

## Build a Web Application Using Node-RED

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Project Name	Project – Smart Farmer-IoT Enabled smart Farming Application

### Configuration of Node-Red to send commands to IBM cloud

ibmiot out node I used to send data from Node-Red to IBM Watson device. So, after adding it to the flow we need to configure it with credentials of our Watson device.

The screenshot shows the Node-RED web interface with a browser tab titled 'Node-RED : node-red-hdyfv-202'. The URL bar displays 'ed/#flow/c7ddb1462b8a000c'. The main workspace shows a configuration panel for the 'ibmiot out' node, titled 'Edit ibmiot in node'. The panel includes a 'Delete' button, 'Cancel' and 'Done' buttons, and a 'Properties' tab. The configuration fields are as follows:

- Authentication:** API Key
- API Key:** IBMIOT APIKEY
- Input Type:** Device Event
- Device Type:** ☐ All or abcd
- Device Id:** ☐ All or 7654321
- Event:** ☒ All or +
- Format:** ☐ All or json
- QoS:** 0
- Name:** IBM IoT

At the bottom of the configuration panel, there is an 'Enabled' checkbox which is currently unchecked.

Here we add two buttons in UI

1 -> for motor on

2 -> for motor off

We used a function node to analyse the data received and assign command to each number.

The Java script code for the analyses is:

```
if(msg.payload===1)
```

```
msg.payload={"command": "ON"};
```

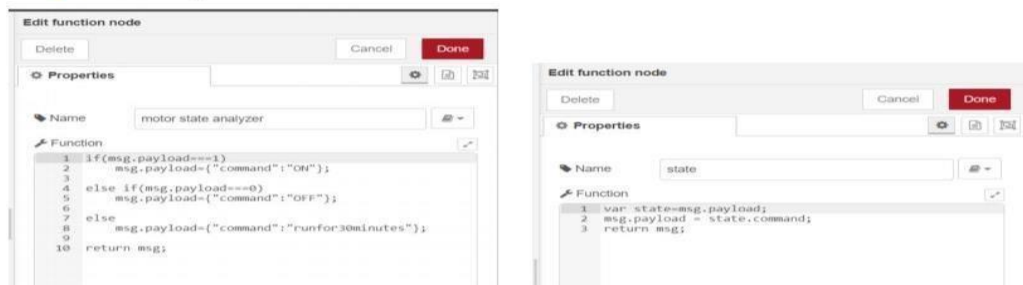
```
else if(msg.payload===0)
```

```
msg.payload={"command": "OFF"};
```

Then we use another function node to parse the data and get the command and represent it visually with text node.

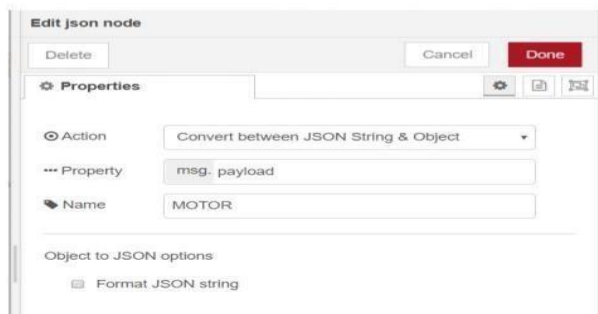
The Java script code for that function node is:

```
var state=msg.payload;  
msg.payload = state.command;  
return msg;
```

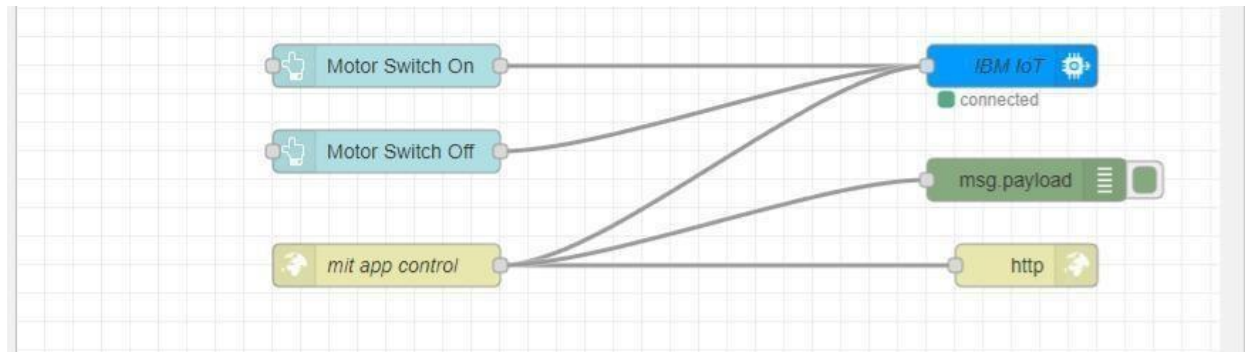


The above images show the java script codes of analyser and state function nodes.

Then we add edit Json node to the conversion between JSON string & object and finally connect it to IBM IoT Out.



Edit JSON node needs to be configured like this



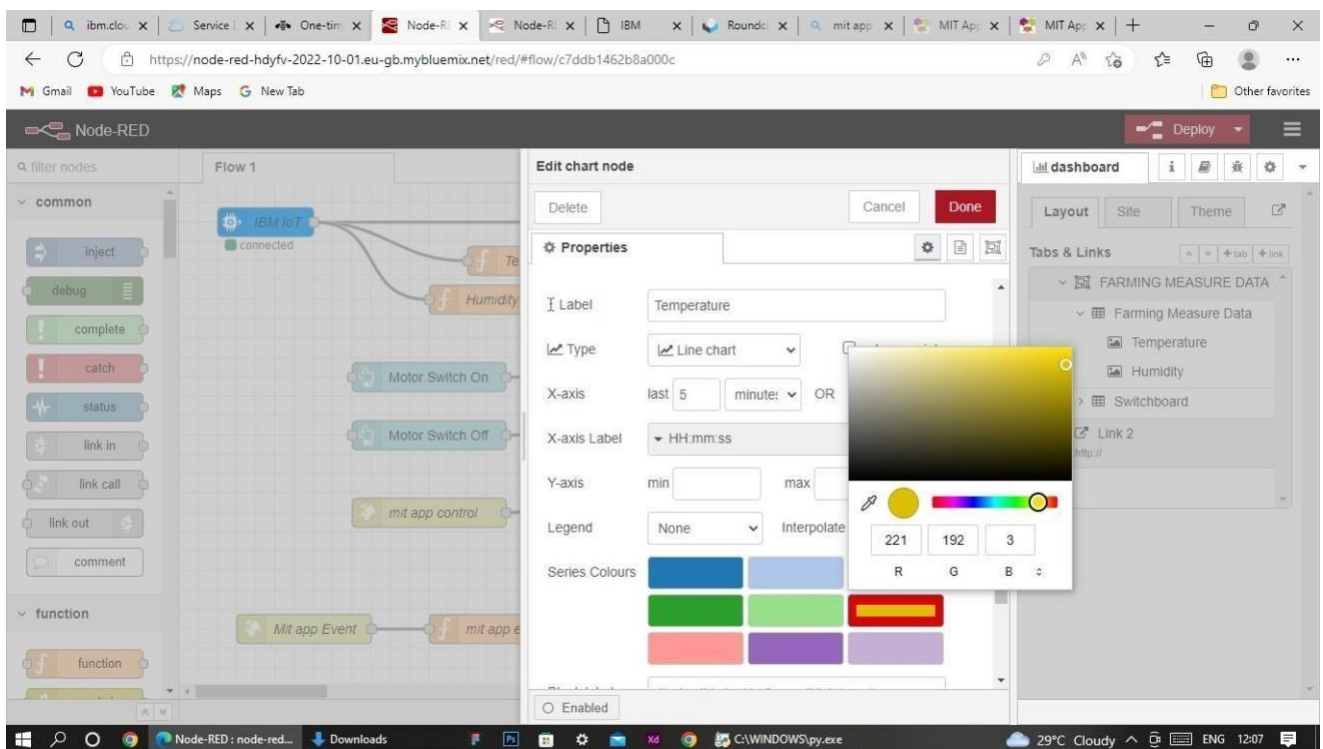
This is the program flow for sending commands to IBM cloud.

## Adjusting User Interface

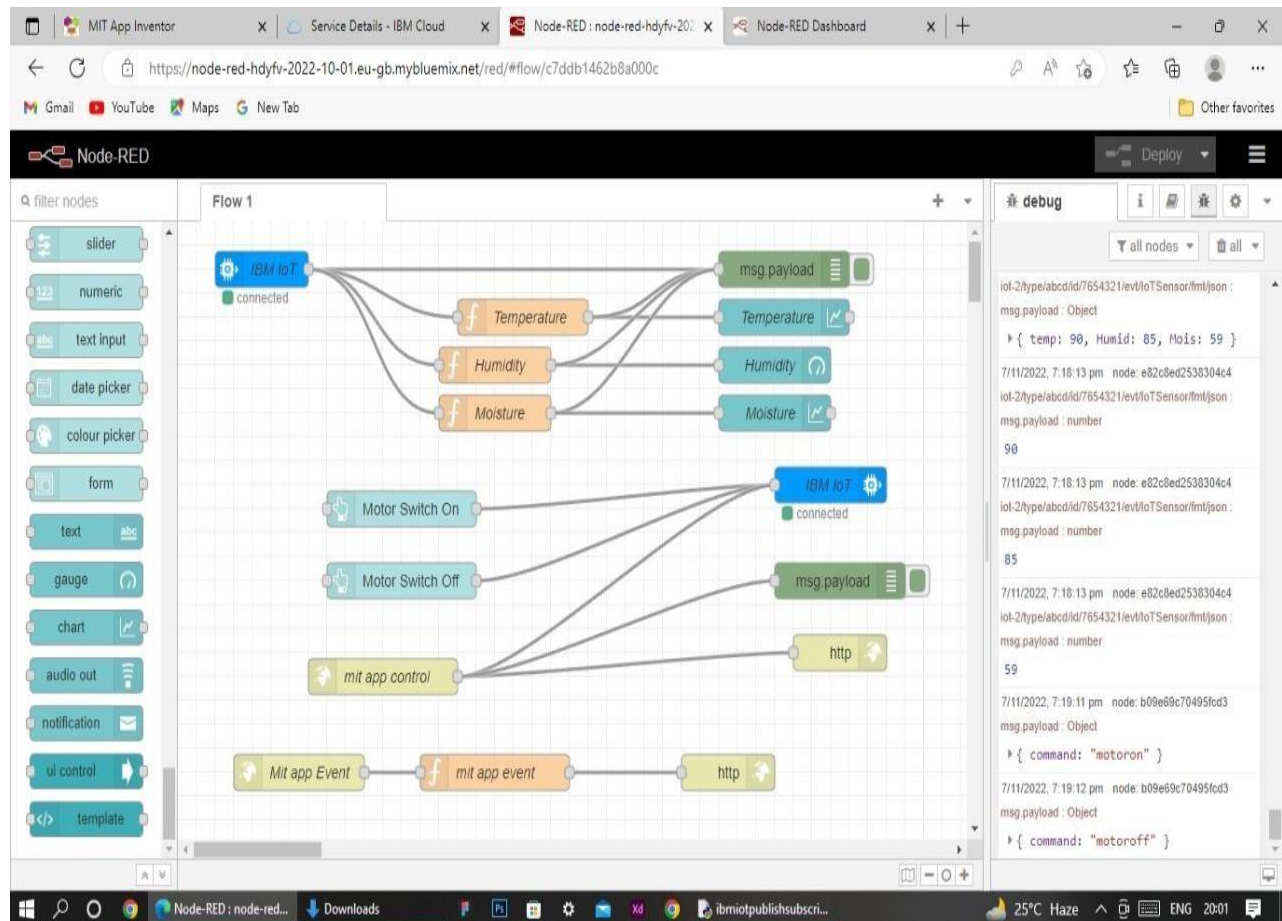
In order to display the parsed JSON data a Node-Red dashboard is created

Here we are using Gauges, text and button nodes to display in the UI and helps to monitor the parameters and control the farm equipment.

Below images are the Gauge, text and button node configurations.



## Complete Program Flow



## Web APP UI Home Tab

