IOT ENABLED SMART FARMING

APPLICATION

SPRINT – 2

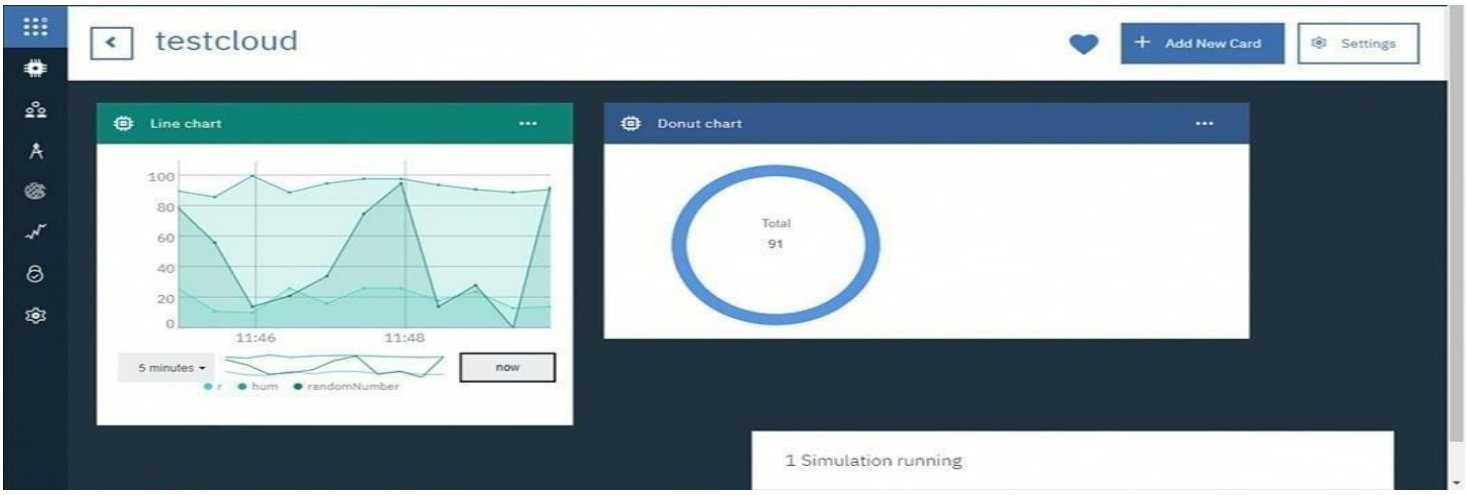
Date	12 NOVEMBER 2022
Team ID	PNT2022TMID52223
Project Name	Project – Smart Farmer-IoT Enabled smart Farming Application

5,Building Project

5.1 Connecting IoT Simulator to IBM Watson IoT Platform

Open link provided in above section 4.3

Give the credentials of your device in IBM Watson IoT Platform



Click on connect

You can see the received data in graphs by creating cards in Boards tab

➢ You will receive the simulator data in cloud

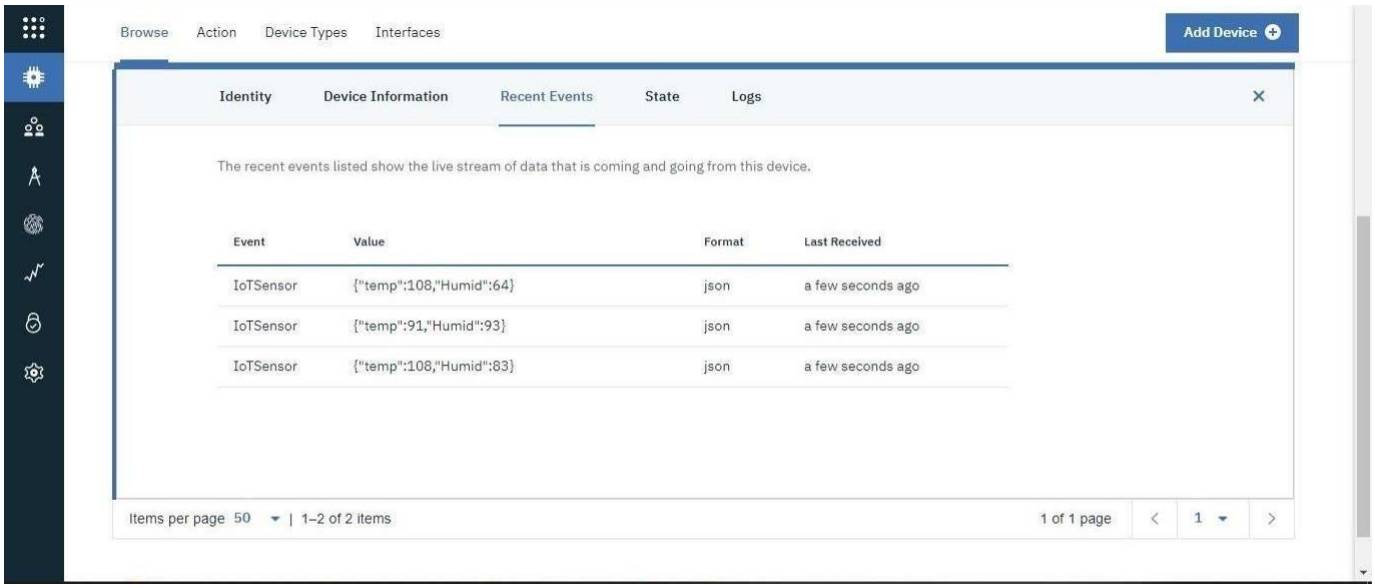
➢ You can see the received data in Recent Events under your device ➢ Data received in this format(json)

{

"d": {

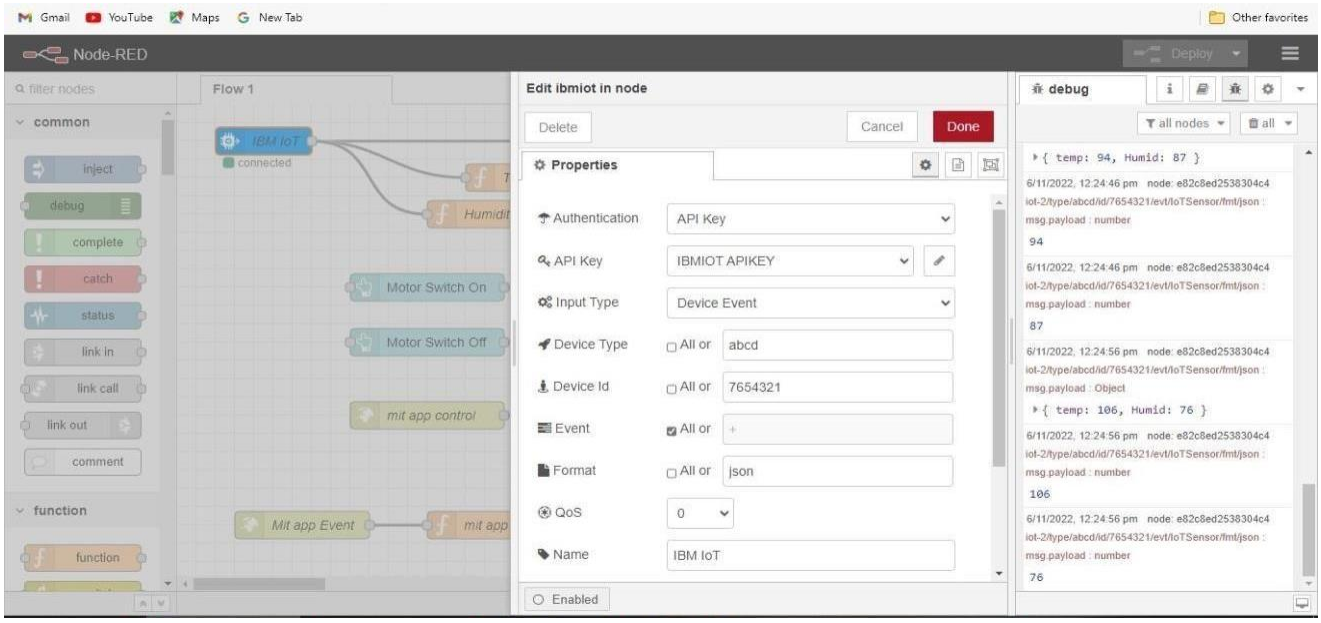
- "name": "abcd",
- "temperature": 17,
- "humidity": 76,
- "Moisture ": 25

```
    }
}
```



5.2 Configuration of Node-Red to collect IBM cloud data

The node IBM IoT App In is added to Node-Red workflow. Then the appropriate device credentials obtained earlier are entered into the node to connect and fetch device telemetry to Node-Red.



Once it is connected Node-Red receives data from the device

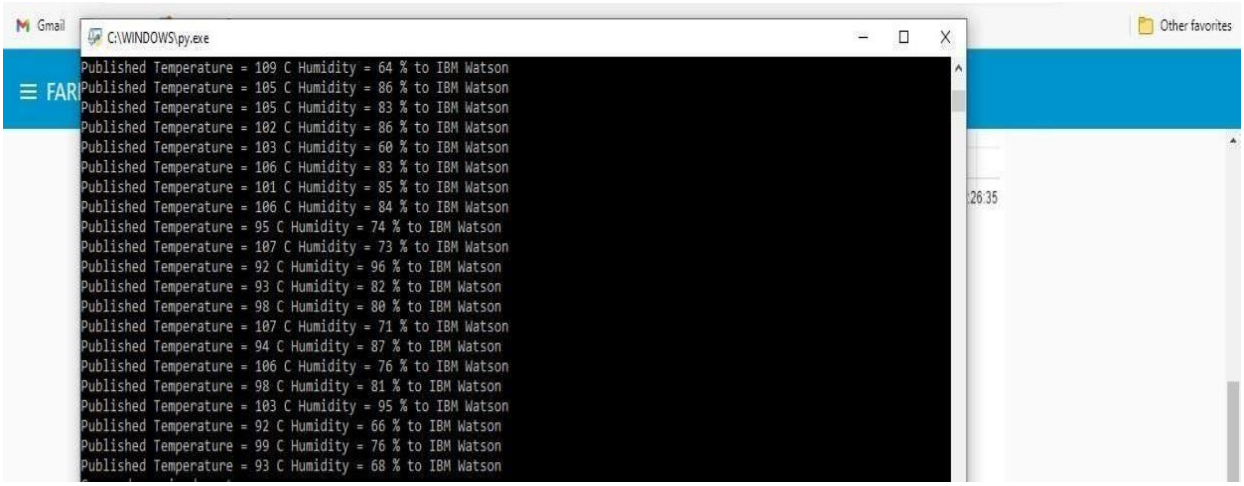
Display the data using debug node for verification

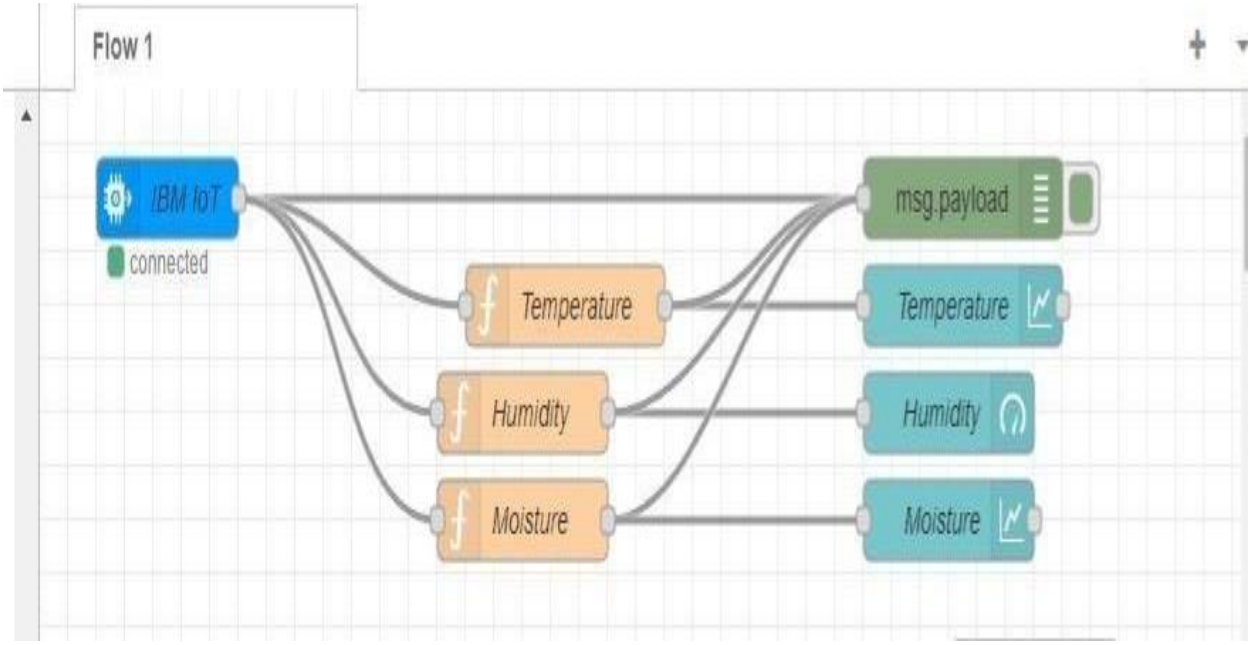
Connect function node and write the Java script code to get each reading separately.

The Java script code for the function node is:

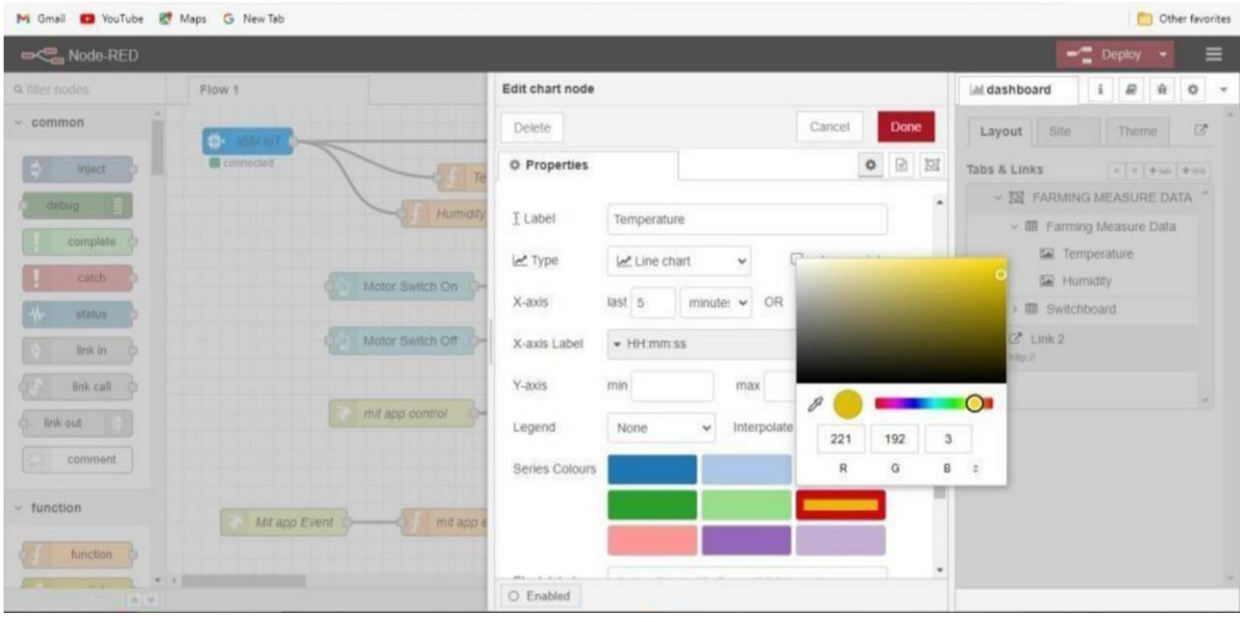
msg.payload=msg.payload.d.temperature returnmsg;

Finally connect Gauge nodes from dashboard to see the data in UI
Data received from the cloud in Node-Red console





Nodes connected in following manner to get each reading separately



This is the Java script code I written for the function node to get Temperature separately.

5.3 Configuration of Node-Red to collect data from OpenWeather

The Node-Red also receive data from the OpenWeather API by HTTP GET request.

An inject trigger is added to perform HTTP request for every certain interval.

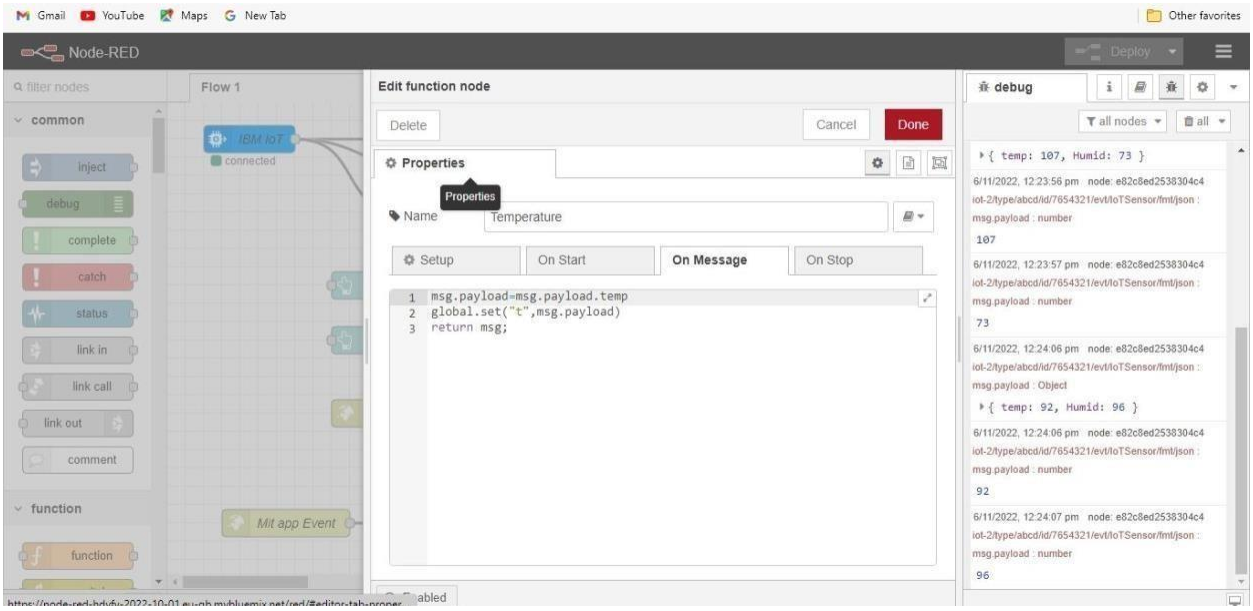
HTTP request node is configured with URL we saved before in section 4.4 The data we receive from OpenWeather after request is in below JSON

format:{"coord":{"lon":79.85,"lat":14.13},"weather":[{"id":803,"main":"Clouds","description":"brokenclouds","icon":"04n"}],"base":"stations","main":{"temp":30759,"feels_like":305.5,"temp_min":307.59,"temp_max":307.59,"pressure":1002,"humidity":35,"sea_level":1002,"grnd_level":1000},"wind":{"speed":6.23,"deg":170
}
,"clouds":{"all":68},"dt":1589991979,"sys":{"country":"IN","sunrise":1589933553,"sunset":1589979720},"timezone":19800,"id":1270791,"name":"Gūdūr","cod":200}

In order to parse the JSON string we use Java script functions and get each parameters `var temperature = msg.payload.main.temp; temperature = temperature-273.15; return {payload : temperature.toFixed(2)};`

In the above Java script code we take temperature parameter into a new variable and convert it from kelvin to Celsius

Then we add Gauge and text nodes to represent data visually in UI


Gmail
YouTube
Maps
New Tab
Other favorites
Node-RED
Deploy
filter nodes
Flow 1
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
IBM IoT
connected
Mit app Event
Edit function node
Delete
Cancel
Done
Properties
Properties
Name
Temperature
Setup
On Start
On Message
On Stop
1 msg.payload=msg.payload.temp
2 global.set("t",msg.payload)
3 return msg;
debug
all nodes
all
{ temp: 107, Humid: 73 }
6/11/2022, 12:23:56 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json :
msg.payload : number
107
6/11/2022, 12:23:57 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json :
msg.payload : number
73
6/11/2022, 12:24:06 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json :
msg.payload : Object
{ temp: 92, Humid: 96 }
6/11/2022, 12:24:06 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json :
msg.payload : number
92
6/11/2022, 12:24:07 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json :
msg.payload : number
96