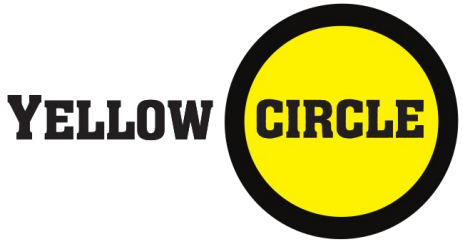


TECHNOLOGY CAMP

Building IoT Devices GPIOs

Day 4 : Session 2

Session Overview

Learning Objectives

- Learn what GPIOs are
- Learn how GPIO pins on the Raspberry Pi can be used to create IoT devices
- Learn how to use Node-RED on Raspberry Pi to program IoT device control

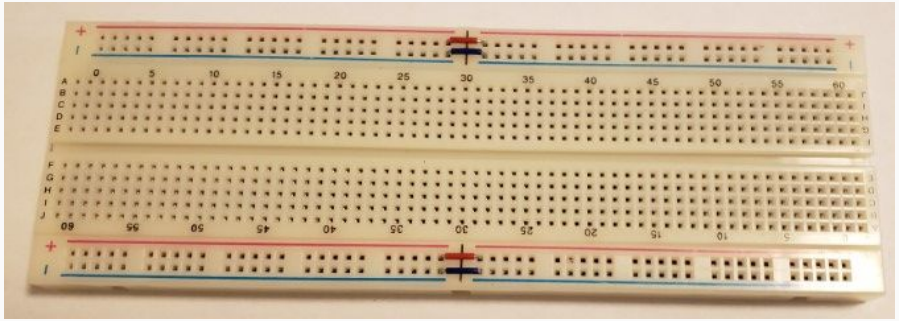
What are GPIO pins?

GPIO stands for general-purpose input/output. On a Raspberry Pi, the GPIO pins are rows of small metal posts (called pins) that can be used to make connections with external devices. Different pins have different functions and capabilities. By connecting components to the correct GPIO pins and programming software to either send or receive information from the pins, the Raspberry Pi can be used to communicate with and/or control external devices.

What is a breadboard?

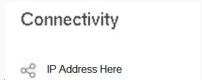
A breadboard is a solderless device for temporary prototype with electronics and test circuit designs. Most electronic components in electronic circuits can be interconnected by inserting their leads or terminals into the holes and then making connections through wires where appropriate. The breadboard has strips of metal underneath the board and connect the holes on the top of the board. .-wiring.org.co

http://wiring.org.co/learning/tutorials/breadboard/



Raspberry Pi Set up

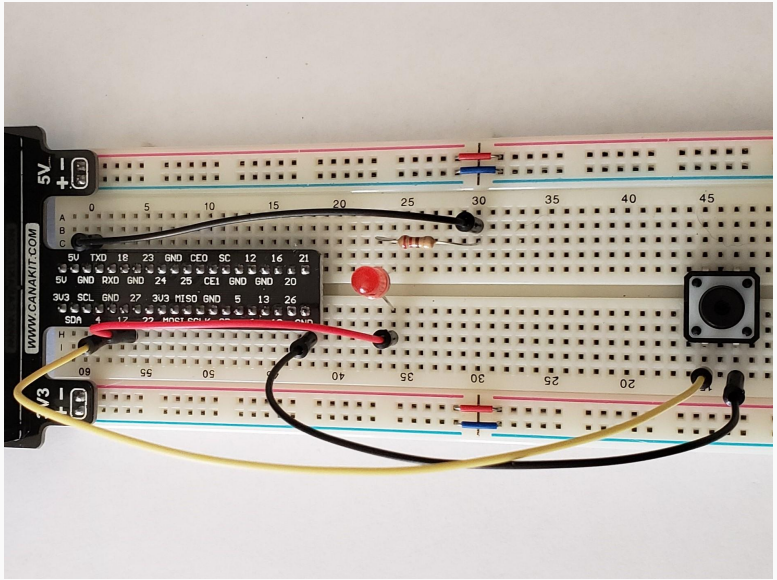
- Please ***do not*** unplug or turn off the PI without shutting it down from the App Menu ( in the upper left corner). Doing so could corrupt the SD card.
- Open your laptop and double click on the VNC Viewer icon. 

- 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

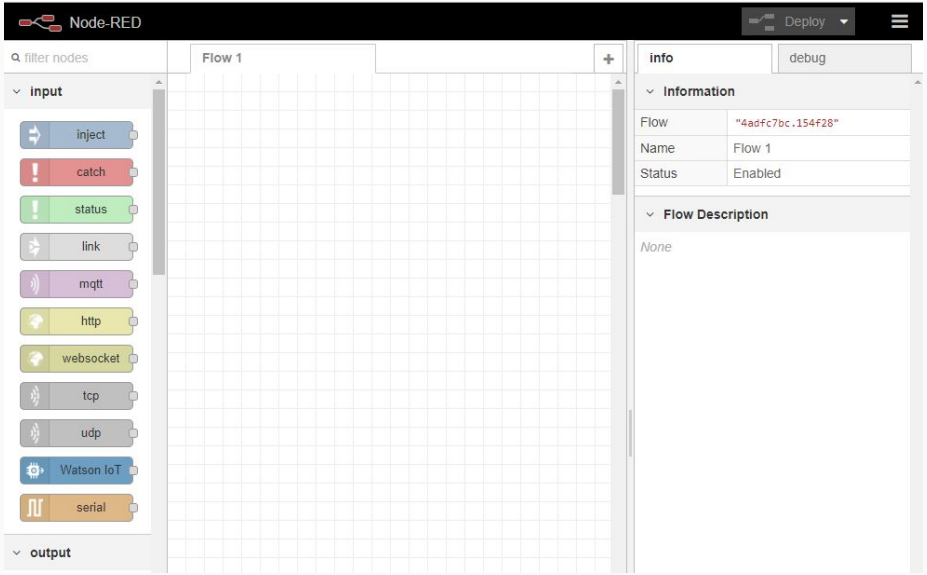
Breadboards and Circuits

- *Follow along with Instructor screen share*



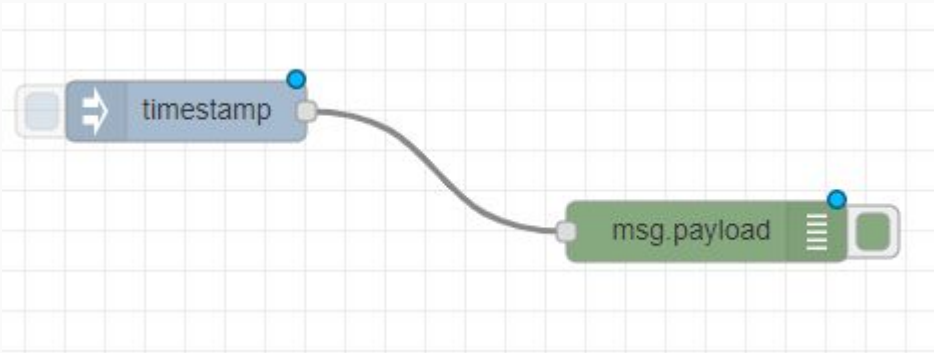
Programming Device Control with Node-RED

- *Follow along with Instructor screen share*



Student Activity

Try it

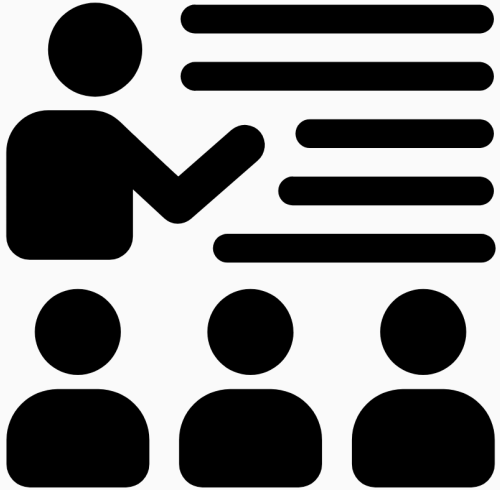


- *Modify the flows you built.*
- *Build your own flows.*
- *Experiment with using different options and note the results.*

Closing / Wrap-up

What we learned?

- What GPIOs are
- How GPIO pins on the Raspberry Pi can be used to create IoT devices
- How to use Node-RED on Raspberry Pi to program IoT device control



What's next...

YELLOW CIRCLE

End of session 2

- Time for lunch
- Lunch served in Cafeteria
- Remember to use restrooms