IOT ENABLED SMART FARMING APPLICATION.

Build A Web Application Using Node-RED

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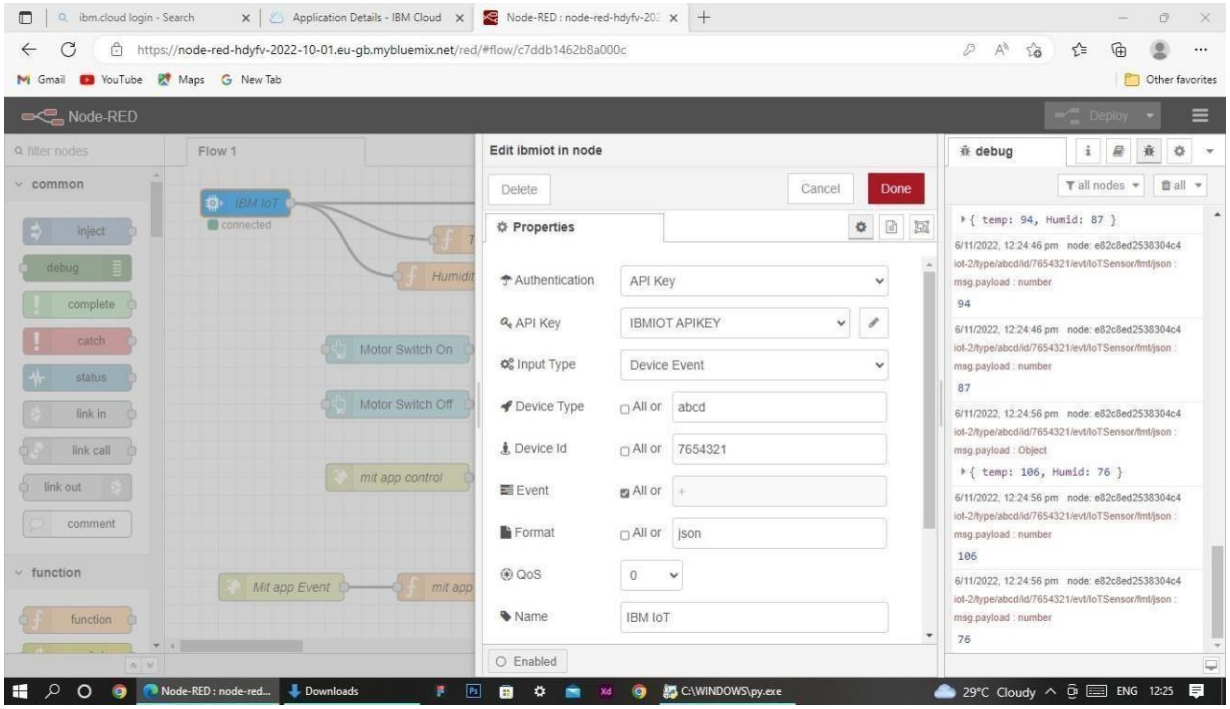
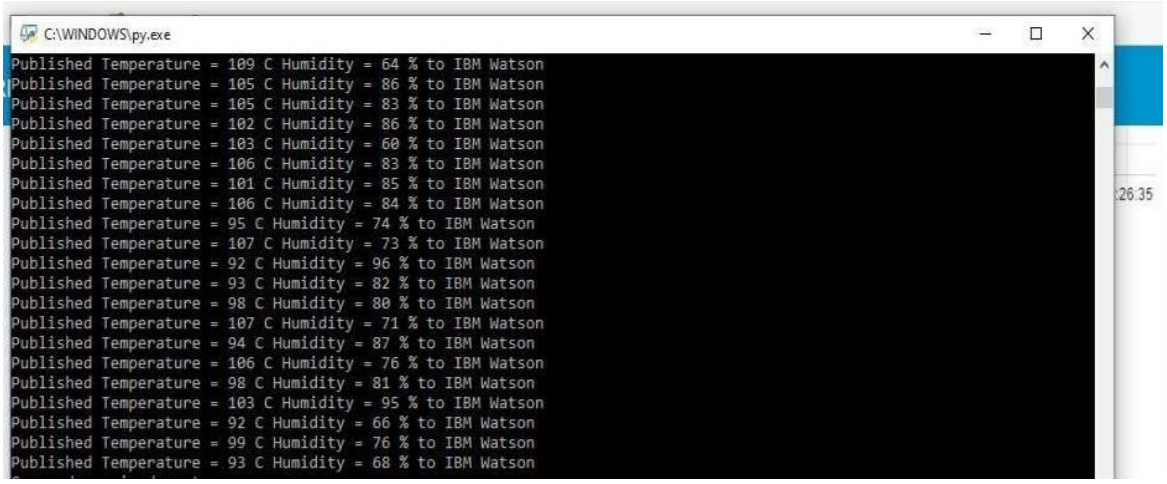
Configuration of Node-Red to collect IBM cloud data

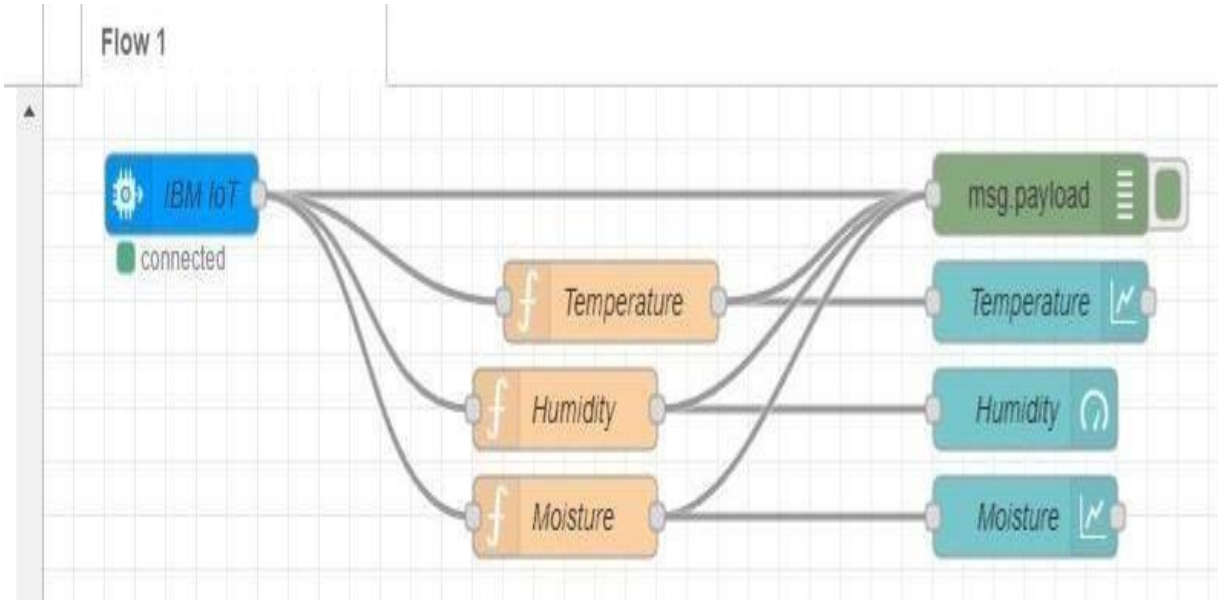
The node IBM IOT App In is added to Node-Red workflow. Then the appropriate device credentials obtained earlier are entered into the node to connect and fetch device telemetry to Node-Red



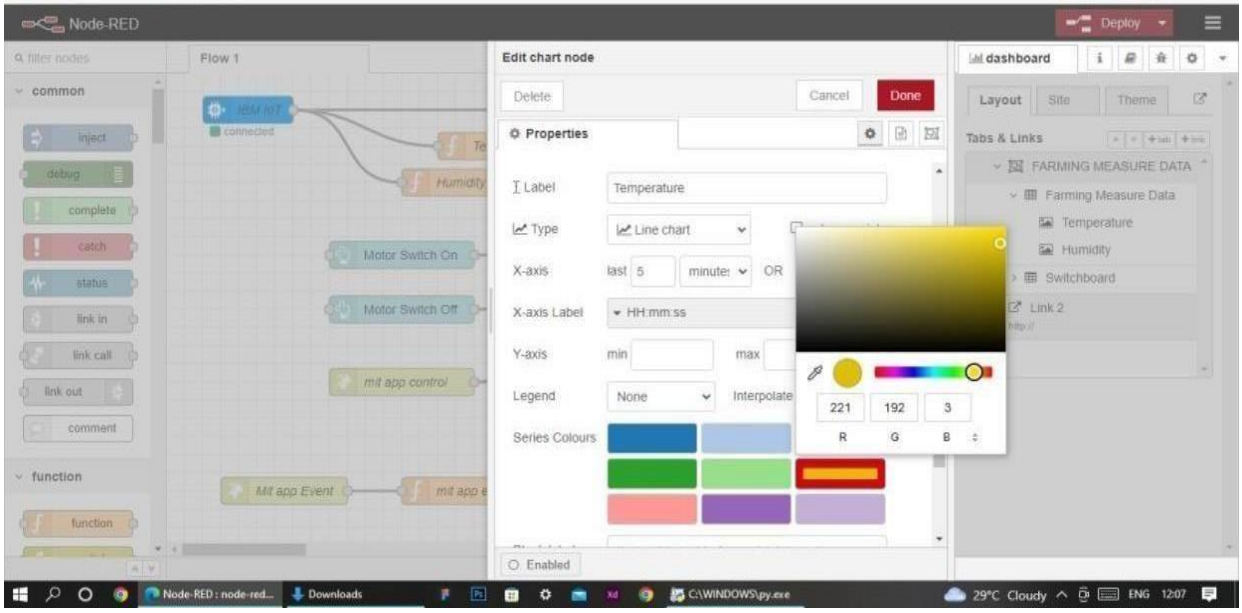
- Once it is connected Node-Red receives data from the device
- Display the data using debug node for verification
- Connect function node and write the Java script code to get each reading separately.
- The Java script code for the function node is: msg.payload=msg.payload.d.temperature return msg;
- 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 Open Weather

- The Node-Red also receive data from the Open Weather 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
- Thedata we receive from Open Weather 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,"sun

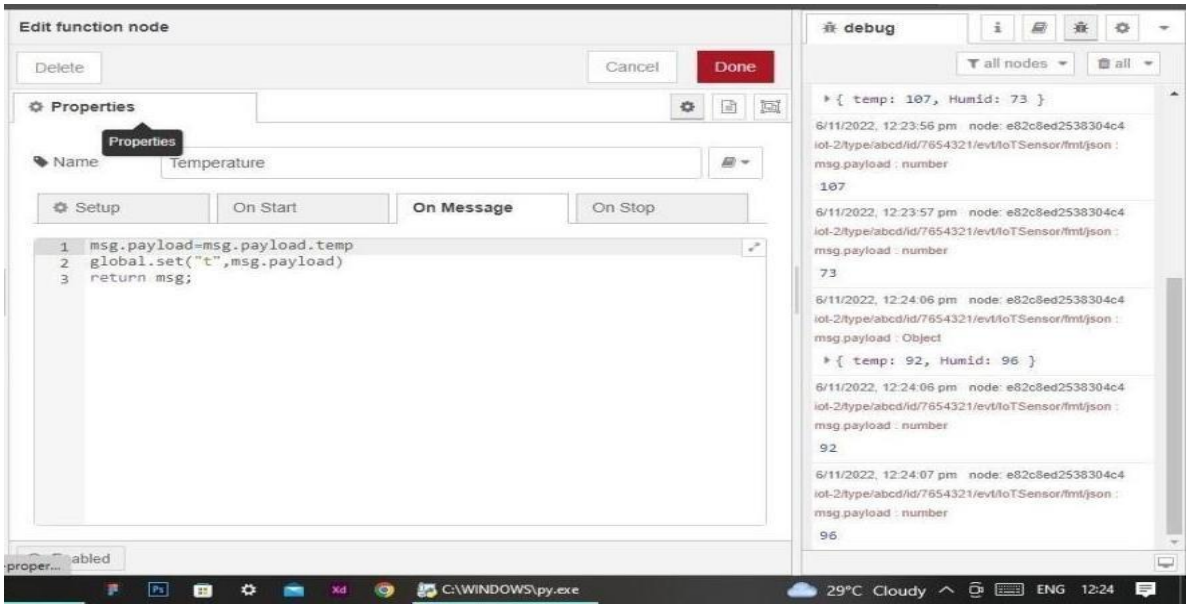
set":1589979720},"timezone":19800,"id":1270791,"name":"Gūdūr","
cod":20 0}

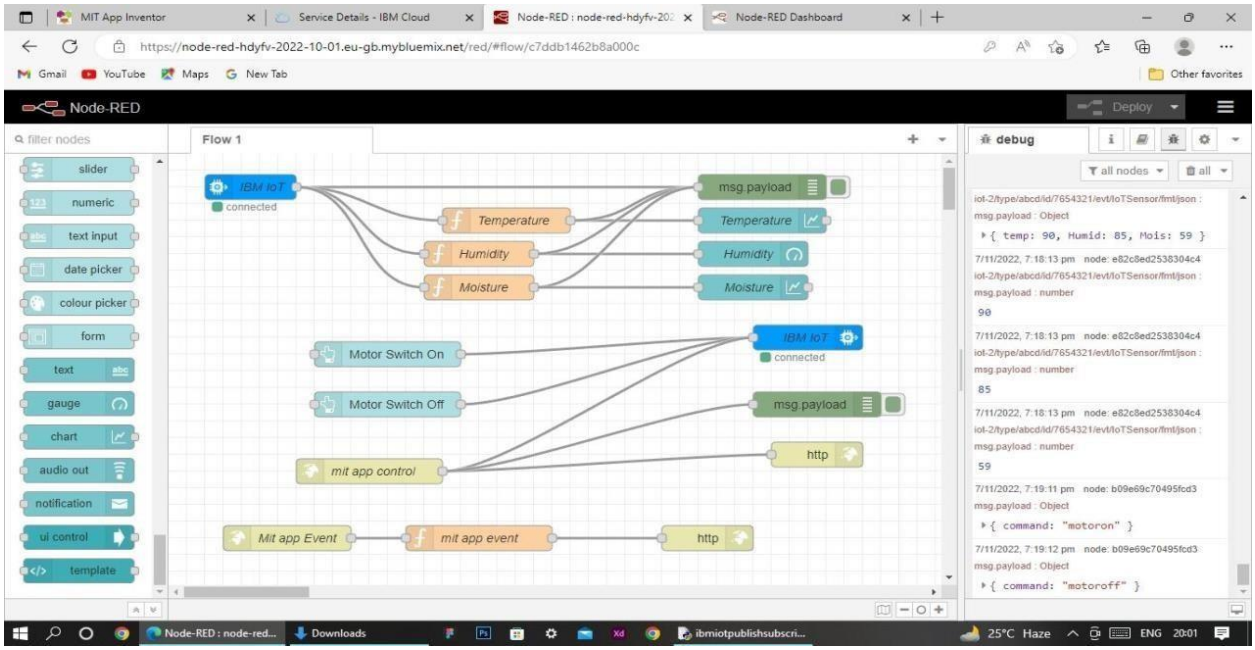
In order to parse the JSON string we use Java script functions and get each parameters

```
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.




MIT App Inventor
Service Details - IBM Cloud
Node-RED : node-red-hdyfv-20
Node-RED Dashboard
https://node-red-hdyfv-2022-10-01.eu-gb.mybluemix.net/red/#flow/c7ddb1462b8a000c
Gmail
YouTube
Maps
New Tab
Other favorites
Node-RED
Deploy
filter nodes
Flow 1
slider
numeric
text input
date picker
colour picker
form
text
gauge
chart
audio out
notification
ui control
template
IBM IoT
connected
Temperature
Humidity
Moisture
msg.payload
Temperature
Humidity
Moisture
Motor Switch On
Motor Switch Off
mit app control
IBM IoT
connected
msg.payload
http
Mit app Event
mit app event
http
debug
all nodes
all
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json : msg.payload : Object
{ temp: 90, Humid: 85, Mois: 59 }
7/11/2022, 7:18:13 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json : msg.payload : number
90
7/11/2022, 7:18:13 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json : msg.payload : number
85
7/11/2022, 7:18:13 pm node: e82c8ed2538304c4
iot-2/type/abcd/id/7654321/evt/IoTSensor/fmt/json : msg.payload : number
59
7/11/2022, 7:19:11 pm node: b09e69c70495fcd3
msg.payload : Object
{ command: "motoron" }
7/11/2022, 7:19:12 pm node: b09e69c70495fcd3
msg.payload : Object
{ command: "motoroff" }
Node-RED : node-red...
Downloads
ibmiotpublishsubscri...
25°C Haze
ENG
20:01