Project Development Phase
Sprint-3

Date	16 November 2022
Team ID	PNT2022TMID11064
Project Name	IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE

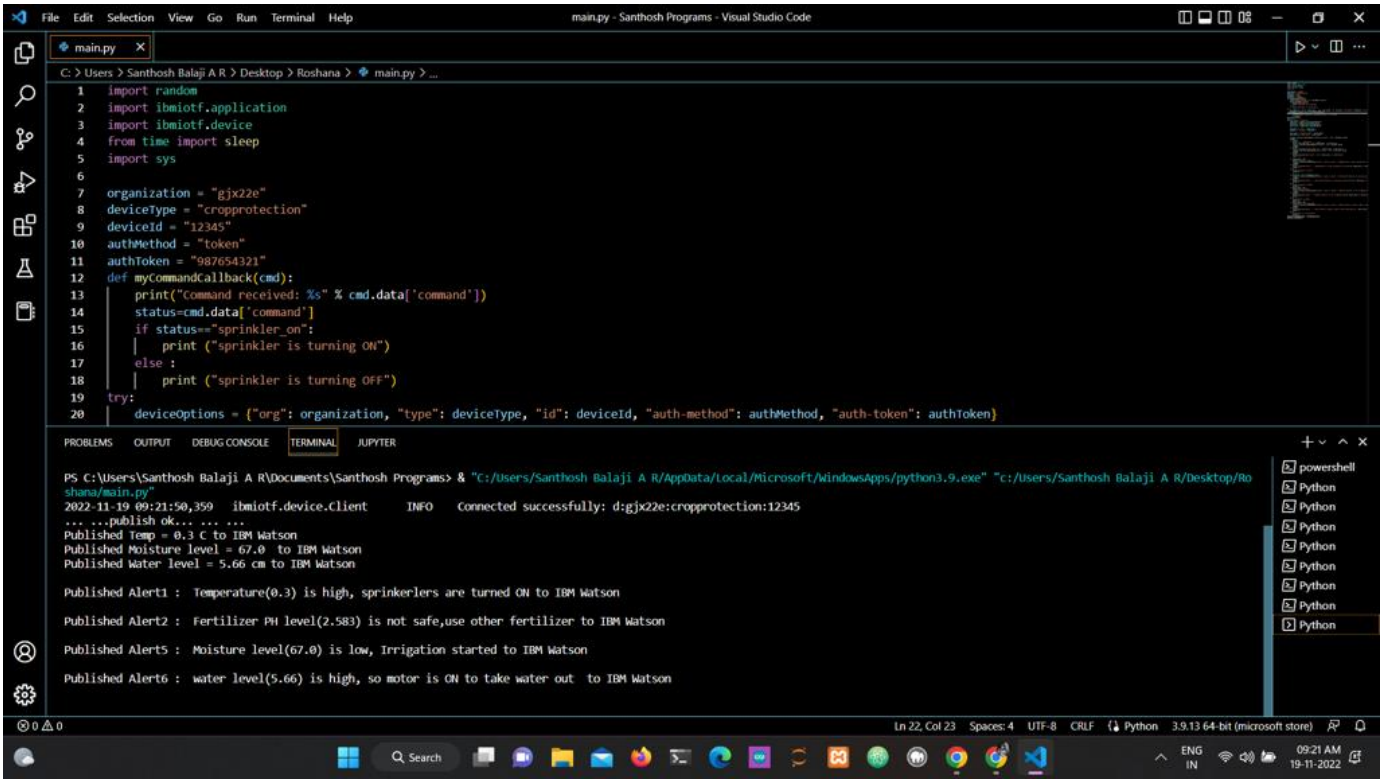
Python code:

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

organization = "gjx22e"
deviceType = "cropprotection"
deviceId = "12345"
authMethod = "token"
authToken = "987654321"
def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    status=cmd.data['command']
    if status=="sprinkler_on":
        print ("sprinkler is turning ON")
    else :
        print ("sprinkler is turning OFF")
try:
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-
method": authMethod, "auth-token": authToken}
    deviceCli = ibmiotf.device.Client(deviceOptions)
except Exception as e:
        print("Exception detected in connecting device: %s" % str(e))
        sys.exit()
deviceCli.connect()
while True:
#Getting values from sensors...
    temp_sensor = round( random.uniform(0,80),2)
    PH_sensor = round(random.uniform(1,14),3)
    moist_level = round(random.uniform(0,100),2)
    water_level = round(random.uniform(0,30),2)

    temp_data = { 'Temp' : temp_sensor }
    PH_data = { 'PH value' : PH_sensor }

    moist_data = { 'Moisture level' : moist_level}
    water_data = { 'Water level' : water_level}

    success = deviceCli.publishEvent("Temperature sensor", "json", temp_data, qos=0)
```

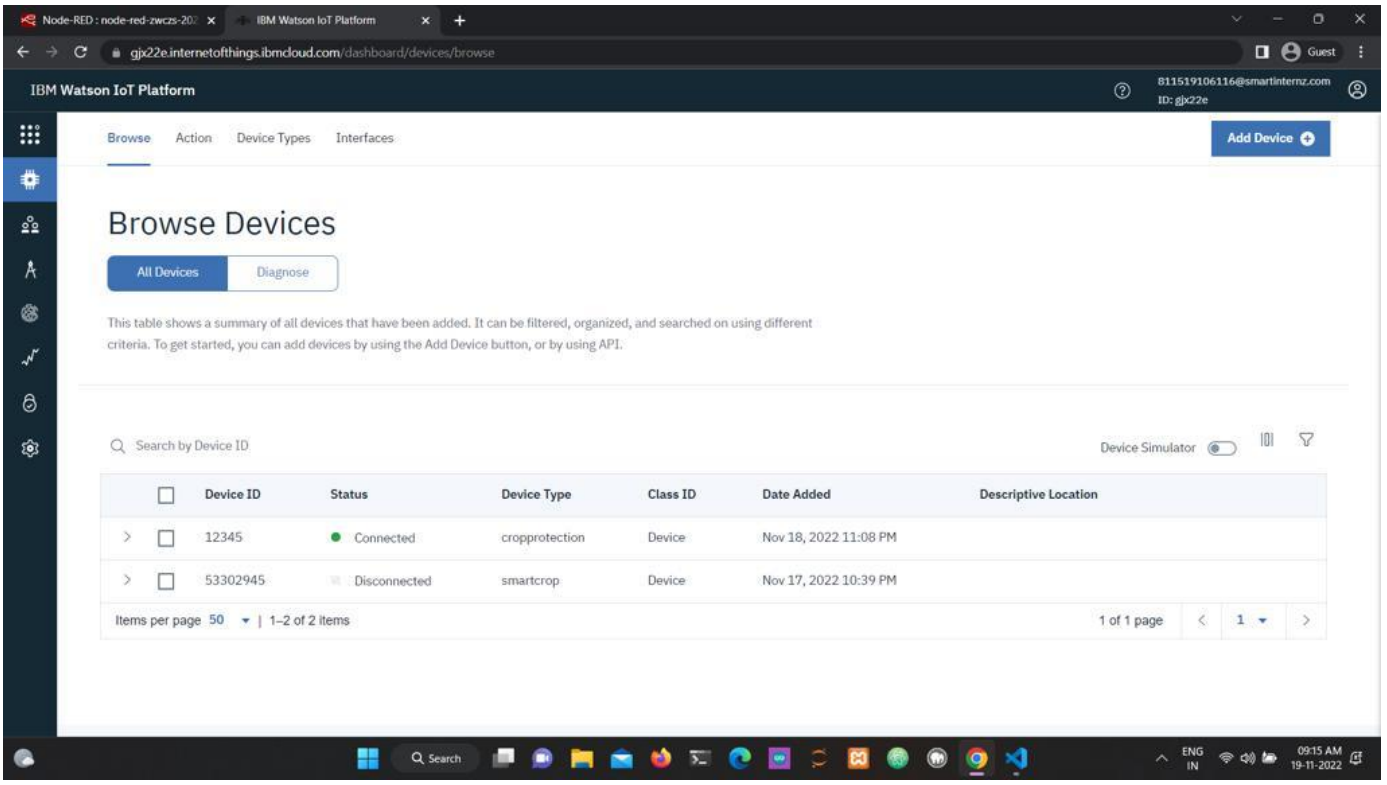
```
    sleep(1)
    if success:
        print ("... ...publish ok... ... ...")
        print ("Published Temp = %s C" % temp_sensor, "to IBM Watson")
        success = deviceCli.publishEvent("PH sensor", "json", PH_data, qos=0)
        sleep(1)
    if success:
        print ("Published Moisture level = %s " % moist_level, "to IBM Watson")
        success = deviceCli.publishEvent("Water sensor", "json", water_data, qos=0)
        sleep(1)
    if success:
        print ("Published Water level = %s cm" % water_level, "to IBM Watson")
        print ("")

    if (temp_sensor > 35):
        print("sprinkler-1 is ON")
        success = deviceCli.publishEvent("Alert1", "json",{ 'alert1' : "Temperature(%s)
is high, sprinkerlers are turned ON" %temp_sensor }, qos=0)
        sleep(1)
    if success:
        print( 'Published Alert1 : ', "Temperature(%s) is high, sprinkerlers are turned
ON" %temp_sensor,"to IBM Watson")
        print("")
    else:
        print("sprinkler-1 is OFF")
        print("")

    if (PH_sensor > 7.5 or PH_sensor < 5.5):
        success = deviceCli.publishEvent("Alert2", "json",{ 'alert2' : "Fertilizer PH
level(%s) is not safe,use other fertilizer" %PH_sensor } , qos=0)
        sleep(1)
    if success:
        print('Published Alert2 : ' , "Fertilizer PH level(%s) is not safe,use other
fertilizer" %PH_sensor,"to IBM Watson")
        print("")
    else:
        print("sprinkler-2 is OFF")
        print("")
    if (moist_level < 20):
        print("Motor-1 is ON")
        success = deviceCli.publishEvent("Alert5", "json", { 'alert5' : "Moisture
level(%s) is low, Irrigation started" %moist_level }, qos=0)
        sleep(1)
    if success:
        print('Published Alert5 : ' , "Moisture level(%s) is low, Irrigation started"
%moist_level,"to IBM Watson" )
        print("")
    else:
        print("Motor-1 is OFF")
        print("")
    if (water_level > 20):
        print("Motor-2 is turning ON")
```

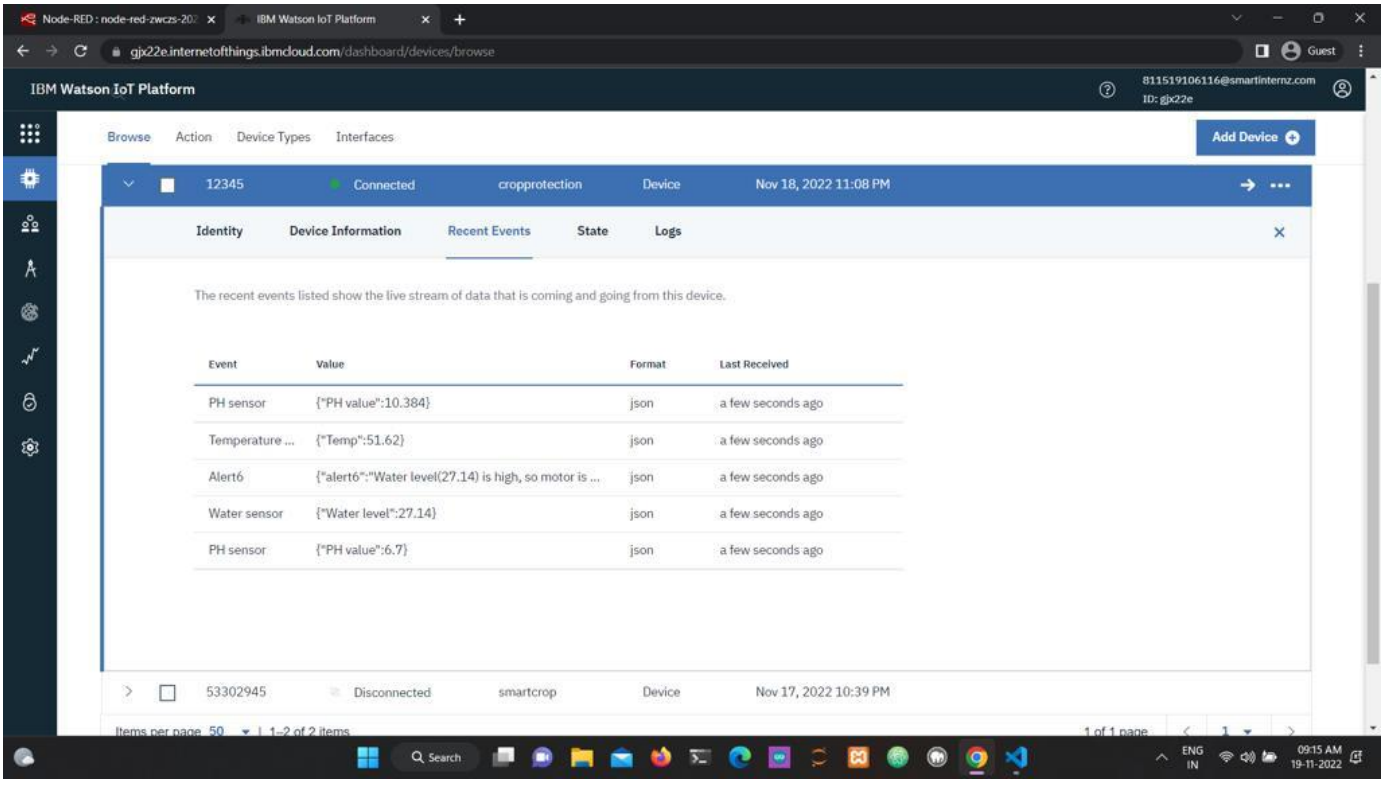
```
        success = deviceCli.publishEvent("Alert6", "json", { 'alert6' : "Water level(%s)
is high, so motor is ON to take water out " %water_level }, qos=0)
        sleep(1)
    if success:
        print('Published Alert6 : ' , "water level(%s) is high, so motor is ON to take
water out " %water_level,"to IBM Watson" )
        print("")
    else:
        print("Motor-2 is turning OFF")
        print("")
deviceCli.commandCallback = myCommandCallback
deviceCli.disconnect()
```

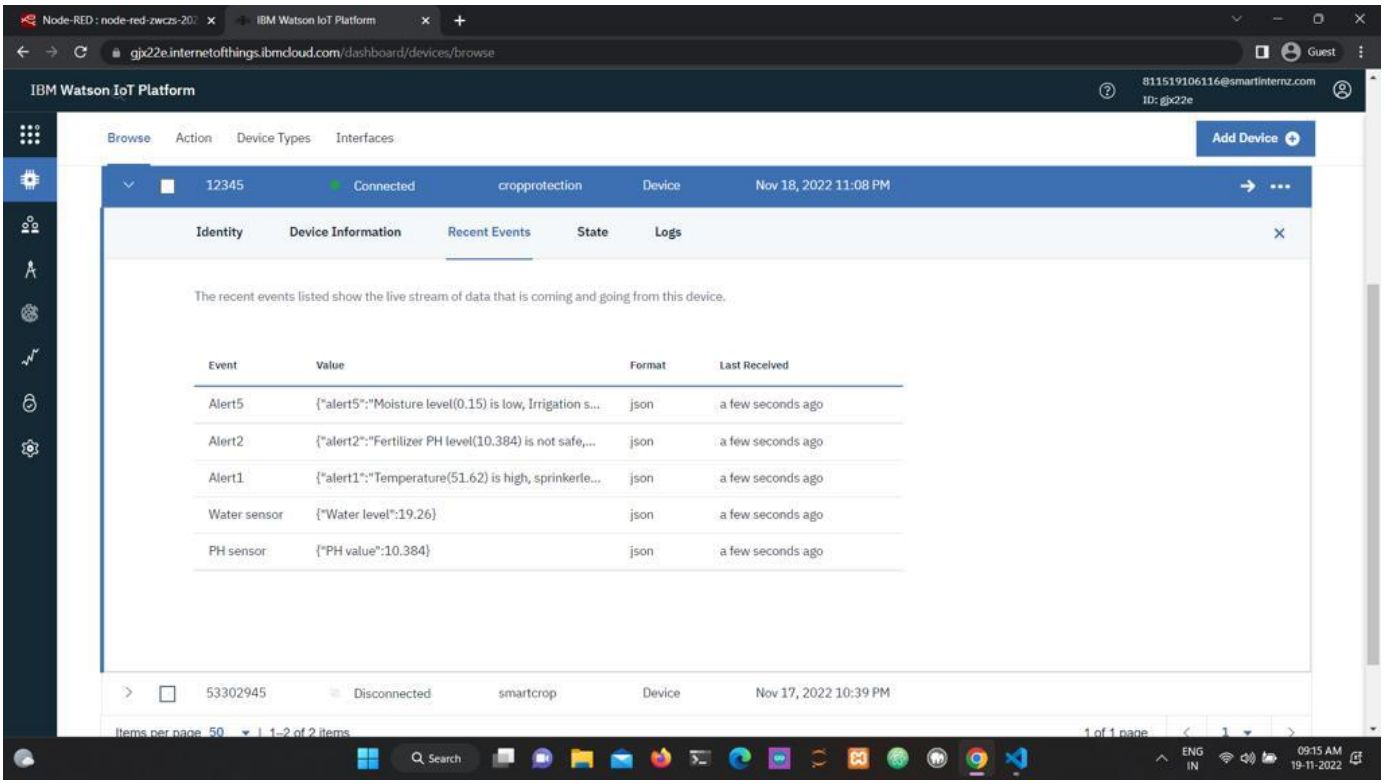
OUTPUT



OUTPUT IN IBM WATSON:






Node-RED : node-red-zwczs-202
IBM Watson IoT Platform
gjx22e.internetofthings.ibmcloud.com/dashboard/devices/browse
Guest
IBM Watson IoT Platform
811519106116@smartinternz.com
ID: gjx22e
Browse
Action
Device Types
Interfaces
Add Device
12345
Connected
cropprotection
Device
Nov 18, 2022 11:08 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Alert5
{"alert5":"Moisture level(0.15) is low, Irrigation s...
json
a few seconds ago
Alert2
{"alert2":"Fertilizer PH level(10.384) is not safe,...
json
a few seconds ago
Alert1
{"alert1":"Temperature(51.62) is high, sprinkerle...
json
a few seconds ago
Water sensor
{"Water level":19.26}
json
a few seconds ago
PH sensor
{"PH value":10.384}
json
a few seconds ago
53302945
Disconnected
smartcrop
Device
Nov 17, 2022 10:39 PM
Items per page: 50
1–2 of 2 items
1 of 1 page
Search
ENG
IN
09:15 AM
19-11-2022