

# Node-RED: The Basics

APPLICATION INTERFACE CONTROLLER

BTB31103

SEMESTER JAN 2020

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V1 JAN 2020 : V2 FEB 2021

## Download Node-RED & Install

### → INSTALL Node.js

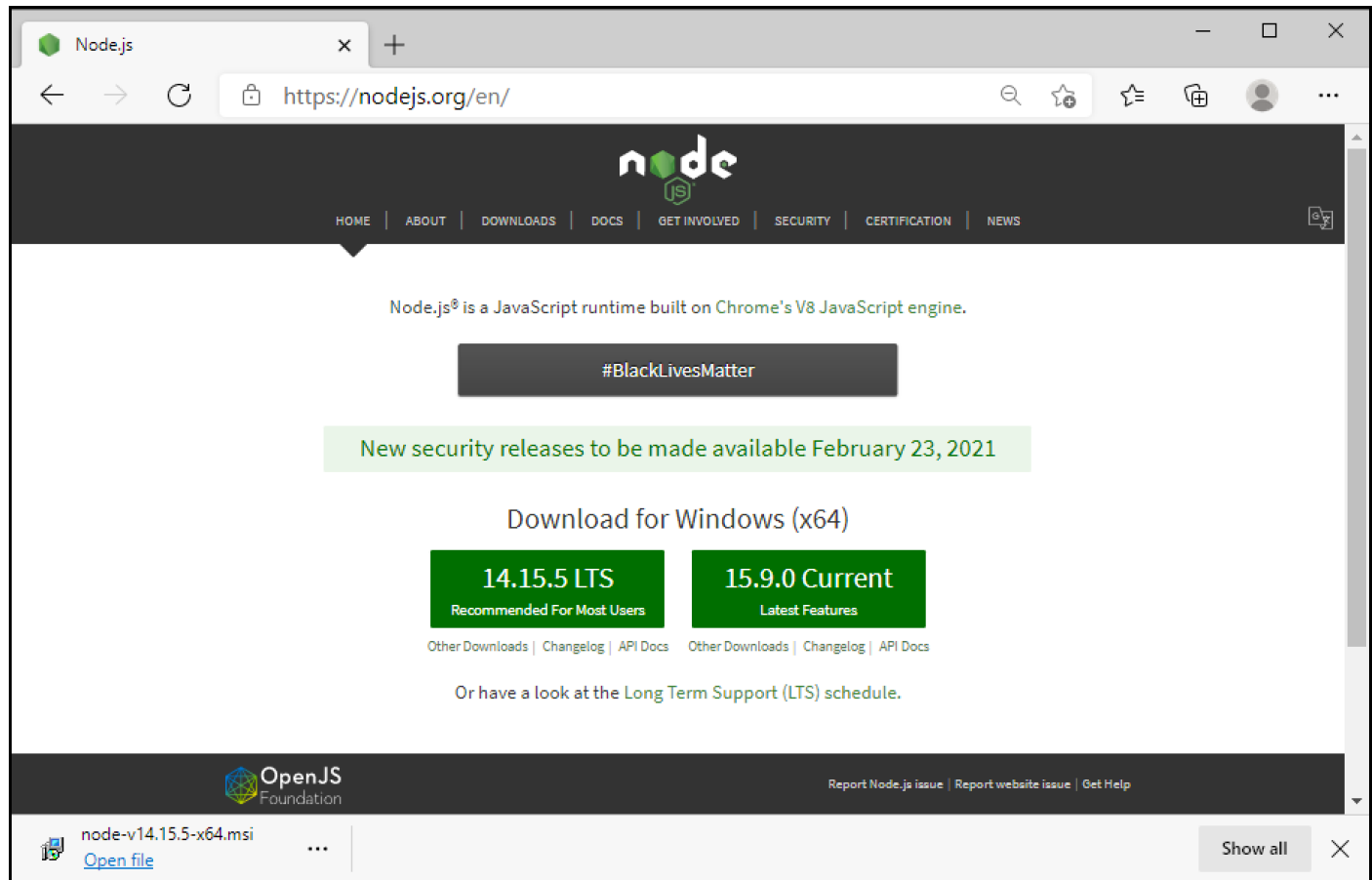
>> Download the latest Long Term Support (LTS) version of Node.js from the official [Node.js](https://nodejs.org/en/) home page. It will offer you the best version for your system.

>> Run the downloaded MSI file.

>> Installing Node.js requires local administrator rights; if you are not a local administrator, you will be prompted for an administrator password on install.

>> Accept the defaults when installing.

>> After installation completes, close any open command prompts and re-open to ensure new environment variables are picked up.



## Download Node-RED & Install

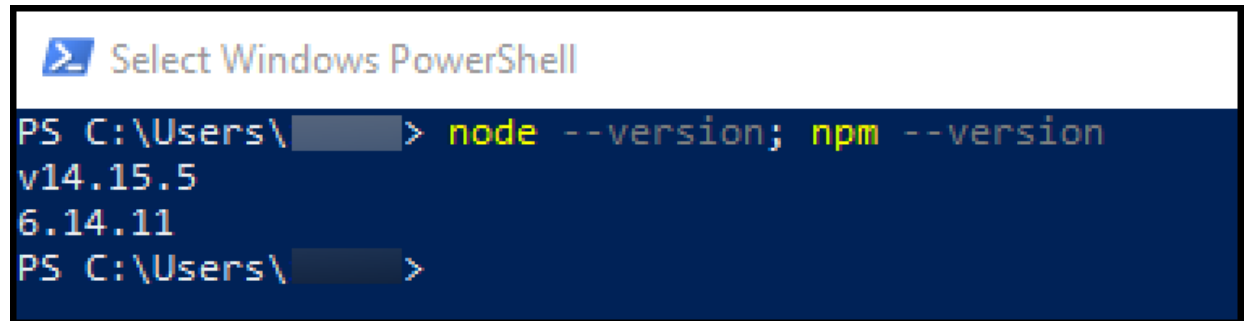
>> Once installed, open a command prompt and run the following command to ensure Node.js and npm are installed correctly.

→ Using Powershell & macOS terminal:

**node --version; npm -version**

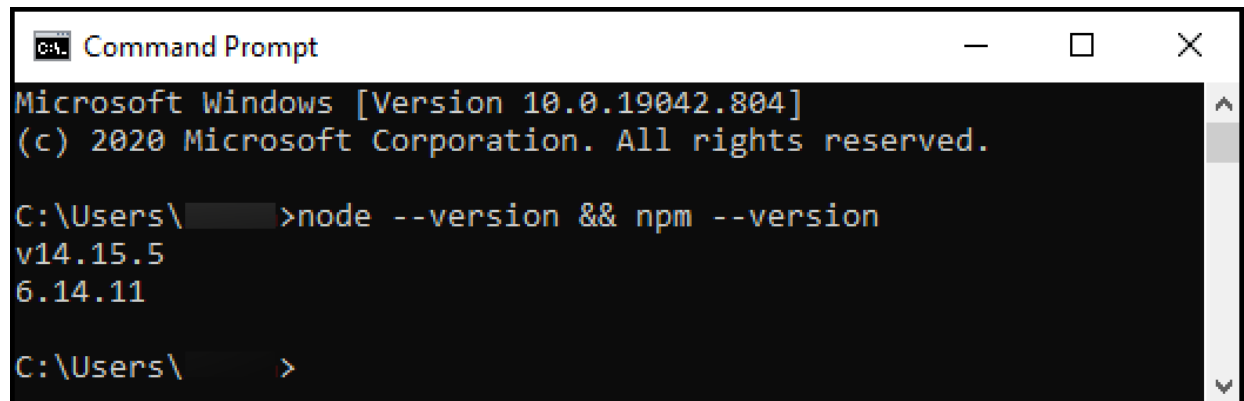
→ Using cmd & macOS terminal:

**node --version && npm --version**



```
Select Windows PowerShell

PS C:\Users\[redacted]> node --version; npm --version
v14.15.5
6.14.11
PS C:\Users\[redacted]>
```

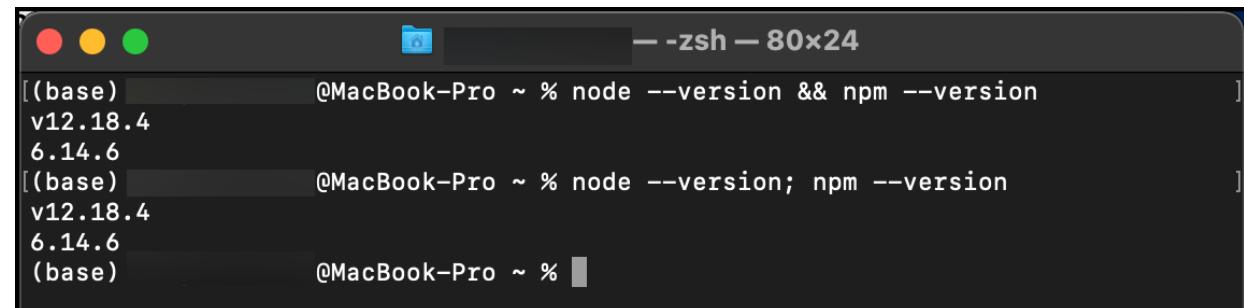


```
Command Prompt

Microsoft Windows [Version 10.0.19042.804]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\[redacted]> node --version && npm --version
v14.15.5
6.14.11

C:\Users\[redacted]>
```



```
- zsh — 80x24

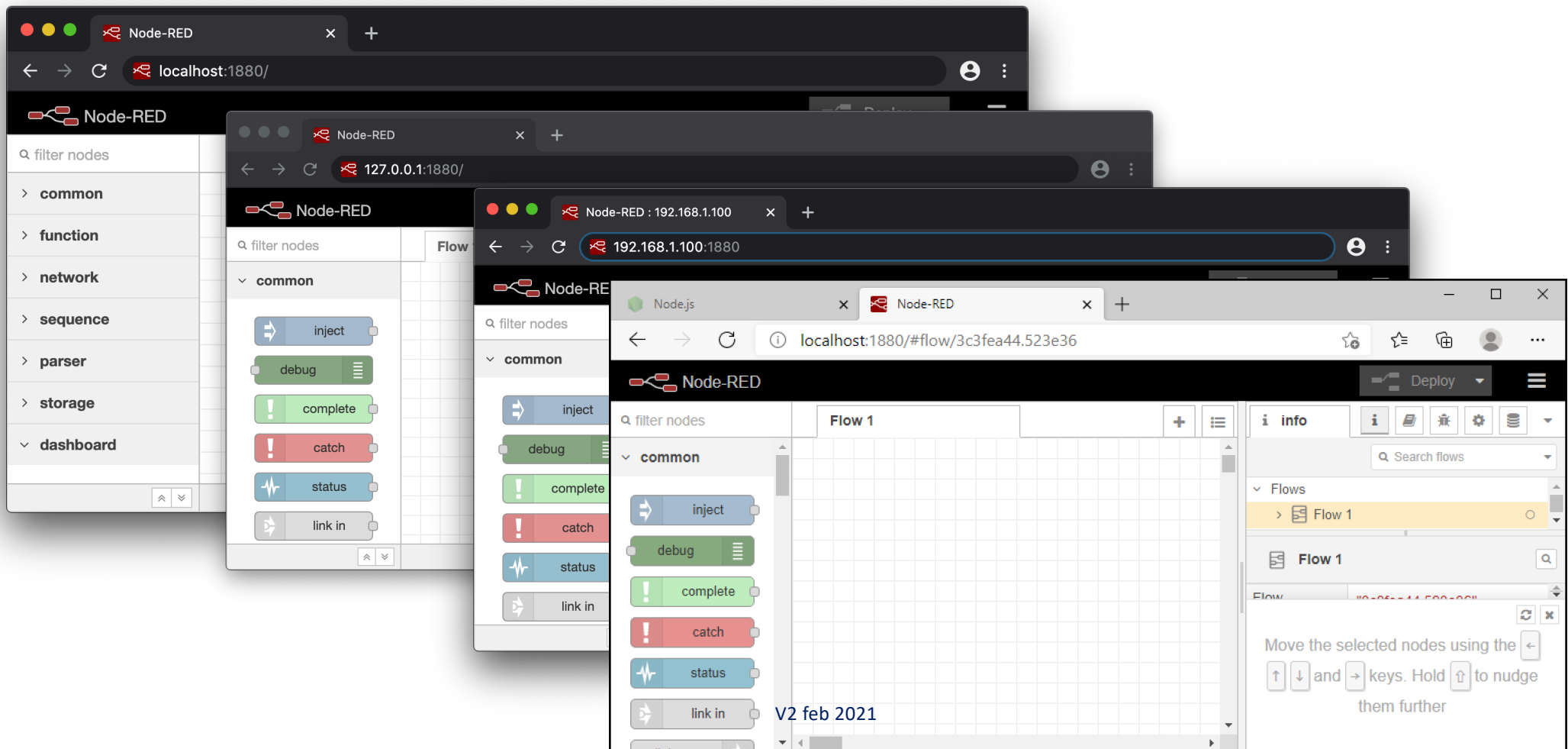
(base) @MacBook-Pro ~ % node --version && npm --version
v12.18.4
6.14.6
(base) @MacBook-Pro ~ % node --version; npm --version
v12.18.4
6.14.6
(base) @MacBook-Pro ~ %
```



## Download Node-RED & Install

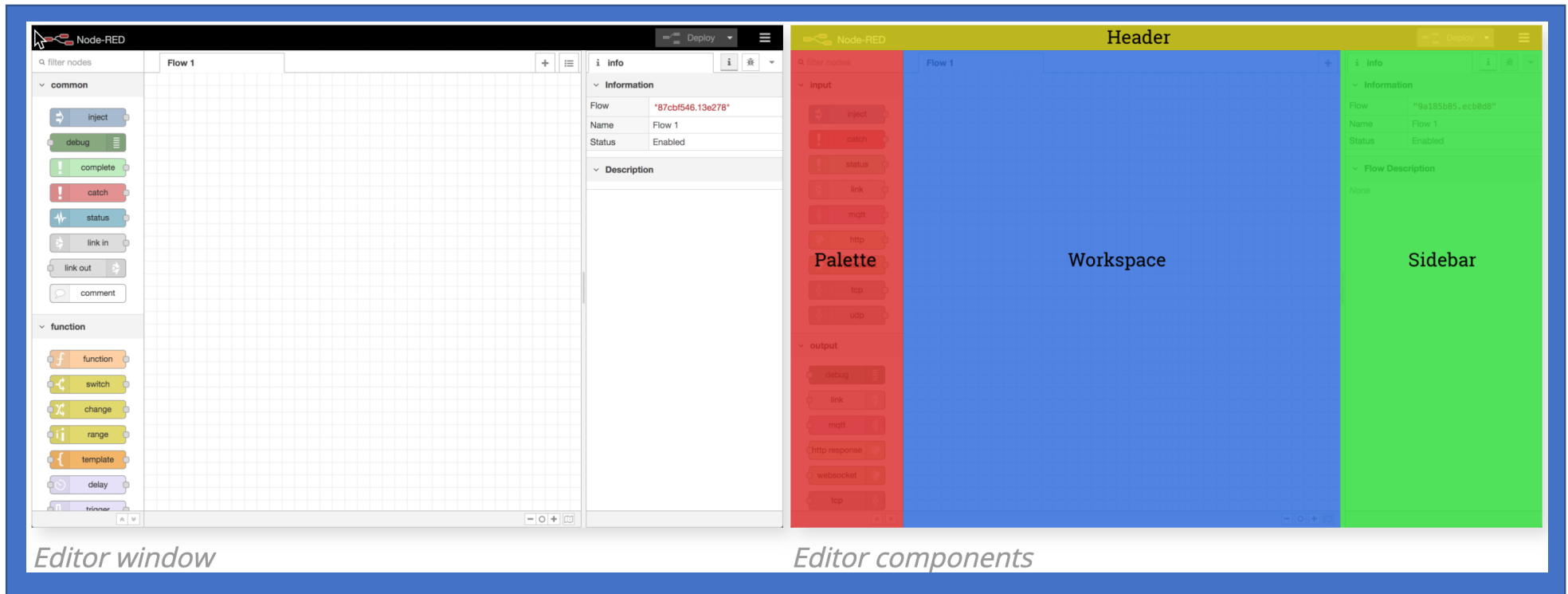
### OPENING THE EDITOR

>> You can then access the Node-RED editor by pointing your browser at <http://localhost:1880>.

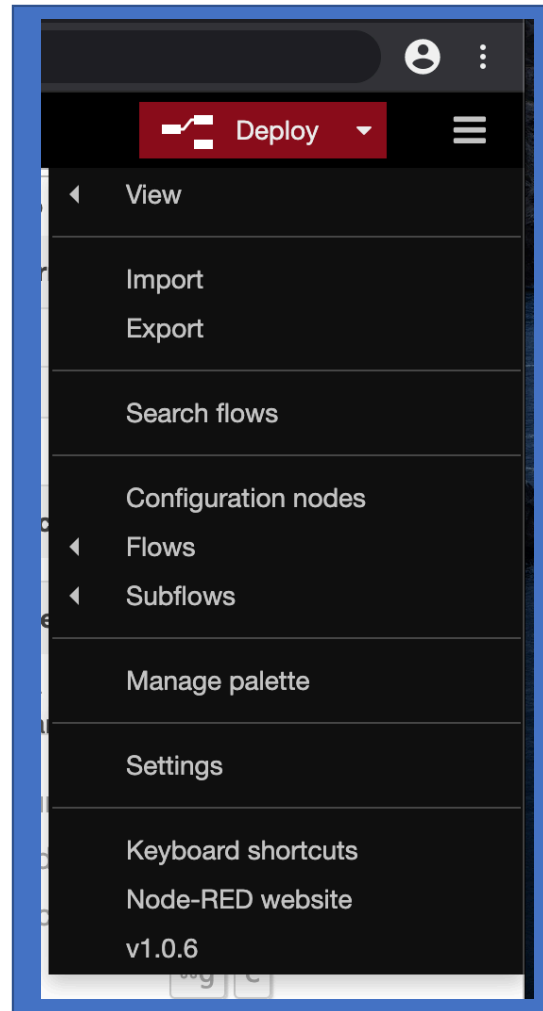


## Node-RED: The Editor

### The editor components.



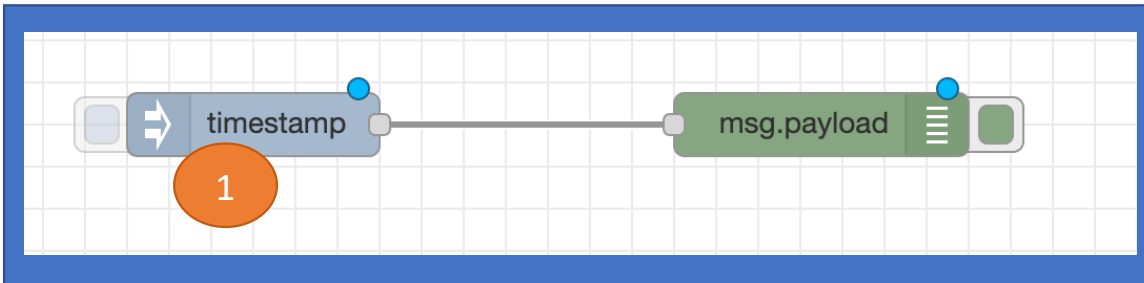
## Node-RED: The Menu



## EXERCISE 1: Sending Information over NodeRED

### i. Display your name when the inject node is click.

1. Place *Inject* node and *Debug* node into workspace.
2. Double click the *Inject* node to change the properties.



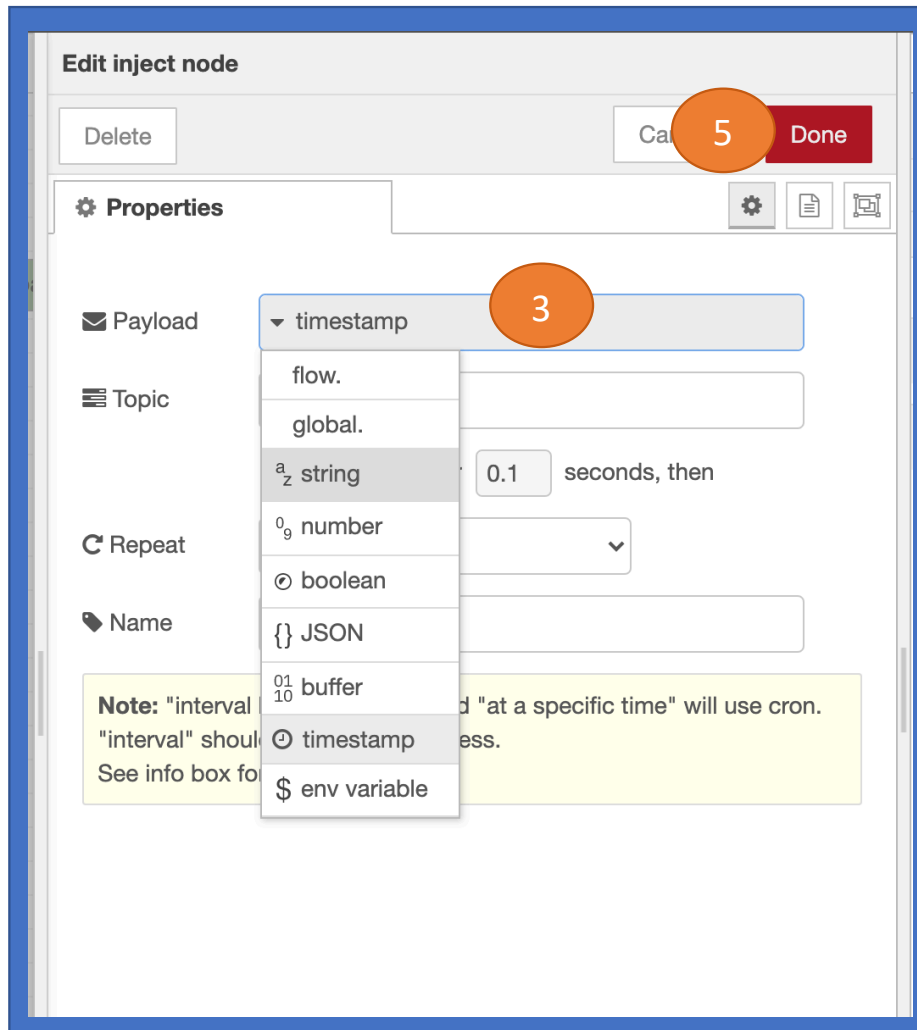
A screenshot of the 'Edit inject node' dialog box in NodeRED. The dialog has a title bar 'Edit inject node' with a red 'Done' button and a grey 'Cancel' button. Below the title bar is a 'Delete' button. The 'Properties' section contains the following fields:

- Payload:** A dropdown menu showing 'timestamp'.
- Topic:** An empty text input field.
- Inject once after:** A checkbox that is unchecked, followed by a text input field containing '0.1' and the text 'seconds, then'.
- Repeat:** A dropdown menu showing 'none'.
- Name:** A text input field containing 'Name'.

At the bottom of the dialog, there is a yellow note box with the text: **Note:** "interval between times" and "at a specific time" will use cron. "interval" should be 596 hours or less. See info box for details. An orange circle with the number '2' is positioned above the 'Done' button.



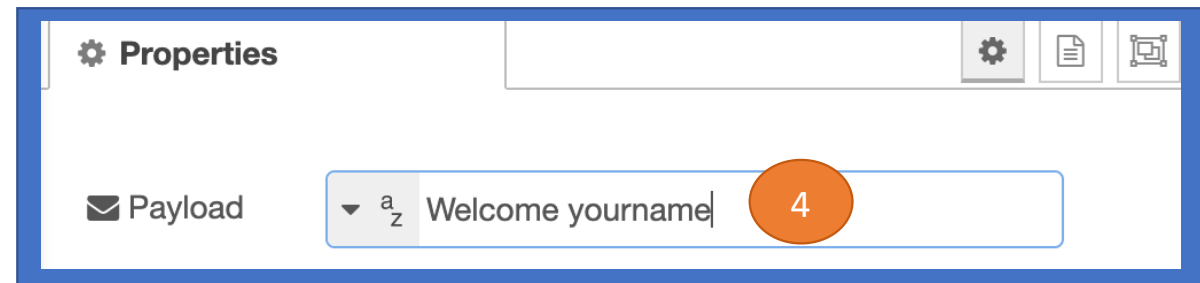
## EXERCISE 1: Sending Information over NodeRED



3. Click at the *Payload* dropdown box and choose *string*.

4. Type *Welcome 'yourname'* .

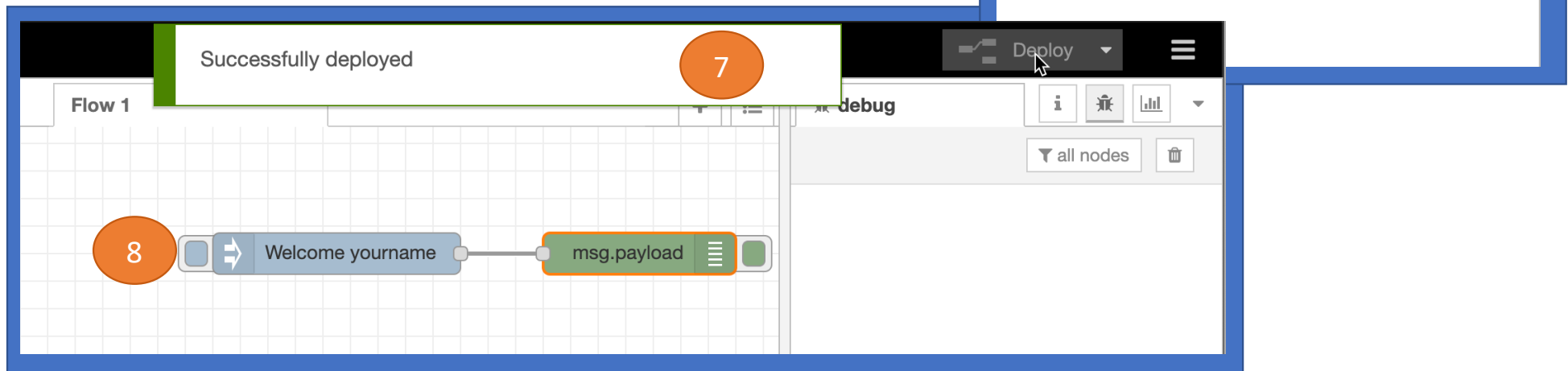
5. Click *Done*.



## EXERCISE 1: Sending Information over NodeRED

6. Click *Deploy* to update, save and enable execute. It becomes red when you make any changes.

7. Success message box appears right after click *Deploy*.



8. Click to small blue square to trigger the output.

## EXERCISE 1: Sending Information over NodeRED

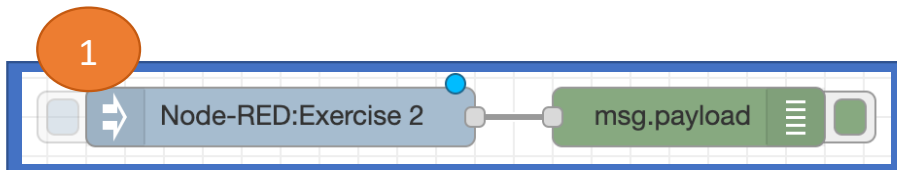
9. A successful injected message will pop-up immediate you click inject node.
10. Click the bug icon to view the output via debug activity.
11. The output.

The screenshot displays the NodeRED web interface. At the top, a notification box (labeled 9) states "Successfully injected: Welcome yourname". Below this, the main workspace shows a flow named "Flow 1" with two nodes: a blue "inject" node with the text "Welcome yourname" and a green "msg.payload" node. To the right, the "debug" sidebar (labeled 10) is open, showing a list of nodes and a "debug" button. Below the sidebar, the debug console (labeled 11) displays the output of the injected message: "03/06/2020, 22:01:57 node: de416064.1ad6a msg.payload : string[16] 'Welcome yourname'".

## EXERCISE 2: Update Information over NodeRED after certain seconds

### ii. Change inject mode

1. Set *Inject node* and *Debug node* as follows.
2. Click *Inject* once after 0.1 seconds, then...
3. Click *Done*.
4. Click *Deploy*.
5. Click *Debug* window.
6. Observe the output.

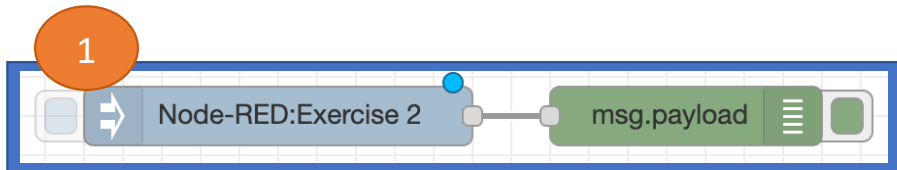


The 'Edit inject node' dialog is shown. It has a 'Delete' button, 'Cancel' and 'Done' buttons, and a 'Properties' tab. The 'Payload' is 'Exercise 2', the 'Topic' is 'Node-RED', and the 'Repeat' is 'none'. The 'Inject once after' checkbox is checked, and the interval is '0.1 seconds, then'. The 'Name' is 'Name'. A note at the bottom states: 'Note: "interval between times" and "at a specific time" will use cron. "interval" should be 596 hours or less. See info box for details.' An orange circle with the number '2' is positioned over the 'Inject once after' checkbox.

## EXERCISE 3: Update Information over NodeRED with Every 1 second

### iii. Change inject mode

1. Set *Inject node* and *Debug node* as follows.
2. Set *Repeat* > *interval* > *every 1* > *seconds*.
3. Click *Done*.
4. Click *Deploy*.
5. Click *Debug* window.
6. Observe the output.



The 'Edit inject node' configuration dialog is shown. It includes fields for Payload (Exercise 2), Topic (Node-RED), and Repeat (interval). The Repeat section is set to 'interval' with a dropdown arrow, and the interval is set to 'every 1 seconds'. An orange circle with the number '2' is positioned next to the 'interval' dropdown. The dialog also has buttons for Delete, Cancel, and Done, and a checkbox for 'Enabled'.

**Edit inject node**

Delete Cancel Done

**Properties**

Payload

Topic

☐ Inject once after  seconds, then

Repeat

Name

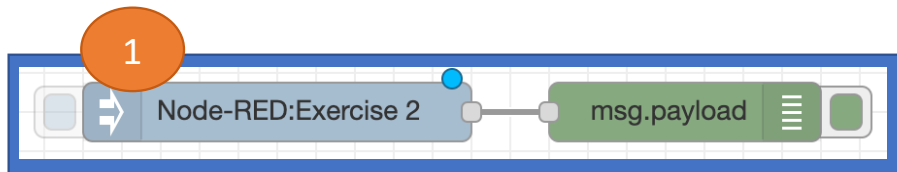
**Note:** "interval between times" and "at a specific time" will use cron. "interval" should be 596 hours or less. See info box for details.

☐ Enabled

## EXERCISE 4: Update Information over NodeRED with Every 1 second

### iv. Enabled vs Disabled mode

1. Set *Inject node* and *Debug node* as follows.
2. Click *Enabled* radio button.
3. Report the results.

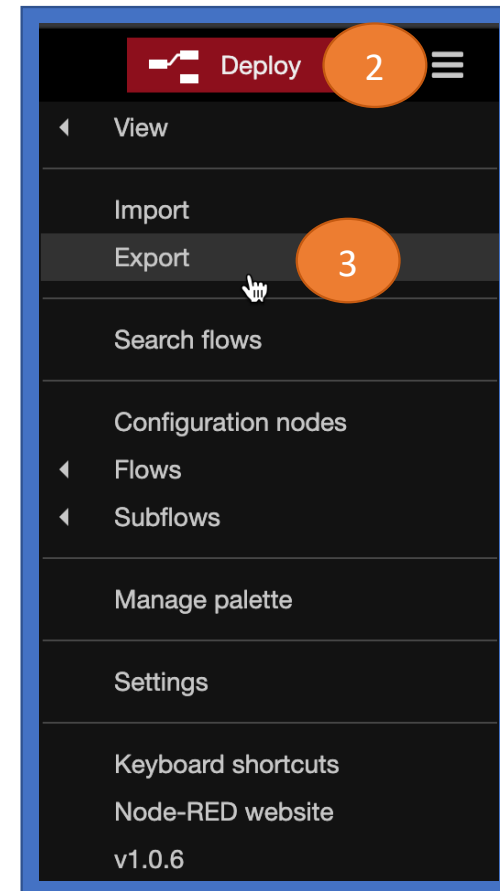
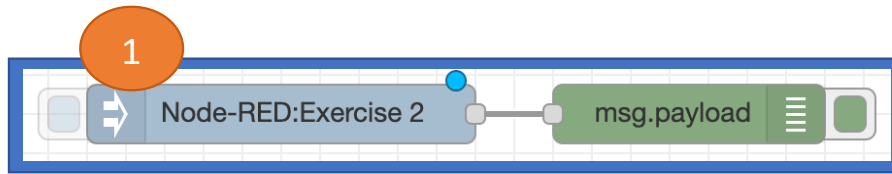


The 'Edit inject node' dialog is shown. It has a title bar 'Edit inject node' and buttons for 'Delete', 'Cancel', and 'Done'. The 'Properties' tab is selected. The 'Payload' field contains 'a\_z Exercise 2'. The 'Topic' field contains 'Node-RED'. The 'Inject once after' checkbox is unchecked, with a value of '0.1' seconds. The 'Repeat' dropdown is set to 'interval'. The 'every' field is set to '1' seconds. The 'Name' field is empty. A note at the bottom states: 'Note: "interval between times" and "at a specific time" will use cron. "interval" should be 596 hours or less. See info box for details.' At the bottom left, the 'Enabled' radio button is selected, and an orange circle with the number '2' is positioned next to it.

## EXERCISE 5: Exporting Your Works

### v. Exporting your works

1. Set *Inject node* and *Debug node* as follows.
2. Click *Menu*.
3. Click *Export*.



## EXERCISE 5: Exporting Your Works

### v. Exporting your works

4. Click *Copy to clipboard*.  
Click *Download* if you wish to download the nodes and it will be saved into your laptop/hard disk with the name of *flows.json*.

Export nodes

Export selected nodes current flow all flows

**Clipboard**

Library

```
[{"id":"7fdeaeda.d2619","type":"tab","label":"Flow 1","disabled":false,"info":""}, {"id":"a123353c.973608","type":"inject","z":"7fdeaeda.d2619","name":"","topic":"Node-RED","payload":"Exercise 2","payloadType":"str","repeat":"1","crontab":"","once":false,"onceDelay":0.1,"x":240,"y":100,"wires":[["de416064.1ad6a"]]}, {"id":"de416064.1ad6a","type":"debug","z":"7fdeaeda.d2619","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetType":"msg","x":450,"y":100,"wires":[]}]
```

compact formatted

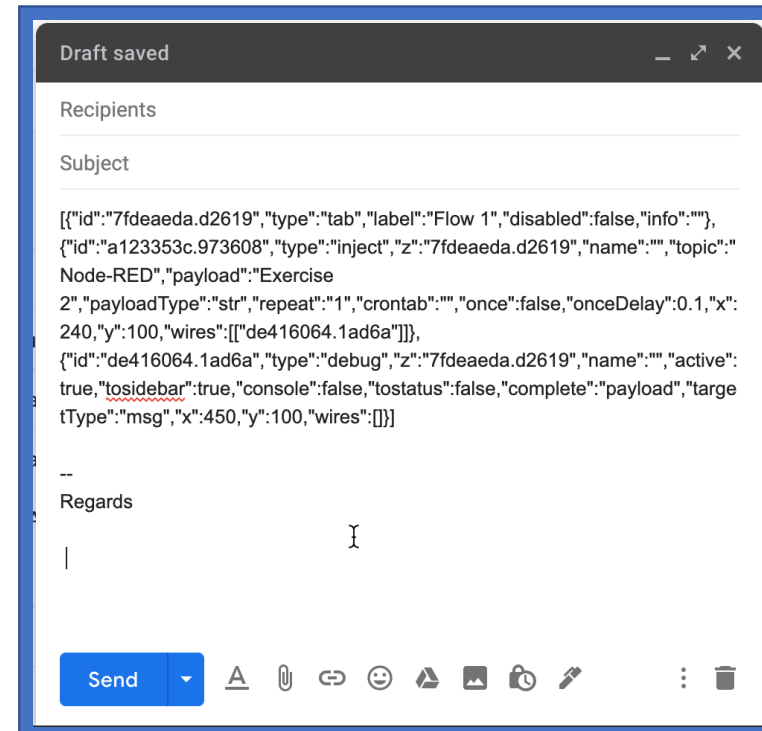
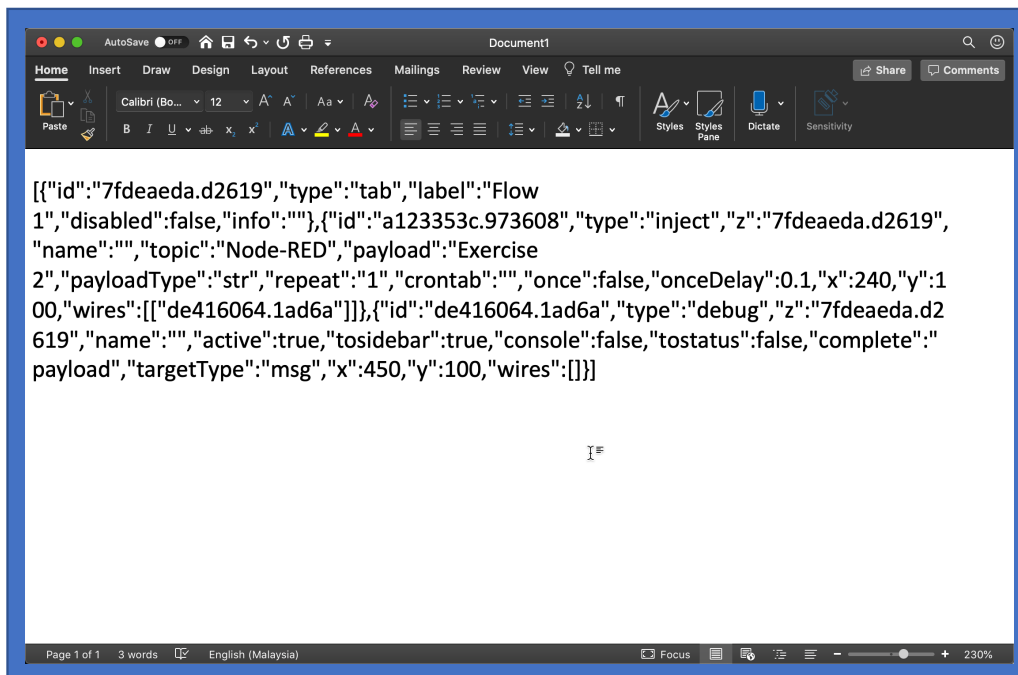
Cancel Download Copy to clipboard



## EXERCISE 5: Exporting Your Works

### v. Exporting your works

#### 6. Open any text editor, email and paste work.



QUESTIONS

**END**