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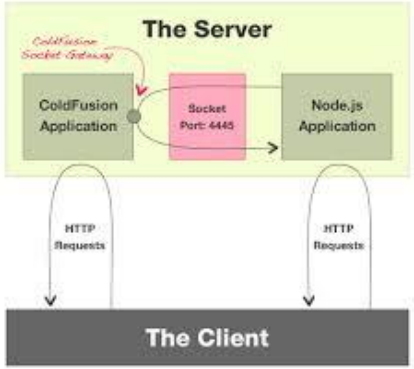
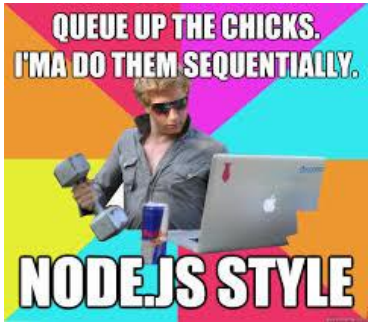


What is node??



nodejs.org


```
function runInParallel() {
  async.parallel([
    getUserProfile,
    getRecentActivity,
    getSubscriptions,
    getNotifications
  ], function(err, results) {
    //This callback runs when all the functions complete
  });
}
```

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Node.js

Open Source

Written in JavaScript

Event-Based

Utilizes V8 JavaScript Engine built in Google Chrome

Can write for front-end and back-end

Asynchronous

Concurrent users

Cross platform runtime environment for server-side and networking applications

Callbacks

Great if you need to do several things at the same time

npm

Benefits

- easier for JavaScript developers to share and reuse code

- easier for JavaScript developers to update their code

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Node.js Install Fest Linux and Mac

Step 1:

Let's go to nodejs.org

Go to Downloads in the navbar

Select your installer

Start the Installer

Click Install and Finish

Step 2:

Enter your terminal:

type: node --version

Installation Complete!!!

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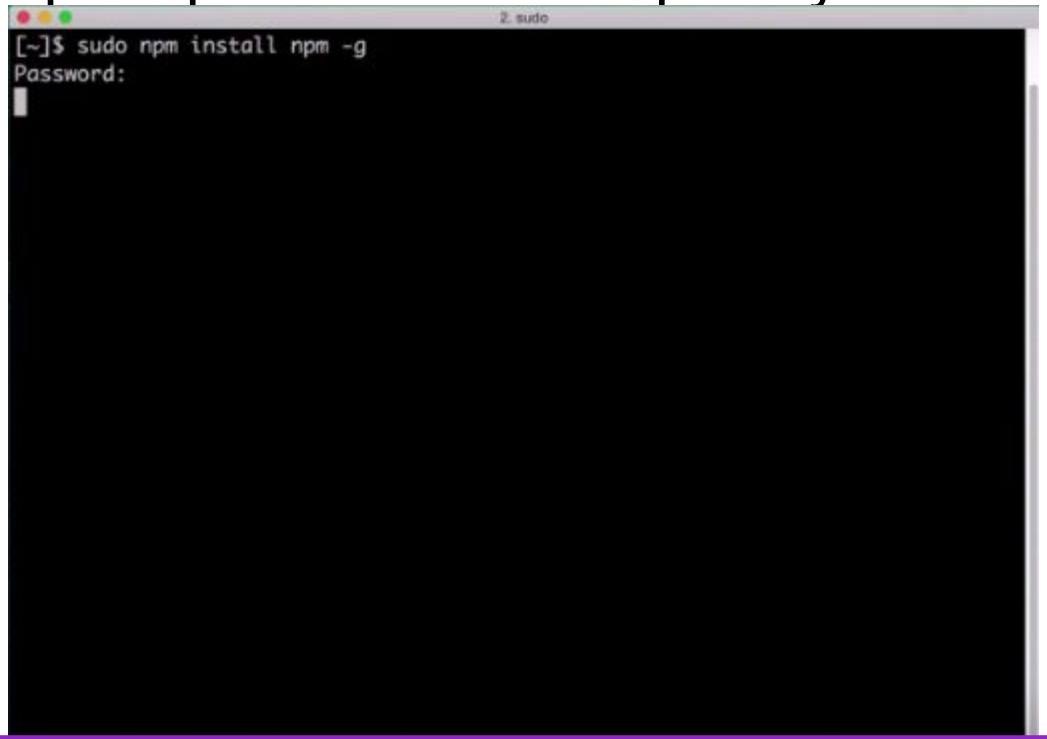
npm: Updating

Node comes with npm, but npm updates more frequently

Terminal

- Type: sudo npm install npm -g
- Enter your password



npm con’t.

Terminal:

- Type: npm init -f-y

  -writes a package.json file for you

- Install and Require file
  - we’re going to create a file
  - Type: console.log(‘Hello, npm!’);
  - Run: node index.js
    - receive: Hello, npm!
  - Run: node
    - require

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Node for Windows

- Download installer Nodejs.org
- Follow Installer
- Restart Computer
- To update just repeat the installation steps

Testing Exercise

Let’s see if we downloaded node and npm correctly.

Test NPM - `npm -v`

Download Express

Navigate to your terminal, create a projects folder for your new project

cd into this folder and type the following:

```
npm install --save <module_name>
```

Asynchronous

What is Node.js? | non-blocking I/O

***Non*-Blocking I/O Model**

Every ***function in Node is non-blocking***

Single-threaded

No parallel code execution

Single CPU

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I/O

Input/Output Model

- Communication b/t the information processing system (computer) and the outside world
- Inputs: data or information received by the system
- Outputs: signals or data sent from it

Let’s order lunch

You and your friends walk inside the food place and go **online**

The **server sits and waits** as you both decide what to eat

The server assists one person at a time...

So when your friend chooses an order, the server **process their food** and **moves on to you**

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As a non-blocking system...

What is Node.js? | non-blocking I/O

Non-Blocking I/O Model

- Node loops through the customers and polls them to determine which ones are ready to order.
- During a function's queue, Node can listen to another event.
- When the other customer is finally ready to order, he'll issue a *callback*.
- Asynchronous **callbacks**: *"come back to me when I'm finished"*
  - function called at the completion of a given task.

Node.js/npm Summary

Node.js

- Runtime Environment for server-side and network app.
- Framework, requires (this class = Express)
- Written in C++, used with JavaScript
- Code sharing b/t server-side and client-side
- Allows high concurrency
- Asynchronous
- Open Source

npm

- Package Manager
- Packages as JS modules
- Makes it easier to share and reuse code
- Must update npm; updates more rapidly than node
- npm registry: https://www.npmjs.com/

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The Possibilities....

- Create scalable, real-time web application with simplicity
  - even a web chat application (i.e. Gchat)
- Online Games
- Create a DNS Server
- Create an HTTP Server
  - with just 4 lines of code...
- Anything that sends updates to the user in real-time