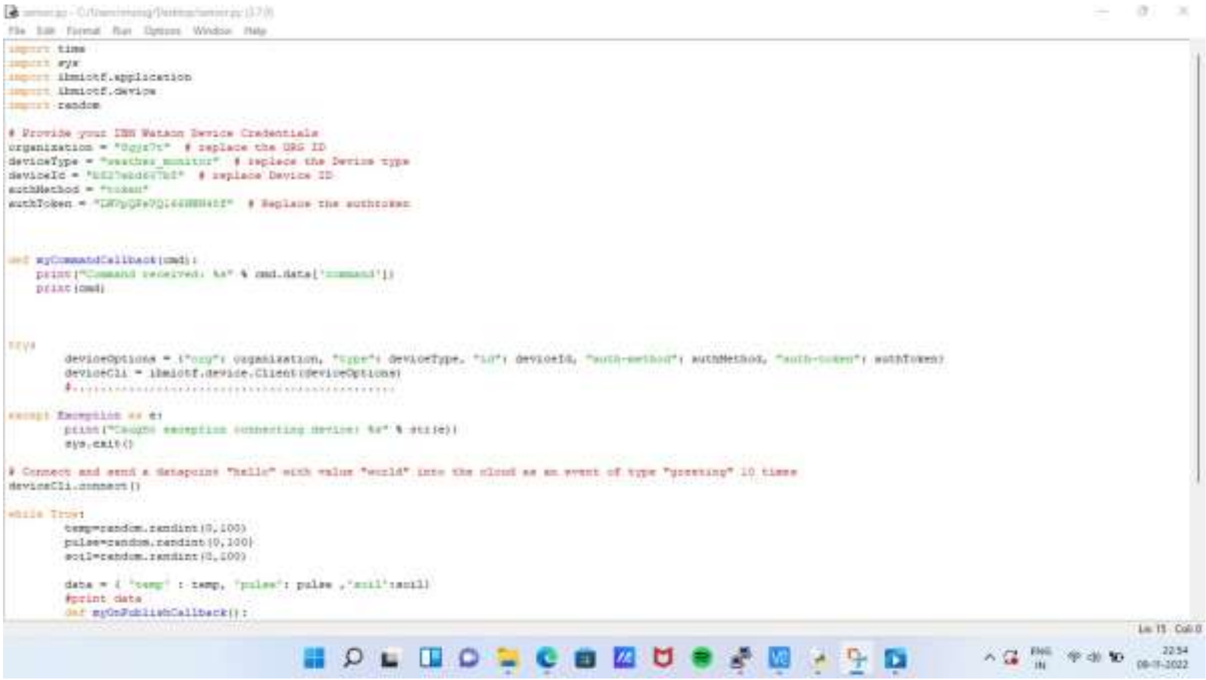
PROJECT DEVELOPMENT PHASE

SPRINT 2

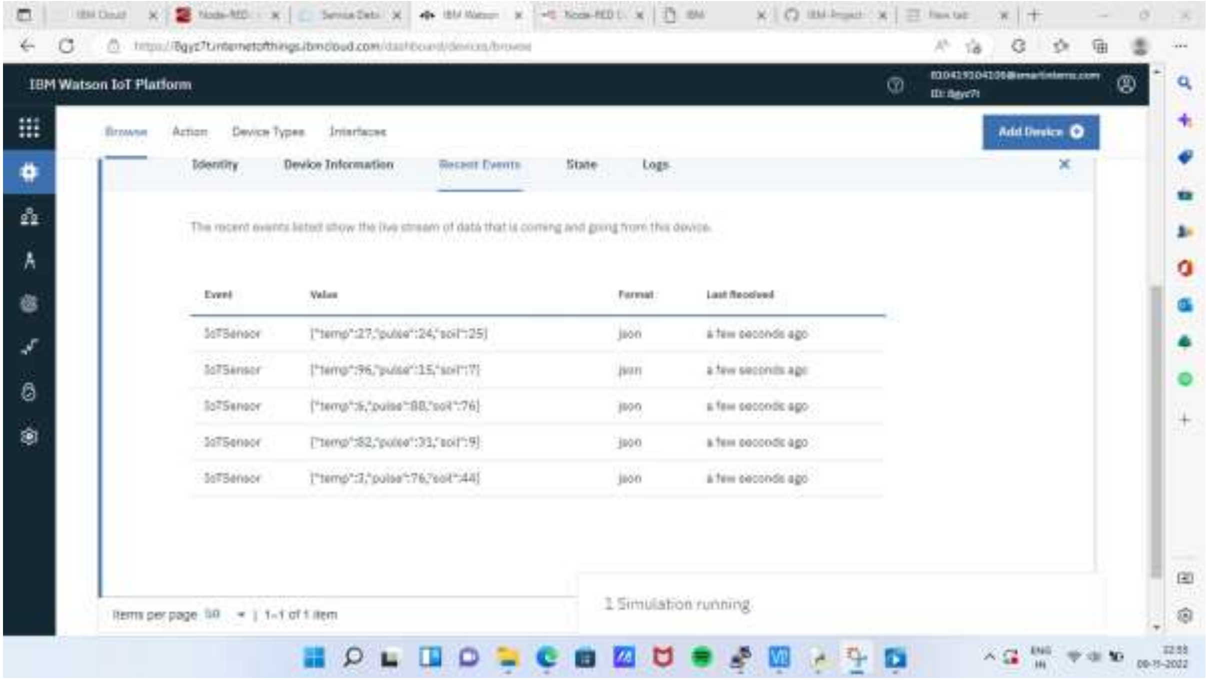
TEAM ID	PNT2022TMID18919
PROJECT NAME	IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE

STEP 1: Write a python code for randomize Soil Moisture ,Temperature and Humidity.



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

# Provide your IBM Watson Device Credentials
organization = "8gyz7t"  # replace the ORG ID
deviceType = "weather_monitor"  # replace the Device type
deviceId = "b527abd67b8"  # replace Device ID
authMethod = "token"
authToken = "LW7pQPe7Q144BB4tf"  # Replace the authtoken


def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    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:
        temp=random.randint(0,100)
        pulse=random.randint(0,100)
        soil=random.randint(0,100)

        data = { 'temp' : temp, 'pulse': pulse ,'soil':soil}
        #print data
        def myOnPublishCallback():
```

STEP 2: Run the python code it send data to IBM IoT Watson Platform.


IBM Watson IoT Platform

Browse Action Device Types Interfaces

Identity Device Information Recent Events State Logs

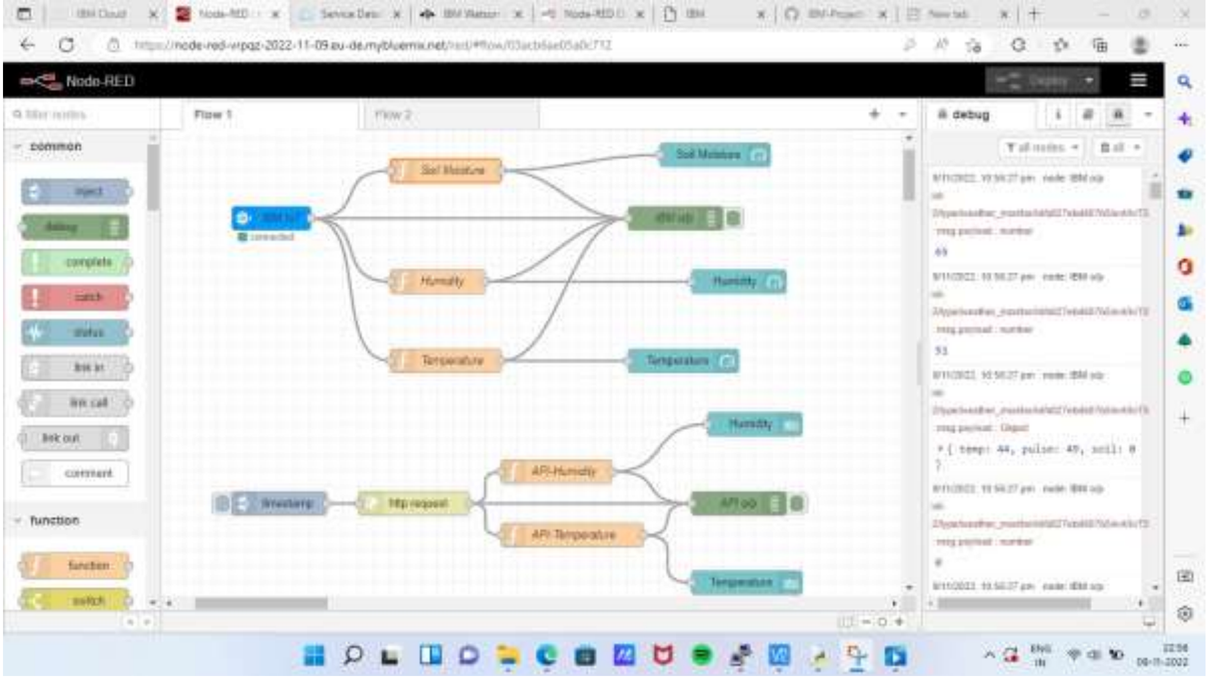
The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
IoTSensor	{"temp":27,"pulse":24,"soil":25}	json	a few seconds ago
IoTSensor	{"temp":96,"pulse":15,"soil":7}	json	a few seconds ago
IoTSensor	{"temp":6,"pulse":88,"soil":76}	json	a few seconds ago
IoTSensor	{"temp":82,"pulse":31,"soil":9}	json	a few seconds ago
IoTSensor	{"temp":3,"pulse":76,"soil":44}	json	a few seconds ago

Items per page 50 | 1–1 of 1 item

1 Simulation running

STEP 3: Open Node-RED flow dashboard.



msg.payload : number

49

msg.payload : number

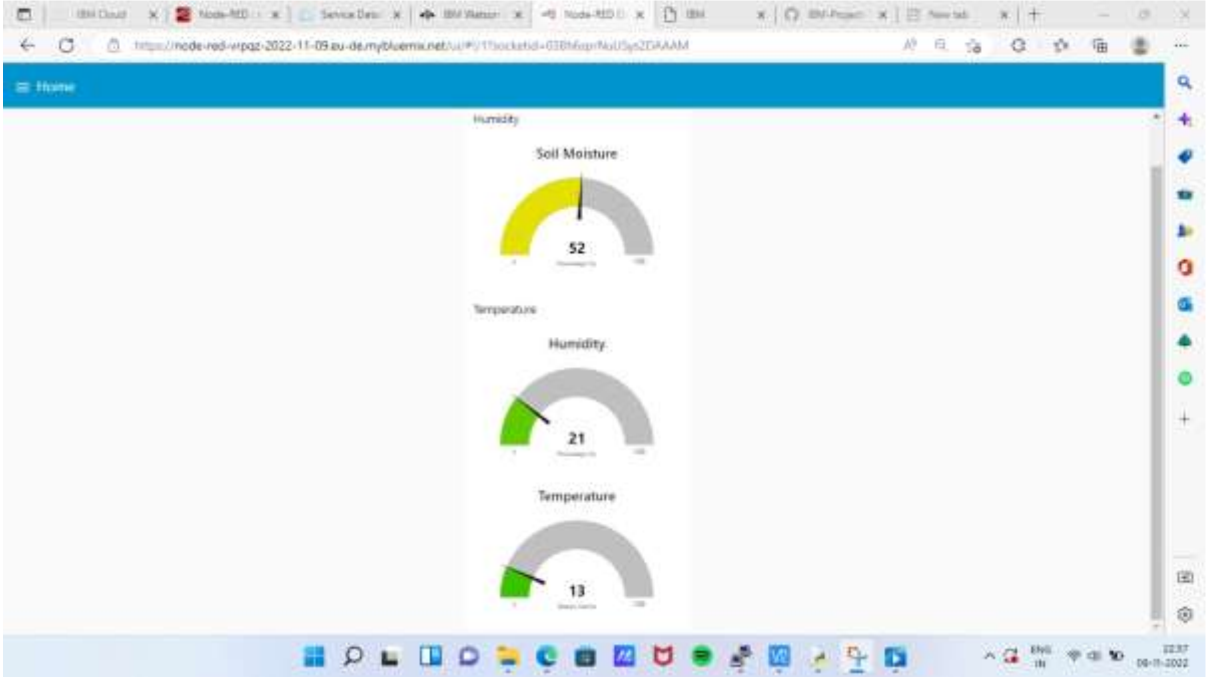
53

msg.payload : Object

▸{ temp: 44, pulse: 49, soil: 8 }

msg.payload : number

STEP 4: Open Node-RED user interface to show the Soil Moisture, Humidity and Temperature value in gauge.



PYTHON CODE :

```
import time

import sys

import ibmiotf.application

import ibmiotf.device

import random


# Provide your IBM Watson Device Credentials

organization = "8gyz7t" # replace the ORG ID

deviceType = "weather_monitor" # replace the Device type

deviceId = "b827ebd607b5" # replace Device ID

authMethod = "token"

authToken = "LWVpQPaVQ166HWN48f" # Replace the authtoken
```

```
def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['command'])
    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:
      temp=random.randint(0,100)
      pulse=random.randint(0,100)
      soil=random.randint(0,100)

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


      success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0, on_publish=myOnPublishCallback)
      if not success:
          print("Not connected to IoTF")
      time.sleep(1)


      deviceCli.commandCallback = myCommandCallback


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

Node-RED :

[{"id":"b42b5519fee73ee2","type":"ibmiot
in","z":"03acb6ae05a0c712","authentication":"apiKey","apiKey":"ef745d48e39
5ccc0","inputType":"evt","logicalInterface":"","ruleId":"","deviceId":"b827ebd
607b5","applicationId":"","deviceType":"weather_monitor","eventType":"+","c
ommandType":"","format":"json","name":"IBM
IoT","service":"registered","allDevices":"","allApplications":"","allDeviceType
s":"","allLogicalInterfaces":"","allEvents":true,"allCommands":"","allFormats":
"","qos":0,"x":270,"y":180,"wires":[["50b13e02170d73fc","d7da6c2f5302ffaf",
"a949797028158f3f","a71f164bc378bcf1"]]},{"id":"50b13e02170d73fc","type"
:"function","z":"03acb6ae05a0c712","name":"Soil
Moisture","func":"msg.payload = msg.payload.soil;\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":490,"y":120
,"wires":[["a949797028158f3f","ba98e701f55f04fe"]]},{"id":"d7da6c2f5302ffa
f","type":"function","z":"03acb6ae05a0c712","name":"Humidity","func":"msg.
payload = msg.payload.pulse;\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":480,"y":260
,"wires":[["a949797028158f3f","70a5b076eeb80b70"]]},{"id":"a949797028158
f3f","type":"debug","z":"03acb6ae05a0c712","name":"IBM

o/p","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"p
ayload","targetType":"msg","statusVal":"","statusType":"auto","x":780,"y":180
,"wires":[]},{"id":"70a5b076eeb80b70","type":"ui_gauge","z":"03acb6ae05a0c
712","name":"","group":"f4cb8513b95c98a4","order":6,"width":"0","height":"0
","gtype":"gage","title":"Humidity","label":"Percentage
(%)","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600
","#ca3838"],"seg1":"","seg2":"","className":"","x":860,"y":260,"wires":[]},{"
id":"b9832c19b922be3e","type":"http
request","z":"03acb6ae05a0c712","name":"","method":"GET","ret":"obj","payt
oqs":"ignore","url":"http://api.openweathermap.org/data/2.5/weather?q=Chinch
wad,%20IN&appid=6aa2b89eb478ce7baebf384e671bfd15","tls":"","persist":fal
se,"proxy":"","authType":"","senderr":false,"x":450,"y":540,"wires":[["f7c149a
3169164e8","c2e6d49c5aa44698","6d207fb212acdac3"]]},{"id":"d55b317d0ec
9acfc","type":"inject","z":"03acb6ae05a0c712","name":"","props":[{"p":"paylo
ad"},{"p":"topic","vt":"str"}],"repeat":"","crontab":"","once":false,"onceDelay":
0.1,"topic":"","payload":"","payloadType":"date","x":280,"y":540,"wires":[["b9
832c19b922be3e"]]},{"id":"6d207fb212acdac3","type":"debug","z":"03acb6ae0
5a0c712","name":"API
o/p","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"p
ayload","targetType":"msg","statusVal":"","statusType":"auto","x":860,"y":540
,"wires":[]},{"id":"f7c149a3169164e8","type":"function","z":"03acb6ae05a0c7
12","name":"API-
Humidity","func":"msg.payload=msg.payload.main.pulse;\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":630,"y":500
,"wires":[["6d207fb212acdac3","23e82e5991b96c8d"]]},{"id":"c2e6d49c5aa44
698","type":"function","z":"03acb6ae05a0c712","name":"API-
Temperature","func":"msg.payload=msg.payload.main.temp;\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":650,"y":580
,"wires":[["6d207fb212acdac3","3e9b68204bef0552"]]},{"id":"a71f164bc378bc
f1","type":"function","z":"03acb6ae05a0c712","name":"Temperature","func":"
msg.payload=msg.payload.temp;\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":490,"y":360
,"wires":[["8e8b63b110c5ec2d","a949797028158f3f"]]},{"id":"8e8b63b110c5e
c2d","type":"ui_gauge","z":"03acb6ae05a0c712","name":"","group":"f4cb8513
b95c98a4","order":11,"width":"0","height":"0","gtype":"gage","title":"Tempera
ture","label":"Degree
Celcius","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e
600","#ca3838"],"seg1":"","seg2":"","className":"","x":790,"y":360,"wires":[]
},{"id":"3e9b68204bef0552","type":"ui_text","z":"03acb6ae05a0c712","group":
"f4cb8513b95c98a4","order":2,"width":"0","height":"0","name":"","label":"Te

mperature","format":"{{msg.payload}}","layout":"row-spread","className":"","x":870,"y":640,"wires":[]},{"id":"23e82e5991b96c8d","type":"ui_text","z":"03acb6ae05a0c712","group":"f4cb8513b95c98a4","order":1,"width":"0","height":"0","name":"","label":"Humidity","format":"{{msg.payload}}","layout":"row-spread","className":"","x":880,"y":440,"wires":[]},{"id":"ba98e701f55f04fe","type":"ui_gauge","z":"03acb6ae05a0c712","name":"","group":"f4cb8513b95c98a4","order":1,"width":"0","height":"0","gtype":"gage","title":"Soil Moisture","label":"Percentage (%)","format":"{{value}}","min":0,"max":"100","colors":["#00b500","#e6e600","#ca3838"],"seg1":"","seg2":"","className":"","x":830,"y":100,"wires":[]},{"id":"ef745d48e395ccc0","type":"ibmiot","name":"weather_monitor","keepalive":"60","serverName":"","cleansession":true,"appId":"","shared":false},{"id":"f4cb8513b95c98a4","type":"ui_group","name":"monitor","tab":"1f4cb829.2fdee8","order":2,"disp":true,"width":"6","collapse":false,"className":""},{"id":"1f4cb829.2fdee8","type":"ui_tab","name":"Home","icon":"dashboard","order":3,"disabled":false,"hidden":false}]