Read out data from MySQL database using Node-RED & display at dashboard
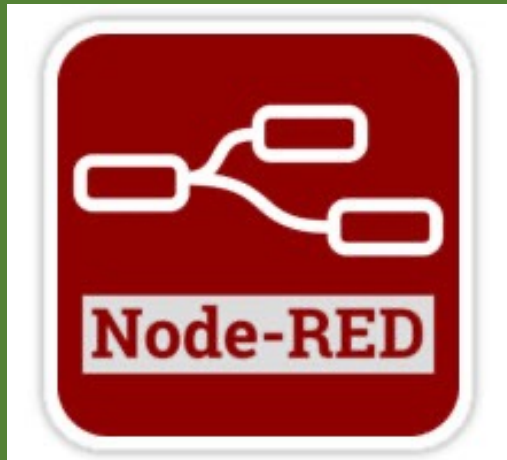
By Safyzan Salim
24 Jan 2023

TASK 1: Create New Database in MySQL

MySQL Schema Object Names

Item	Variables
Database Name	uptm_IoTlab_2023
Table Name	temp_humid

Name	Type	Length / Values	Default	Index	Auto Increment (AI)
info_id	INT	15	None	Primary	Yes
data_log	TIMESTAMP	-	CURRENT_TIME	-	-
temperature	VARCHAR	15	-	-	-
himidity	VARCHAR	15	-	-	-

Task 1: Record Setup at MySQL

STEP 1
Create database: **uptm_IoTlab_2023**
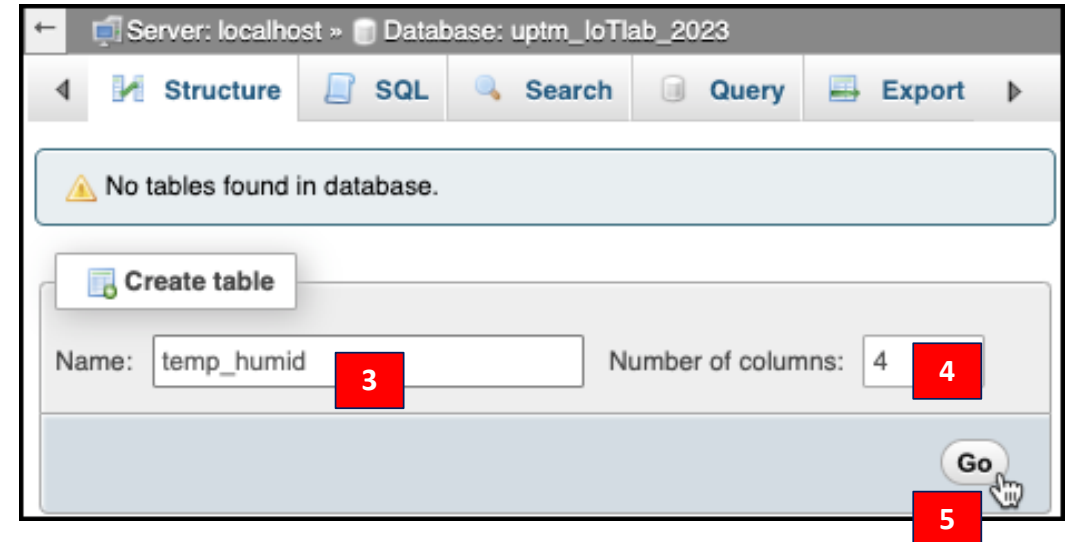Click **Create**.
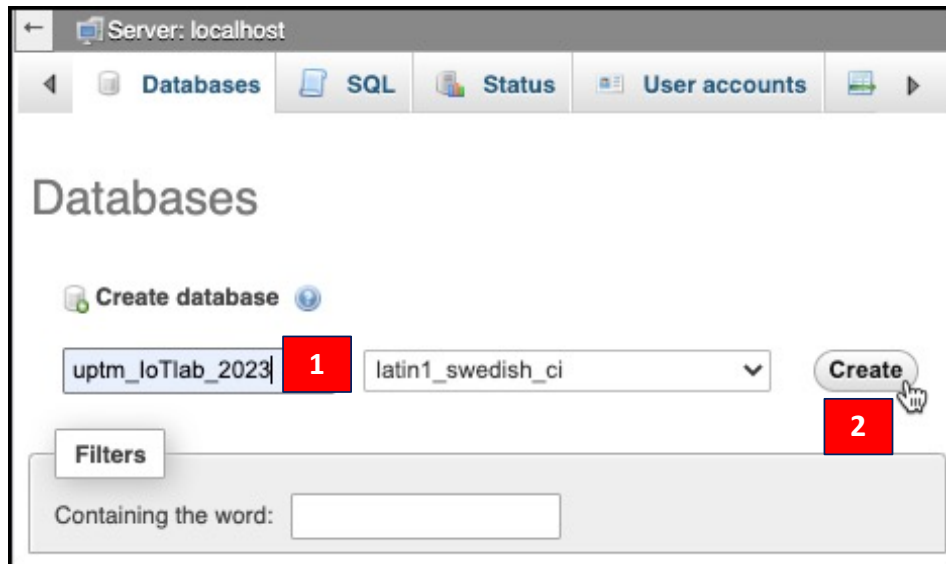
STEP 2
Create table: **temp_humid**
Number of columns: **4**
Click **Go**.

Task 1: Record Setup at MySQL
STEP 3
Create database fields and click **Save**.
Click here (slide 3) for object names.
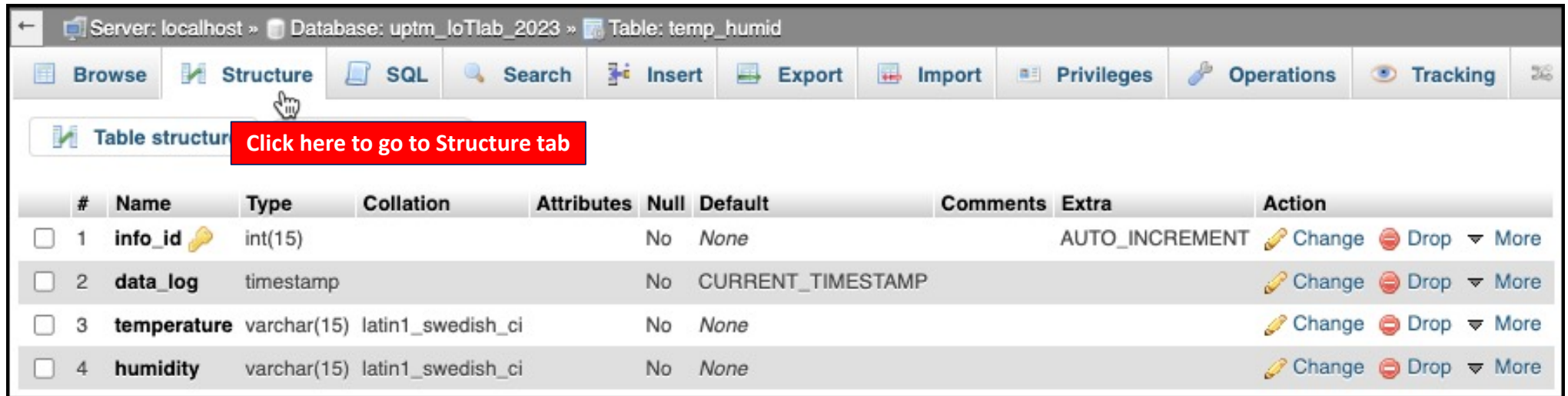
Task 1: Record Setup at MySQL

STEP 4

Click **Structure** tab & check the fields.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	info_id 🔑	int(15)			No	None		AUTO_INCREMENT	🖉 Change ⊖ Drop ▾ More
2	data_log	timestamp			No	CURRENT_TIMESTAMP			🖉 Change ⊖ Drop ▾ More
3	temperature	varchar(15)	latin1_swedish_ci		No	None			🖉 Change ⊖ Drop ▾ More
4	humidity	varchar(15)	latin1_swedish_ci		No	None			🖉 Change ⊖ Drop ▾ More

Server: localhost » Database: uptm_IoTlab_2023 » Table: temp_humid

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Tracking

Table structure

Click here to go to Structure tab

Task 1: Record Setup at MySQL

STEP 5

Click at **Insert** tab and manually key in dummy data to temperature & humidity field.

Then click **Go** to save.

Click here to save

Task 1: Record Setup at MySQL

STEP 6

Click at **Browse** tab to view the result.
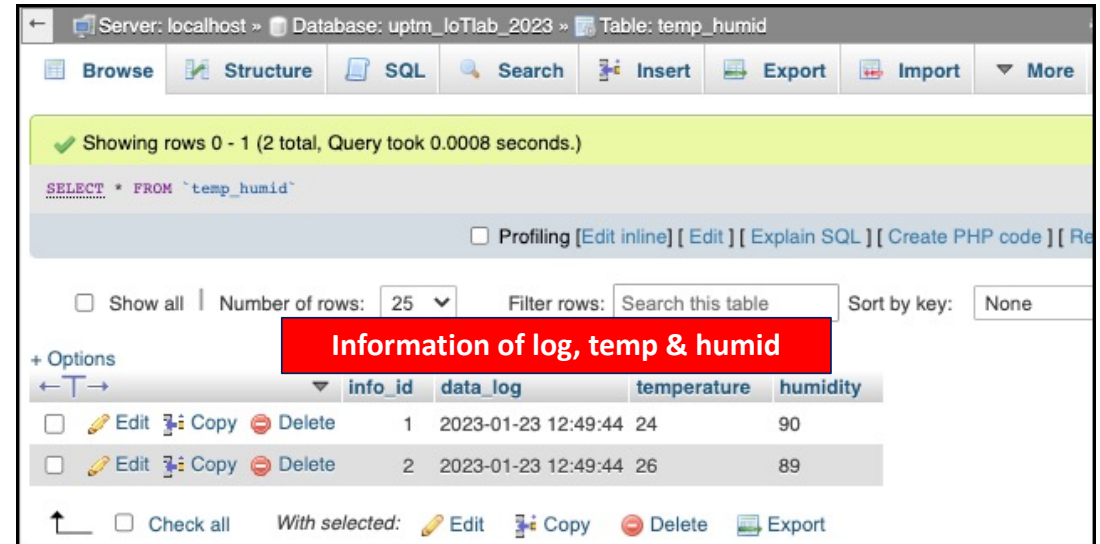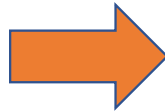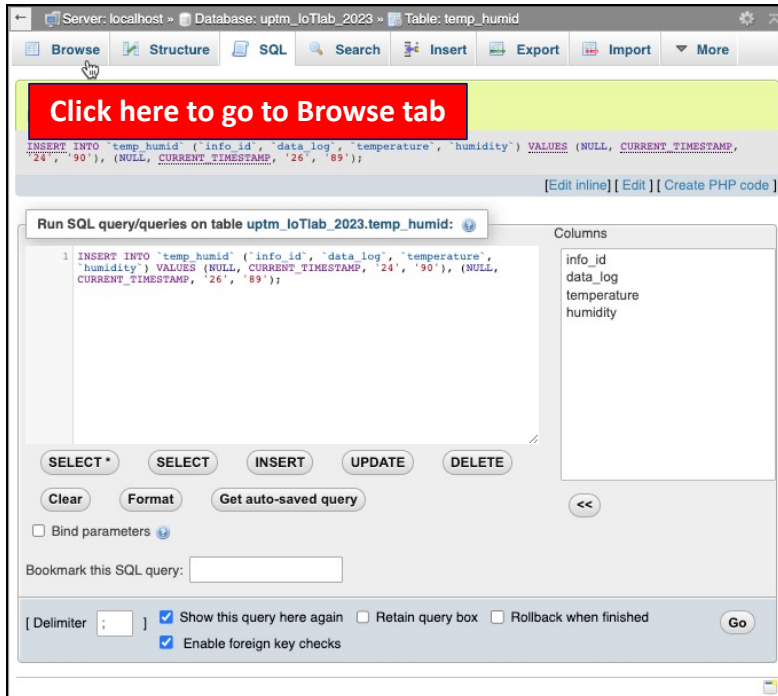
TASK 2: Create Node-RED Interfaces & Dashboard

Task 2: Node-RED Interface

STEP 1

This Node-RED exercise requires 2 additional palettes to be downloaded from the Node-RED server:

       i. Dashboard palette

      ii. MySQL palette
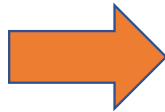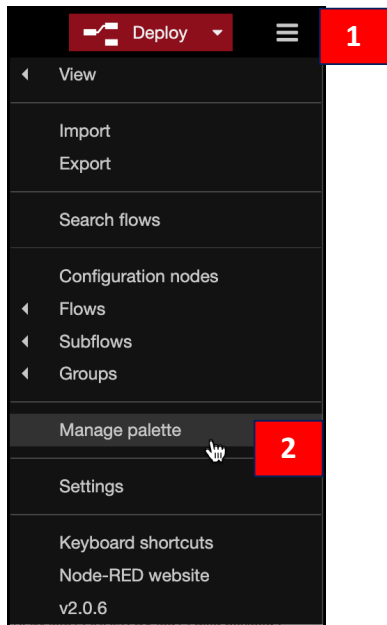
Installation of Dashboard palette
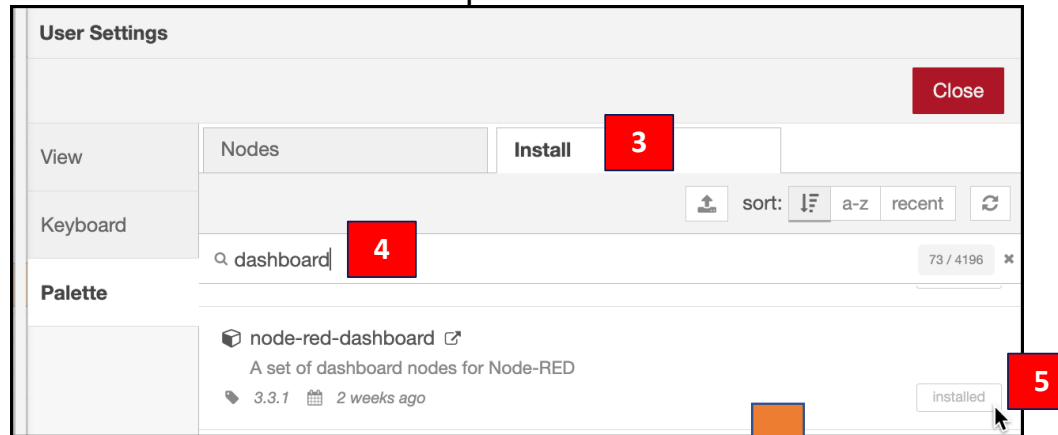
Installation of MySQL palette
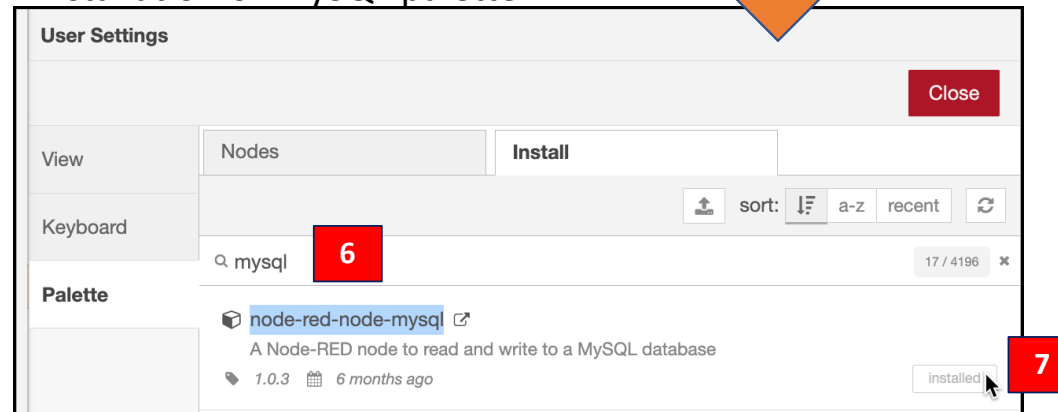
Task 2: Node-RED Interface

STEP 1

Setup the connection as shown in the figure.

The nodes can be found at filter nodes section.
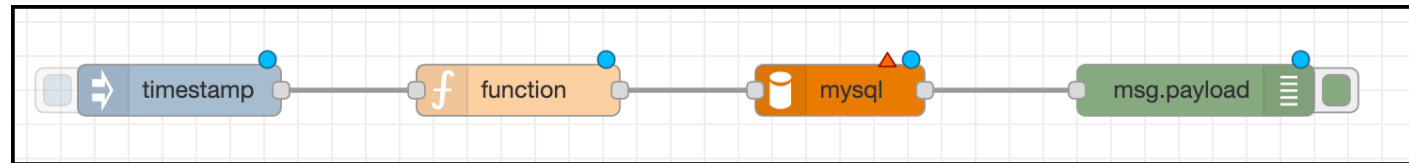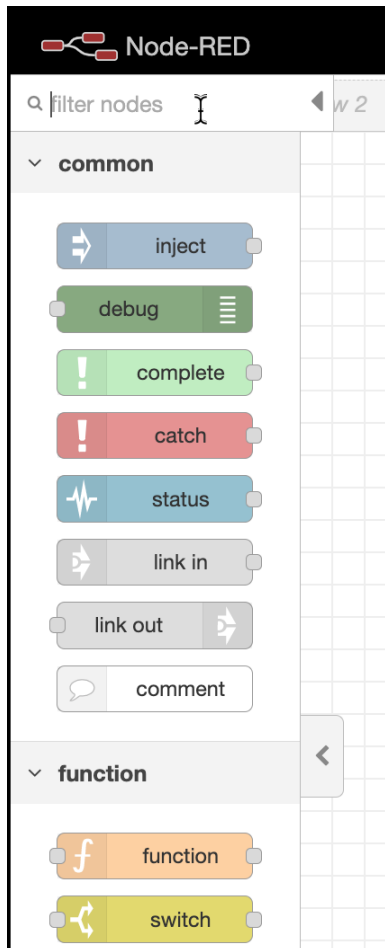
The Blue dot indicates that the node has undeployed changes.

The Red triangle means that node is either missing required configuration data or has some configuration data that does not validate.

Task 2: Node-RED Interface

STEP 2
Set each node's properties accordingly by double clicking them.
Click here (slide 3) for database object names.

Edit inject node

Cancel   Done   **2**

Properties

Name   [Name]

msg. payload   =   ▼ timestamp   ✕

msg. topic   =   ▼ ᵃz   ✕

1 ⟹ timestamp

Edit function node   **5**

Delete   Cancel   Done

Properties

Name   [Name]

Setup | On Start | **On Message** | On Stop

```
1  msg.topic = "SELECT * FROM temp_humid ORDER BY info_id DESC LIMIT 1";
2  return msg;
```

4

msg.topic = "SELECT * FROM temp_humid ORDER BY info_id DESC LIMIT 1";

3 ƒ function

6 🗄 uptm_IoTlab_2023

Edit mysql node

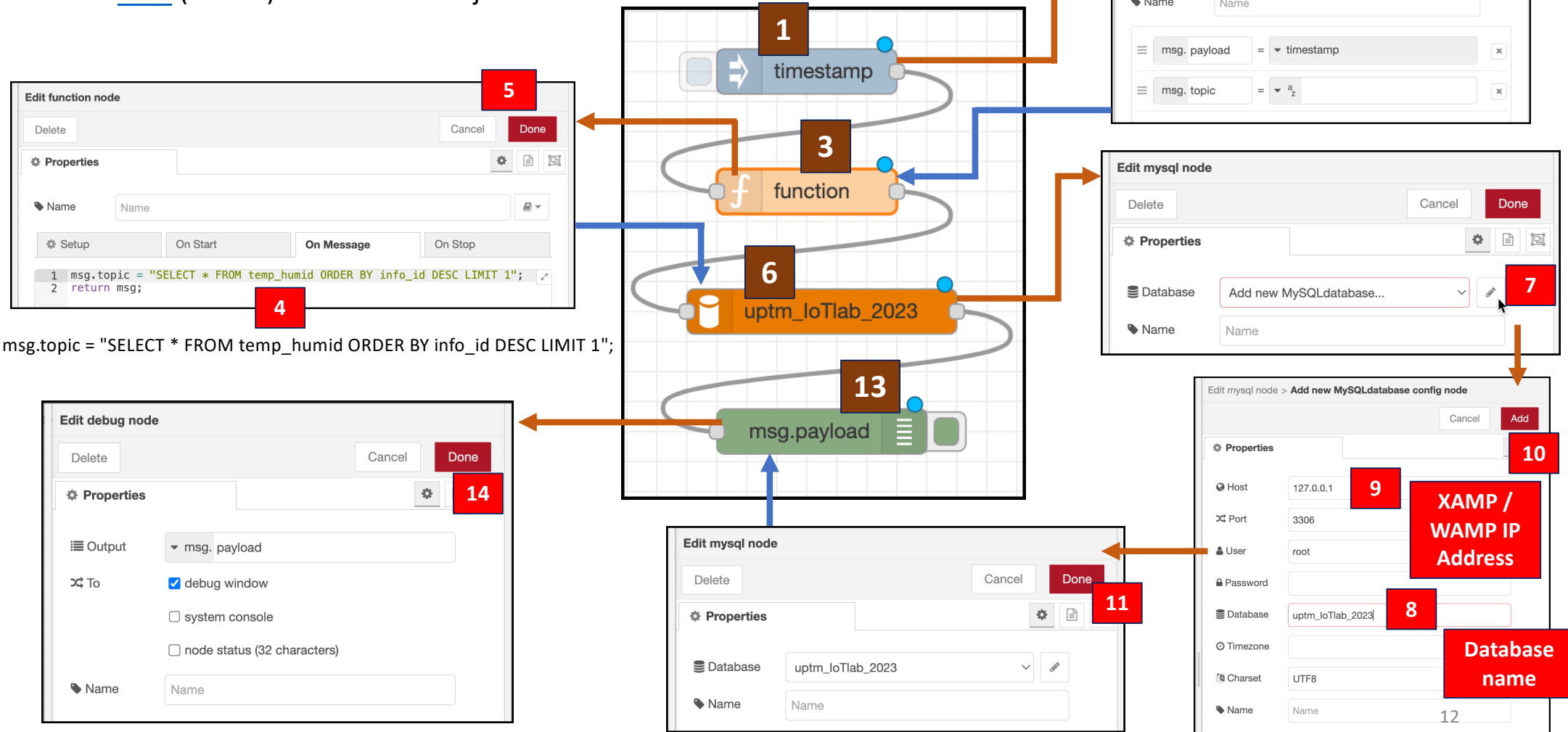Delete   Cancel   Done

Properties

Database   Add new MySQLdatabase...   ✎   **7**

Name   [Name]

Edit debug node

Delete   Cancel   Done

Properties   **14**

Output   ▼ msg. payload

To   ☑ debug window

☐ system console

☐ node status (32 characters)

Name   [Name]

13 msg.payload

Edit mysql node

Delete   Cancel   Done   **11**

Properties

Database   uptm_IoTlab_2023   ✎

Name   [Name]

Edit mysql node > Add new MySQLdatabase config node

Cancel   Add   **10**

Properties

Host   127.0.0.1   **9**   **XAMP / WAMP IP Address**

Port   3306

User   root

Password

Database   uptm_IoTlab_2023   **8**   **Database name**

Timezone

Charset   UTF8

Name   [Name]   12

Task 2: Node-RED Interface

STEP 3

**15** Click **Deploy** button to validate the nodes and execute the connection.

Tackle error if exists by referring previous slides.
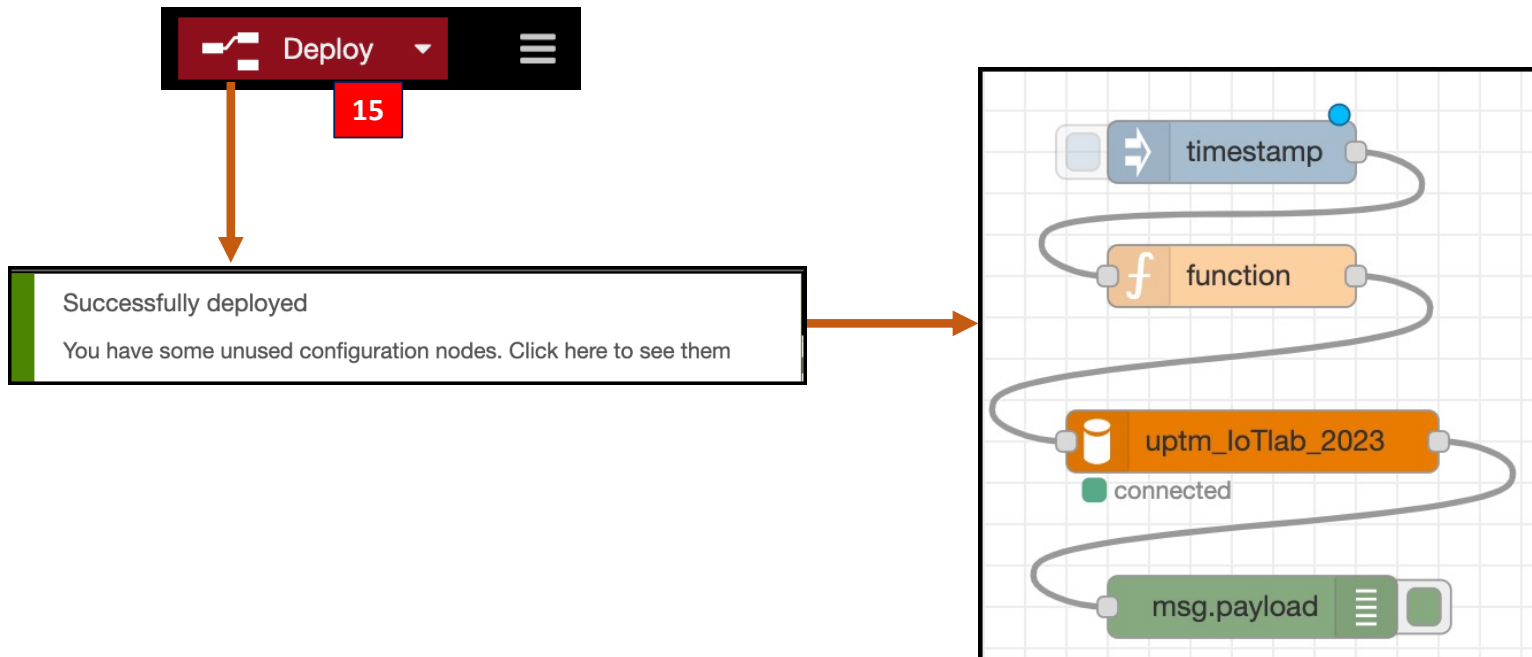
Task 2: Node-RED Interface

STEP 4

16 Click **Debug** sidebar to view messages passed to Debug node.

17 Click button at **Timestamp**'s node to send object or request from **Function** node to MySql node then to **Debug** node.

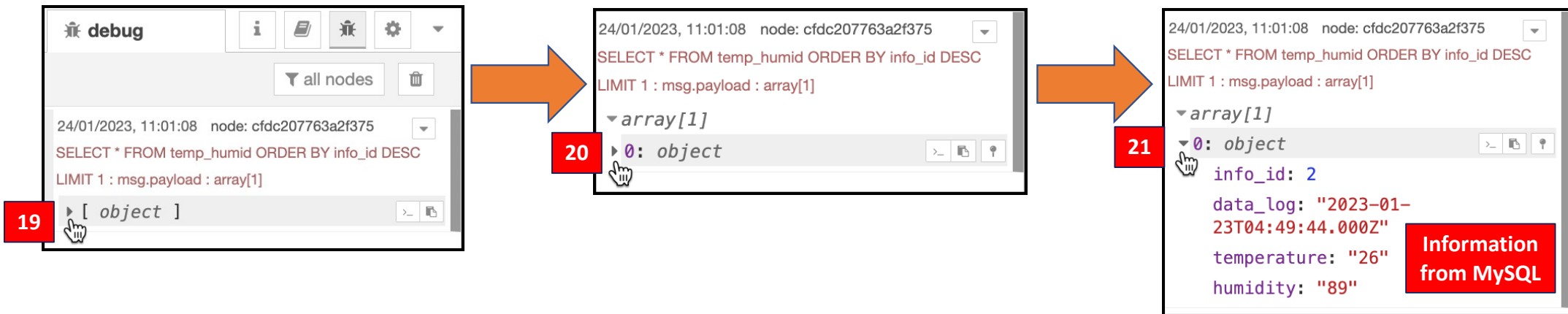**18** Messages from nodes displayed at **Debug**'s sidebar.
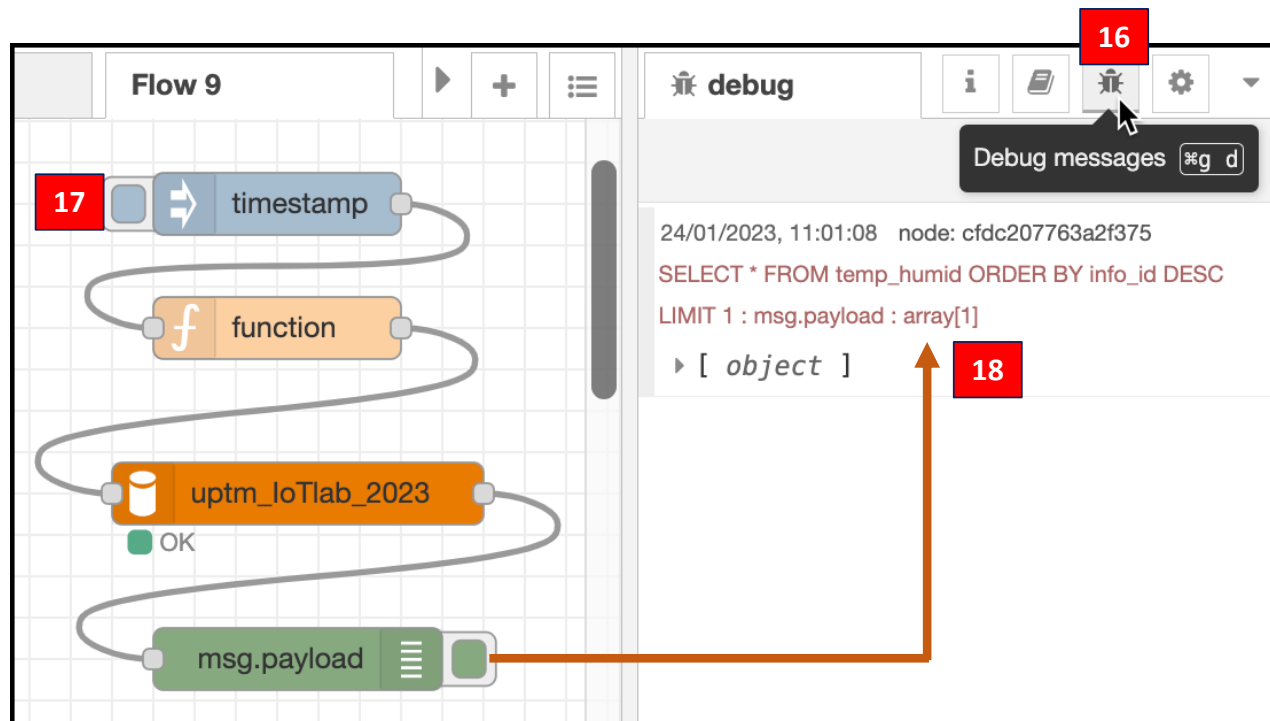
Task 2: Node-RED Interface

STEP 5

Go to **Debug** sidebar & click the arrows to reveal the content or information passed to **Debug** sidebar.

Click here [15] [timestamp] again to display latest information from MySQL.
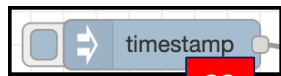
Task 2: Node-RED Interface

STEP 6

The **Inject** node can be manually triggered or automatically triggered & also able to set the interval repetition.
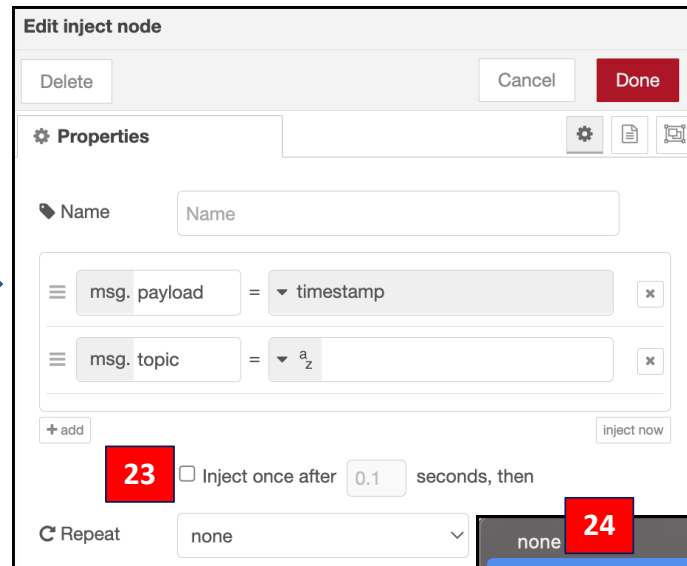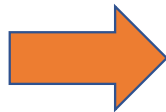
22 Double click **Inject** node.

23 Tick at the **radio** button & set the starting time to activate the system.

24 Change the **Repeat** combo-box to **interval** every **1 second** & click **Done**.

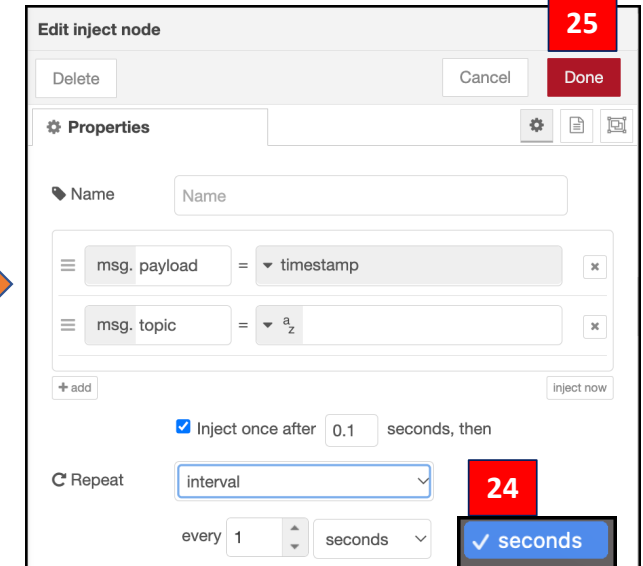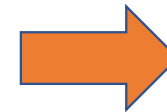Don't forget to click **Deploy** button.

Task 2: Node-RED Interface
STEP 7
Results of automatic trigger to the system can be seen at **Debug** sidebar.

TASK 3: Publish Reading from MySQL to Node-RED's Dashboard

Task 3: Setting-up Node-RED Dashboard Interface

STEP 1

Visualise the project flow by creating storyboard.
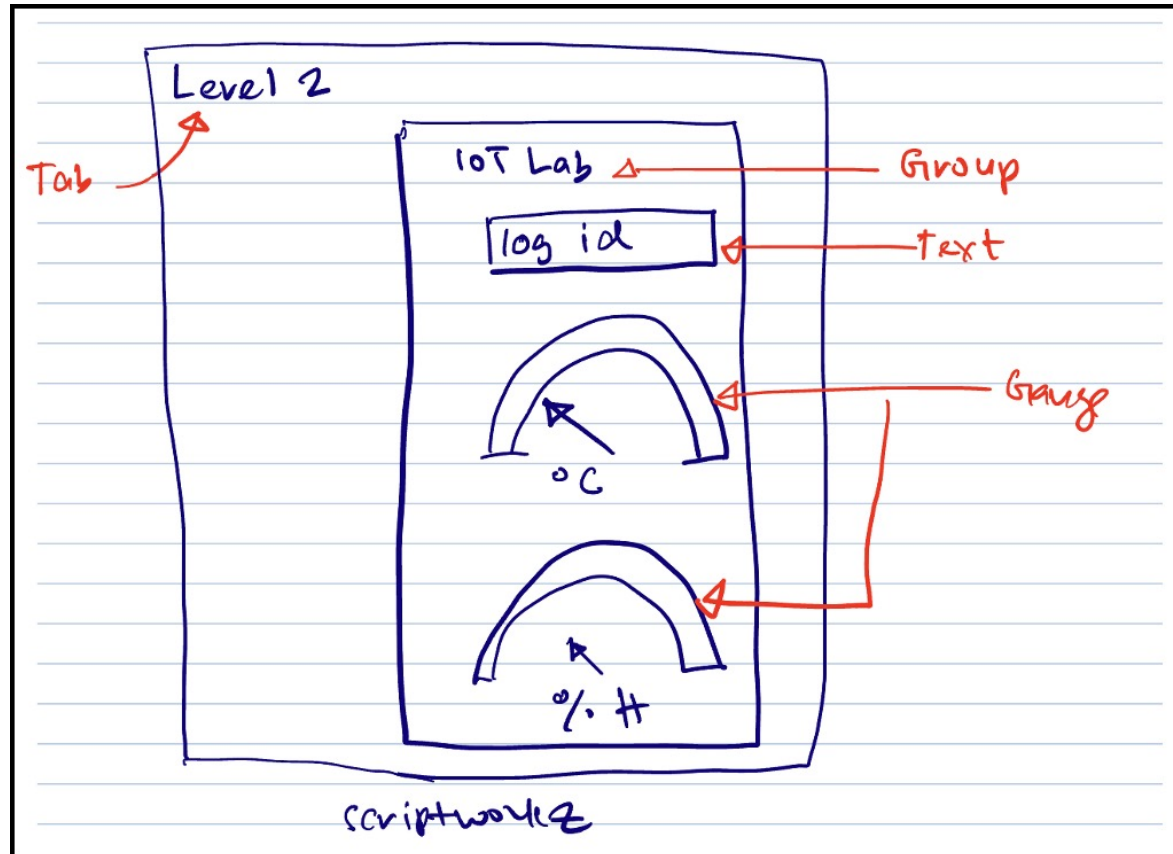
Tab = **Level 2**

Group = **IoT Lab**

Dashboard = **1 x Text node**

= **2 x Gauge nodes**
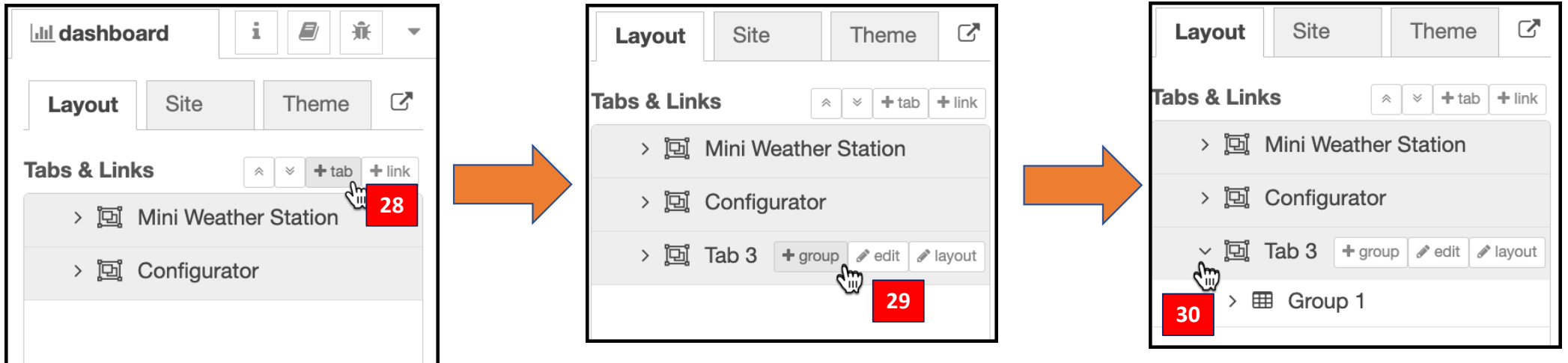
Task 3: Setting-up Node-RED Dashboard Interface

STEP 2

26 Click sidebar's dropdown menu & choose **Dashboard**.

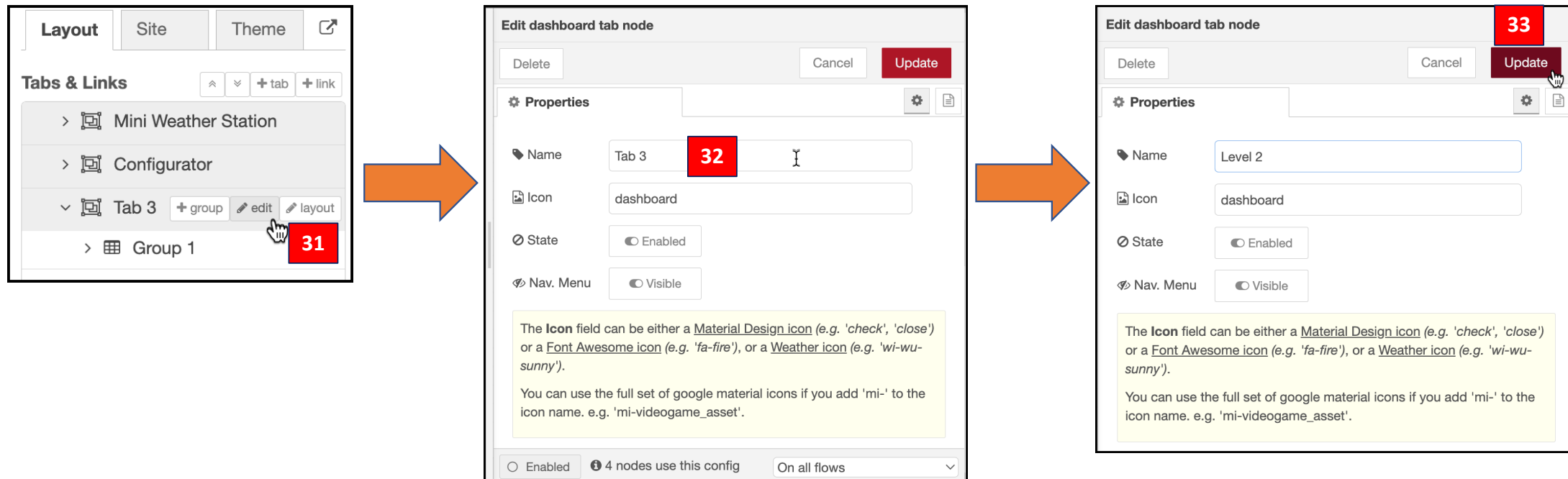# Task 3: Setting-up Node-RED Dashboard Interface

STEP 3

28 Click **+tab once** for new tab.

29 Click **+group** tab **once** within **Tab 3** drop-down button to create new group int **Tab 3**'s dashboard.

30 Click the arrow to the left of Tab 3, in order to view the added group.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 4

31 Click **edit** button to edit the **Tab 3**'s property.

32 At **Name** section, change **Tab 3** to **Level 2** as planned here (slide 19).

33 Click **Update** button to save the new **Name**.

You can click **Delete** button to delete the dashboard.

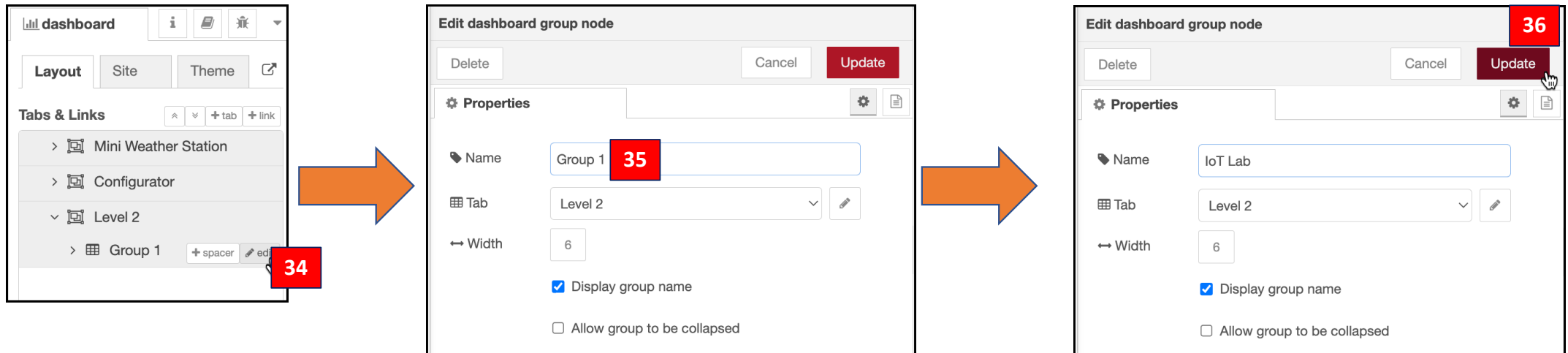# Task 3: Setting-up Node-RED Dashboard Interface

STEP 5

34 Click **Group 1**'s **edit** button to edit its properties.

35 At **Name** section, change **Group 1** to **IoT Lab** as planned [here](#) (slide 19).

36 Click **Update** button to save the new **Name**.

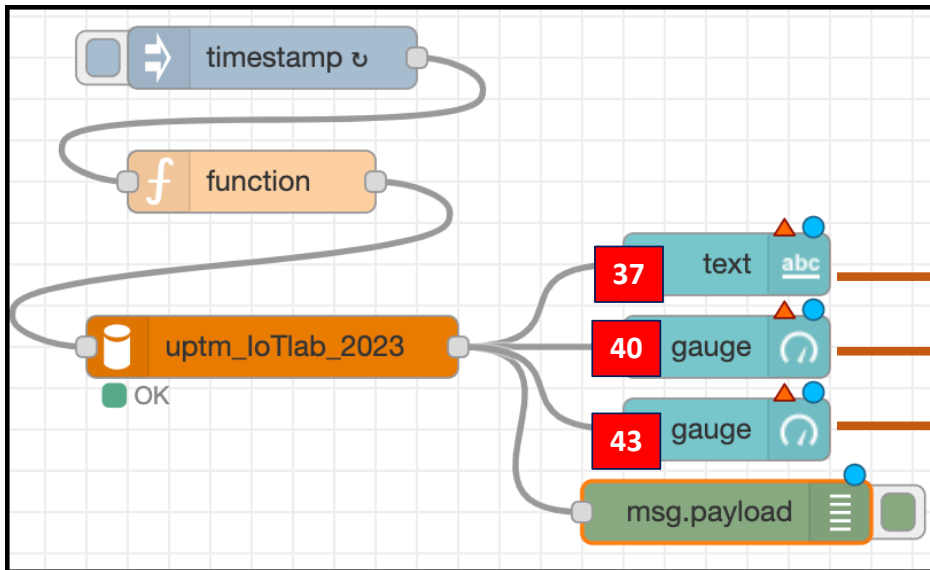You can click **Delete** button to delete the dashboard.

Don't forget to click **Deploy** button after changes have been made.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 7

37 Click the **edit** icon at text node & select the **Group**'s property to **[Level 2] IoT Lab**.

40 Repeat the same action to both **gauge** nodes.

Don't forget to click **Deploy** button after changes have been made.

Edit text node

39

Delete   Cancel   Done

⚙ Properties

⊞ Group   [Level 2] IoT Lab   **38**

⊡ Size   auto

Ɪ Label   text

Ɪ Value format   {{msg.payload}}

⊞ Layout   label **value**   label **value**   label **value**

              label   **value**   label **value**

Edit gauge node

42

Delete   Cancel   Done

⚙ Properties

⊞ Group   [Level 2] IoT Lab   **41**

⊡ Size   auto

≡ Type   Gauge

Ɪ Label   gauge

Ɪ Value format   {{value}}

Ɪ Units   units

Range   min 0   max 10
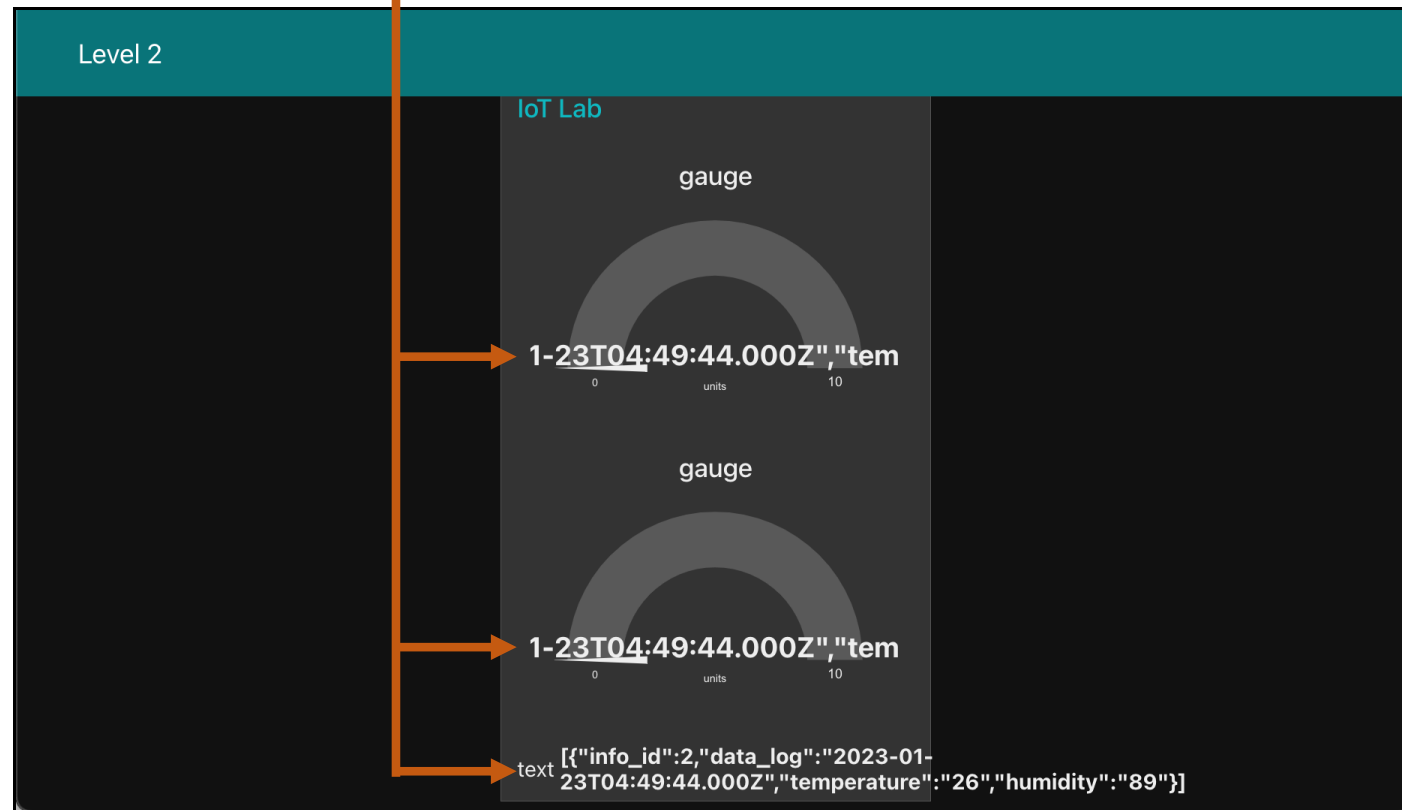
Colour gradient

24

Task 3: Setting-up Node-RED Dashboard Interface

STEP 8

The output the nodes are messed.

Need to change **value format** of each nodes.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 9

44 Double click **text** node.

45 Change at **Label** property from **text** to **Log** .

46 Change at **Value format** from **{{value}}** to **{{msg.payload[0].data_log}}** .

47 Click **Done** once completed.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 10

48 Double click **gauge** node.

49 Change at **Label** property from **text** to **Temperature** .

50 Change at **Value format** from **{{value}}** to **{{msg.payload[0].temperature}}** .

51 Change at **Units** property from **units** to **Celcius** .

52 Change at **Range** property from **0-10** to **15-60** .

53 Click **Done** once completed.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 11

54 Double click **gauge** node.

55 Change at **Label** property from **text** to **Humidity** .

56 Change at **Value format** from **{{value}}** to **{{msg.payload[0].humidity}}** .

57 Change at **Units** property from **units** to **%**.

58 Change at **Range** property from **0-10** to **0-100** .

59 Click **Done** once completed.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 12

60 Click **Deploy** button to execute the configuration.

61 Click ⧉ at Dashboard sidebar or http://localhost:1880/ui/ to open Dashboard User Interface.

Task 3: Setting-up Node-RED Dashboard Interface

STEP 13

The Dashboard UI.
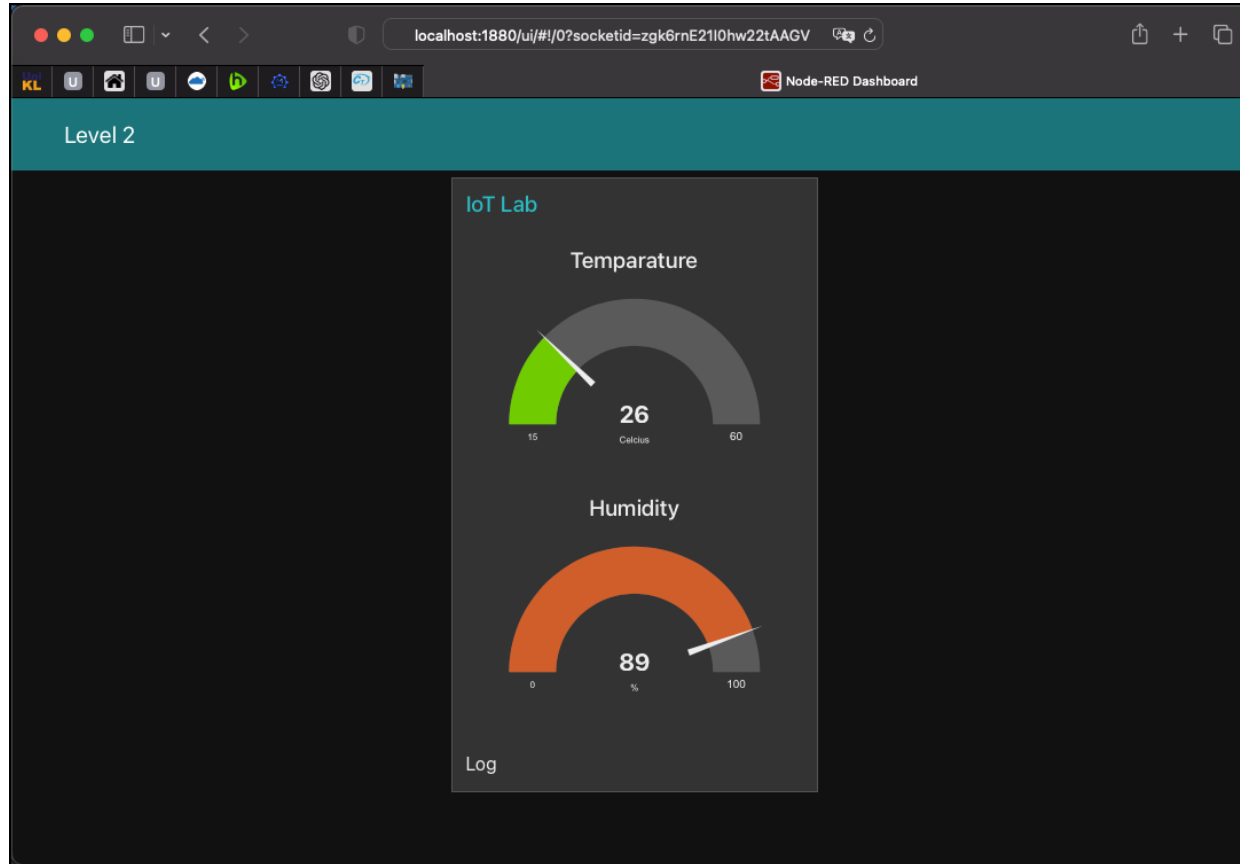
THE END

You can find more information and tutorials what Node-RED with the help of Internet.