

SPRINT -4
Develop a Python Script and web UI

Date	19 November 2022
Team ID	PNT2022TMID07461
Project Name	Smartfarmer - IoT Enabled Smart Farming Application

Python script for generating random values - Temperature, humidity and soil Moisture

CODE:

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

#Provide your IBM Watson Device Credentials
organization = "Id4vg3"
deviceType = "Smartlot"
deviceId = "56780"
authMethod = "token"
authToken = "axS)H_x70RGU*bswcB"

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

```

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
    soil=random.randint(0,100)
    temp=random.randint(0,100)
    hum=random.randint(0,100)
    data = { 'soil moisture': soil, 'temperature':temp, 'humidity':hum}
    #print data

    def myOnPublishCallback():
        print ( "Published Soil Moisture = %s %" % soil,"Temperature = %s C"
% temp, "Humidity = %s %" % hum, "to IBM Watson")

        success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)

        if not success:
            print("Not connected to IoT")

            time.sleep(1)

            deviceCli.commandCallback = myCommandCallback

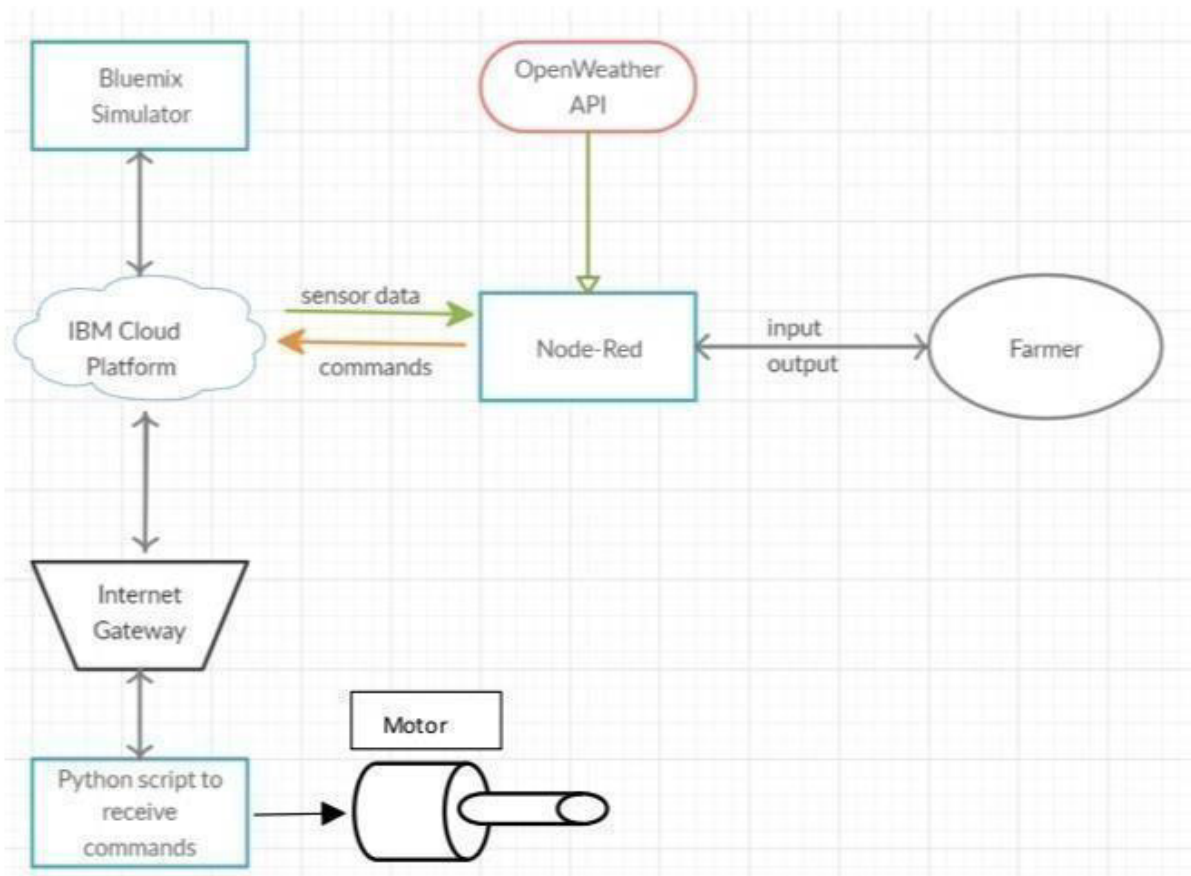
# Disconnect the device and application from the cloud
deviceCli.disconnect()

```

OUTPUT

```
Python 3.8.2 Shell*
File Edit Shell Debug Options Window Help
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 23:03:10) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/MOHAMED ASHIK/AppData/Local/Programs/Python/Python38/new wat
son code.py
2022-11-19 13:40:51,174 ibmiotf.device.Client INFO Connected successfully: d:ld4vg3:SmartIot:56780
Published Soil Moisture = 61 % Temperature = 79 C Humidity = 28 % to IBM Watson
Published Soil Moisture = 91 % Temperature = 16 C Humidity = 5 % to IBM Watson
Published Soil Moisture = 19 % Temperature = 85 C Humidity = 27 % to IBM Watson
Published Soil Moisture = 19 % Temperature = 33 C Humidity = 31 % to IBM Watson
Published Soil Moisture = 86 % Temperature = 35 C Humidity = 87 % to IBM Watson
Published Soil Moisture = 99 % Temperature = 90 C Humidity = 0 % to IBM Watson
Published Soil Moisture = 80 % Temperature = 66 C Humidity = 69 % to IBM Watson
Published Soil Moisture = 7 % Temperature = 70 C Humidity = 23 % to IBM Watson
Published Soil Moisture = 85 % Temperature = 11 C Humidity = 100 % to IBM Watson
Published Soil Moisture = 71 % Temperature = 86 C Humidity = 6 % to IBM Watson
Published Soil Moisture = 13 % Temperature = 50 C Humidity = 94 % to IBM Watson
|
```

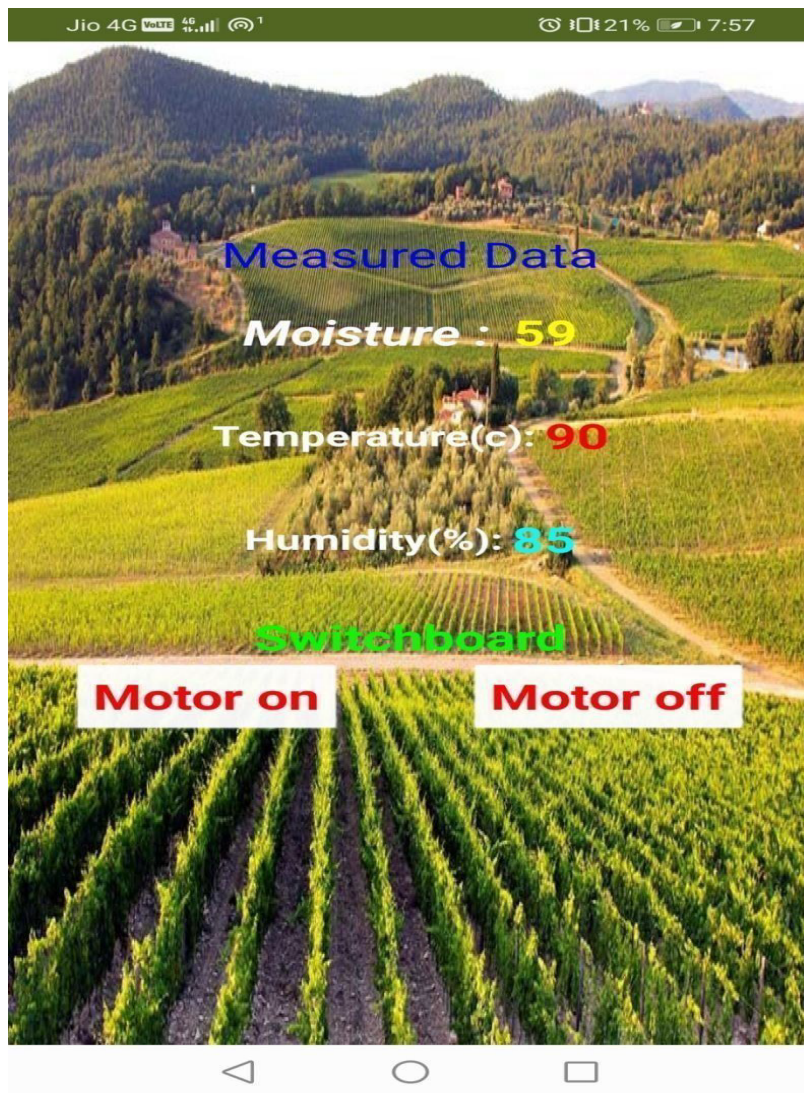
FLOW DIAGRAM :



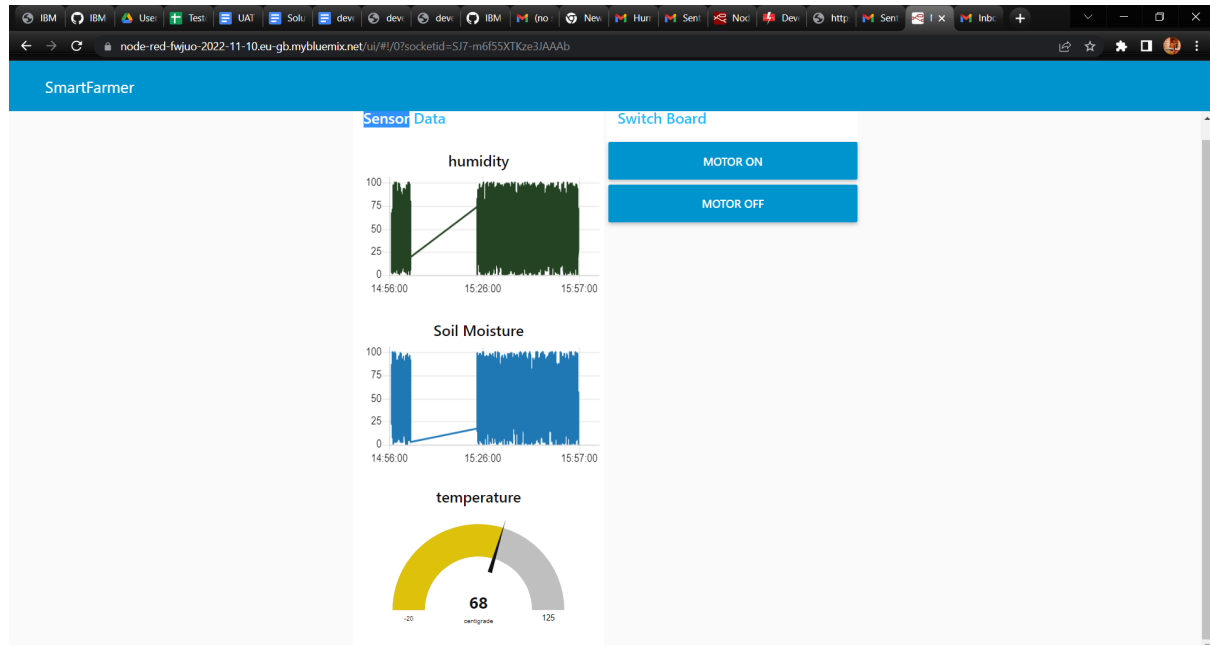
OBSERVATION & RESULTS:

```
*Python 3.8.2 Shell*
File Edit Shell Debug Options Window Help
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|
```

MOBILE APP:



WEB UI :



ADVANTAGES & DISADVANTAGES

Advantage:

1. They Can monitor from anywhere.
2. This project gives more profit and less work.
3. Easy to control and sense.
4. Real-time updates about the parameters.
5. Get immediate alerts about the parameters.
6. Measure the Soil Moisture , temperature, humidity levels immediately.

Disadvantage:

1. Sudden climate change cause soil erosion and biodiversity loss.
2. The farmers cannot know if the application does not work properly.

CONCLUSION:

Agriculture is an integral part of smart growth. Smart farming can make agriculture more profitable for the farmer. Decreasing resource inputs will save the farmer money and labor, and increased reliability of spatially explicit data will reduce risks.

Smart farming is a management concept focused on providing the agricultural industry with the infrastructure to leverage advanced technology – including big data, the cloud and the internet of things (IoT) – for tracking, monitoring, automating and analyzing operations.

This paper presented about monitoring the plants and alert the farmers about the crops. This system is basic yet reliable.