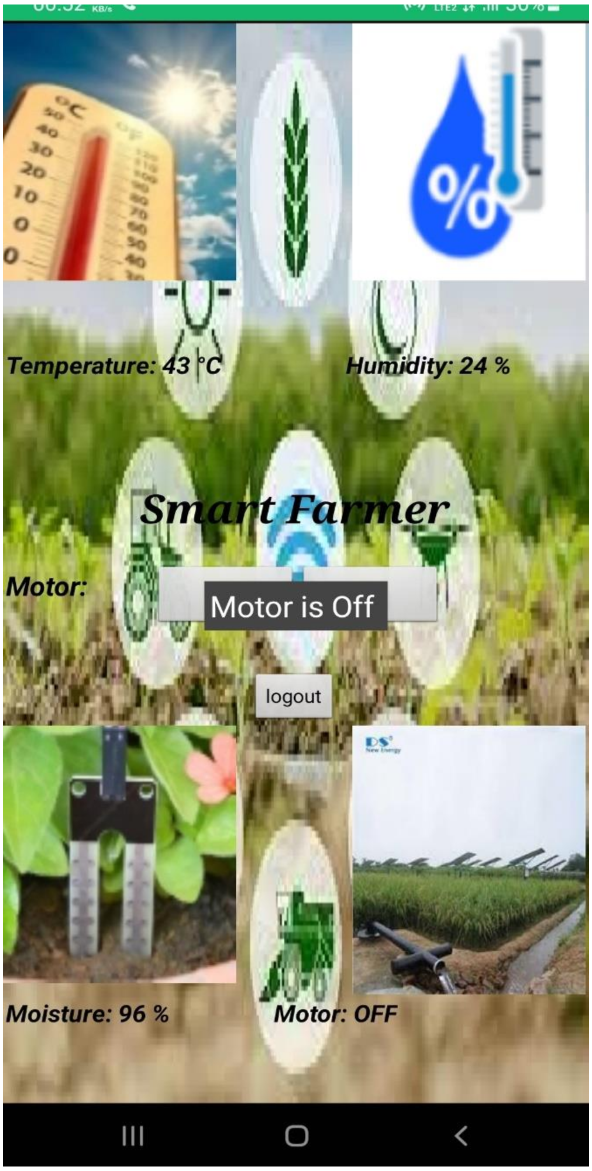
Moisture: 0 %

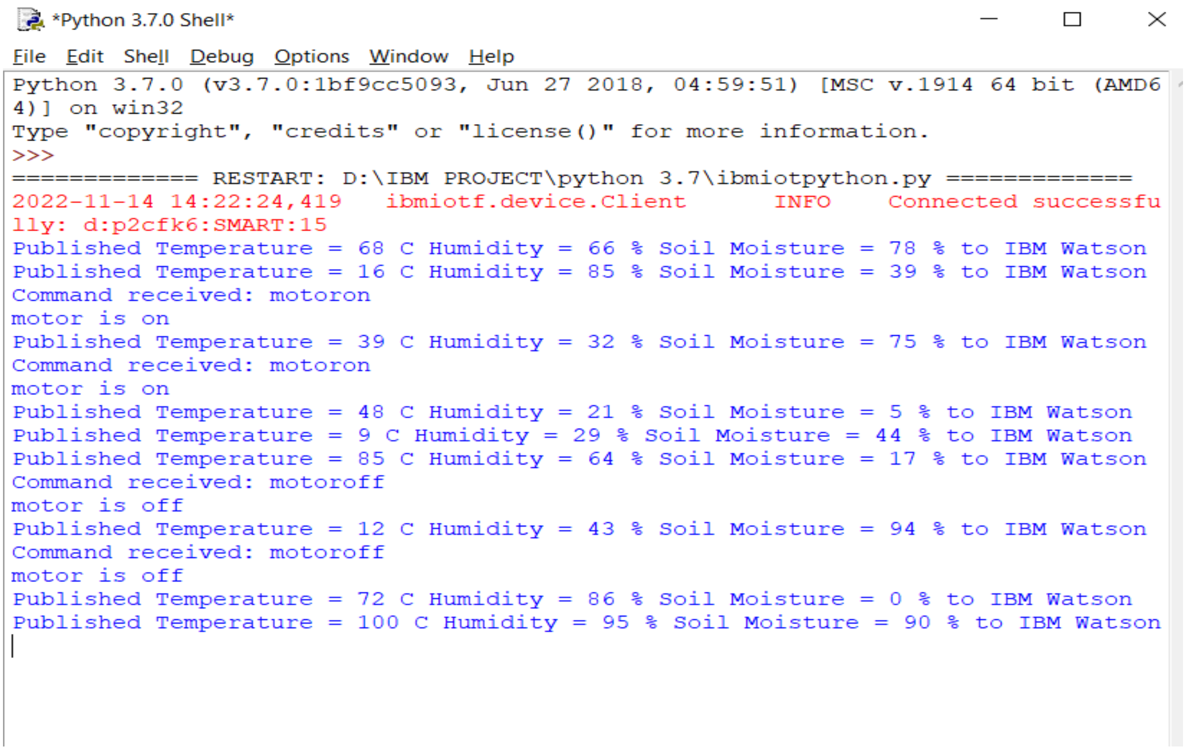
Motor: ON



```
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: D:\IBM PROJECT\python 3.7\ibmiotpython.py =============
2022-11-14 14:22:24,419   ibmiotf.device.Client      INFO    Connected successfu
lly: d:p2cfk6:SMART:15
Published Temperature = 68 C Humidity = 66 % Soil Moisture = 78 % to IBM Watson
Published Temperature = 16 C Humidity = 85 % Soil Moisture = 39 % to IBM Watson
Command received: motoron
motor is on
Published Temperature = 39 C Humidity = 32 % Soil Moisture = 75 % to IBM Watson
Command received: motoron
motor is on
Published Temperature = 48 C Humidity = 21 % Soil Moisture = 5 % to IBM Watson
```

- MOTOR OFF COMMAND





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lly: d:p2cfk6:SMART:15
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Published Temperature = 16 C Humidity = 85 % Soil Moisture = 39 % to IBM Watson
Command received: motoron
motor is on
Published Temperature = 39 C Humidity = 32 % Soil Moisture = 75 % to IBM Watson
Command received: motoron
motor is on
Published Temperature = 48 C Humidity = 21 % Soil Moisture = 5 % to IBM Watson
Published Temperature = 9 C Humidity = 29 % Soil Moisture = 44 % to IBM Watson
Published Temperature = 85 C Humidity = 64 % Soil Moisture = 17 % to IBM Watson
Command received: motoroff
motor is off
Published Temperature = 12 C Humidity = 43 % Soil Moisture = 94 % to IBM Watson
Command received: motoroff
motor is off
Published Temperature = 72 C Humidity = 86 % Soil Moisture = 0 % to IBM Watson
Published Temperature = 100 C Humidity = 95 % Soil Moisture = 90 % to IBM Watson
```

ADVANTAGES:

- Less labour cost.
- Field can be monitored the environment parameters and controlled the motor remotely.
- Better standards of living.
- Farmers can also monitor and control the farm field by Web UI.
- Increase in convenience to farmers.

DISADVANTAGES:

- Farmers wanted to adapt the use of Mobile App.
- Lack of internet/connectivity issues.
- Added cost of internet and internet gateway infrastructure.

CONCLUSION:

Thus, the objective of the project is to implement an IOT system in order to help farmers to control the motor function and monitor the environment parameters like temperature, humidity and soil moisture of their farms has been implemented successfully.