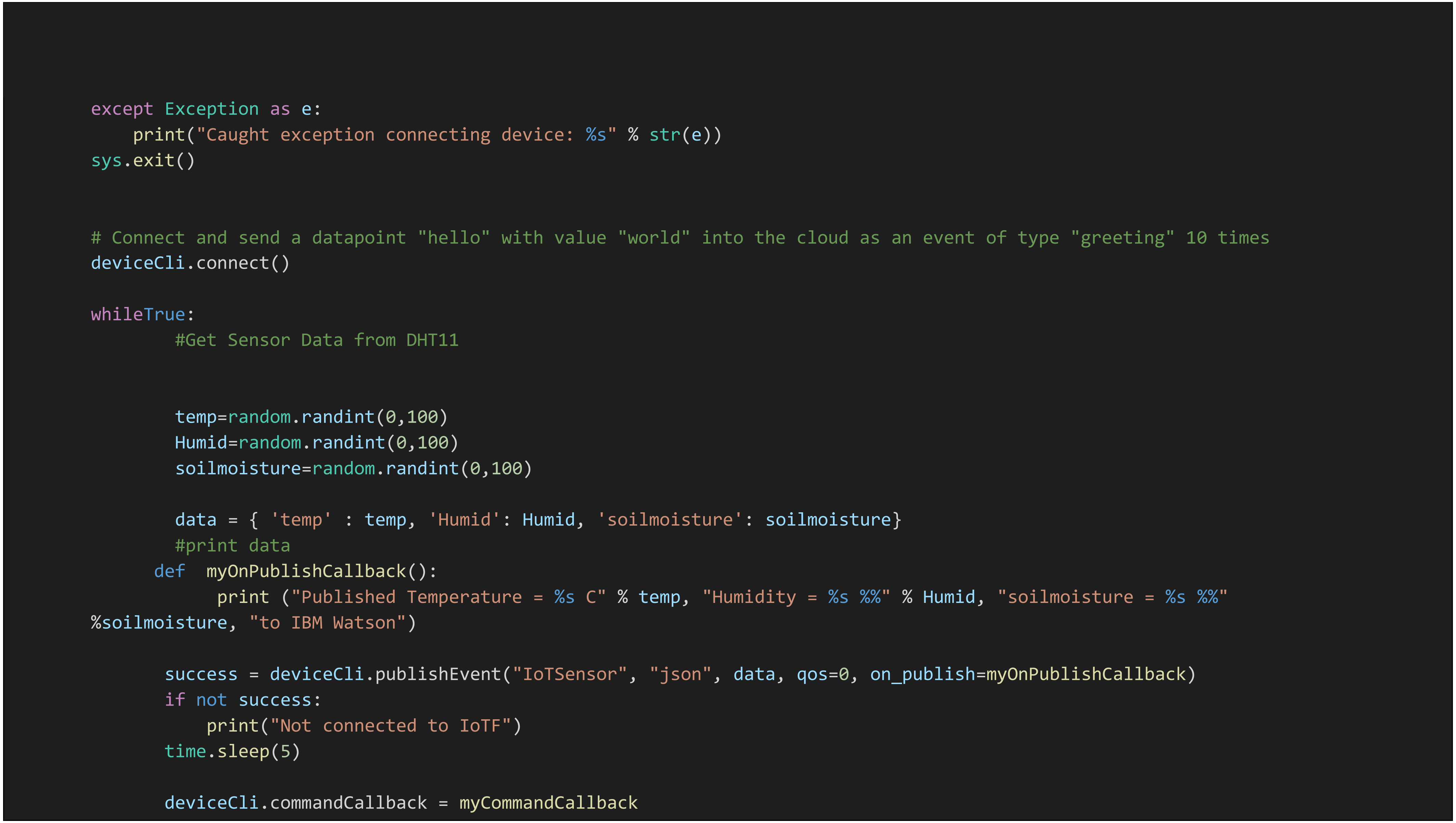
Project Development-Delivery of Sprint-4

Project Title	SmartFarmer – IoT Enabled Smart Farming Application
Team ID	PNT2022TMID26132
Date	17 November 2022

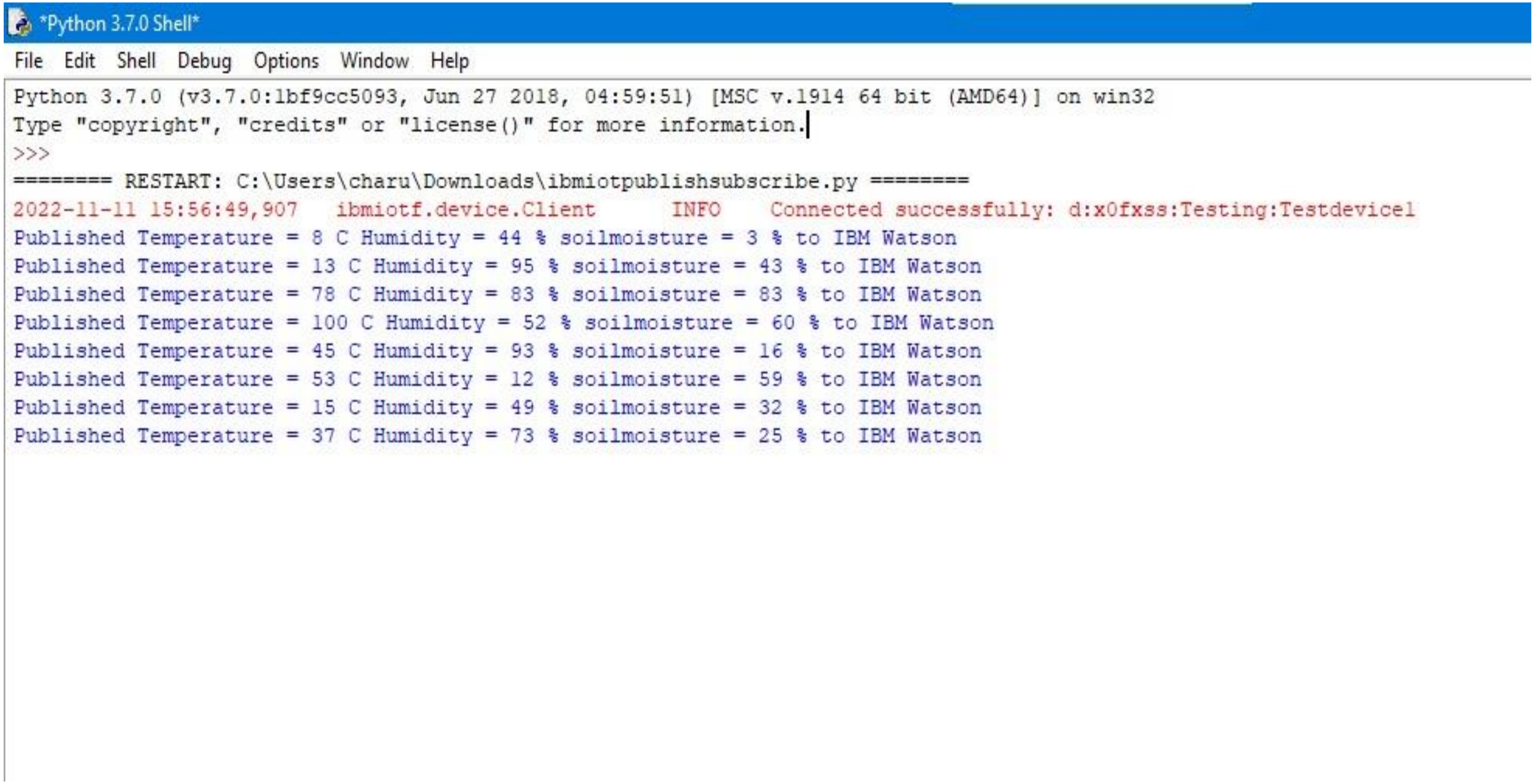
Python Code:

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


#Provide your IBM Watson Device Credentials
organization = "mipzq4" #replace the ORG ID
deviceType = "Testing"#replace the Device type
wi deviceId = "Testdevice1"#replace Device ID
authMethod = "token" authToken = "1234567890"
#Replace the authtoken
# Initialize GPIO


#Receives Command from Node-red
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")
    elif status == "motor30" :
        print ("motor is on for 30 minutes")
 try:
      deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "auth-
token": authToken}     deviceCli = ibmiotf.device.Client(deviceOptions)
```

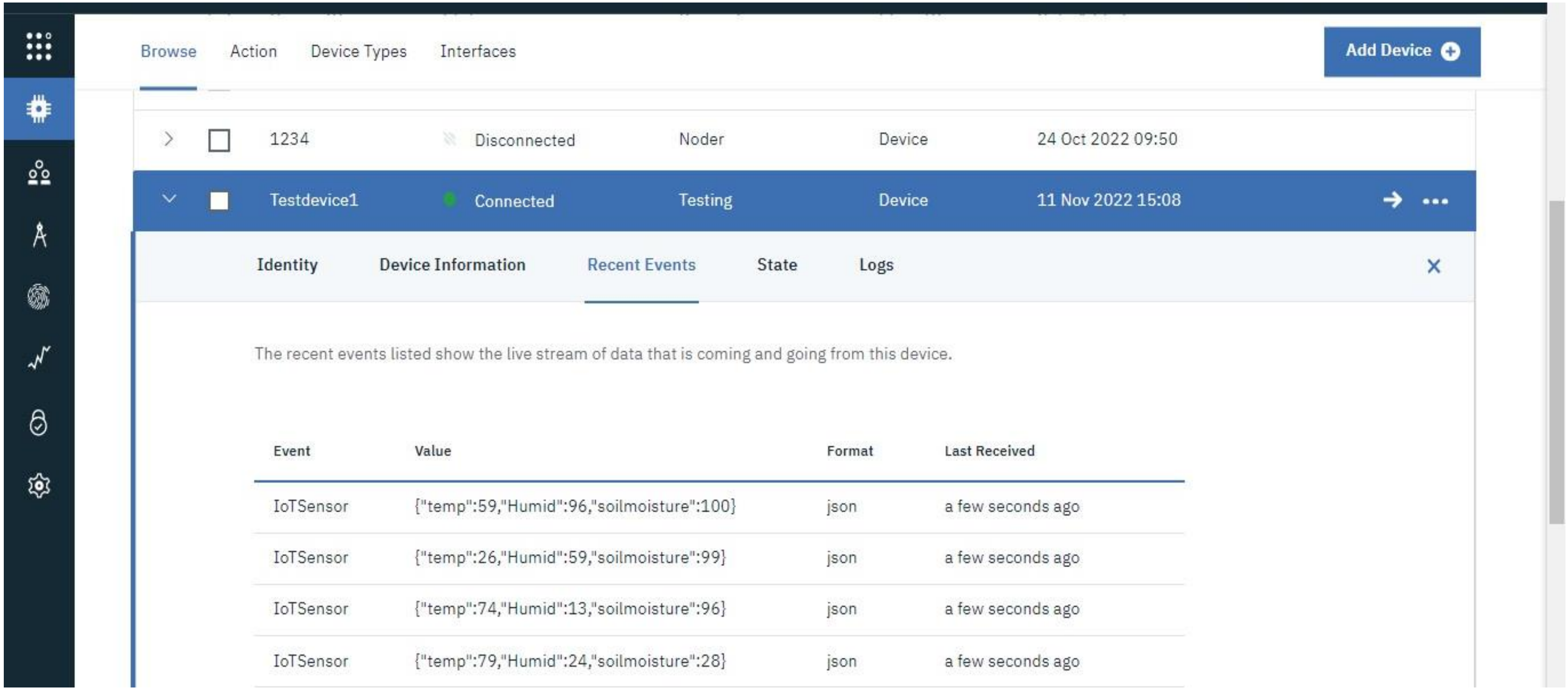


```
except Exception as e:
    print("Caught exception connecting device: %s" % str(e))
sys.exit()


# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type "greeting" 10 times
deviceCli.connect()

whileTrue:
        #Get Sensor Data from DHT11


        temp=random.randint(0,100)
        Humid=random.randint(0,100)
        soilmoisture=random.randint(0,100)

        data = { 'temp' : temp, 'Humid': Humid, 'soilmoisture': soilmoisture}
        #print data
      def  myOnPublishCallback():
            print ("Published Temperature = %s C" % temp, "Humidity = %s %%" % Humid, "soilmoisture = %s %%"
%soilmoisture, "to IBM Watson")

       success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0, on_publish=myOnPublishCallback)
       if not success:
           print("Not connected to IoTF")
       time.sleep(5)

       deviceCli.commandCallback = myCommandCallback
```

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



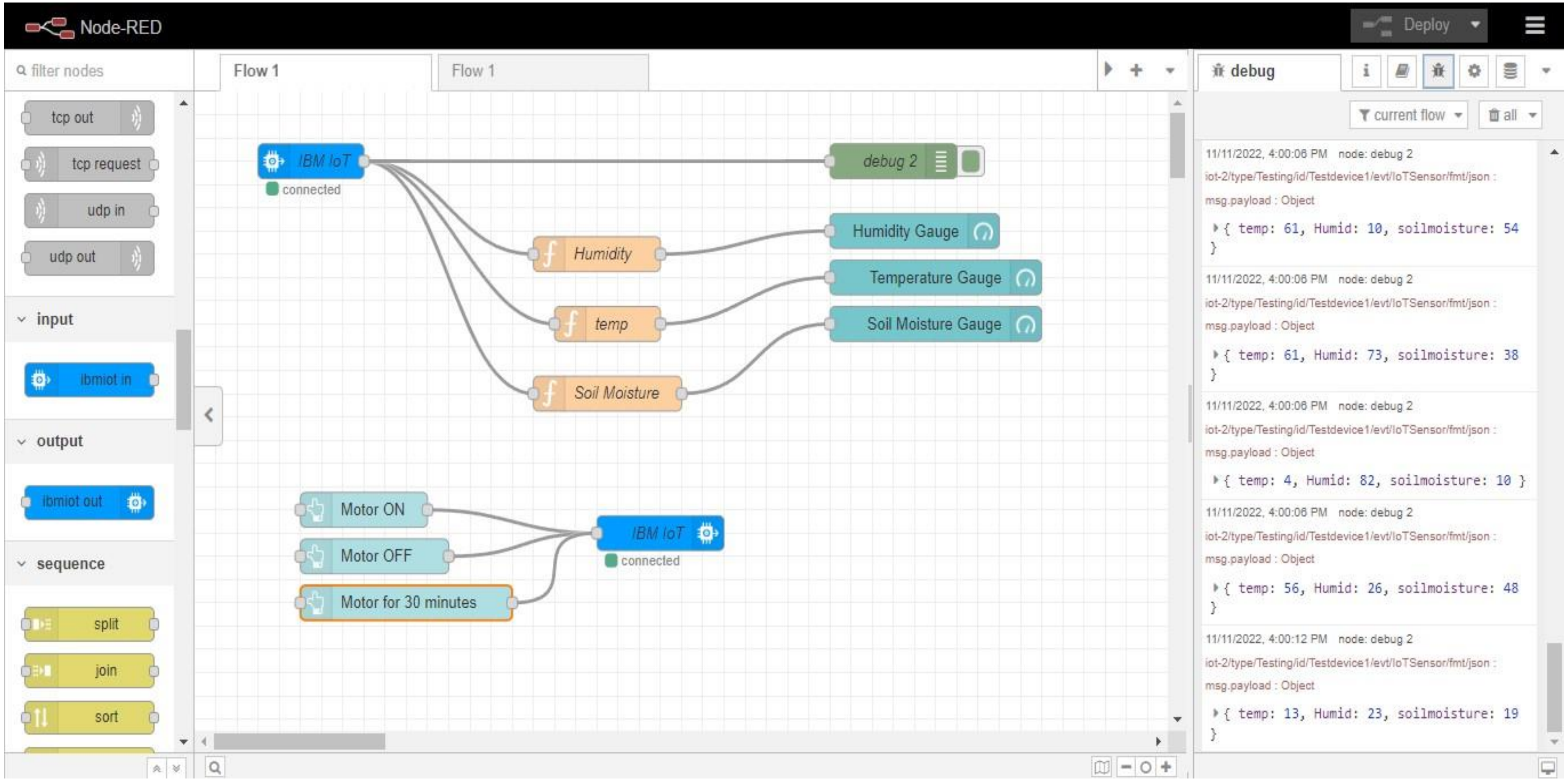
```
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
======== RESTART: C:\Users\charu\Downloads\ibmiotpublishsubscribe.py ========
2022-11-11 15:56:49,907   ibmiotf.device.Client      INFO    Connected successfully: d:x0fxss:Testing:Testdevice1
Published Temperature = 8 C Humidity = 44 % soilmoisture = 3 % to IBM Watson
Published Temperature = 13 C Humidity = 95 % soilmoisture = 43 % to IBM Watson
Published Temperature = 78 C Humidity = 83 % soilmoisture = 83 % to IBM Watson
Published Temperature = 100 C Humidity = 52 % soilmoisture = 60 % to IBM Watson
Published Temperature = 45 C Humidity = 93 % soilmoisture = 16 % to IBM Watson
Published Temperature = 53 C Humidity = 12 % soilmoisture = 59 % to IBM Watson
Published Temperature = 15 C Humidity = 49 % soilmoisture = 32 % to IBM Watson
Published Temperature = 37 C Humidity = 73 % soilmoisture = 25 % to IBM Watson
```



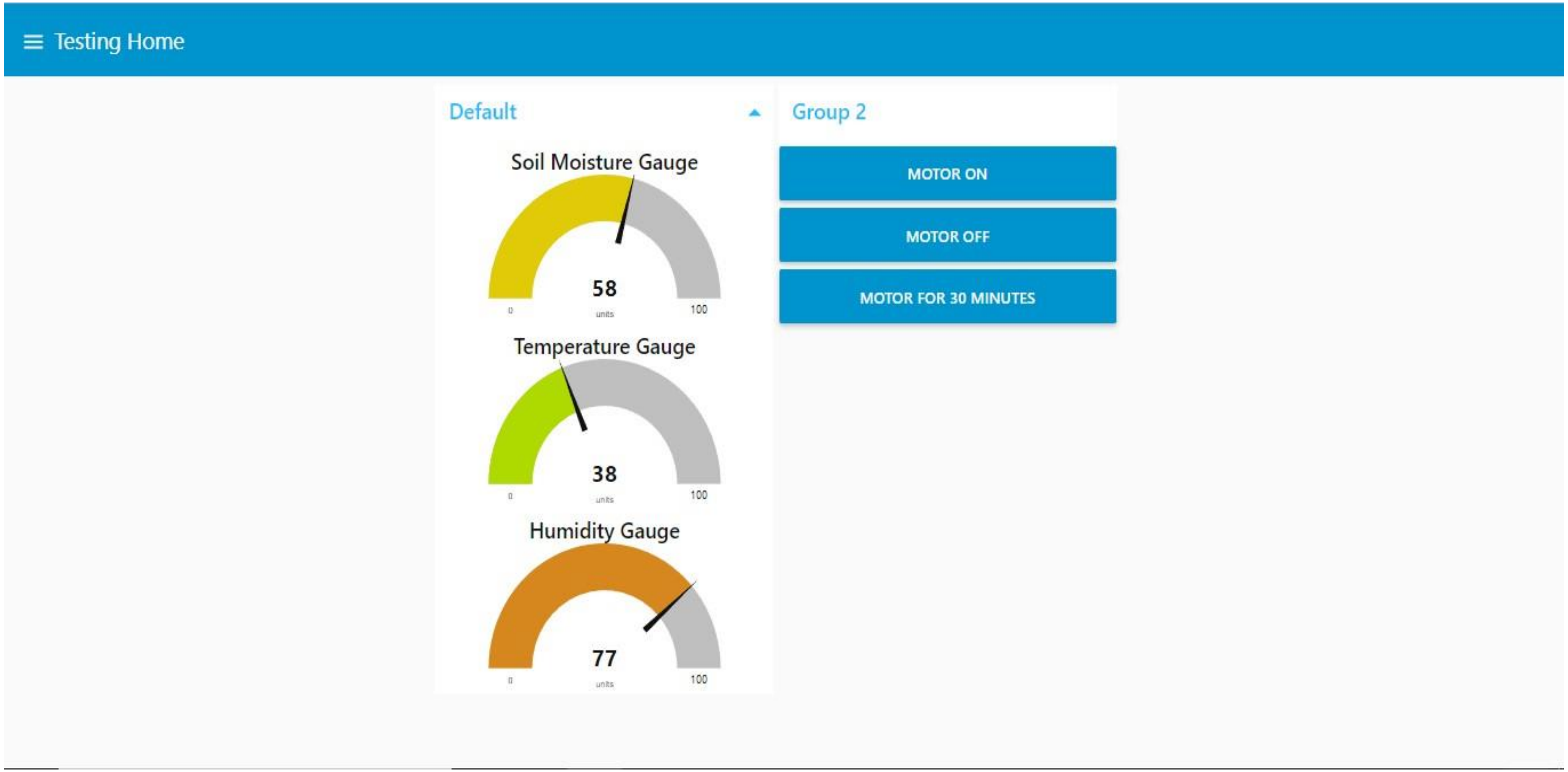
☐	1234	Disconnected	Noder	Device	24 Oct 2022 09:50
☐	Testdevice1	● Connected	Testing	Device	11 Nov 2022 15:08

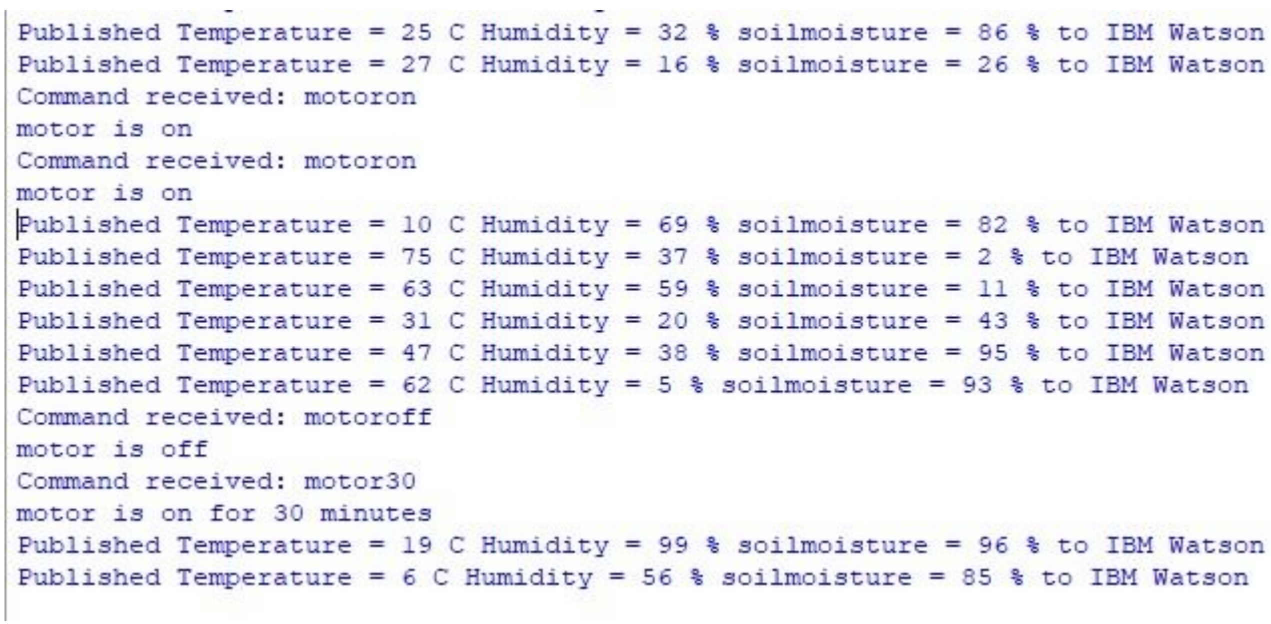
The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
IoTSensor	{"temp":59,"Humid":96,"soilmoisture":100}	json	a few seconds ago
IoTSensor	{"temp":26,"Humid":59,"soilmoisture":99}	json	a few seconds ago
IoTSensor	{"temp":74,"Humid":13,"soilmoisture":96}	json	a few seconds ago
IoTSensor	{"temp":79,"Humid":24,"soilmoisture":28}	json	a few seconds ago



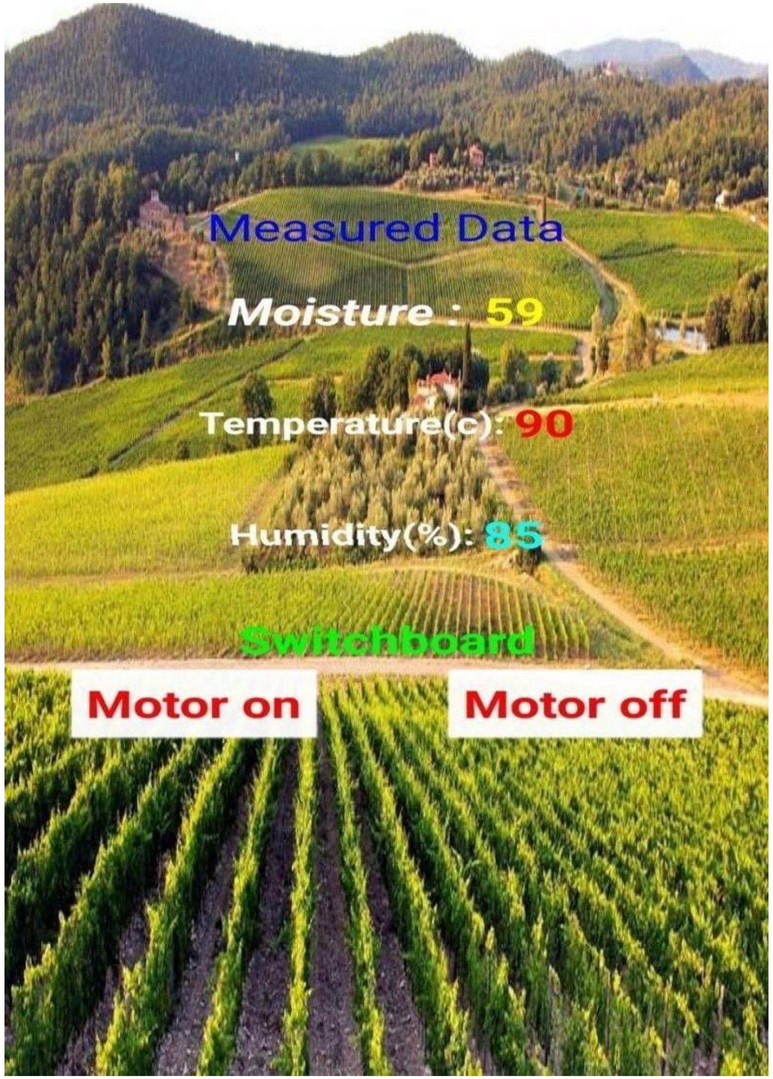
```
11/11/2022, 4:00:06 PM   node: debug 2
iot-2/type/Testing/id/Testdevice1/evt/IoTSensor/fmt/json :
msg.payload : Object
 ▸{ temp: 61, Humid: 10, soilmoisture: 54
 }
11/11/2022, 4:00:06 PM   node: debug 2
iot-2/type/Testing/id/Testdevice1/evt/IoTSensor/fmt/json :
msg.payload : Object
 ▸{ temp: 61, Humid: 73, soilmoisture: 38
 }
11/11/2022, 4:00:06 PM   node: debug 2
iot-2/type/Testing/id/Testdevice1/evt/IoTSensor/fmt/json :
msg.payload : Object
 ▸{ temp: 4, Humid: 82, soilmoisture: 10 }
11/11/2022, 4:00:06 PM   node: debug 2
iot-2/type/Testing/id/Testdevice1/evt/IoTSensor/fmt/json :
msg.payload : Object
 ▸{ temp: 56, Humid: 26, soilmoisture: 48
 }
11/11/2022, 4:00:12 PM   node: debug 2
iot-2/type/Testing/id/Testdevice1/evt/IoTSensor/fmt/json :
msg.payload : Object
 ▸{ temp: 13, Humid: 23, soilmoisture: 19
 }
```


Testing Home
Default
Group 2
Soil Moisture Gauge
58
units
0
100
Temperature Gauge
38
units
0
100
Humidity Gauge
77
units
0
100
MOTOR ON
MOTOR OFF
MOTOR FOR 30 MINUTES



```
Published Temperature = 25 C Humidity = 32 % soilmoisture = 86 % to IBM Watson
Published Temperature = 27 C Humidity = 16 % soilmoisture = 26 % to IBM Watson
Command received: motoron
motor is on
Command received: motoron
motor is on
Published Temperature = 10 C Humidity = 69 % soilmoisture = 82 % to IBM Watson
Published Temperature = 75 C Humidity = 37 % soilmoisture = 2 % to IBM Watson
Published Temperature = 63 C Humidity = 59 % soilmoisture = 11 % to IBM Watson
Published Temperature = 31 C Humidity = 20 % soilmoisture = 43 % to IBM Watson
Published Temperature = 47 C Humidity = 38 % soilmoisture = 95 % to IBM Watson
Published Temperature = 62 C Humidity = 5 % soilmoisture = 93 % to IBM Watson
Command received: motoroff
motor is off
Command received: motor30
motor is on for 30 minutes
Published Temperature = 19 C Humidity = 99 % soilmoisture = 96 % to IBM Watson
Published Temperature = 6 C Humidity = 56 % soilmoisture = 85 % to IBM Watson
```

Output:



Measured Data

Moisture : 59

Temperature(c): 90

Humidity(%): 85

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.