Build a Web Application Using Node-RED

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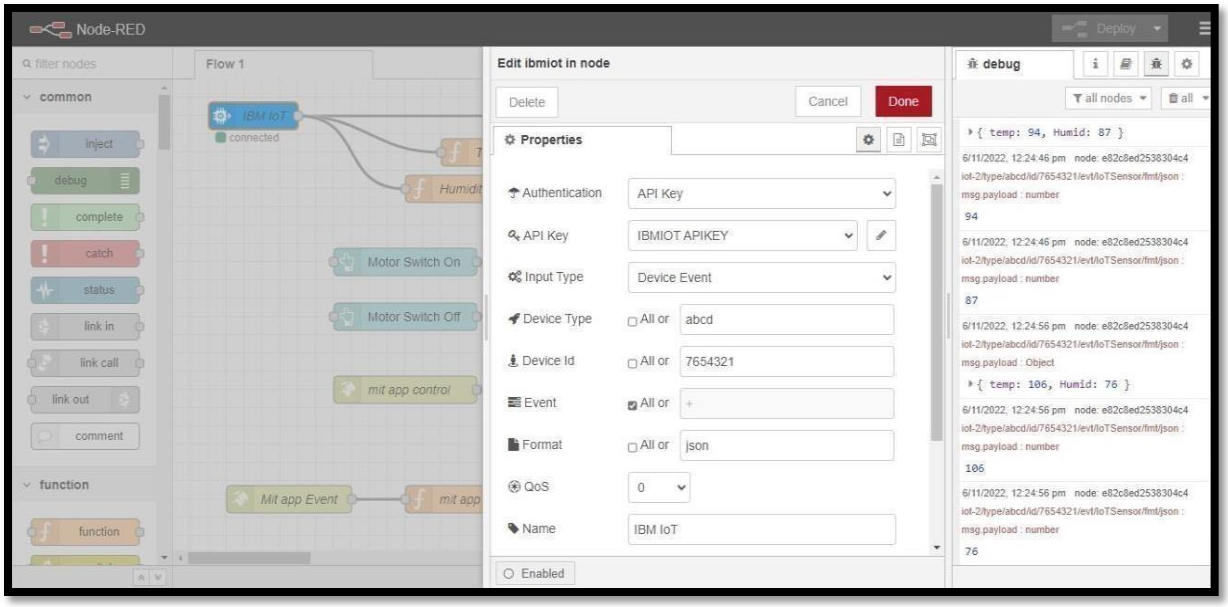
Project Title	SmartFarmer - IoT Enabled Smart Farming Application
Team Id	PNT2022TMID51073

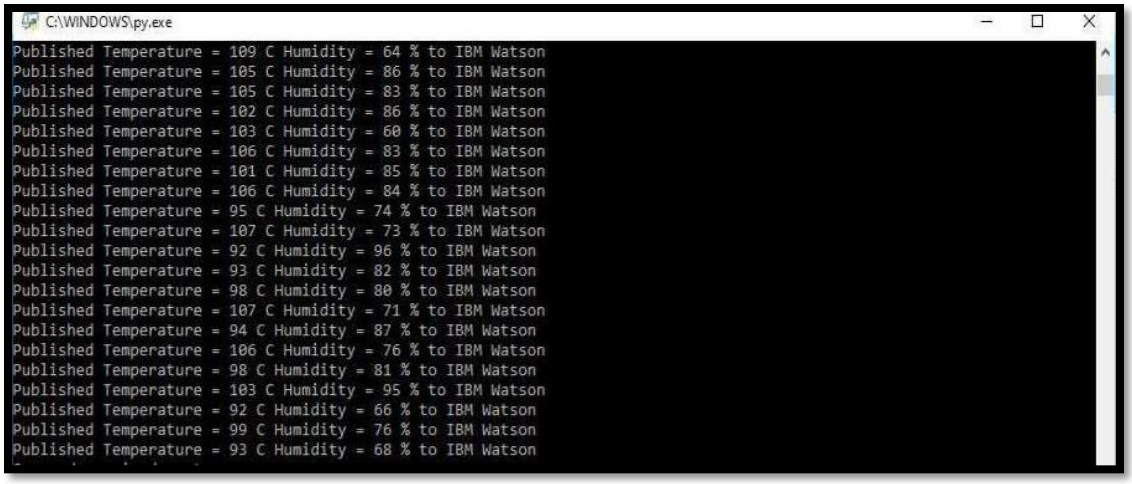
Configuration of Node-Red to collect IBM cloud data

The node IBM IOT App 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

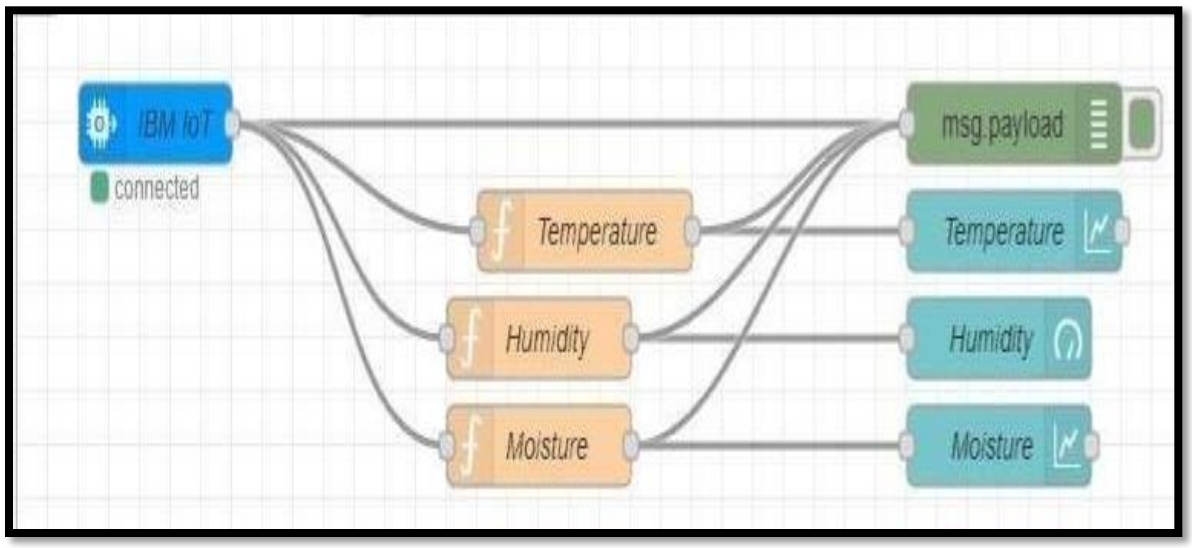
- Once it is connected Node-Red receives data from the device.



- Data is displayed 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:
- global.set('temp',msg.payload.temperature)
  msg.payload=msg.payload.temperature;
  return msg;
- To see the data in UI,connect Gauge nodes from dashboard



Data received from the cloud in Node-Red console



Connect the nodes in following manner to get each reading 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 HTTPrequest for every certain interval.
- HTTP request node is configured with URL
- The data we receive from Open Weather after request is in below JSON

format:

{"coord":{"lon":79.85,"lat":14.13},"weather":[{"id":803,"mai
n":"Clouds","description":"brokenclouds","icon":"04n"}],"base":"stati
ons","main":{"temp":30759,"feels_like":305.5,"temp_min":307.59,"te
mp_max":307.59,"pressure":1002,"humidity":35,"sea_level":1002,"gr
nd_level":1000},"wind":{"speed":6.23,"deg":170},"clouds":{"all":68
},"dt":1589991979,"sys":{"country":"IN","sunrise":1589933553,"sun

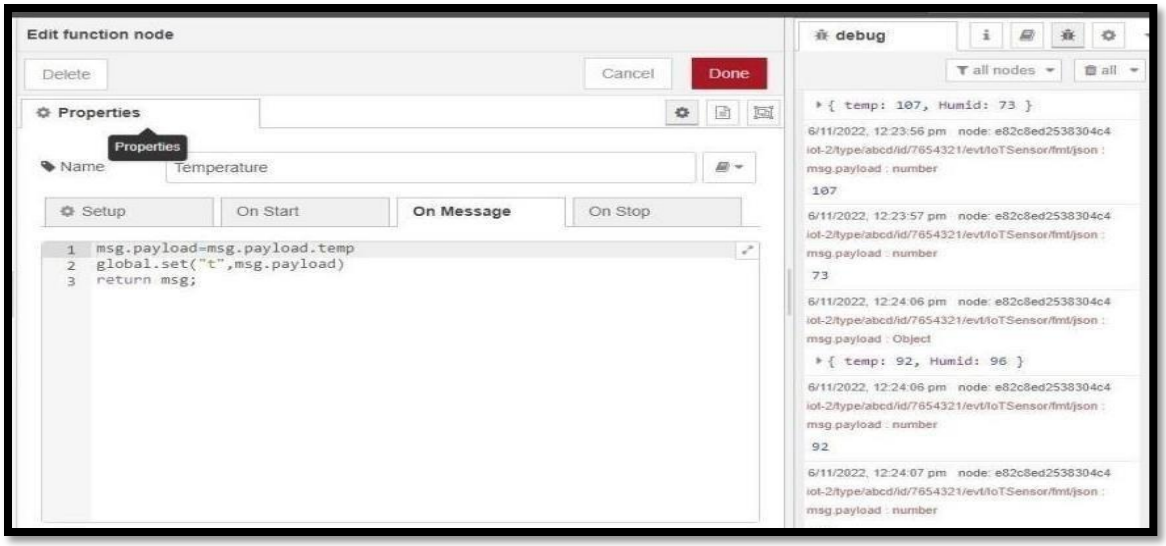
set":1589979720},"timezone":19800,"id":1270791,"name":"G","
cod":20 0}

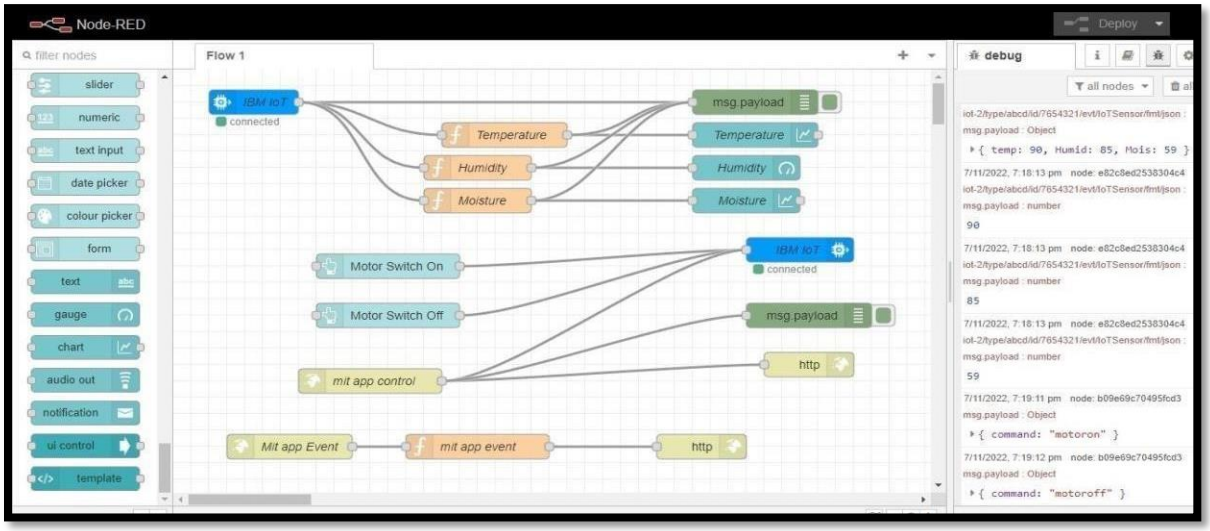
In order to parse the JSON string we use Java script functions and get each parameters

```
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.




Node-RED
Deploy
filter nodes
Flow 1
debug
all nodes
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
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" }