

# Node-RED: The Basics

APPLICATION INTERFACE CONTROLLER

BTB31103

SEMESTER JAN 2020

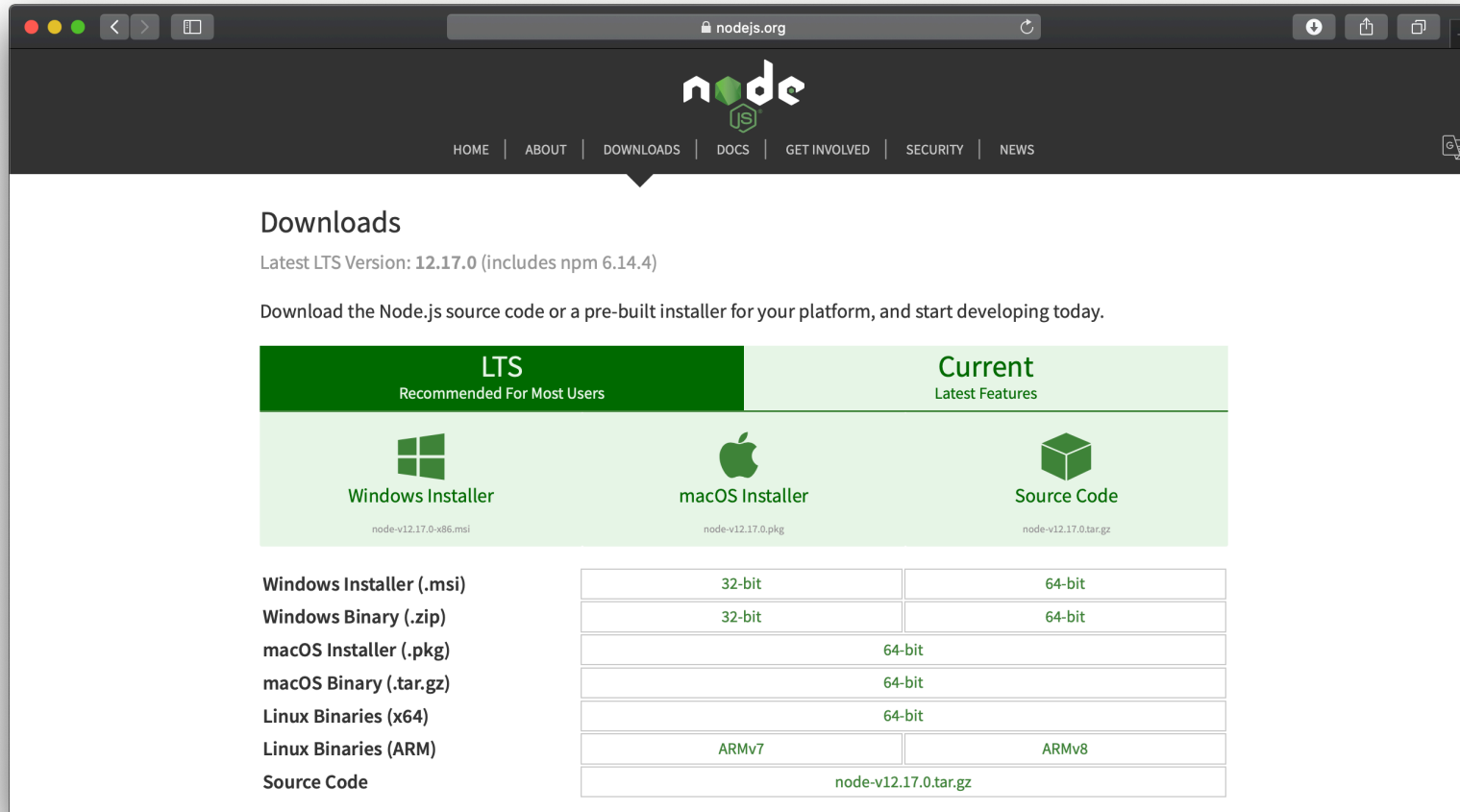
Safyzan Salim



## Download Node-RED & Install

<https://nodejs.org/>

Execute after finished download.

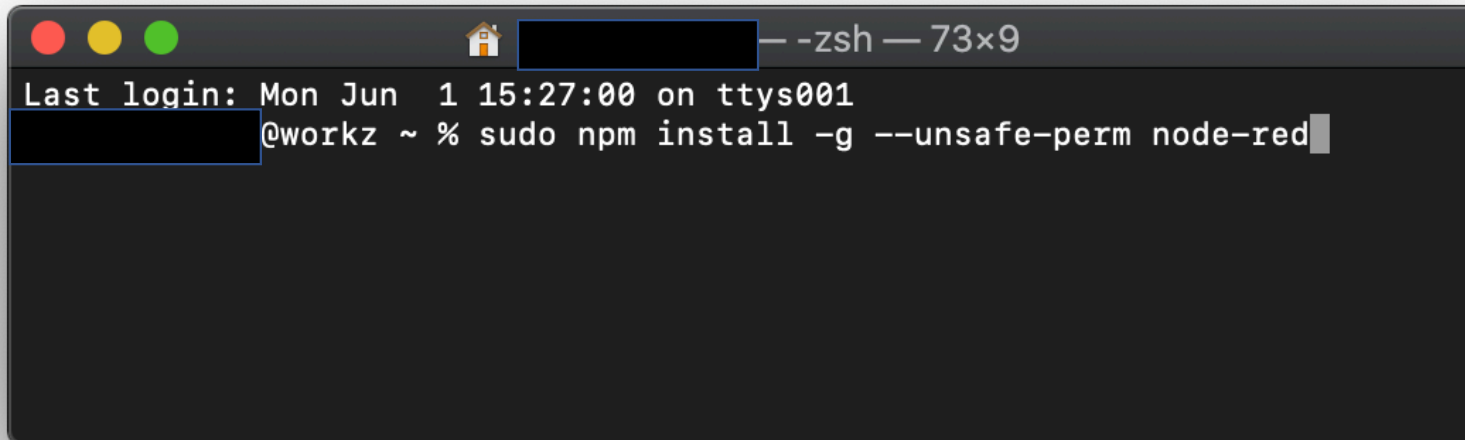


The screenshot shows the Node.js Downloads page. The header includes the Node.js logo and navigation links: HOME, ABOUT, DOWNLOADS, DOCS, GET INVOLVED, SECURITY, and NEWS. The main content area is titled "Downloads" and states "Latest LTS Version: 12.17.0 (includes npm 6.14.4)". It instructs users to "Download the Node.js source code or a pre-built installer for your platform, and start developing today." Below this, there are two tabs: "LTS" (Recommended For Most Users) and "Current" (Latest Features). Under the "LTS" tab, there are three main options: "Windows Installer" (node-v12.17.0-x86.msi), "macOS Installer" (node-v12.17.0.pkg), and "Source Code" (node-v12.17.0.tar.gz). Below these, there is a list of download links: "Windows Installer (.msi)", "Windows Binary (.zip)", "macOS Installer (.pkg)", "macOS Binary (.tar.gz)", "Linux Binaries (x64)", "Linux Binaries (ARM)", and "Source Code". To the right of this list is a table showing the available binaries for each platform.

32-bit	64-bit
32-bit	64-bit
64-bit	
64-bit	
64-bit	
ARMv7	ARMv8
node-v12.17.0.tar.gz	

Open command prompt / power shell / terminal and type the following:

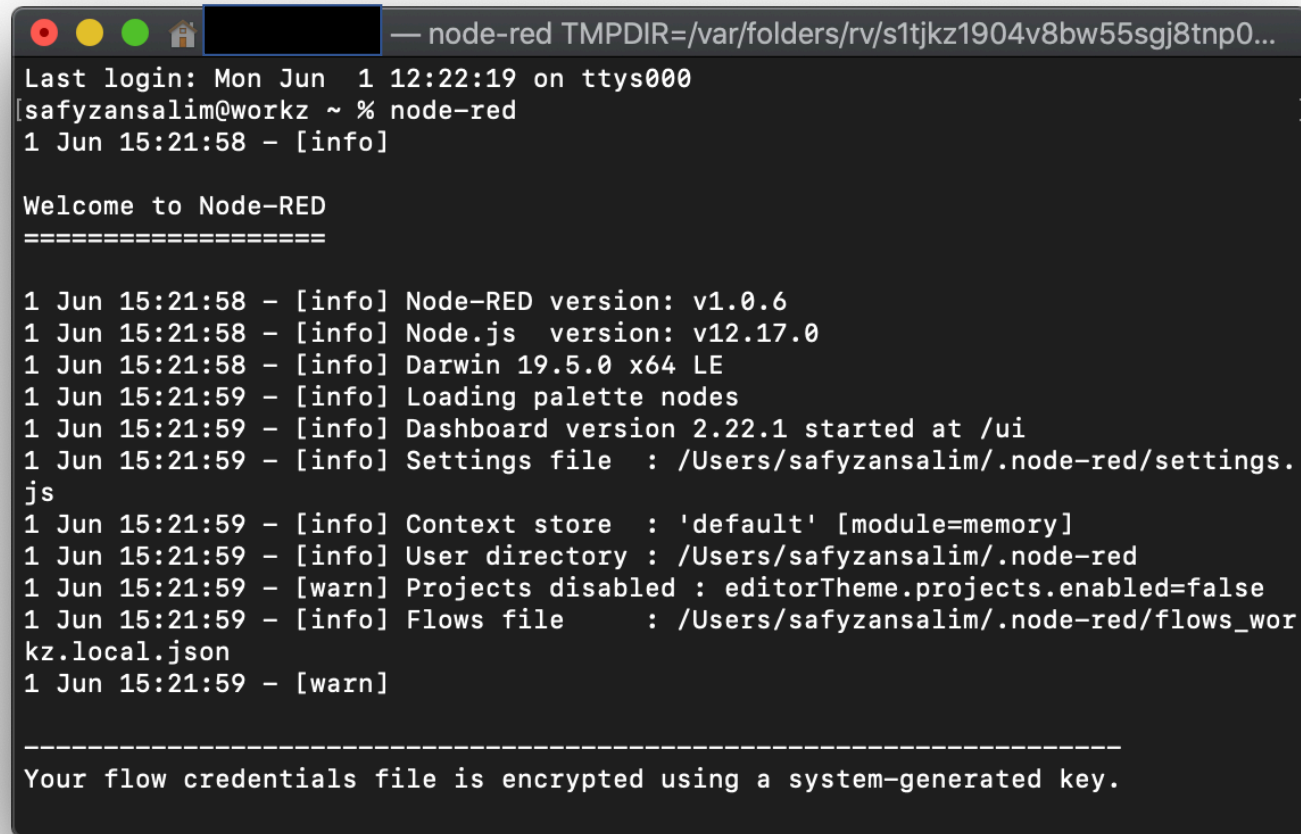
**sudo npm install -g --unsafe-perm node-red**

A screenshot of a macOS terminal window. The title bar shows three colored window control buttons (red, yellow, green) on the left, a home icon and a redacted username followed by '- zsh' and '73x9' on the right. The terminal content shows 'Last login: Mon Jun 1 15:27:00 on ttys001' followed by a prompt '@workz ~ %' and the command 'sudo npm install -g --unsafe-perm node-red' being typed. A cursor is visible at the end of the command. There is a closing bracket ']' at the far right of the terminal window.

```
Last login: Mon Jun 1 15:27:00 on ttys001
@workz ~ % sudo npm install -g --unsafe-perm node-red ]
```

## Executing Node-RED

Type node-red at command prompt / power shells / terminal.

A terminal window with a dark background and light text. The title bar shows standard macOS window controls (red, yellow, green buttons) and a home icon. The terminal text shows the command 'node-red' being executed, followed by a series of log messages including version information for Node-RED, Node.js, and the dashboard, as well as file paths for settings and flows. A warning message about disabled projects is also visible. At the bottom, a message states that the flow credentials file is encrypted using a system-generated key.

```
— node-red TMPDIR=/var/folders/rv/s1tjkz1904v8bw55sgj8tnp0...
Last login: Mon Jun  1 12:22:19 on ttys000
[safyzansalim@workz ~ % node-red
1 Jun 15:21:58 - [info]

Welcome to Node-RED
=====

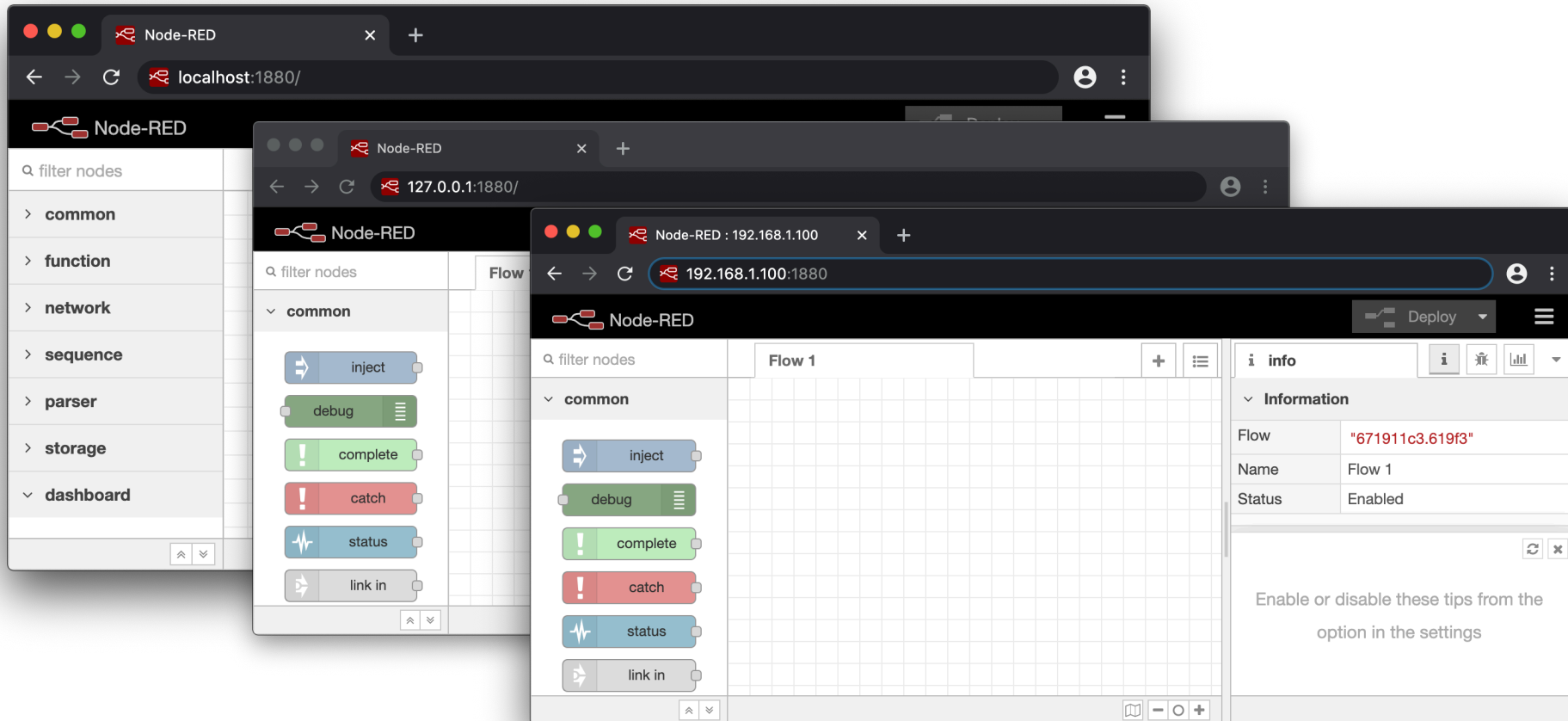
1 Jun 15:21:58 - [info] Node-RED version: v1.0.6
1 Jun 15:21:58 - [info] Node.js version: v12.17.0
1 Jun 15:21:58 - [info] Darwin 19.5.0 x64 LE
1 Jun 15:21:59 - [info] Loading palette nodes
1 Jun 15:21:59 - [info] Dashboard version 2.22.1 started at /ui
1 Jun 15:21:59 - [info] Settings file  : /Users/safyzansalim/.node-red/settings.
js
1 Jun 15:21:59 - [info] Context store  : 'default' [module=memory]
1 Jun 15:21:59 - [info] User directory : /Users/safyzansalim/.node-red
1 Jun 15:21:59 - [warn] Projects disabled : editorTheme.projects.enabled=false
1 Jun 15:21:59 - [info] Flows file      : /Users/safyzansalim/.node-red/flows_wor
kz.local.json
1 Jun 15:21:59 - [warn]

-----
Your flow credentials file is encrypted using a system-generated key.
```

## Node-RED Editor

Type the any of the following URLs at your browser:

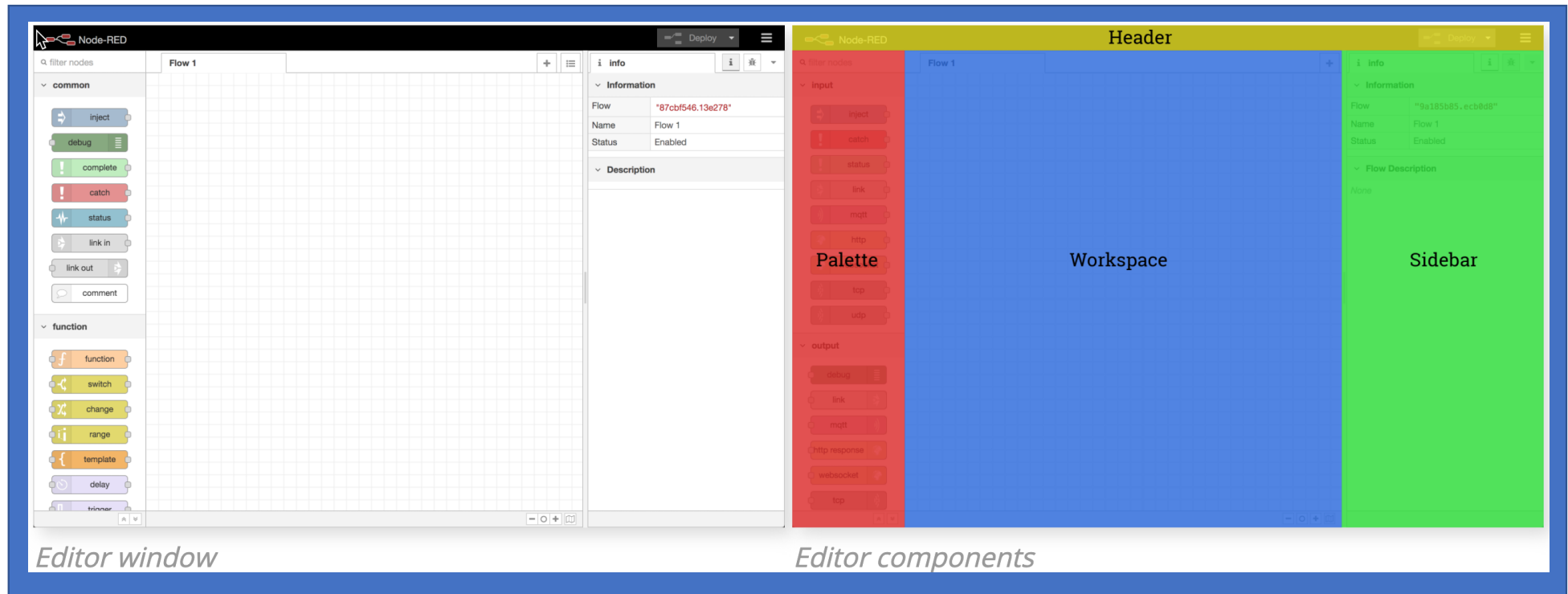
**http://localhost:1880** or **http://127.0.0.1:1880** or **http://ipaddress:1880**



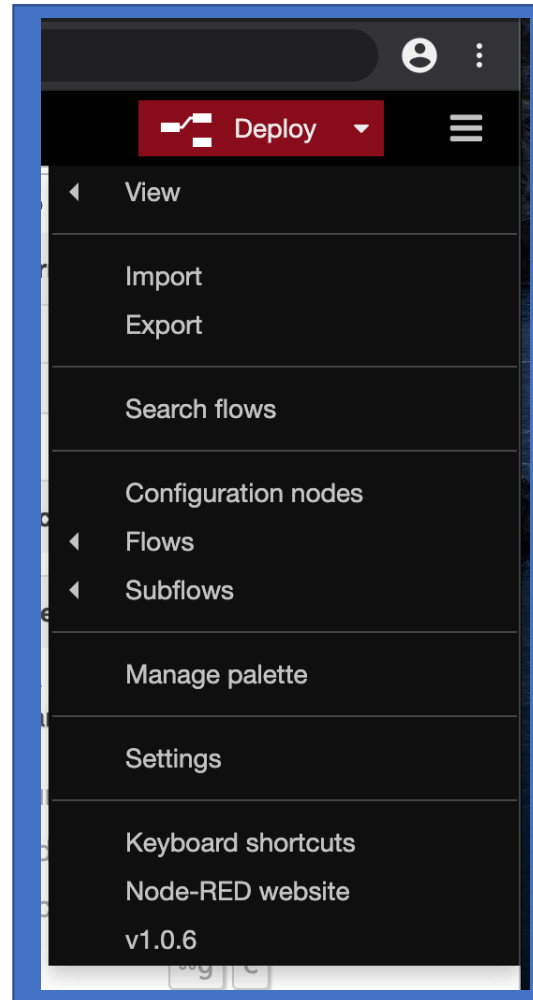
\*\*\* execute the scripts

## Node-RED: The Editor

### The editor components.

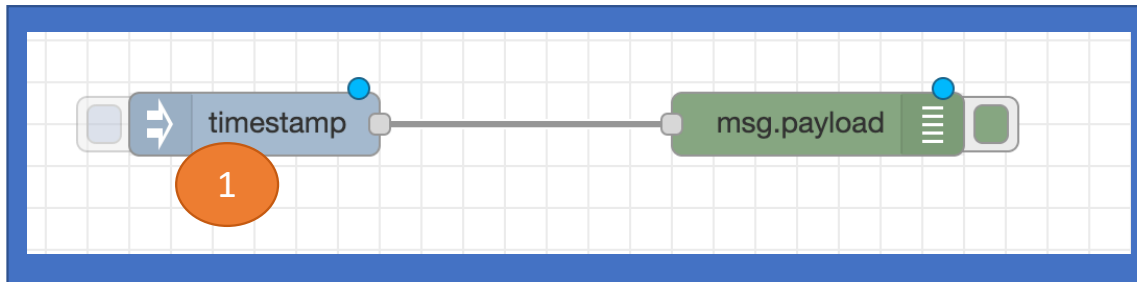


## Node-RED: The Menu



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

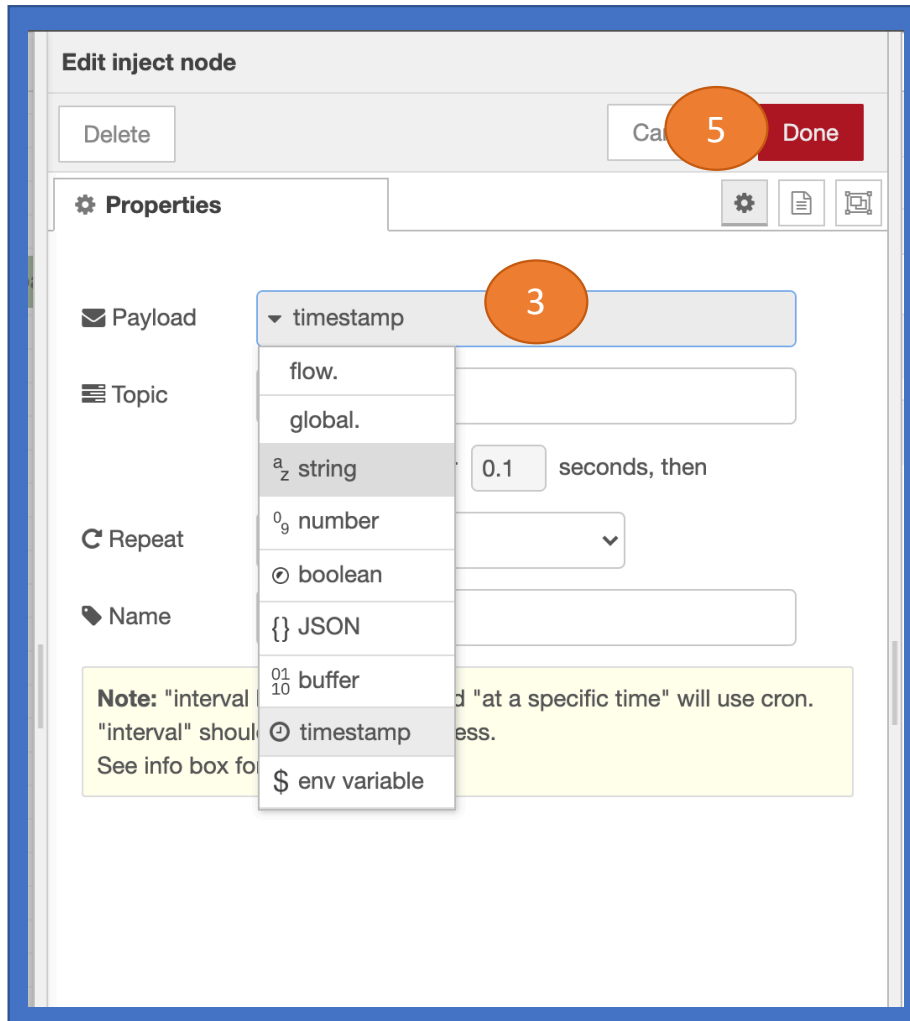
1. Place *Inject* node and *Debug* node into workspace.
2. Double click the *Inject* node to change the properties.



The 'Edit inject node' dialog box in Node-RED. It has a title bar 'Edit inject node' with a close button (X) and a search icon. Below the title bar are buttons for 'Delete', 'Cancel', and 'Done'. The main area is titled 'Properties' and contains several fields: 'Payload' (a dropdown menu showing 'timestamp'), 'Topic' (a text input field), 'Inject once after' (a checkbox, currently unchecked, followed by a text input '0.1' and the text 'seconds, then'), 'Repeat' (a dropdown menu showing 'none'), and 'Name' (a text input field). At the bottom, 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.



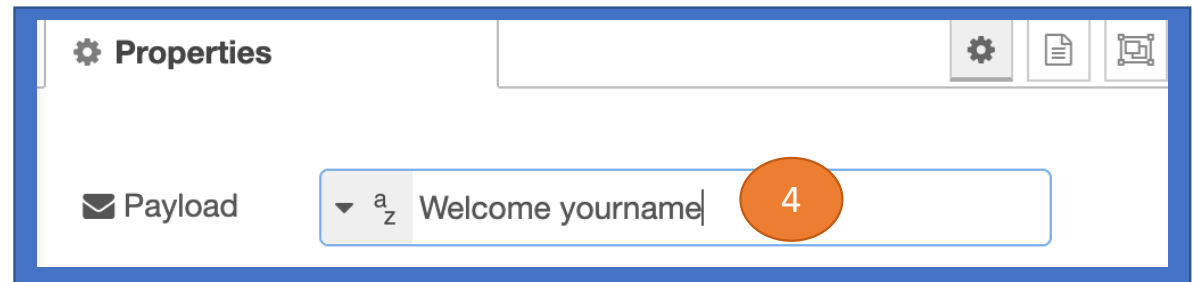
## Node-RED: Exercise i



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

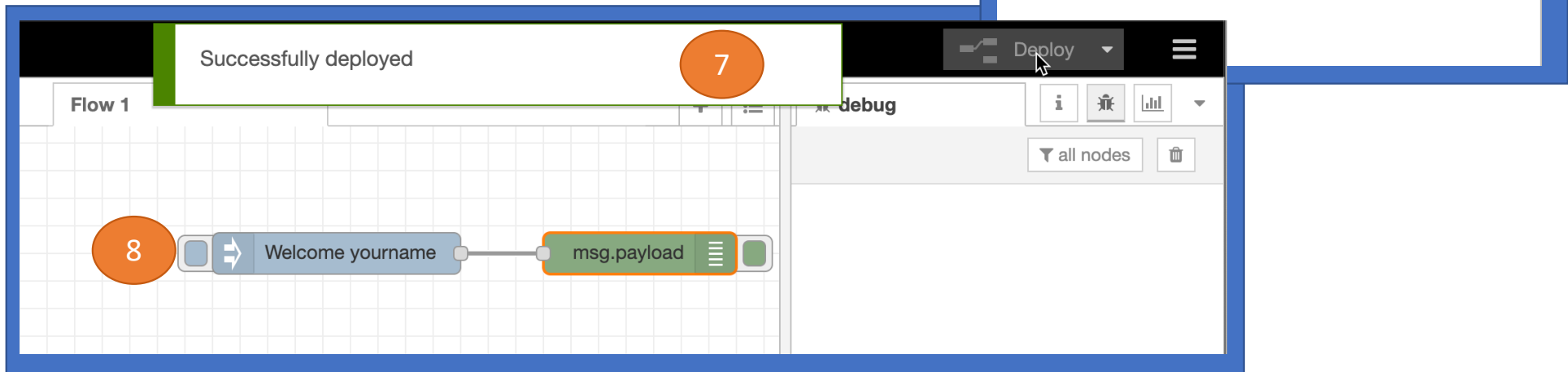
4. Type *Welcome 'yourname'* .

5. Click *Done*.



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.

9. A successful injected message will pop-up immediate you click inject node.

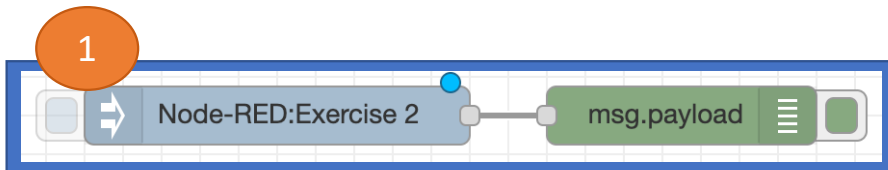
10. Click the bug icon to view the output via debug activity.

11. The output.

The screenshot displays the Node-RED web interface. At the top, a notification bar shows 'Successfully injected: Welcome yourname' with an orange circle labeled '9' next to it. Below this, the main workspace shows a flow named 'Flow 1' containing two nodes: a blue 'inject' node with the text 'Welcome yourname' and a green 'msg.payload' node. On the right sidebar, the 'debug' tab is active, showing a message log. The log entry, timestamped '03/06/2020, 22:01:57' for node 'de416064.1ad6a', shows 'msg.payload : string[16]' with the value '"Welcome yourname"'. An orange circle labeled '11' is next to this log entry. Above the debug tab, there is a 'Deploy' button and a menu icon, with an orange circle labeled '10' next to the menu icon.

## 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.



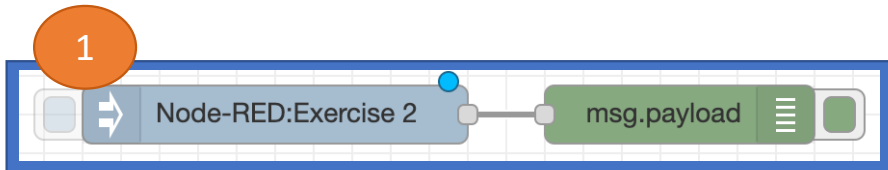
The "Edit inject node" dialog box is shown. It has a "Delete" button, a "Cancel" button, and a "Done" button. The "Properties" section is expanded, showing the following settings:

- Payload:** Exercise 2
- Topic:** Node-RED
- Inject once after:** 0.1 seconds, then (checked)
- Repeat:** none
- Name:** Name

A red circle with the number "2" is placed over the "Inject once after" checkbox. 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."

### iii. Change inject mode

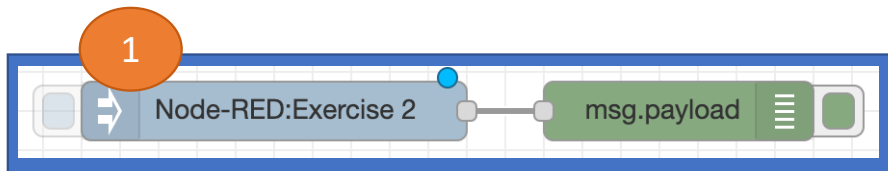
1. Set *Inject node* and *Debug node* as follows.
2. Set *Repeat* > *interval* > *every 1* > *seconds*.
3. Click *Done*.
4. Click *Deploy*.
5. Click *Debug* window.
6. Observe the output.



The 'Edit inject node' configuration dialog is shown. It includes fields for Payload (Exercise 2), Topic (Node-RED), and Repeat mode (interval). The Repeat mode 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 'Inject once after 0.1 seconds, then'. 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.'

## iv. Change inject mode

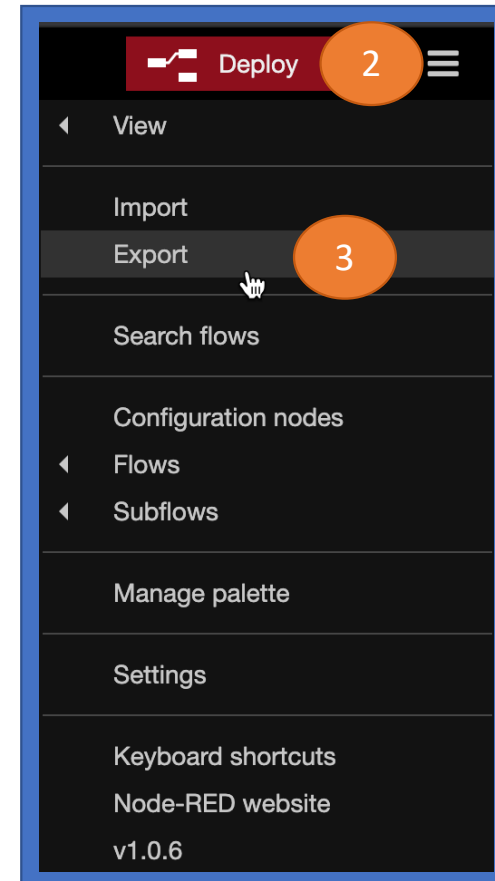
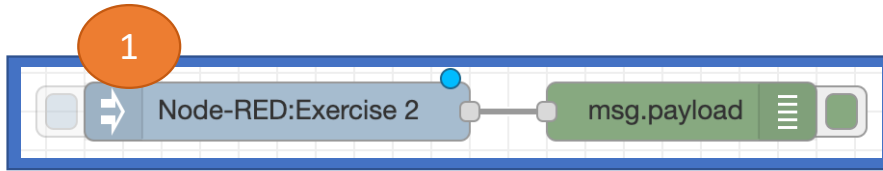
1. Set *Inject node* and *Debug node* as follows.
2. Click *Enabled* radio button.
3. Report the results.



The 'Edit inject node' configuration window. It includes a 'Delete' button, 'Cancel' and 'Done' buttons. The 'Properties' tab is active, showing fields for 'Payload' (set to 'a\_z Exercise 2'), 'Topic' (set to 'Node-RED'), and a checkbox for 'Inject once after 0.1 seconds, then'. The 'Repeat' section is set to 'interval' with a dropdown menu. Below this, 'every 1 seconds' is configured with a numeric input and a unit dropdown. A 'Name' field is also present. A yellow note box 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, the 'Enabled' radio button is selected, and an orange circle with the number '2' is placed next to it.

## v. Exporting your works

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



## 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

**Clipboard**

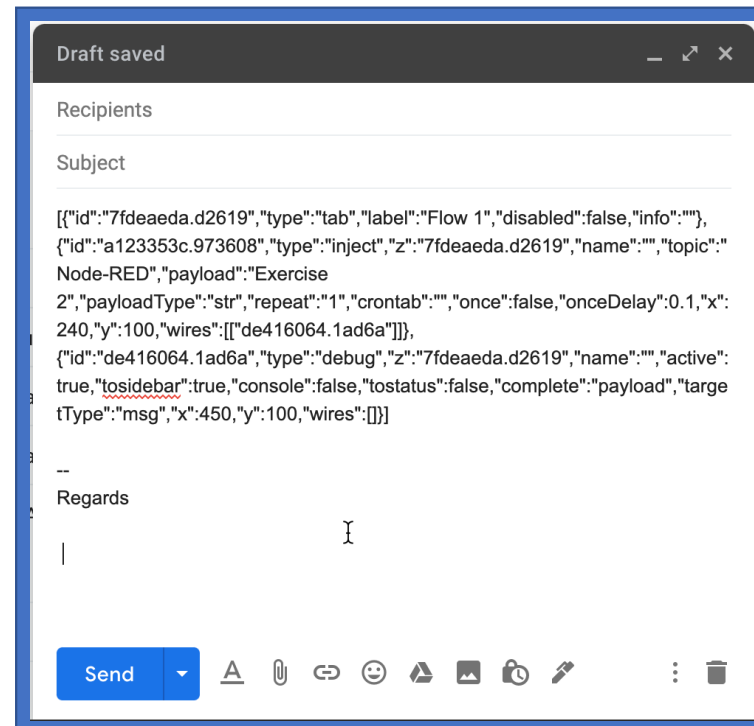
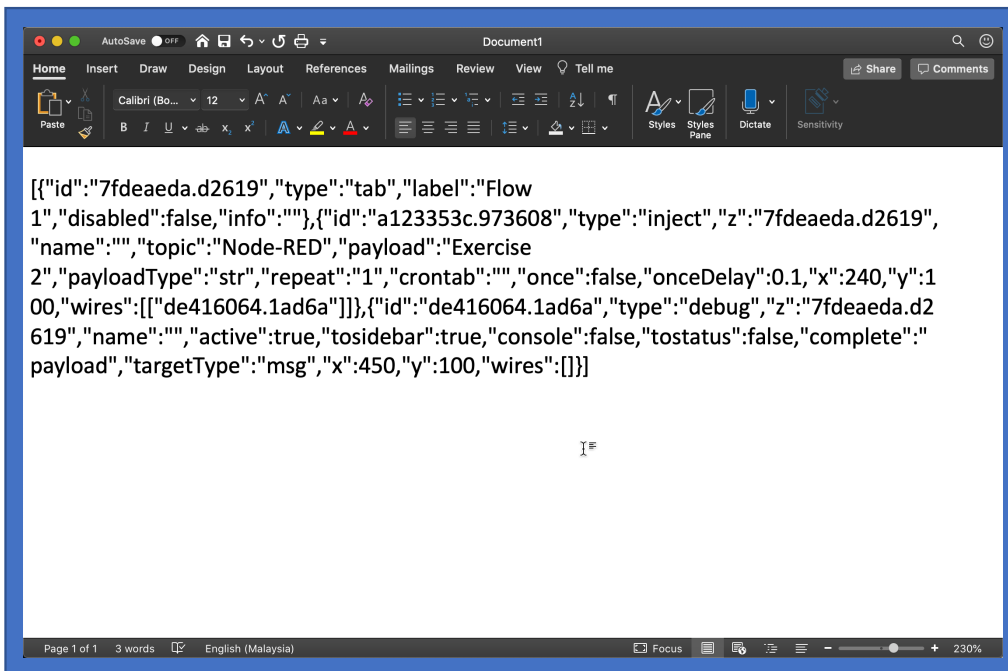
Library

```
[{"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":[]}]
```



## v. Exporting your works

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



QnA

**END**