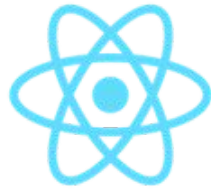




From **Zero** to **Hero**

Towards Front-End Craftsmanship



Jasmine



ESLint





What shall I do next?

T D D

B D D



P D D



*You either die a **JavaScript hero**, or you live long enough to read those JavaScript **fatigue** articles.*

Sample Project



github.com/ariya/from-zero-to-hero



Test Library



Assertion Library



Test Runner



Style Checker

```
> npm start
```

```
> from-zero-to-hero@0.0.1 start /home/ariya/from-hero-to-zero
```

```
> http-server -p 9000
```

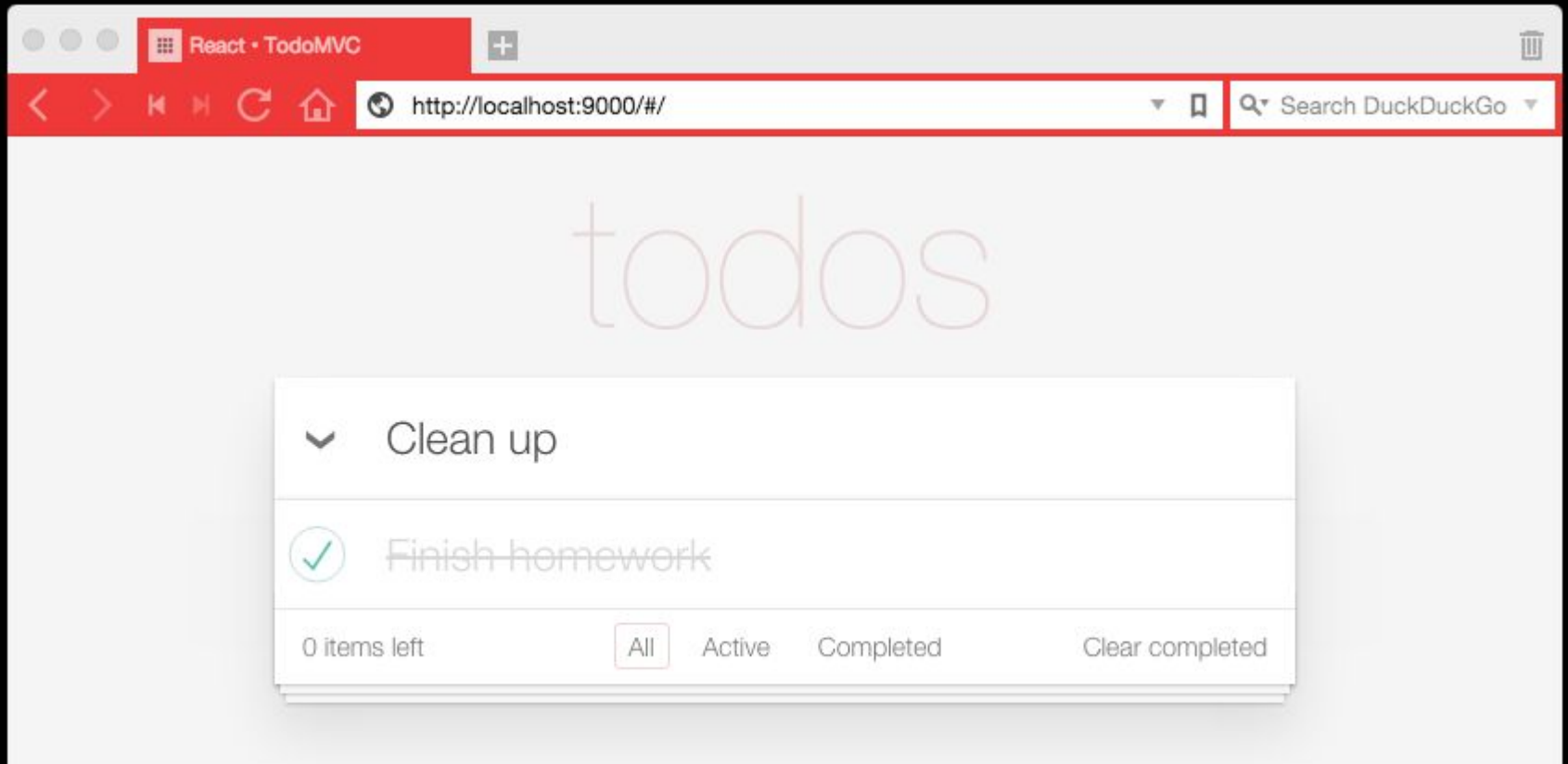
Starting up http-server, serving ./

Available on:

<http://127.0.0.1:9000>

<http://192.168.1.69:9000>

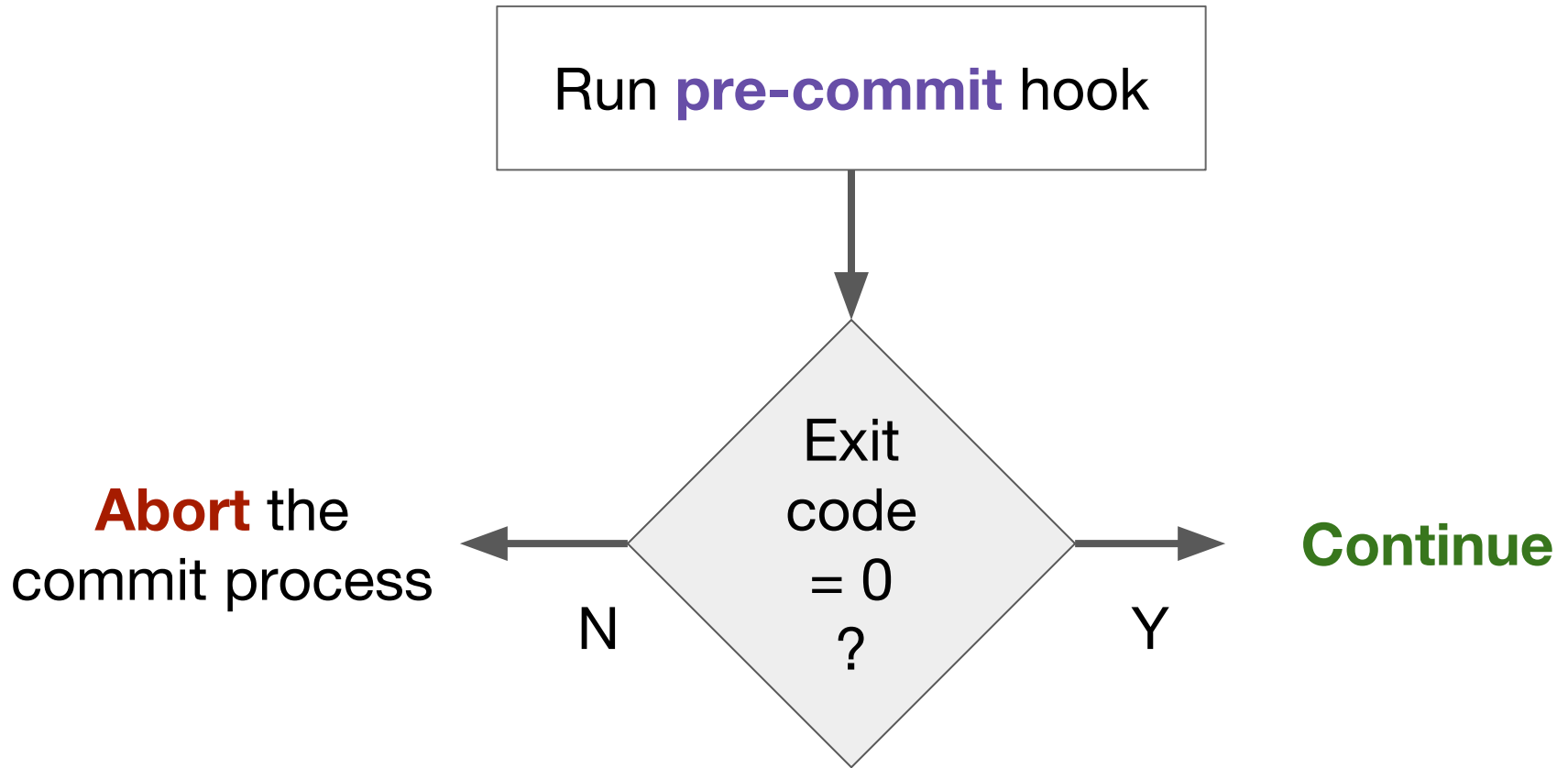
Hit CTRL-C to stop the server





Prevent regressions with **Git hooks**

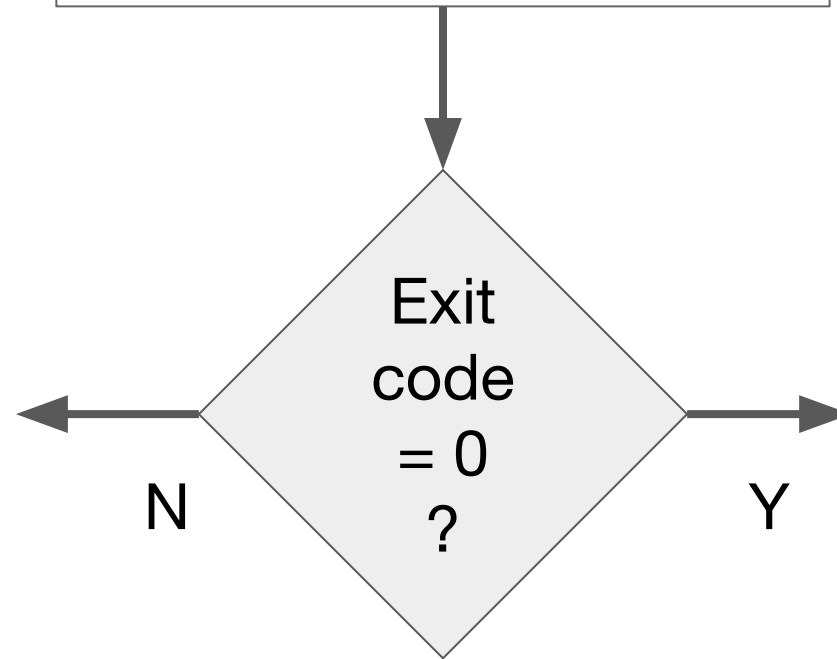
git commit



git push

Run **pre-push** hook

Abort the
push process



Continue

```
cat << EOF >> .git/hooks/pre-commit  
npm run jscs  
EOF
```

Create a pre-commit hook script

```
chmod +x .git/hooks/pre-commit
```

Ensure that it is executable

```
> git commit -a -m "Fix bug #666"
```

```
> from-zero-to-hero@0.0.1 jscs /home/ariya/from-hero-to-zero
```

```
> jscs -p idiomatic js/*.js
```

Invalid quote mark found at `js/todoModel.js` :

```
1 |var app = app || {};
```

```
2 |(function() {
```

```
3 |     'use strict';
```

```
-----^
```

```
4 |     var Utils = app.Utils;
```

```
5 |     // Generic "model" object. You can use whatever
```

1 code style error found.



Manage
code complexity

SOURCE CODE

```
function searchConsultant() {  
  var candidate = [];  
  for (var i = 0; i < depts.length; ++i) {  
    var dept = depts[i];  
    if (dept !== 'Service') continue;  
    for (var j = 0; j < dept.members[j].length; ++i) {  
      var e = dept.members[j];  
      if (e.state == 'CA') {  
        if (e.keywords.indexOf('JavaScript') >= 0) {  
          candidate.push(e);  
        }  
      }  
    }  
  }  
}
```

OPTIONAL SOURCES OF CYCLOMATIC COMPLEXITY:

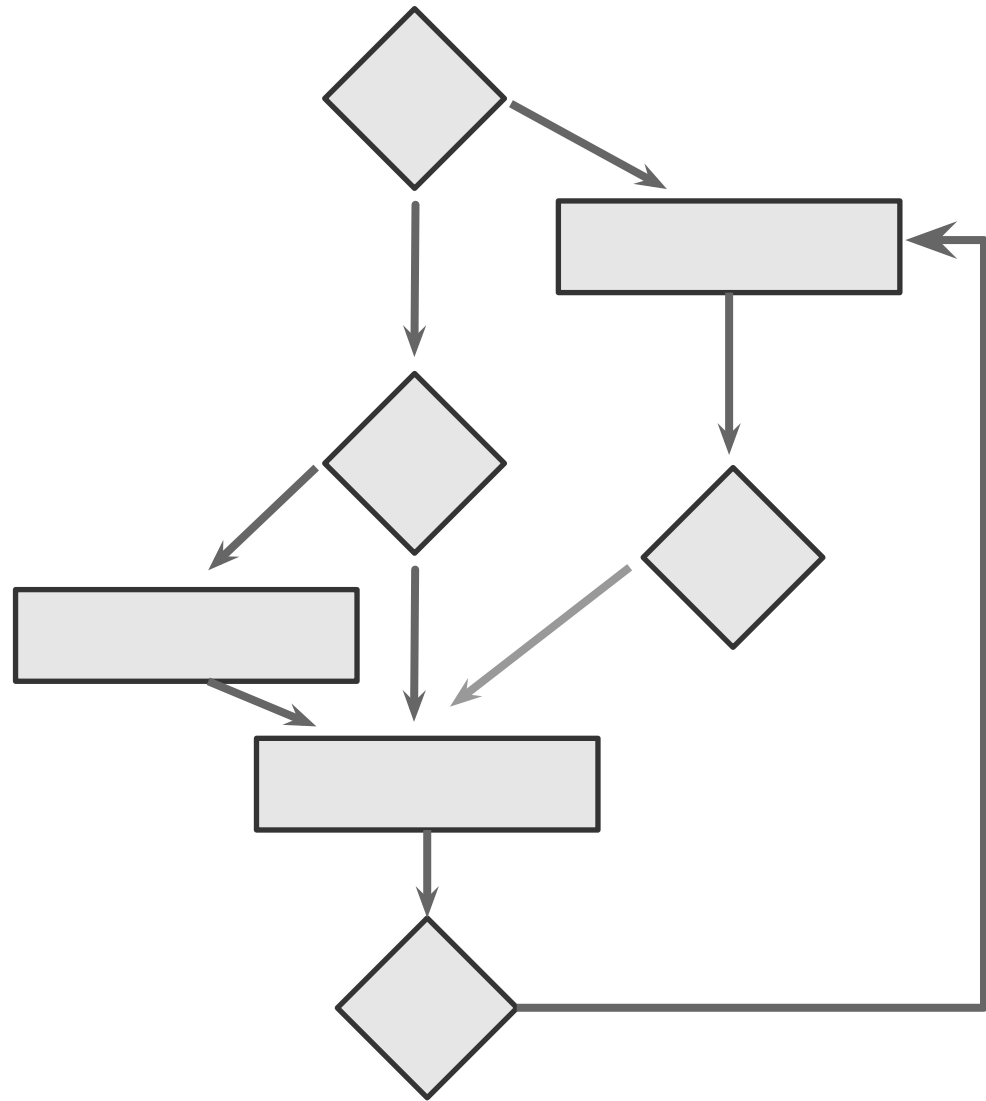
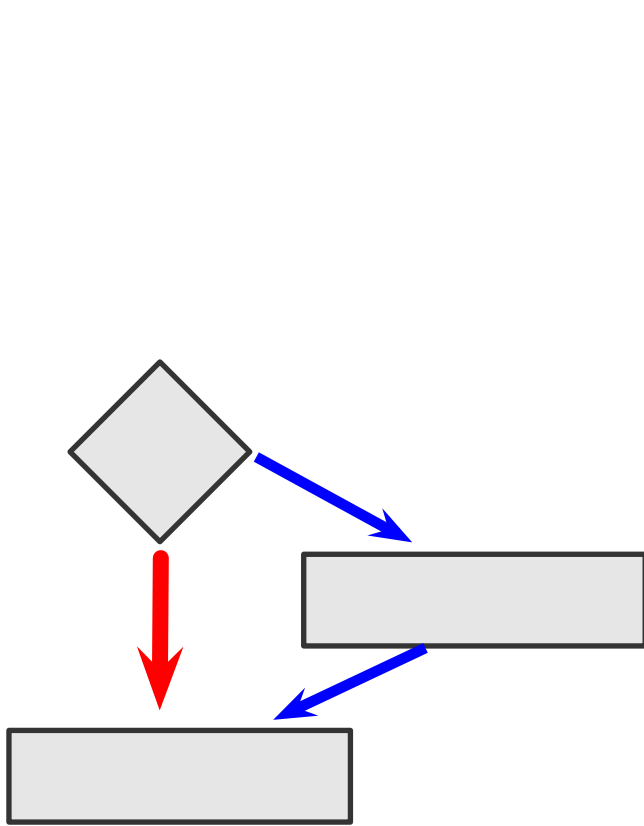
☒ || operator

☒ switch statements

☐ for...in loops

☐ catch clauses

ANALYSE



```
> cr -f plain search.js
```

search.js

Function: searchConsultant

Line No.: 1

Physical LOC: 17

Logical LOC: 13

Parameter count: 0

Cyclomatic complexity: 6

Cyclomatic complexity density: 46.15384615384615%

Halstead difficulty: 15.235294117647058

Halstead volume: 371.5647232790157

Halstead effort: 5660.897842897945



Monitor and track
code coverage

Istanbul

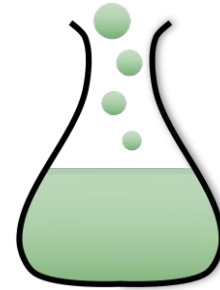


Instrumenter + Coverage analysis

Source



Instrumented Source



Tests



Coverage Report

KARMA configuration

```
module.exports = function(config) {
  config.set({
    basePath: '..',
    autoWatch: true,
    frameworks: ['mocha', 'chai'],
    files: ['js/*.js', 'test/*.js' ],
    plugins: [ 'karma-mocha', 'karma-chai', 'karma-coverage',
      'karma-phantomjs-launcher'],
    browsers: ['PhantomJS'],
    singleRun: true,
    preprocessors: { 'js/*.js': ['coverage'] },
    reporters: ['progress', 'coverage'],
    coverageReporter: {
      dir : 'coverage/',
      reporters: [{ type: 'html', subdir: 'html' },]
    }
  });
};
```

Coverage Report

all files / js/ todoModel.js

77.14% Statements 27/35 66.67% Branches 4/6 62.5% Functions 10/16 77.14% Lines 27/35

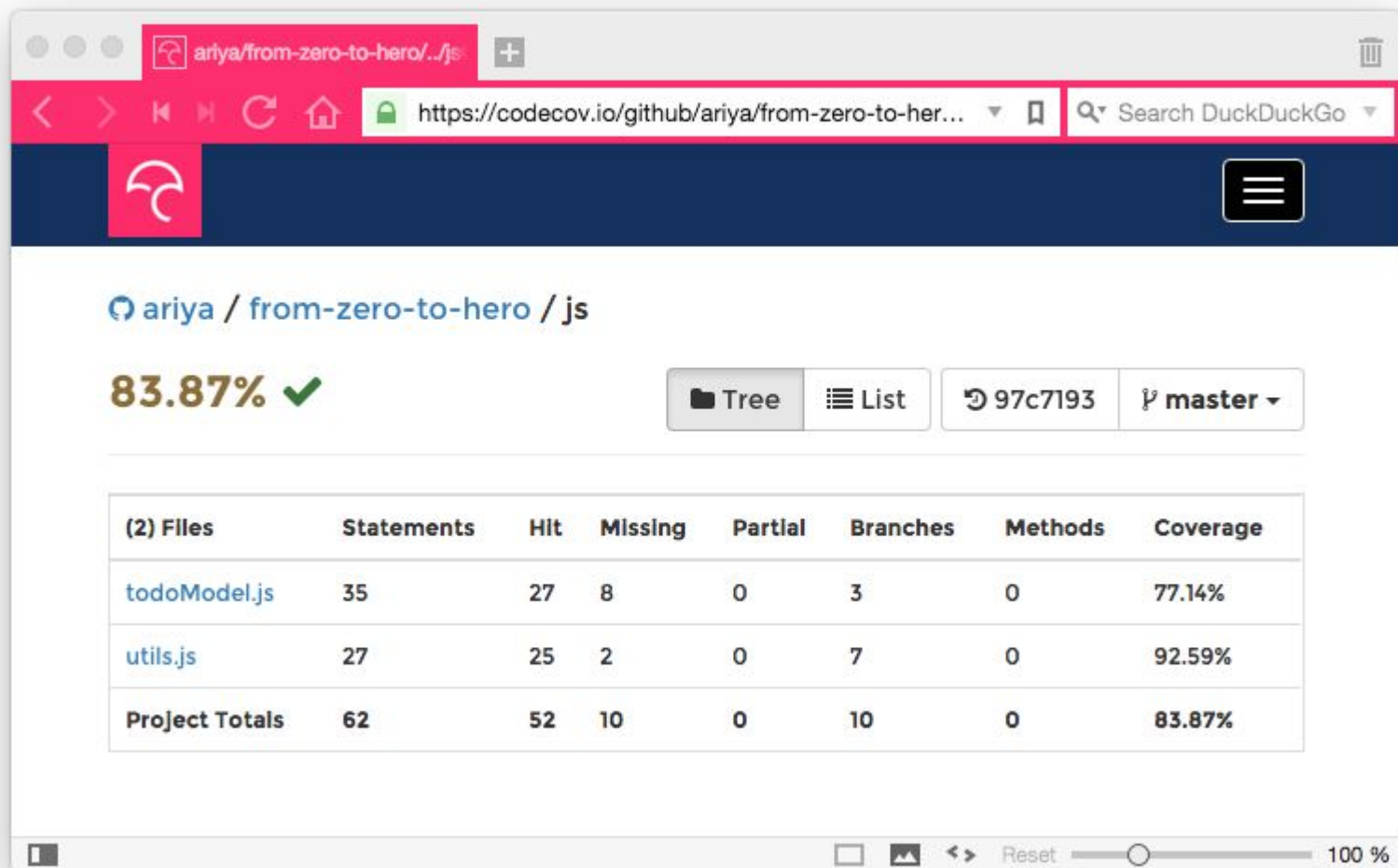
Statistics

```
1 1x var app = app || {};  
2 1x (function() {  
3     "use strict";  
4  
5 1x   app.TODOModel = function( key ) {  
6 5x     this.key = key;  
7 5x     this.todos = app.Utils.store( key );  
8 5x     this.onChanges = [];  
9  
10 1x   app.TODOModel.prototype.subscribe = function( onChange ) {  
11     this.onChanges.push( onChange );  
12  
13 1x   app.TODOModel.prototype.inform = function() {  
14 9x     app.Utils.store( this.key, this.todos );  
15 9x     this.onChanges.forEach(function( cb ) {  
16     cb();  
17     });  
18   };  
19 1x   app.TODOModel.prototype.addTodo = function( title ) {  
20 6x     this.todos = this.todos.concat({  
21       id: app.Utils.uuid(),  
22       title: title,  
23       completed: false  
24     });  
25 6x     this.inform();  
26   };  
27 1x   app.TODOModel.prototype.toggleAll = function( checked ) {  
28 1x     this.todos = this.todos.map(function( todo ) {  
29 2x       return app.Utils.extend({}, todo, { completed: checked });  
30     });  
31 1x     this.inform();  
32   };
```

Uncovered
Statements



Code Coverage Dashboard



Repository



Build system

**Cobertura
Report**



Dashboard

Coverage Tracking in Pull Request



codecov-io commented 10 minutes ago



Current coverage is 80.00%

Merging **#3** into **master** will decrease coverage by **-20.00%** as of **d85bc86**

@@	master	#3	diff @@
Files	1	1	
Stmts	4	5	+1
Branches	1	2	+1
Methods	0	0	
Hit	4	4	
- Partial	0	1	+1
Missed	0	0	

Review entire **Coverage Diff** as of **d85bc86**

Powered by **Codecov**. Updated on successful CI builds.

“If you think JSLint hurts
your feelings, wait until you
use Istanbul.”



@davglass



Run the tests with
evergreen browsers



#1 Continuous Delivery service for Windows

Your new build server in a cloud. Start in minutes. Enjoy faster results.

SIGN UP FOR FREE

Free for open-source projects. Plans start from \$29/month.

appveyor.yml



install:

- **choco install firefox**
- **choco upgrade firefox**
- **choco install googlechrome**
- **choco upgrade googlechrome**
- ps: Install-Product node \$env:nodejs_version
- node --version
- npm --version
- npm install

test_script:

- npm test



519,342
Downloads

31,637
Downloads of v 44.0.2

2/11/2016
Last update

[Software Site](#)
[Software License](#)

[Package Specific](#)
[Package Source](#)

Mozilla Firefox 44.0.2

This package was approved as a **trusted package** on 2/11/2016.

Bringing together all kinds of awesomeness to make browsing better for you.

This package installs Firefox in the first language which matches this list:

1. Install arguments override parameter if present, e.g. `choco install Firefox -packageParameters "l=en-GB"`.
To get a list of all available locales have a look at this file:
<https://releases.mozilla.org/pub/firefox/releases/latest/README.txt>.
2. If Firefox is already installed: the same language as the already installed Firefox.
3. The Windows system language where the Firefox package gets installed.
4. If Firefox does not support the system language, it will fall back to "en-US"

Looking for Firefox Developer Edition? Install the **firefox-dev** package.

To install Mozilla Firefox, run the following command from the command line or from PowerShell:

```
C:\> choco install firefox
```

<https://chocolatey.org/packages/Firefox>

Running Install scripts

```
choco install firefox
```

Installing the following packages:

firefox

By installing you accept licenses for the packages.

Firefox v41.0.2 already installed.

Use --force to reinstall, specify a version to install, or try upgrade.

Chocolatey installed 0/1 package(s). 0 package(s) failed.

```
choco upgrade firefox
```

Upgrading the following packages:

firefox

By upgrading you accept licenses for the packages.

You have Firefox v41.0.2 installed. Version 44.0.2 is available based on your source(s).

Firefox v44.0.2

Downloading Firefox 32 bit

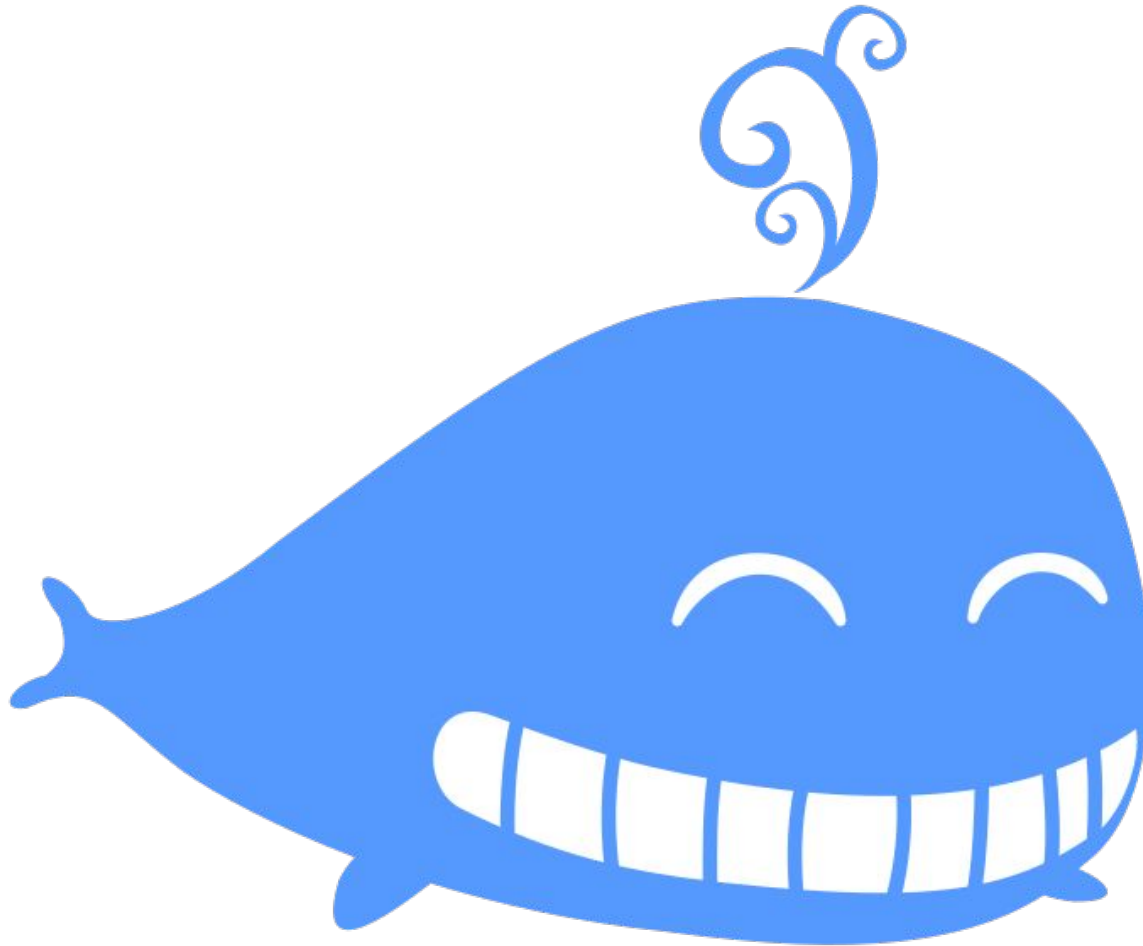
Installing Firefox...

Firefox has been installed.

The upgrade of firefox was successful.

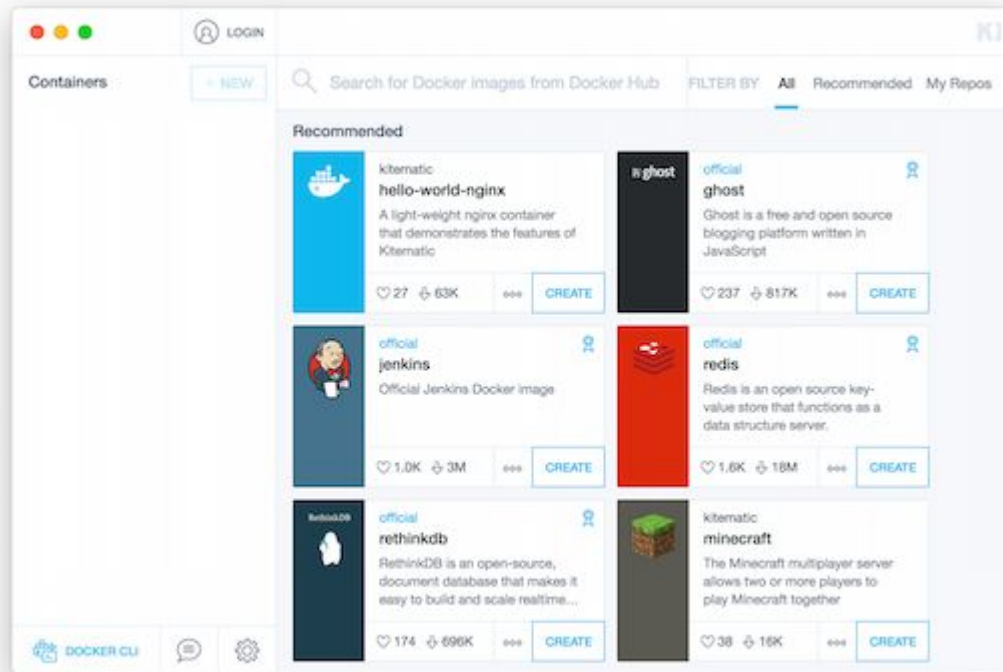


Ensure a consistent
development setup with **Docker**



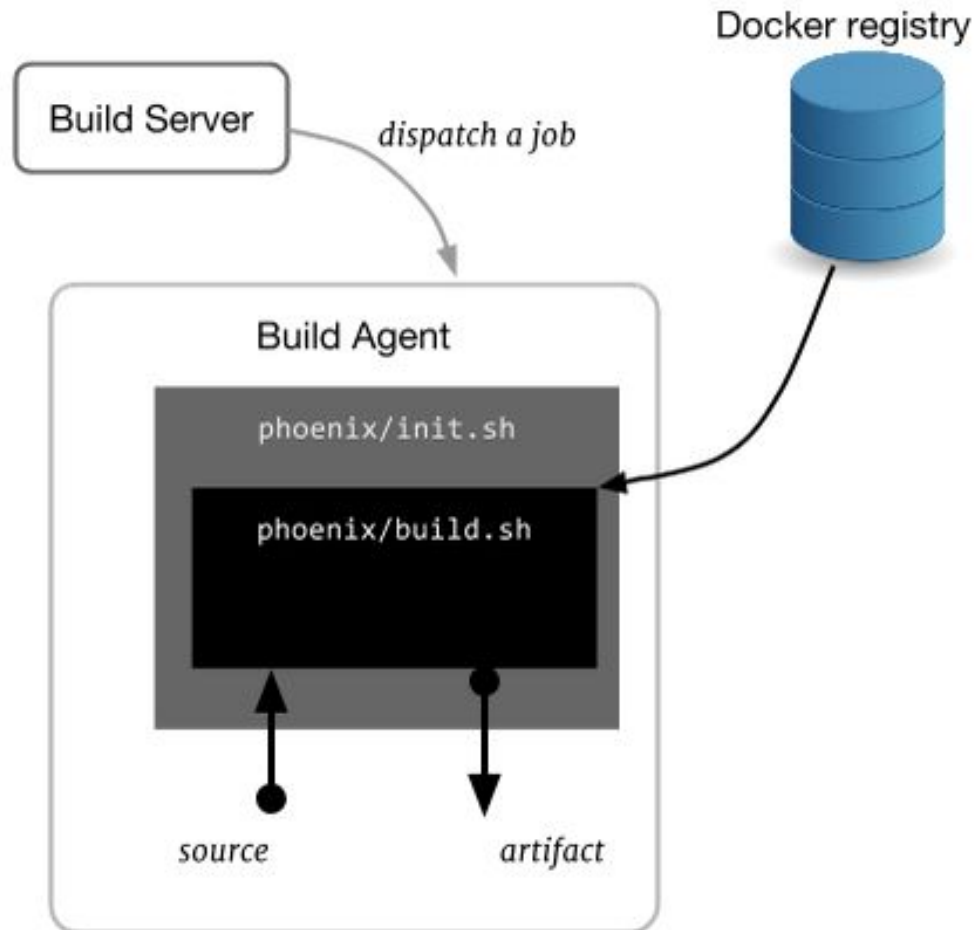
New (happy) kid on the block

Docker Toolbox on OS X/Windows



<http://ariya.ofilabs.com/2016/02/easy-docker-on-os-x.html>

In-container Build



Interactive

Docker image

```
docker run -it -v $PWD:/src node:5 bash
```

Map guest current
directory as /src

Shell

```
$ docker run -it -v $PWD:/src node:5 bash
```

```
root@f28390ec6f58:/src# cat /etc/debian_version  
8.3
```

```
root@f28390ec6f58:/# cd /src
```

```
root@f28390ec6f58:/src# npm install  
npm info it worked if it ends with ok  
npm info using npm@3.6.0  
npm info using node@v5.7.1  
npm info attempt registry request try #1 at 11:09:19 PM
```

```
root@ed866d9b9c7e:/src# npm run coverage
```

```
npm info it worked if it ends with ok
```

```
npm info using npm@3.6.0
```

```
npm info using node@v5.7.1
```

```
npm info lifecycle from-zero-to-hero@0.0.1~precoverage: from-zero-to-hero@0.0.1
```

```
npm info lifecycle from-zero-to-hero@0.0.1~coverage: from-zero-to-hero@0.0.1
```

```
> from-zero-to-hero@0.0.1 coverage /src
```

```
> cd test && karma start coverage.conf
```

```
06 03 2016 23:00:46.690:INFO [karma]: Karma v0.13.21 server started at http://localhost:9876/
```

```
06 03 2016 23:00:46.707:INFO [launcher]: Starting browser PhantomJS
```

```
06 03 2016 23:00:48.280:INFO [PhantomJS 2.1.1 (Linux 0.0.0)]: Connected on socket /#kp_WwtJE66DQ3pwZAAAA with id 56126974
```

```
PhantomJS 2.1.1 (Linux 0.0.0): Executed 6 of 6 SUCCESS (0.027 secs / 0.003 secs)
```

```
npm info lifecycle from-zero-to-hero@0.0.1~postcoverage: from-zero-to-hero@0.0.1
```

```
npm info ok
```



Launch the tests with
many web browsers

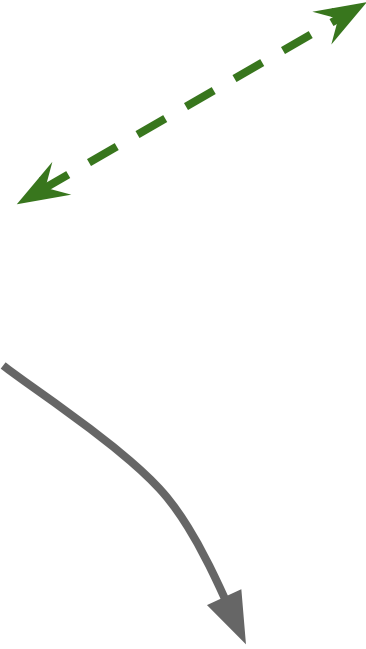


Browser Farm

Build system



Repository



Sauce Connect

Download & install

```
wget -q https://saucelabs.com/downloads/sc-4.3.11-linux.tar.gz
tar -xzf sc-4.3.11-linux.tar.gz
export PATH=$PATH:`pwd`/sc-4.3.11-linux/bin
```


```
sc -u $SAUCE_USERNAME -k $SAUCE_ACCESS_KEY -f ~/sc_ready &
```


```
sleep 25
while [ ! -e ~/sc_ready ]; do sleep 5; done
```


Launch Sauce Connect


Wait until it is ready


Sauce Labs Dashboard





 Dashboard


 Tunnels 1 ACTIVE

 Archives

 Docs

 New Manual Test

 Ariya



FILTER:

Date

Status

Build

Owner

Tag











Platform

Browser

5 Tests Found

Show Columns

Sort By: Best Match

NAME	P	B	DURATION
<input type="checkbox"/> ✓ Hero		 9	8s
<input type="checkbox"/> ✓ Hero		 9	10s
<input type="checkbox"/> ✓ Hero		 13	10s
<input type="checkbox"/> ✓ Hero		 5	52s
<input type="checkbox"/> ✓ Hero		 8.4	1m 2s

Missing Tests?

Sauce Labs Dashboard

The screenshot displays the Sauce Labs dashboard interface. On the left is a sidebar with navigation links: Dashboard, Tunnels (1 ACTIVE), Archives, and Docs. Below these is a 'New Manual Test' button and a user profile for 'Ariya'. The main area features a table of test configurations with filter headers: FILTER: Date, Status, Build, Owner, Tag, Platform, and Browser. A green callout box highlights a subset of the table data.

Platform	Browser	Version	Duration
Windows 7	Internet Explorer 9	9	8s
OS X 10.11	Safari 9	9	10s
Windows 10	Edge 13	13	10s
Android 5.0	Chrome	5.0	52s
iOS 8.4	Mobile Safari 8	8.4	1m 2s

Internet Explorer 9 on Windows 7
Safari 9 on OS X 10.11
Edge 13 on Windows 10
Chrome on Android 5.0
Mobile Safari 8 on iOS 8.4

```
$ npm run saucelabs
```

```
> from-zero-to-hero@0.0.1 saucelabs /home/ubuntu/src/github.  
com/ariya/from-zero-to-hero  
> cd test && karma start saucelabs.conf
```

```
04:11:58.484:INFO [karma]: Karma v0.13.21 server started at http:  
//localhost:9876/
```

```
04:11:58.500:INFO [launcher]: Starting browser microsofedge (Windows 10)  
on SauceLabs
```

```
04:11:58.524:INFO [launcher]: Starting browser safari 9.0 (OS X 10.11) on  
SauceLabs
```

```
04:11:58.537:INFO [launcher]: Starting browser android (Linux) on  
SauceLabs
```

```
04:11:58.550:INFO [launcher]: Starting browser iphone 8.4 (OS X 10.11) on  
SauceLabs
```

```
04:11:58.566:INFO [launcher]: Starting browser internet explorer 9.0  
(Windows 7) on SauceLabs
```



Test your
downstream projects

Library

UNDERSCORE.JS



Framework



BACKBONE.JS



Application

 **TodoMVC**

```
function test_downstream_project(project, repo)
  console.log('Cloning', repo, '...');
  execute('git clone --depth 1 ' + repo + ' ' + ...);
```

Clone a downstream project

```
  process.chdir(project);
```

```
  console.log();
  execute('npm install');
```

Install dependencies

```
  console.log();
  console.log('Replacing awesome with a fresh one...');
  copy_file(source, './node_modules/awesome/awesome.js');
```

Replace the library with
a fresh one

```
  console.log();
  try {
    execute('npm test');
  } catch (e) {
    console.log('Failing...');
    process.exit(1);
  }
  process.chdir('..');
```

Run the test suite

```
}
```


Run different tests in **parallel**





Verify code coverage

Run cross-browser tests

Check downstream project

Parallel Execution



Verify code coverage



Monitor complexity



Run cross-browser tests



Check downstream project



This is the **heroes** you're looking for

Thank You



@ariyahidayat

speakerdeck.com/ariya

SH-PE

shapesecurity.com

Booth **#208**