



**TECHNOLOGY CAMP**

**Controlling IoT Devices**

**Day 4 : Session 3**

## Learning Objectives

- Learn 3 methods to copy and reuse Node-RED flows
- Describe common nodes and their uses
- Build a manual control button using Node-RED

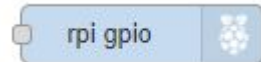




- The inject node inserts (injects) a message, known as a payload into the flow. When first dropped on the workspace, the node defaults to timestamp, but edited to inject other payloads as selected from the drop down menu



- The debug node displays either the message payload or the complete message object. The message can be output in to several different locations.

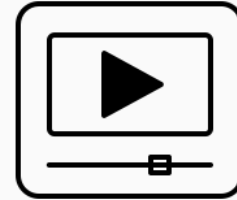


- The rpi gpio output node (note the logo on the right) allows for message payloads (values) to control the state of GPIO pins to control IoT devices.

## Node-Red Switch Node for Beginners

Lets watch it:

- [https://www.youtube.com/watch?v=oRTb6bgGN\\_I](https://www.youtube.com/watch?v=oRTb6bgGN_I)





- The function node allows for the addition of JavaScript code. Messages received by the function node can be processed by the JavaScript code and then return a message, message object(s), or nothing (ending the flow).

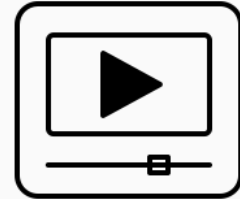


- The switch node evaluates a received message based on a hierarchy of pre-defined rules. The switch can be set to stop at the first match or run through all the rules in the switch. Once the evaluation is complete, the switch routes message on based on the flow design.




## How to Copy Nodes and Flows in Node-Red

Lets watch it:

- <https://www.youtube.com/watch?v=vLhVxWRtWc8>
- Stop at 5:25

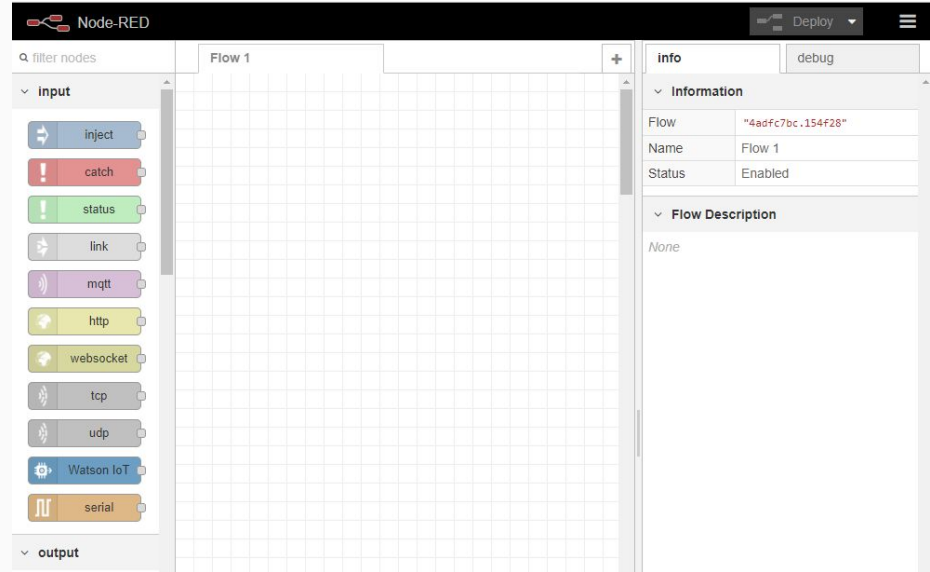


## Raspberry Pi Set up

- Please **do not** unplug or turn off the PI without shutting it down from the App Menu ( in the upper left corner). Doing so could corrupt the SD card.
- Open your laptop and double click on the VNC Viewer icon. 
- Login using the default credentials:
  - *UserID: pi*
  - *Password: raspberry*
- When the Raspberry Pi desktop appears, click on the VNC icon  in the upper right and note your IP address listed under Connectivity
- Open a new browser tab and enter `http://{Your IP Address Here}:1880` to start Node-Red

# Import a Node-RED Flow – Blinking LED

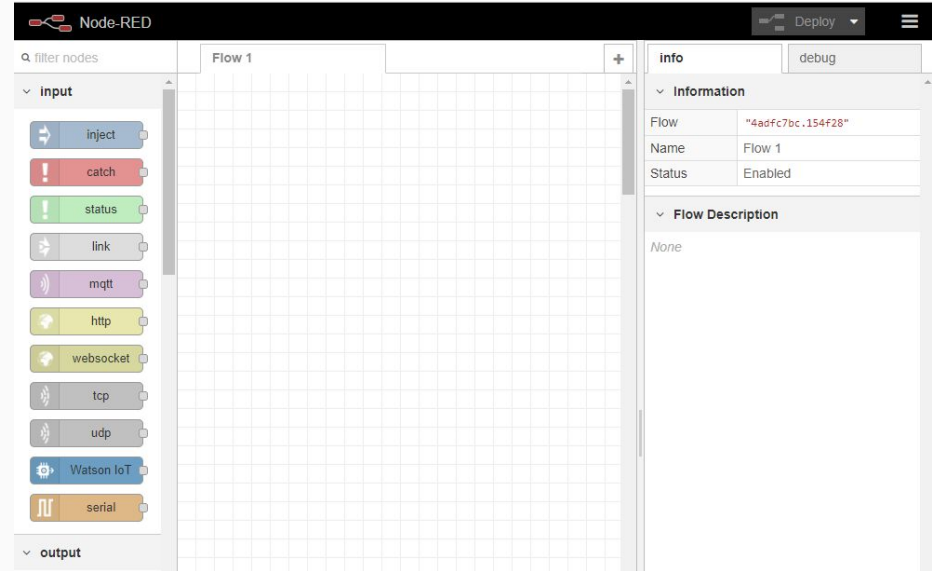
- *Follow along with Instructor screen share*





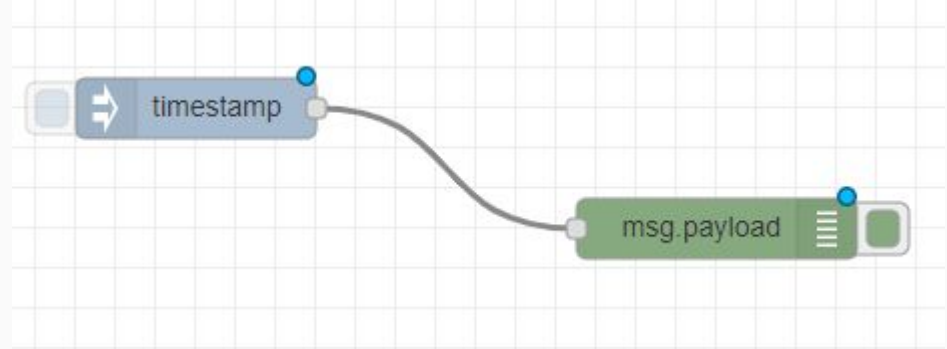
# Build a Node-RED Manual LED Control Button

- *Follow along with Instructor screen share*



## Try it

- *Modify the flows you built.*
- *Build your own flows.*
- *Experiment with using different options and note the results.*



## What we learned?

- Learn 3 methods to copy and reuse Node-RED flows
- Describe common nodes and their uses
- Build a manual control button using Node-RED



## End of session 3

- Time for break
- Snacks served in Cafeteria
- Remember to use restrooms

