

1)INTRODUCTION:-

1.1) OVERVIEW:- -

In this "SMART AGRICULTURE" project, we have created a UI based on iot using nodered, IBM cloud services and ibm iot sensor.we have connected the iot sensor virtually to IBM cloud and UI.

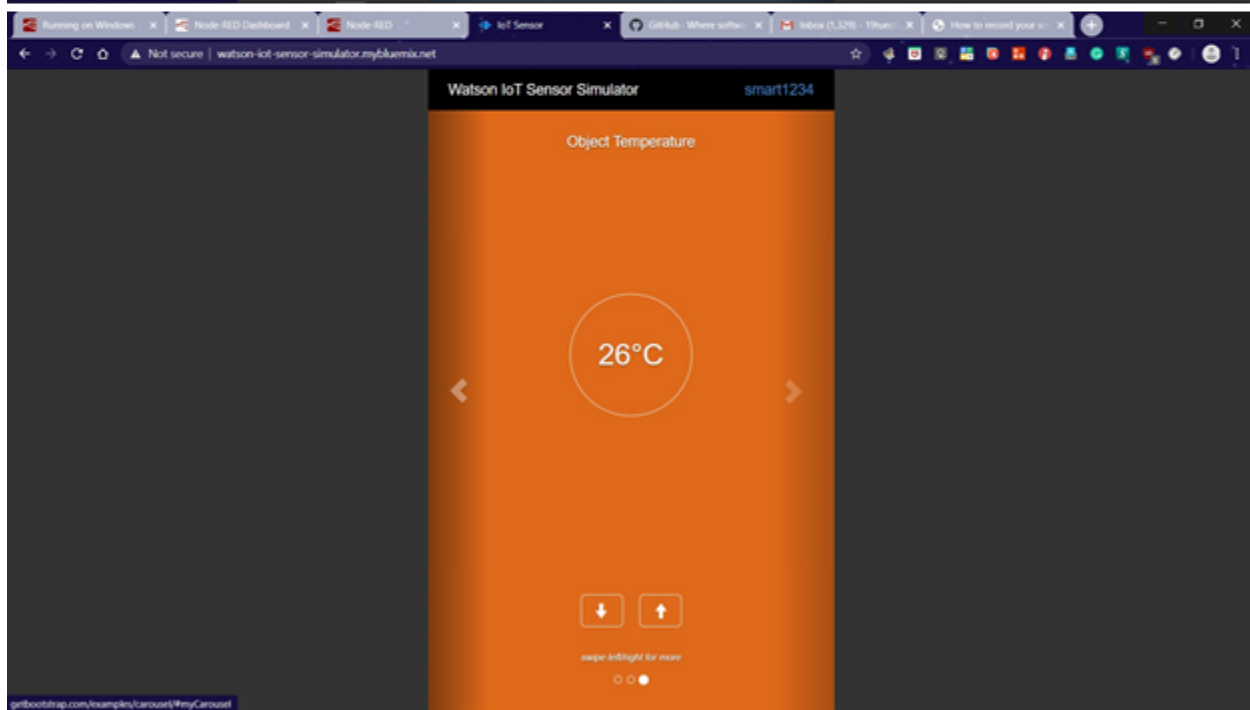
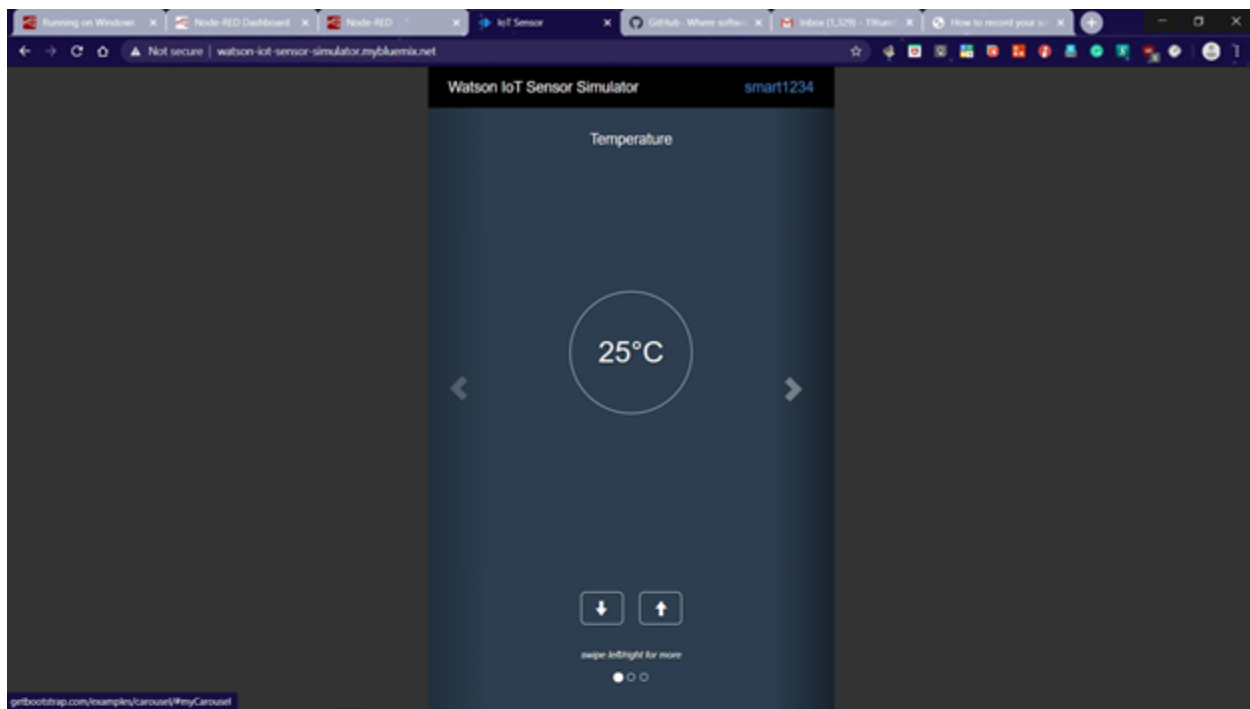
1.2) Purpose:- -This project focuses on agriculture, and this enables the farmers to monitor the field parameters and control the motors for irrigation from anywhere. - This technology would ultimately improve the yield and limit the water usage to a greater extent, as farmers can consider the field parameters such as moisture, temp and humidity and climate parameters from open weather api before irrigation.

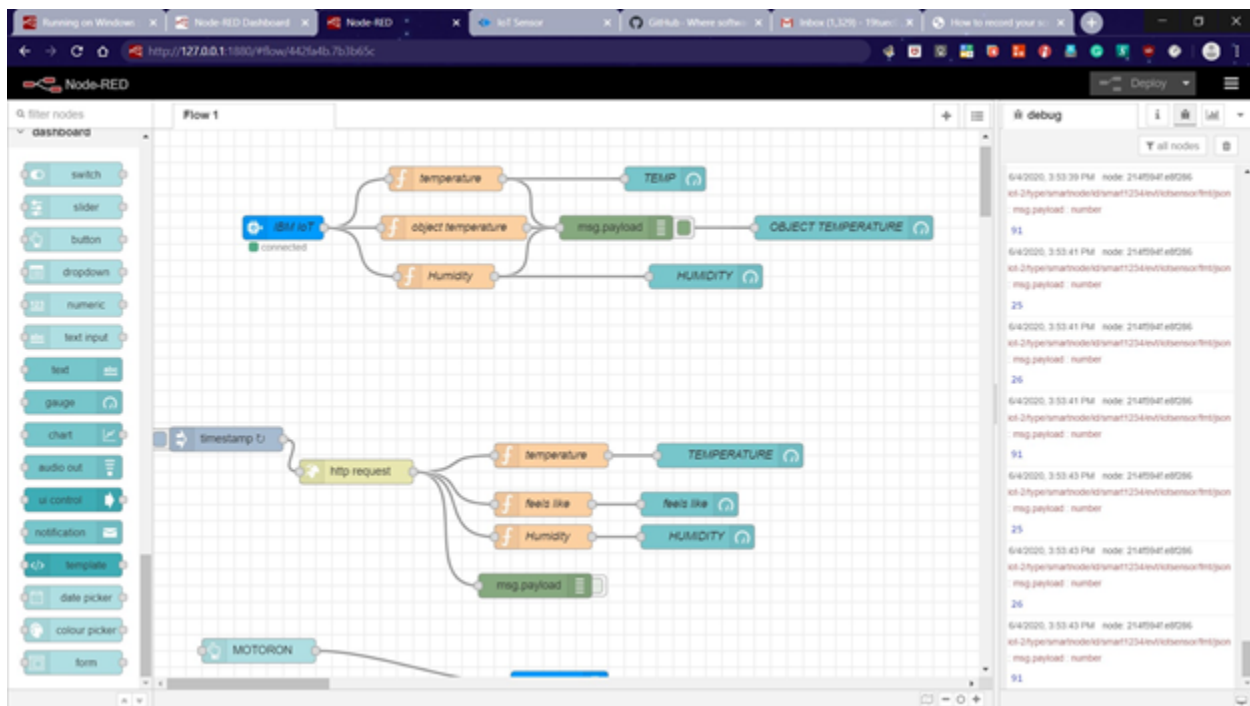
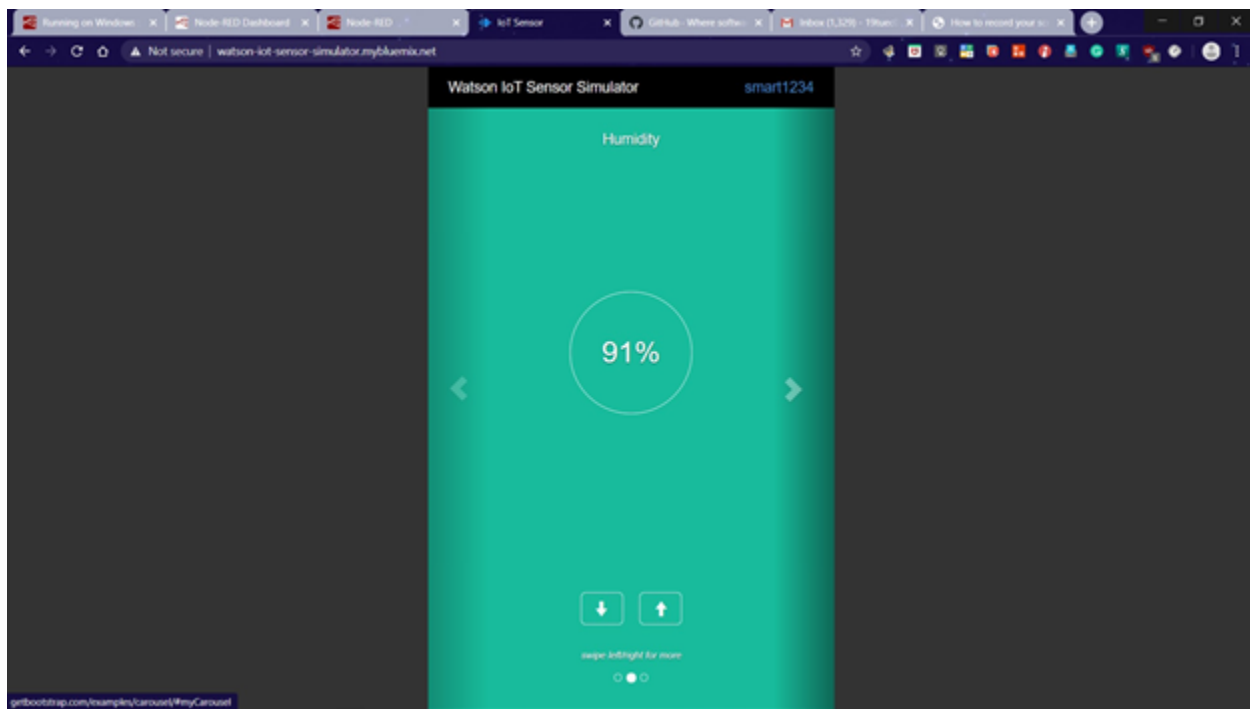
2.LITERATURE SURVEY:-

2.1)Existing problem: -

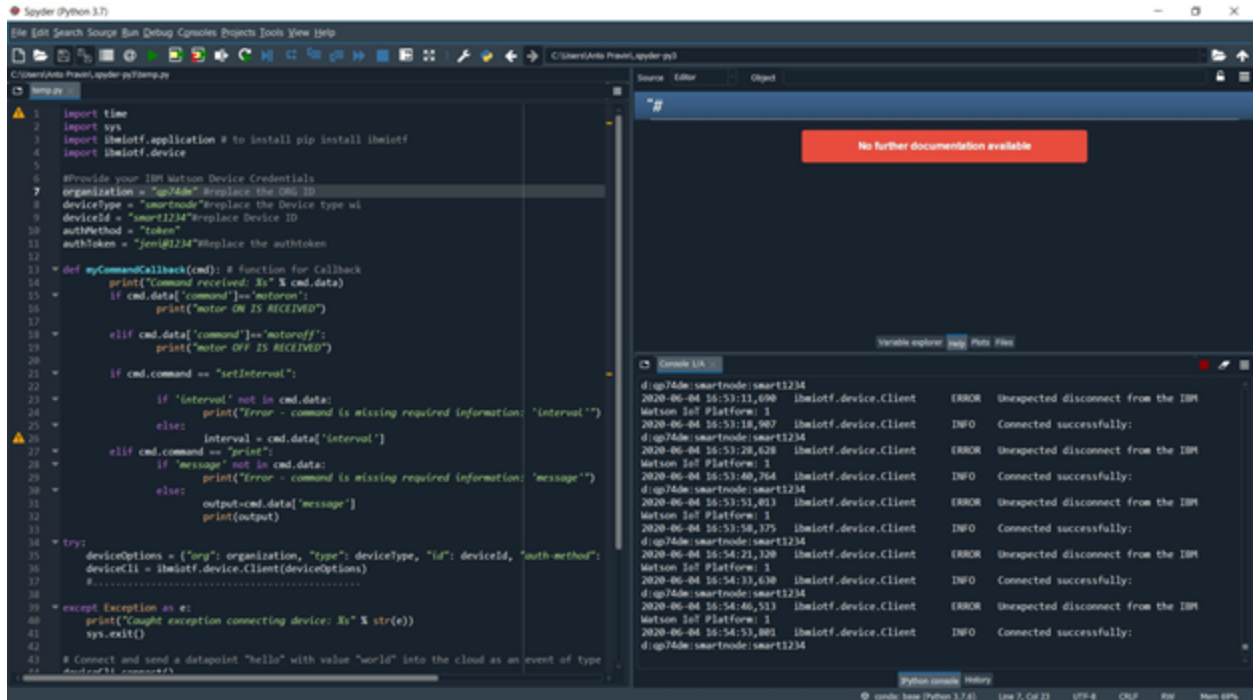
Farmers of today are not aware about changing climatic conditions due to global warming. This makes them irrigate crops without considering the weather forecast. They even don't consider their own field parameters before irrigation. This causes crop failure and water wastage. - This issue causes both water waste and crop failure to farmers and pushes them in high interest loans.

2.2)Proposed solution. : -Our solution is to provide a UI to farmers, through which they can monitor the field parameters (humidity, temperature,moisture), weather data from open weather api. This UI also provides two control buttons, using which they can control motors for irrigation. - This would reduce water wastage and increase productivity.





EXPERIMENTAL INVESTIGATION: -



```
1 import time
2 import sys
3 import ibmiotf.application # to install pip install ibmiotf
4 import ibmiotf.device
5
6 #Provide your IBM Watson Device Credentials
7 organization = "qp74de" #replace the Org ID
8 deviceType = "smartnode" #replace the Device type w/
9 deviceId = "smart1234" #replace Device ID
10 authMethod = "token"
11 authToken = "jen@1234" #replace the authToken
12
13 def myCommandCallback(cmd): # function for Callback
14     print("Command received: %s" % cmd.data)
15     if cmd.data['command'] == 'motoron':
16         print("motor ON IS RECEIVED")
17
18     elif cmd.data['command'] == 'motoreff':
19         print("motor OFF IS RECEIVED")
20
21     if cmd.command == "setInterval":
22
23         if 'interval' not in cmd.data:
24             print("Error - command is missing required information: 'interval'")
25         else:
26             interval = cmd.data['interval']
27
28     elif cmd.command == "print":
29         if 'message' not in cmd.data:
30             print("Error - command is missing required information: 'message'")
31         else:
32             output=cmd.data['message']
33             print(output)
34
35 try:
36     deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method":
37                     "token"}
38     deviceCli = ibmiotf.device.Client(deviceOptions)
39
40 except Exception as e:
41     print("Caught exception connecting device: %s" % str(e))
42     sys.exit()
43
44 # Connect and send a datapoint "hello" with value "world" into the cloud as an event of type
45 deviceCli.connect()
```

Console I/O

```
d:\qp74de-smartnode:smart1234
2020-06-04 16:53:11,690 ibmiotf.device.Client ERROR Unexpected disconnect from the IBM
Watson IoT Platform: 1
2020-06-04 16:53:18,907 ibmiotf.device.Client INFO Connected successfully:
d:\qp74de-smartnode:smart1234
2020-06-04 16:53:28,628 ibmiotf.device.Client ERROR Unexpected disconnect from the IBM
Watson IoT Platform: 1
2020-06-04 16:53:40,764 ibmiotf.device.Client INFO Connected successfully:
d:\qp74de-smartnode:smart1234
2020-06-04 16:53:51,813 ibmiotf.device.Client ERROR Unexpected disconnect from the IBM
Watson IoT Platform: 1
2020-06-04 16:53:56,375 ibmiotf.device.Client INFO Connected successfully:
d:\qp74de-smartnode:smart1234
2020-06-04 16:54:21,328 ibmiotf.device.Client ERROR Unexpected disconnect from the IBM
Watson IoT Platform: 1
2020-06-04 16:54:33,638 ibmiotf.device.Client INFO Connected successfully:
d:\qp74de-smartnode:smart1234
2020-06-04 16:54:46,513 ibmiotf.device.Client ERROR Unexpected disconnect from the IBM
Watson IoT Platform: 1
2020-06-04 16:54:53,803 ibmiotf.device.Client INFO Connected successfully:
d:\qp74de-smartnode:smart1234
```

The UI was created using NODERED, all the nodes were configured and the UI was run. - This UI was able to display the different gauges to show the field parameters. - This UI was also able to display the data from open weather API by gauges. - This UI provided two control buttons for controlling the motor, and when one of any of these two buttons is clicked, this returned "motor-on command received" in the IDE where the Python code was run. This act shows that the UI and the code are connected.

5) RESULT: - Thus the required UI with complete required specifications is created and tested

6) Disadvantage: This UI can't make its own wiser decision, which would be very useful for illiterate farmers.

ADVANTAGES: - This UI saves time for farmers as they control and monitor their farm without visiting the farm. This makes them concentrate in other activities to gain money.

7) APPLICATIONS: - In Agricultural and Horticultural fields.

8)CONCLUSION: I strongly beleive that, this project would boost up the yield to feed growing population, and save water

. 9)FUTURE SCOPE: -This UI would further devoloped to provide wise decision for illiterate farmers.

