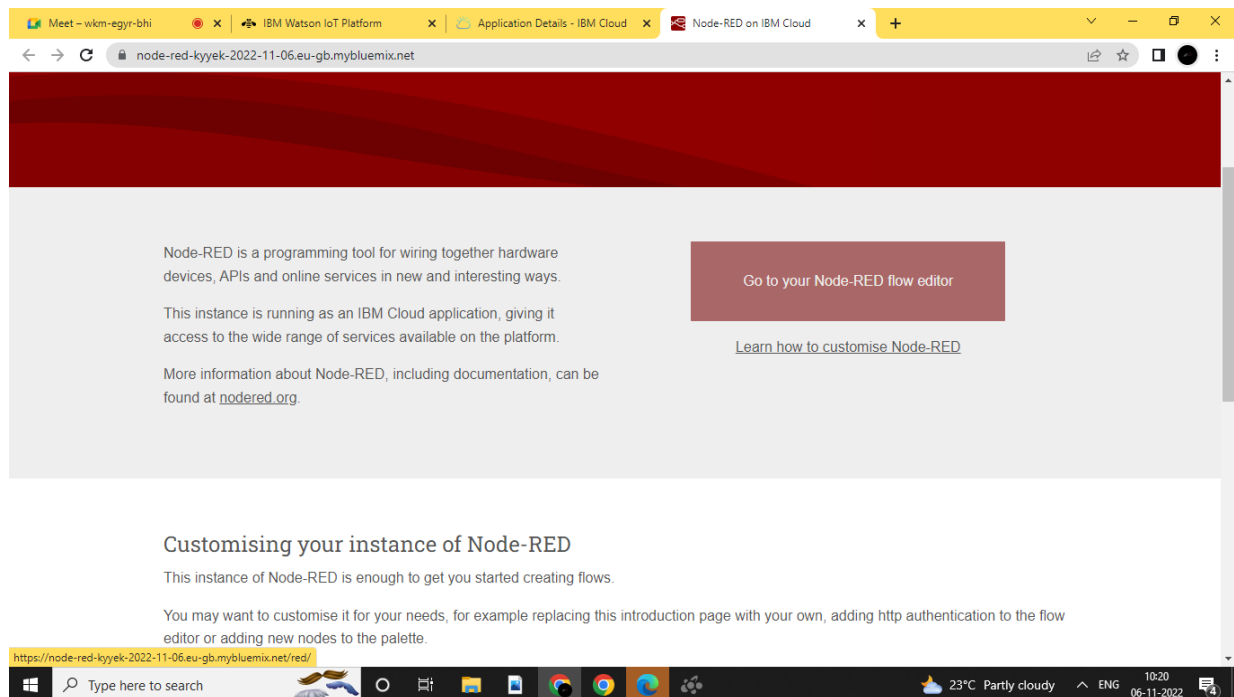


Develop a web application using Node RED to view data separately

Date	4th November 2022
Team ID	PNT2022TMID43020
Project Name	Smart Farmer- IoT Enabled Smart Farming Application

Step 1:



The screenshot shows a web browser window with multiple tabs. The active tab is titled "Node-RED on IBM Cloud". The address bar shows the URL "node-red-kyyek-2022-11-06.eu-gb.mybluemix.net". The page content includes a red header, a main text area with an introduction to Node-RED, a button labeled "Go to your Node-RED flow editor", and a link "Learn how to customise Node-RED". Below this is a section titled "Customising your instance of Node-RED" with further instructions. The browser's taskbar at the bottom shows the Windows logo, a search bar, and various application icons. The system tray on the right indicates a temperature of 23°C, "Partly cloudy" weather, and the date "06-11-2022".

Meet - wkm-egyr-bhi x IBM Watson IoT Platform x Application Details - IBM Cloud x Node-RED on IBM Cloud x +

node-red-kyyek-2022-11-06.eu-gb.mybluemix.net

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

This instance is running as an IBM Cloud application, giving it access to the wide range of services available on the platform.

More information about Node-RED, including documentation, can be found at nodered.org.

[Go to your Node-RED flow editor](#)

[Learn how to customise Node-RED](#)

Customising your instance of Node-RED

This instance of Node-RED is enough to get you started creating flows.

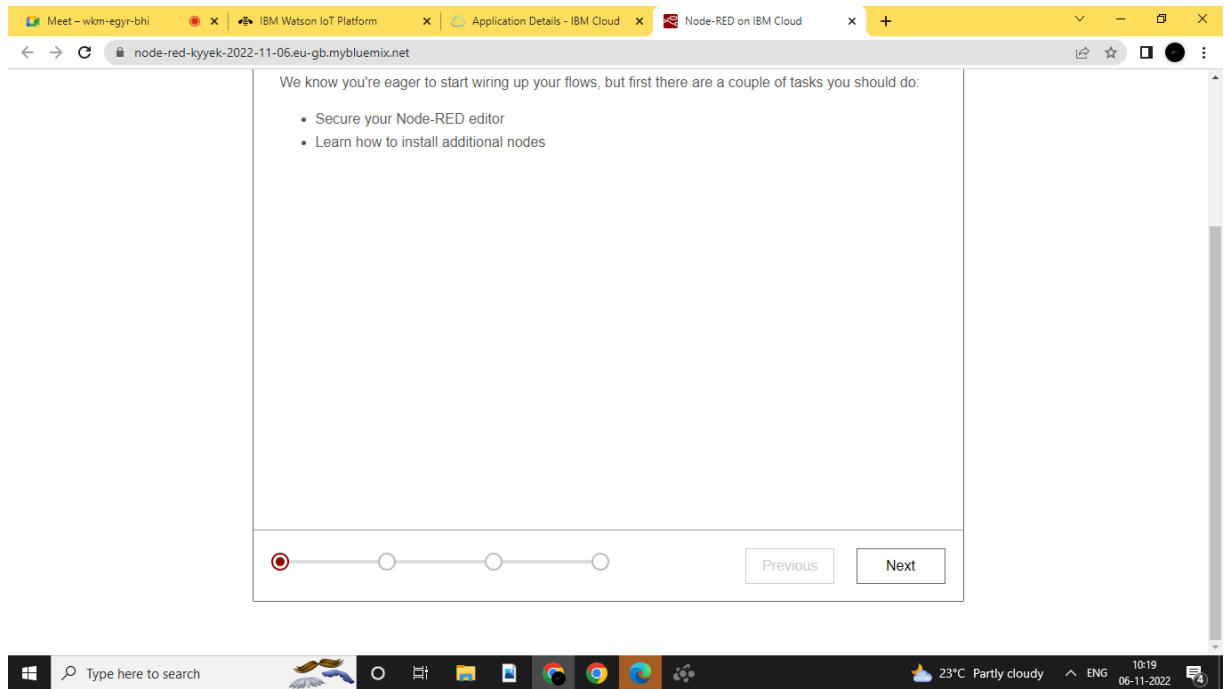
You may want to customise it for your needs, for example replacing this introduction page with your own, adding http authentication to the flow editor or adding new nodes to the palette.

<https://node-red-kyyek-2022-11-06.eu-gb.mybluemix.net/red/>

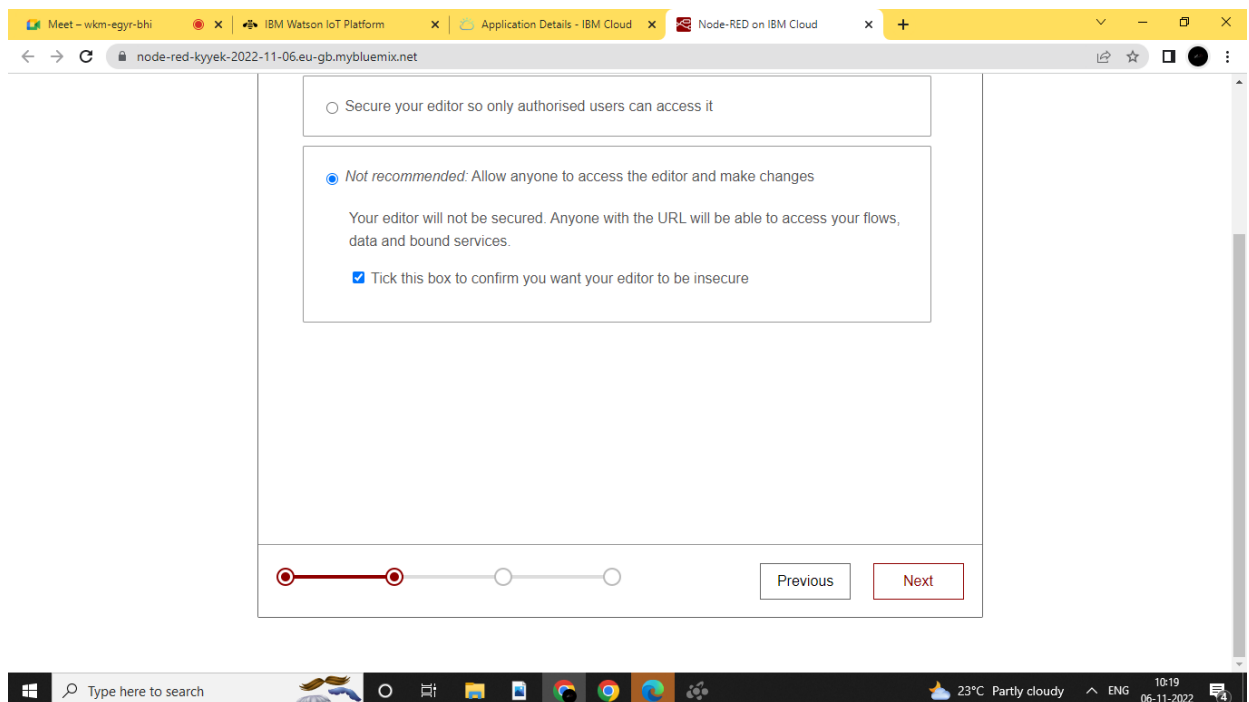
Type here to search

23°C Partly cloudy ENG 10:20 06-11-2022

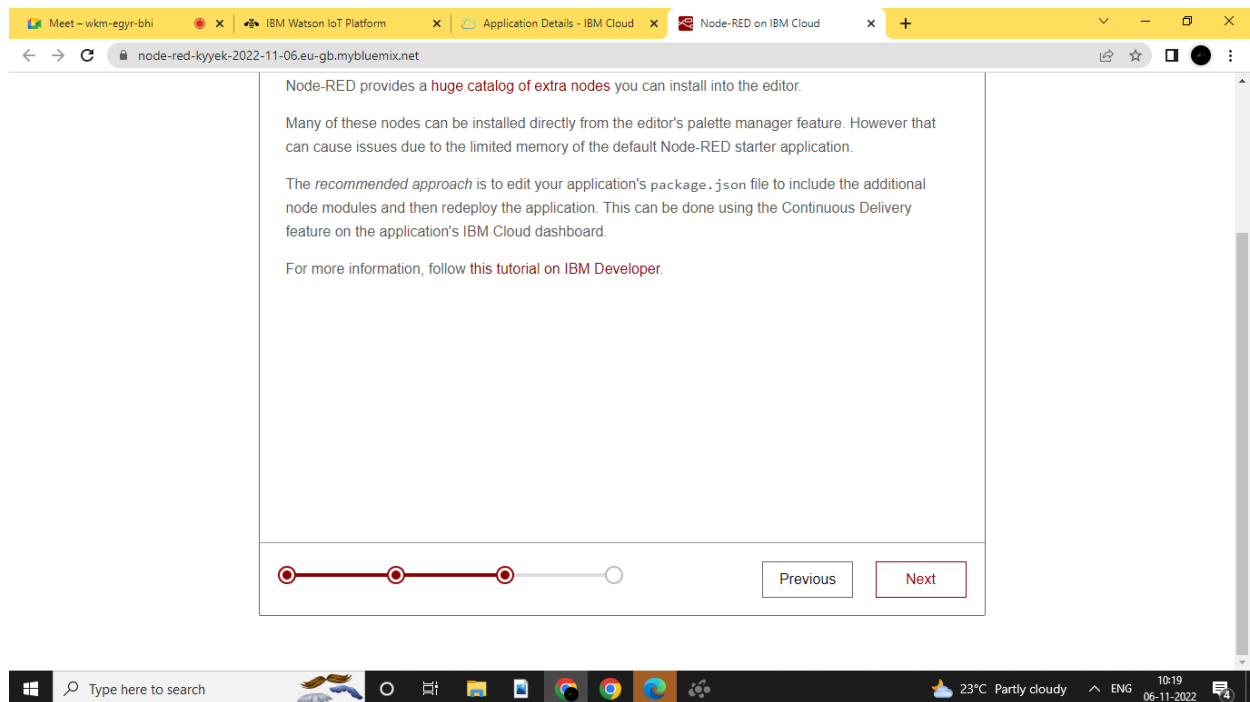
Step 2:



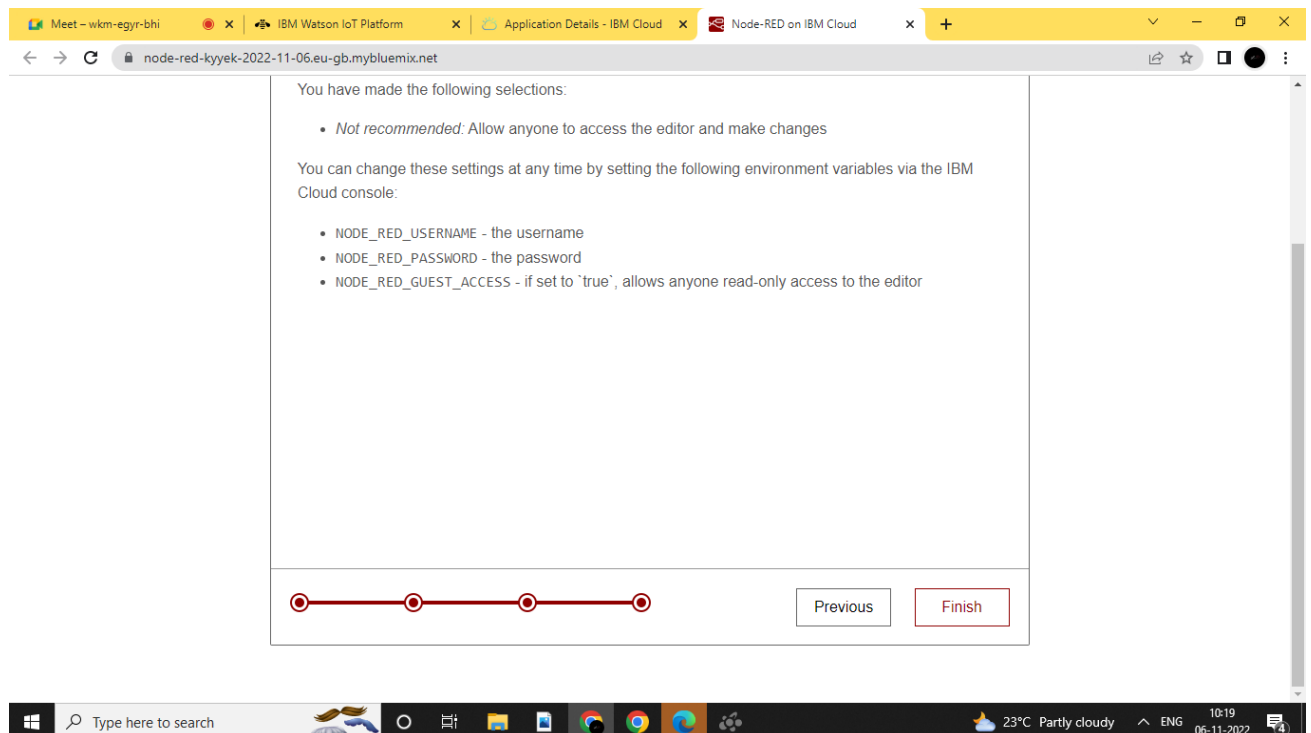
Step 3:



Step 4:



Step 5:



Step 6:

The screenshot shows a web browser window with the URL `node-red-kyyek-2022-11-06.eu-gb.mybluemix.net`. The page has a red header and a light gray body. It contains the following text:

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

This instance is running as an IBM Cloud application, giving it access to the wide range of services available on the platform.

More information about Node-RED, including documentation, can be found at nodered.org.

On the right side, there is a red button that says "Go to your Node-RED flow editor" and a link below it that says "Learn how to customise Node-RED".

Below the main content, there is a section titled "Customising your instance of Node-RED" with the following text:

This instance of Node-RED is enough to get you started creating flows.

You may want to customise it for your needs, for example replacing this introduction page with your own, adding http authentication to the flow editor or adding new nodes to the palette.

The browser's taskbar at the bottom shows the Windows search bar and several open applications, including IBM Watson IoT Platform and Application Details - IBM Cloud.

Step 7:

The screenshot shows the Node-RED flow editor interface in a web browser. The URL is `node-red-xjezb-2022-11-05.eu-gb.mybluemix.net/red/#flow/3af7b9ab05639a39`. The interface includes a left sidebar with a "filter nodes" search bar and two categories of nodes: "common" and "function". The "common" category includes nodes like inject, debug, complete, catch, status, link in, link call, link out, and comment. The "function" category includes function and switch nodes. The main workspace is a grid where a flow is being built. It starts with an "IBM IoT" node (blue) connected to a "msg.payload" node (orange). The right sidebar shows the "info" panel for the selected "msg.payload" node, displaying its ID ("1145e42a92c45d9b") and type ("debug"). A tooltip at the bottom of the right sidebar indicates that pressing "ctrl+space" will toggle the view of this sidebar. The browser's taskbar at the bottom shows the Windows search bar and several open applications, including IBM App Dev, Application, Node-RED, Meet, IBM Watson, and IBM.

Step 8:

The screenshot shows the Node-RED web interface in a browser. The flow consists of an **IBM IoT** node (labeled 'connected') connected to two **function** nodes. The output of these function nodes is connected to a **msg.payload** node. The **debug** console on the right displays a series of messages received from the IoT node, each containing a timestamp, node ID, and a payload object with temperature and humidity values.

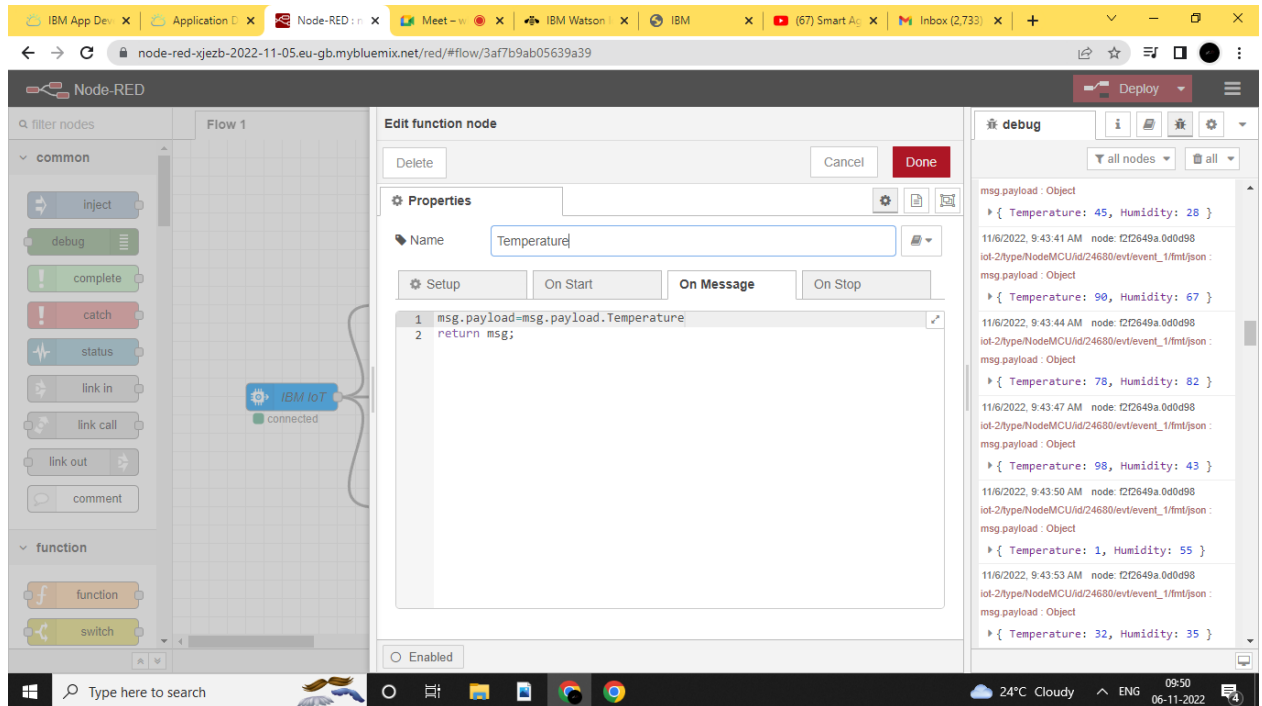
```
msg payload : Object
  > { Temperature: 45, Humidity: 28 }
11/6/2022, 9:43:41 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 90, Humidity: 67 }
11/6/2022, 9:43:44 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 78, Humidity: 82 }
11/6/2022, 9:43:47 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 98, Humidity: 43 }
11/6/2022, 9:43:50 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 1, Humidity: 55 }
11/6/2022, 9:43:53 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 32, Humidity: 35 }
```

Step 9:

The screenshot shows the Node-RED web interface with the **Edit function node** dialog box open. The dialog displays the function code: `1 msg.payload=msg.payload.Humidity` and `2 return msg;`. The **debug** console on the right displays a series of messages received from the IoT node, each containing a timestamp, node ID, and a payload object with temperature and humidity values.

```
11/6/2022, 9:44:16 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 23, Humidity: 47 }
11/6/2022, 9:44:19 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 73, Humidity: 1 }
11/6/2022, 9:44:22 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 47, Humidity: 84 }
11/6/2022, 9:44:25 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 15, Humidity: 90 }
11/6/2022, 9:44:28 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload : Object
  > { Temperature: 85, Humidity: 18 }
11/6/2022, 9:44:31 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
```

Step 10:



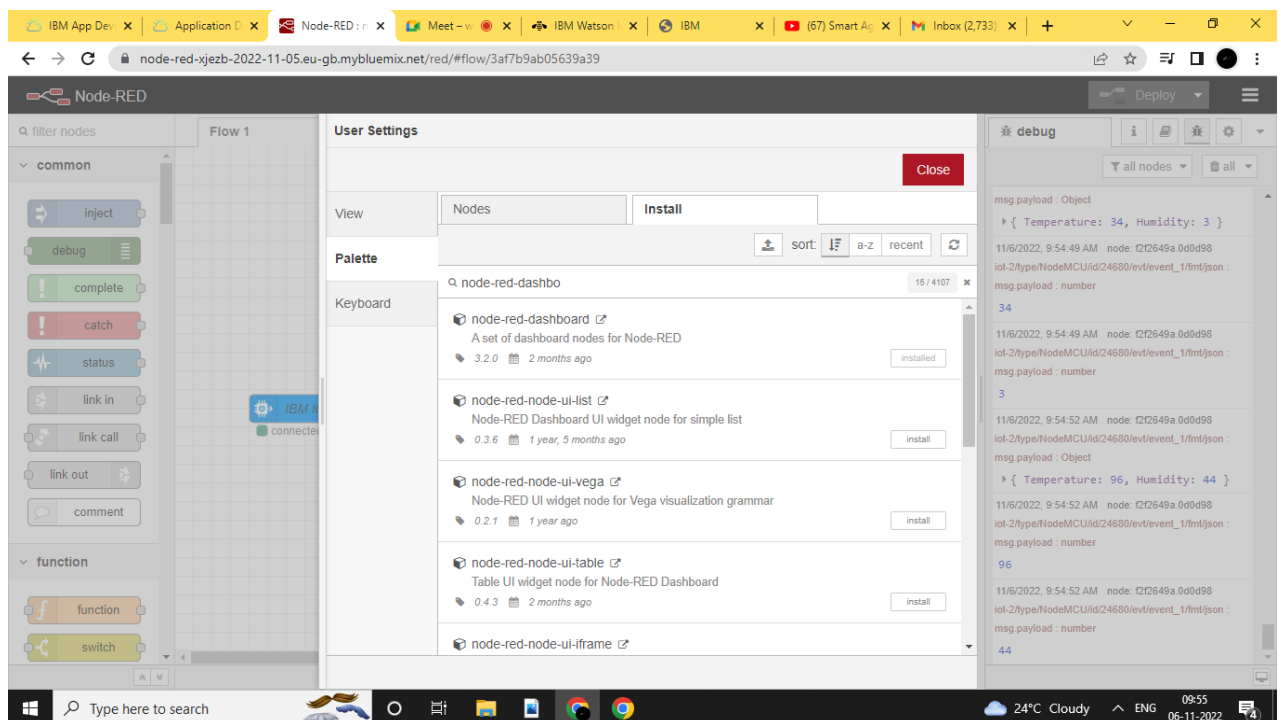
The screenshot shows the Node-RED web interface. The 'Edit function node' panel is open, showing a function that extracts the 'Temperature' property from the message payload. The 'debug' console on the right displays a log of message payloads, showing temperature and humidity data.

```
1 msg.payload=msg.payload.Temperature
2 return msg;
```

Debug log:

```
msg.payload : Object
  { Temperature: 45, Humidity: 28 }
11/6/2022, 9:43:41 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : Object
  { Temperature: 90, Humidity: 67 }
11/6/2022, 9:43:44 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : Object
  { Temperature: 78, Humidity: 82 }
11/6/2022, 9:43:47 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : Object
  { Temperature: 98, Humidity: 43 }
11/6/2022, 9:43:50 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : Object
  { Temperature: 1, Humidity: 55 }
11/6/2022, 9:43:53 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : Object
  { Temperature: 32, Humidity: 35 }
```

Step 11:



The screenshot shows the Node-RED web interface. The 'User Settings' panel is open, displaying a list of installed and available nodes. The 'debug' console on the right displays a log of message payloads, showing temperature and humidity data.

Installed nodes:

- node-red-dashbo (A set of dashboard nodes for Node-RED) 3.2.0 2 months ago installed
- node-red-node-ui-list (Node-RED Dashboard UI widget node for simple list) 0.3.6 1 year, 5 months ago install
- node-red-node-ui-vega (Node-RED UI widget node for Vega visualization grammar) 0.2.1 1 year ago install
- node-red-node-ui-table (Table UI widget node for Node-RED Dashboard) 0.4.3 2 months ago install
- node-red-node-ui-iframe

Debug log:

```
msg.payload : Object
  { Temperature: 34, Humidity: 3 }
11/6/2022, 9:54:49 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : number
  34
11/6/2022, 9:54:49 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : number
  3
11/6/2022, 9:54:52 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : Object
  { Temperature: 96, Humidity: 44 }
11/6/2022, 9:54:52 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : number
  96
11/6/2022, 9:54:52 AM node: f2f2649a.0d0d98
iot-2/typeNodeMCU/id/24680/ev/evnt_1/fmt/json :
msg.payload : number
  44
```

Step 12:

The screenshot shows the Node-RED web interface in a browser. The left sidebar contains a list of nodes: numeric, dropdown, switch, text input, date picker, colour picker, form, text, gauge, chart, audio out, notification, ui control, and template. The main workspace displays a flow named 'Flow 1'. It starts with an 'IBM IoT' node (labeled 'connected') that branches into two function nodes: 'Temperature' and 'Humidity'. Both function nodes are connected to a 'msg.payload' node, which then connects to two 'gauge' nodes. The right sidebar shows the 'debug' console with a log of messages. The messages are JSON objects containing 'Temperature' and 'Humidity' values. The bottom status bar shows the system clock and weather information.

Step 13:

The screenshot shows the Node-RED web interface with the 'Edit gauge node' dialog box open for the 'Temperature' gauge. The dialog box has a 'Properties' tab with the following settings: Group: '[Temperature] Smart Farming', Size: 'auto', Type: 'Gauge', Label: 'Temperature', Value format: '{value}', Units: '°C', Range: min 0, max 100, Colour gradient: a gradient from green to yellow to red, Sectors: 0, optional, optional, 100, and Class: 'Optional CSS class name(s) for widget'. The 'Done' button is highlighted in red. The background shows the same flow as in Step 12, but the 'Humidity' gauge is not visible. The right sidebar shows the 'debug' console with the same log of messages. The bottom status bar shows the system clock and weather information.

Step 14:

The screenshot shows the Node-RED web interface in a browser. The main workspace displays a flow with an 'IBM IoT' node connected to 'Temperature' and 'Humidity' nodes. The 'Edit gauge node' panel is open, showing the following properties:

- Group: [Temperature] Smart Farming
- Size: auto
- Type: Gauge
- Label: Humidity
- Value format: {{value}}
- Units: gal
- Range: min 0 max 100
- Colour gradient: [Green, Yellow, Red]
- Sectors: 0 ... optional ... optional ... 100
- Class: Optional CSS class name(s) for widget
- Enabled: ☐

The debug console on the right shows the following messages:

```
msg payload: Object
{ Temperature: 96, Humidity: 44 }
11/6/2022, 9:54:52 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload: number
96
11/6/2022, 9:54:52 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload: number
44
11/6/2022, 9:56:14 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload: Object
{ Temperature: 15, Humidity: 95 }
11/6/2022, 9:56:14 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload: number
15
11/6/2022, 9:56:14 AM node: f2f2649a.0d0d98
iot-2/type/NodeMCUID/24680/evt/event_1/fmt/json :
msg payload: number
95
```

Step 15:

The screenshot shows a Google search page in a browser. The address bar displays the URL <https://node-red-xjezb-2022-11-05.eu-gb.mybluemix.net/ui>. The Google logo is centered on the page, and the search bar is below it. The search bar contains the text "Search Google or type a URL". Below the search bar are three buttons: "Google", "Web Store", and "Add shortcut". The Windows taskbar is visible at the bottom of the screen.

Step 16:

