

SPRINTDELIVERY-2

TITLE	Smart Farmer-IOT Enabled Smart Farming Application
DOMAIN NAME	INTERNET OF THINGS
TEAM ID	PNT2022TMID30465
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\5,Building Project

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

My credentials given to simulator are:

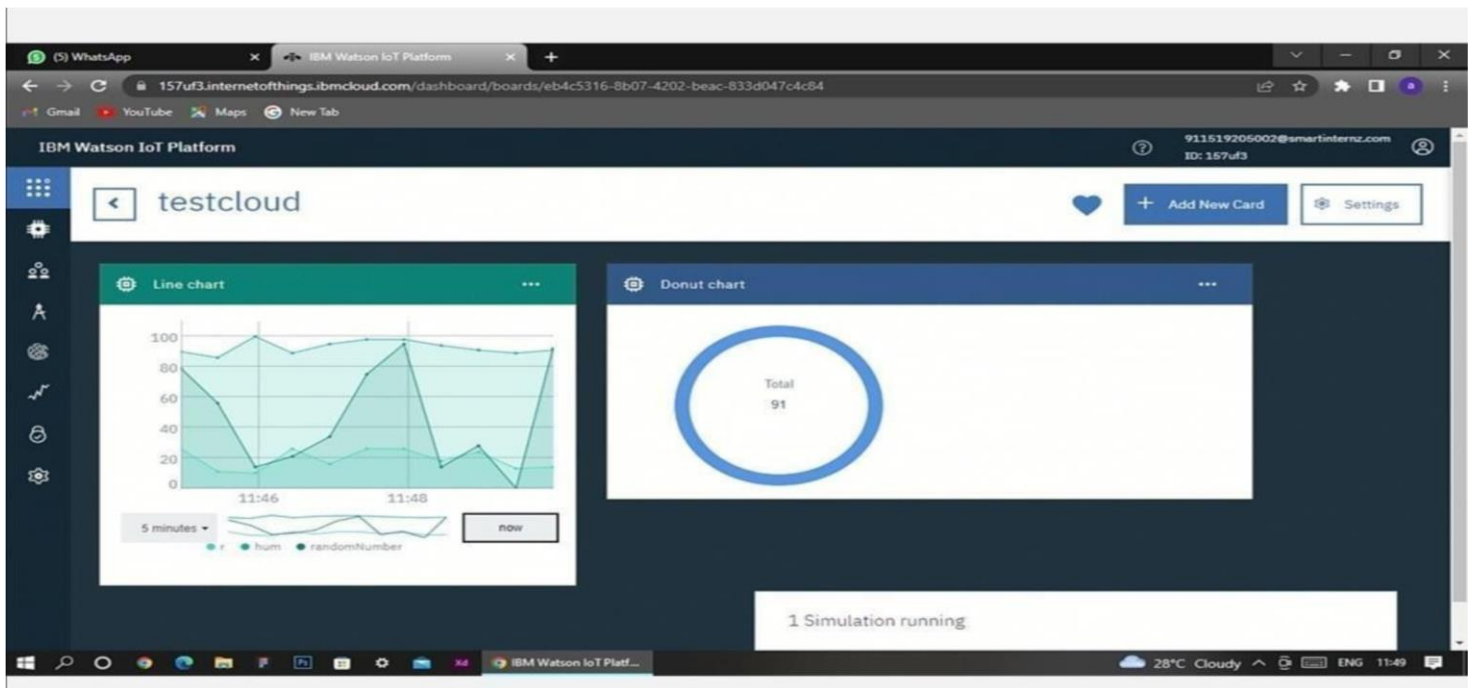
OrgID: **157uf3** api: **a-157uf3f5rg4qxp3**

Device type: **abcd**

token:**6ogMaaQHNWFEgOD8R?**

Device ID : **7654321**

DeviceToken: **87654321**



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
  }
}
```

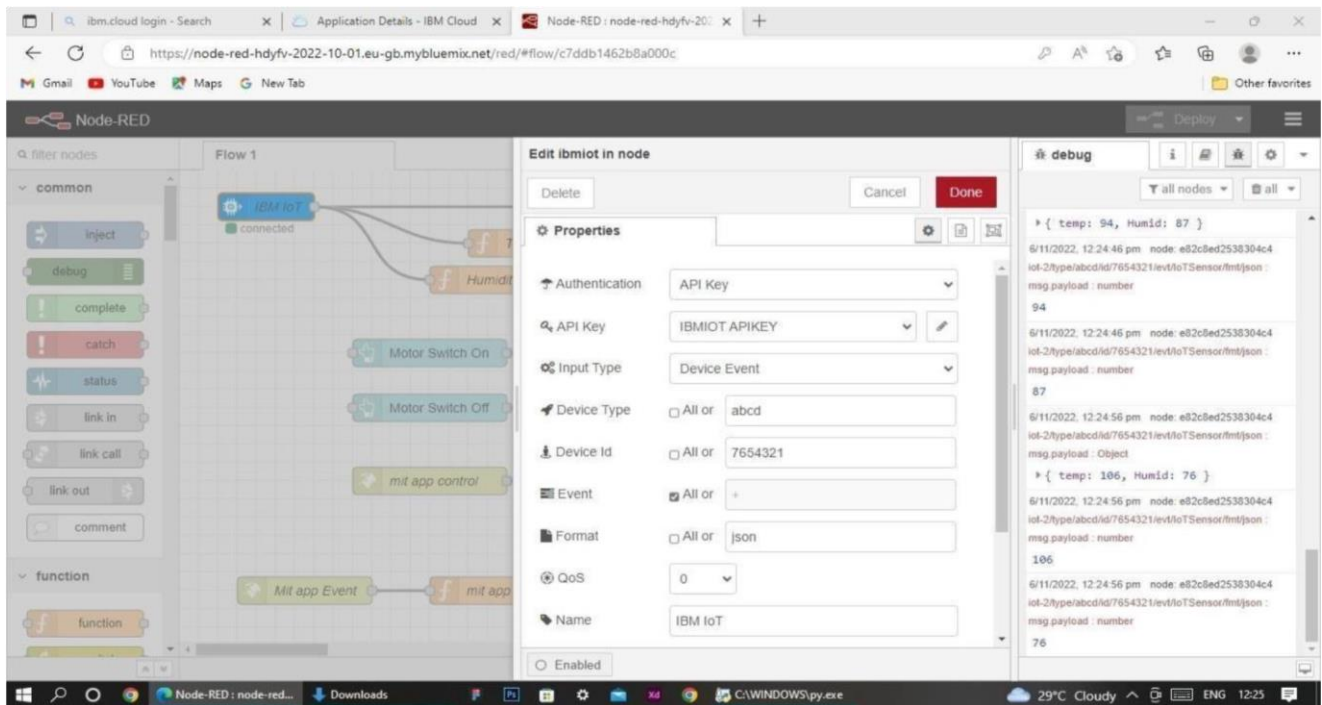
The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area shows a modal window titled 'Recent Events' with a close button. Inside this window, a message states: 'The recent events listed show the live stream of data that is coming and going from this device.' Below this message is a table with the following data:

Event	Value	Format	Last Received
IoT Sensor	{"temp":108,"Humid":64}	json	a few seconds ago
IoT Sensor	{"temp":91,"Humid":93}	json	a few seconds ago
IoT Sensor	{"temp":108,"Humid":83}	json	a few seconds ago

At the bottom of the modal, there is a pagination control showing 'Items per page: 50' and '1-2 of 2 items'. The bottom of the screenshot shows a Windows taskbar with various application icons and a system tray displaying '29°C Cloudy' and 'ENG 11:14'.

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

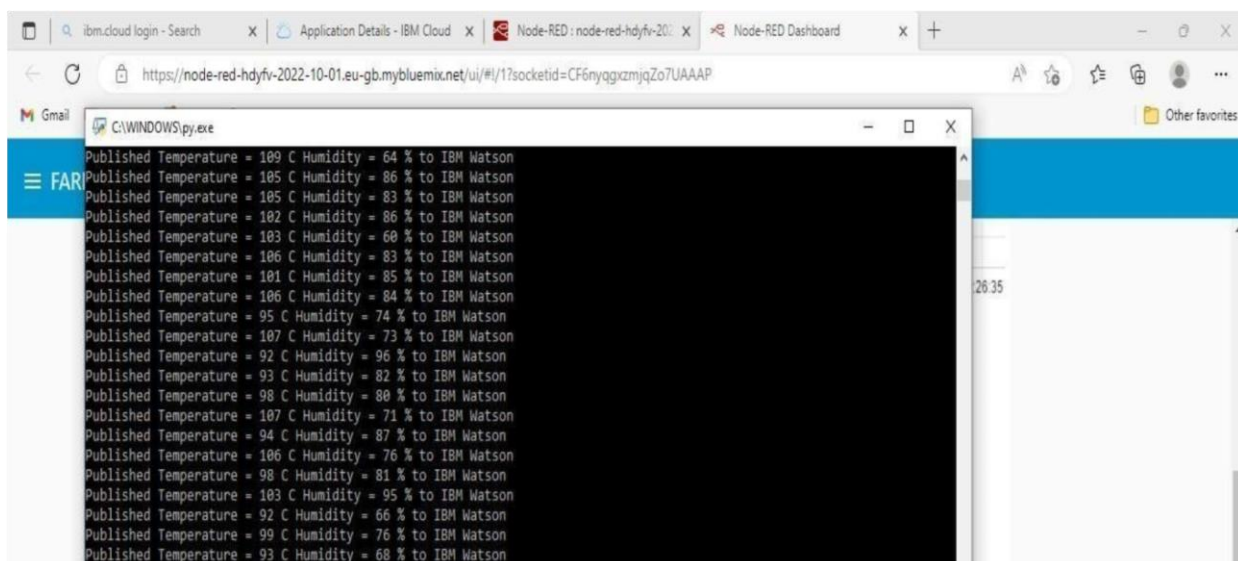
Display the data using debug node for verification

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

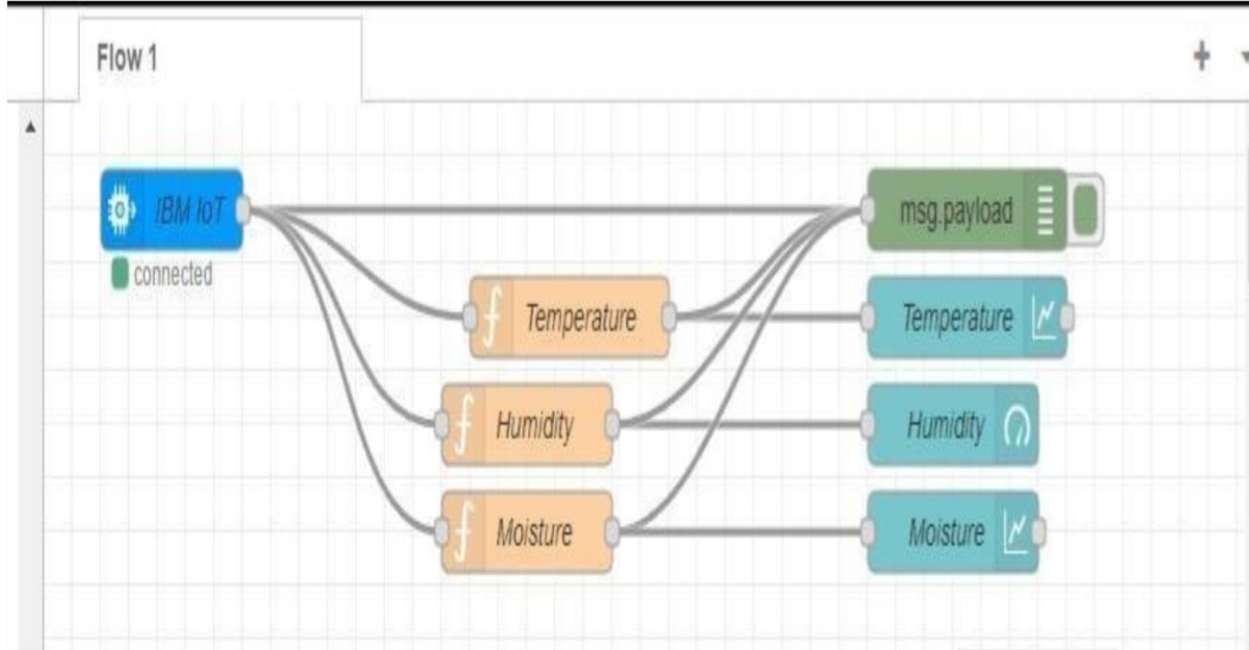
The Java script code for the function node is:

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

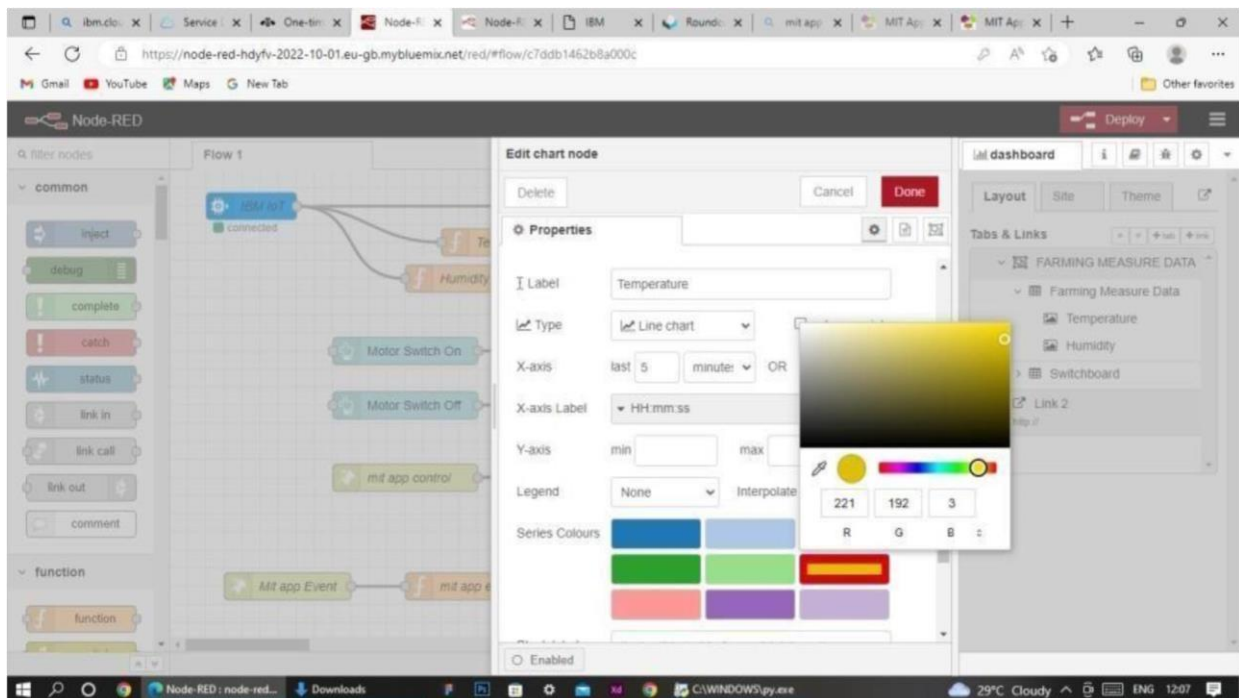
Finally connect Gauge nodes from dashboard to see the data in UI



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.

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":307.59,"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

Node-RED interface showing a flow with an IBM IoT node connected to a function node. The function node is editing the 'Temperature' property. The debug console shows a sequence of messages with temperature and humidity data.

Flow 1

Edit function node

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 ▼

6/11/2022, 12:23:58 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evs/iotSensor/rtm/json :
msg.payload : number
107

6/11/2022, 12:23:57 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evs/iotSensor/rtm/json :
msg.payload : number
73

6/11/2022, 12:24:06 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evs/iotSensor/rtm/json :
msg.payload : Object
{ temp: 92, Humid: 96 }

6/11/2022, 12:24:06 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evs/iotSensor/rtm/json :
msg.payload : number
92

6/11/2022, 12:24:07 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evs/iotSensor/rtm/json :
msg.payload : number
96