

# UI REGRESSION TESTING

@JONHARDING

<https://github.com/webedge/grunt-phantomflow-demo>

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# VACATION



# CARS

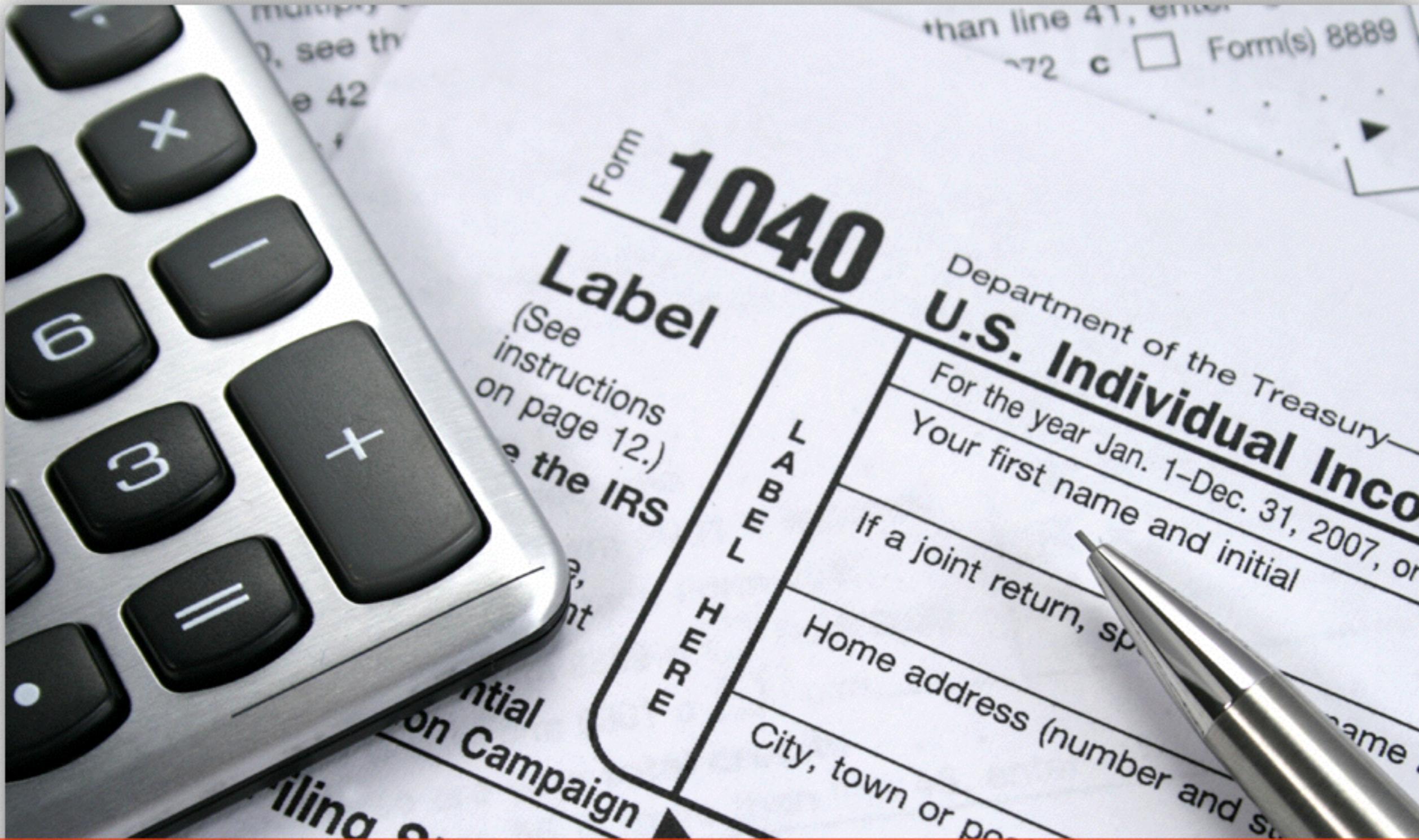


# ELECTRONICS



# HOBBIES

# TAXES





# TIRES

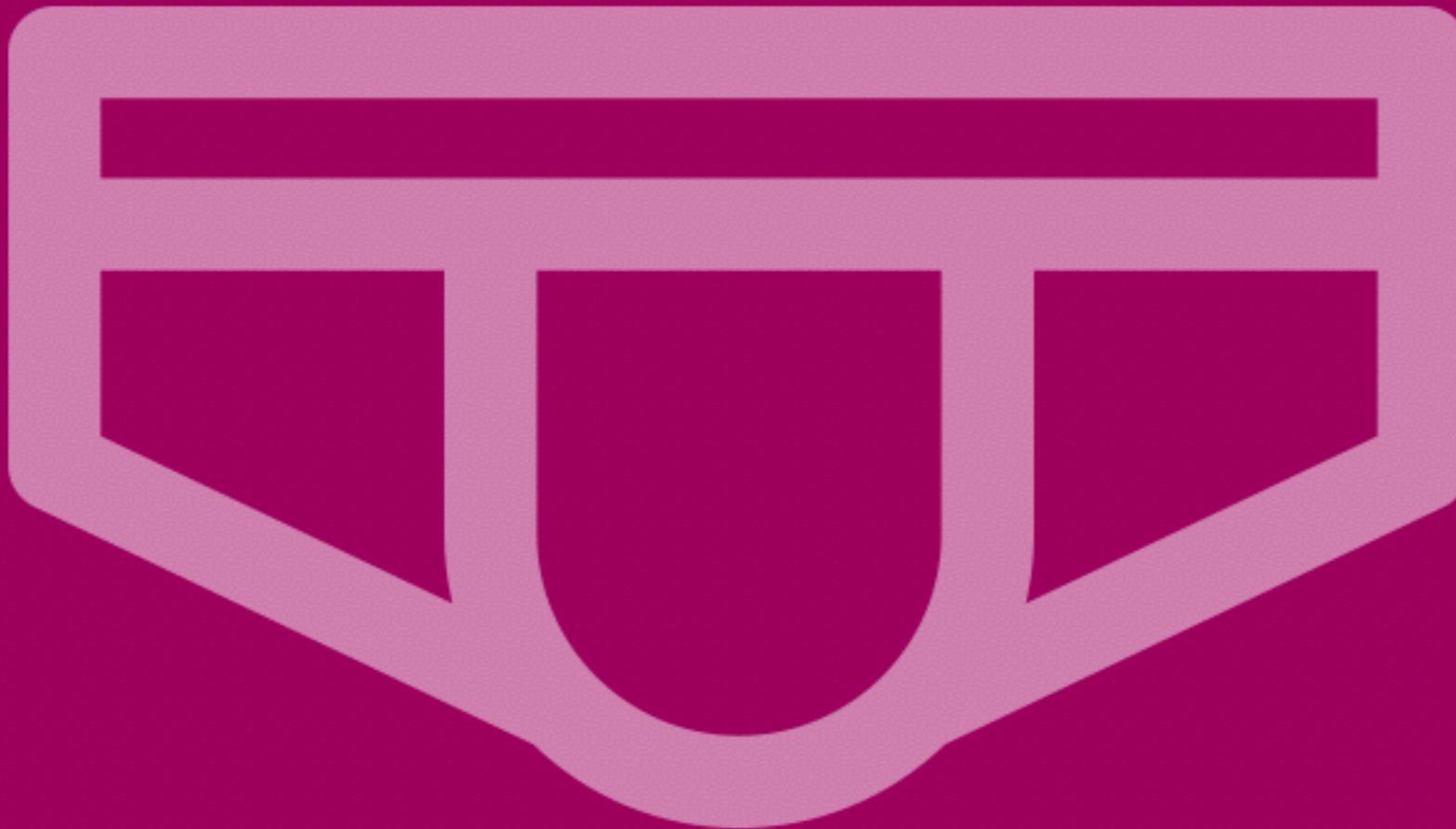


**MAC & CHEESE**

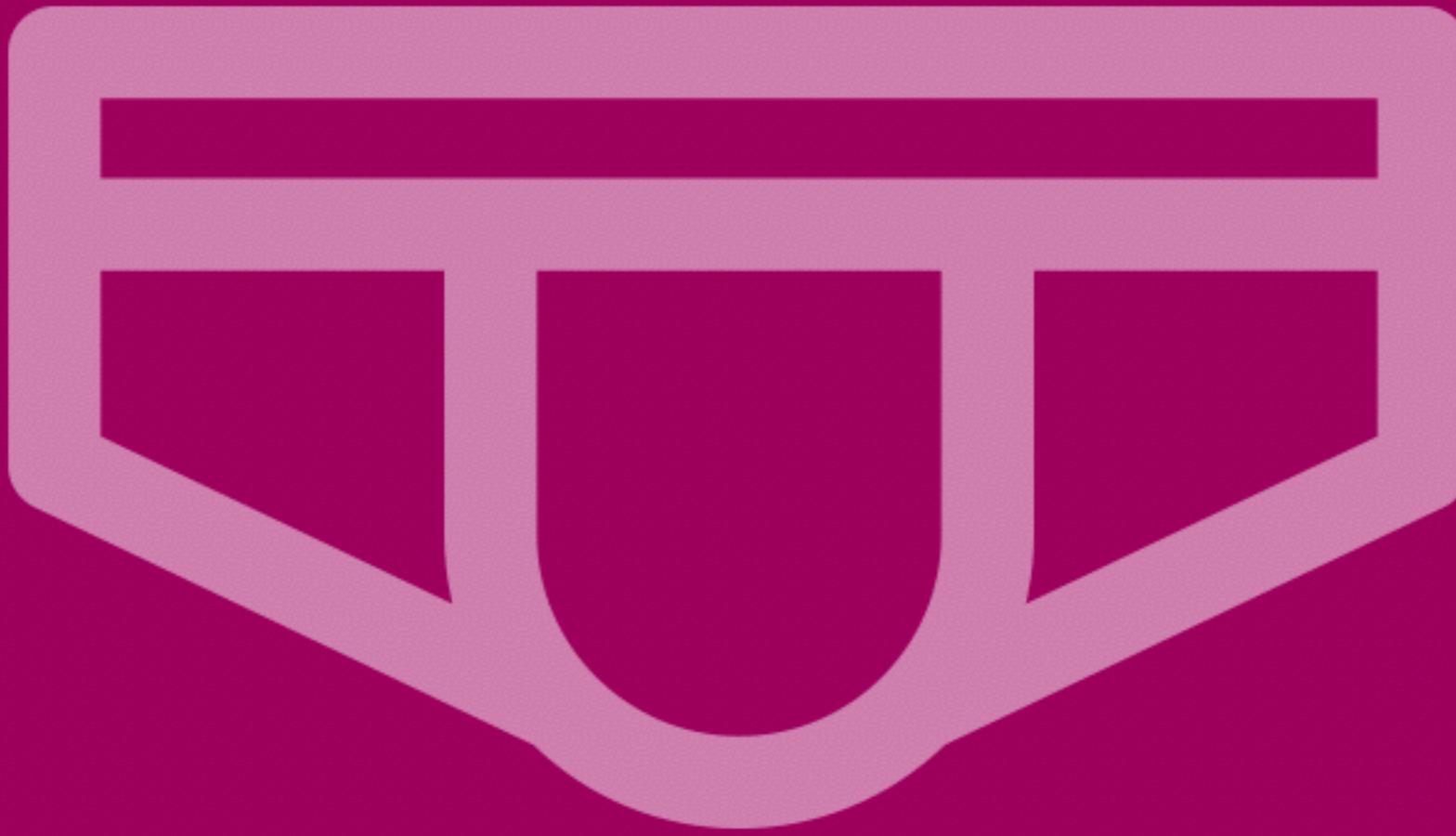


**\$1.29/BOX**

**MAC & CHEESE**



**TESTING =  
BUYING UNDERWEAR**



**YOU HATE TO BUY IT  
BUT CAN'T BE CAUGHT  
WITHOUT IT**



VS

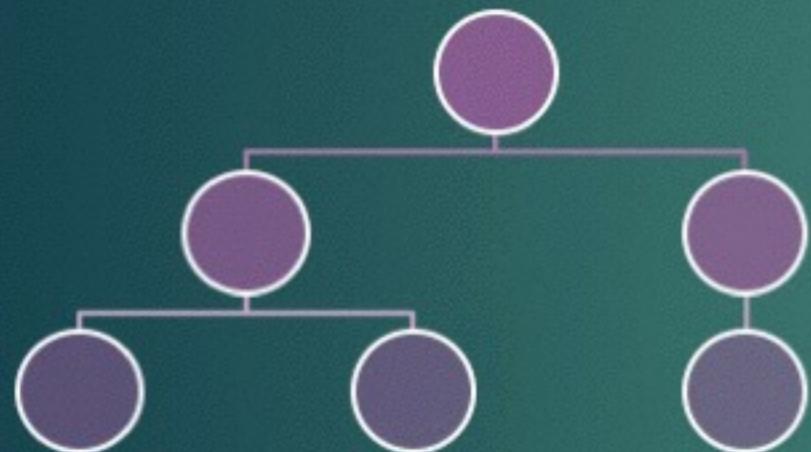


**YOU CAN EVEN  
CHOOSE HOW  
RESTRICTIVE**

# What we were looking for

- ▶ Refactor friendly!
- ▶ Not highly coupled to AngularJS
- ▶ Implicit test coverage of not only JS but HTML and CSS
- ▶ Verifiable contract of visual design

# What is PhantomFlow?



Phantom  
JS

Casper  
JS

Phantom  
CSS

Phantom  
XHR

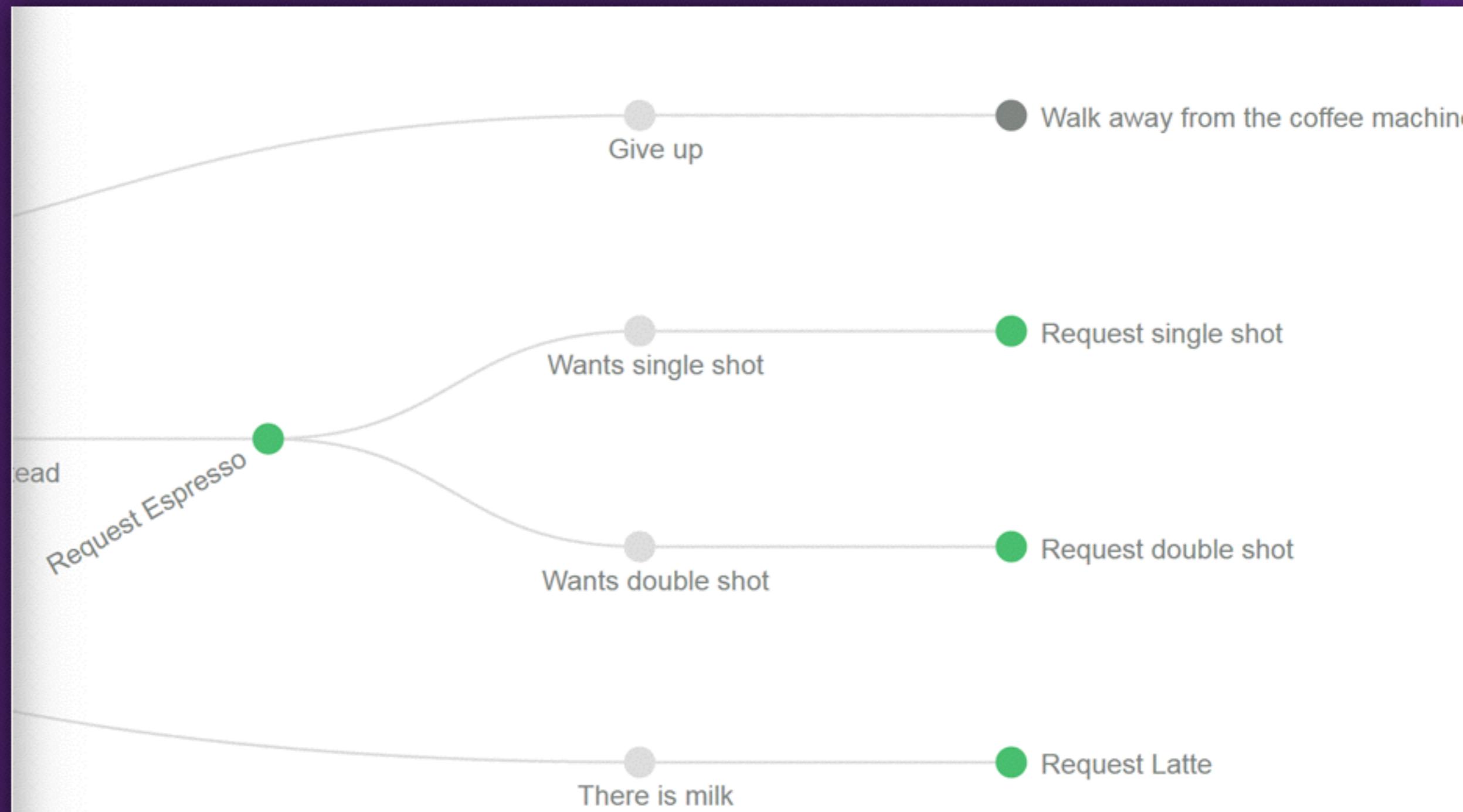
# Test coverage of UI without implementation coupling

Tests that reflect the designer model not the developer model.

james cryer



# DECISION TREE



# DECISION TREE

```
/test-results/visuals/coffeemachine.test.js/Get a coffee/Wants Cappuccino/There is no milk/Request Espresso instead/Wants single shot/Request single shot.png

[coffeemachine.test.js] (0ms) PASS PhantomCSS C:/tfs/PhantomFlow_Grunt/grunt-phantomflow-demo/_tests/test-results/visuals/coffeemachine.test.js/Get a coffee/Wants Cappuccino/There is no milk/Request Espresso instead/Wants double shot/Request double shot.png

[coffeemachine.test.js] (0ms) PASS PhantomCSS C:/tfs/PhantomFlow_Grunt/grunt-phantomflow-demo/_tests/test-results/visuals/coffeemachine.test.js/Get a coffee/Wants Cappuccino/There is milk/Request Cappuccino.png

[coffeemachine.test.js] (0ms) PASS PhantomCSS C:/tfs/PhantomFlow_Grunt/grunt-phantomflow-demo/_tests/test-results/visuals/coffeemachine.test.js/Get a coffee/Wants Espresso/Request Espresso.png

[coffeemachine.test.js] (0ms) PASS PhantomCSS C:/tfs/PhantomFlow_Grunt/grunt-phantomflow-demo/_tests/test-results/visuals/coffeemachine.test.js/Get a coffee/Wants Espresso/Wants single shot/Request single shot.png

[coffeemachine.test.js] (0ms) PASS PhantomCSS C:/tfs/PhantomFlow_Grunt/grunt-phantomflow-demo/_tests/test-results/visuals/coffeemachine.test.js/Get a coffee/Wants Espresso/Wants double shot/Request double shot.png

[coffeemachine.test.js] process has completed in 20.606s

All the threads have completed (all process exit codes 0).

Test name          Exit code  Passed assertions  Failed assertions  Process time /s
-----           -----      -----            -----            -----
[responsive.test.js]    0          6 passes          0 fails        6.022s
[coffeemachine.test.js]   0         29 passes          0 fails       20.608s

Completed 35 assertions in 21 seconds. 0 assertions failed, 35 assertions passed.

Done.

C:\tfs\PhantomFlow_Grunt\grunt-phantomflow-demo>
```

# COMMAND LINE

The screenshot shows the official PhantomJS website at phantomjs.org. The header features a GitHub fork button and the PhantomJS logo. A navigation bar includes links for SOURCE CODE, DOCUMENTATION, API, EXAMPLES, and FAQ. The main content area highlights "Full web stack No browser required" and describes PhantomJS as a headless WebKit scriptable with a JavaScript API supporting various web standards. A code snippet demonstrates loading a page and exiting.

```
// Simple Javascript example
console.log('Loading a web page');
var page = require('webpage').create();
var url = 'http://phantomjs.org/';
page.open(url, function (status) {
    //Page is loaded!
    phantom.exit();
});
```

[Download v2.1](#)

[Get started](#)

# PhantomJS

## HEADLESS WEBKIT BROWSER

PhantomJS is an optimal solution for

### HEADLESS WEBSITE TESTING

Run functional tests with frameworks such as Jasmine, QUnit, Mocha, Capybara, WebDriver, and many others.

[Learn more](#)

### SCREEN CAPTURE

Programmatically capture web contents, including SVG and Canvas. Create web site screenshots with thumbnail preview.

[Learn more](#)

### PAGE AUTOMATION

Access and manipulate webpages with the standard DOM API, or with usual libraries like jQuery.

[Learn more](#)

### NETWORK MONITORING

Monitor page loading and export as standard HAR files. Automate performance analysis using YSlow and Jenkins.

[Learn more](#)

PhantomJS is used in the test workflow of various open-source projects: [Bootstrap](#), [CodeMirror](#), [Ember.js](#), [jQuery Mobile](#), [Less.js](#), [Modernizr](#), [YUI3](#), and [many more](#).



[QUICKSTART](#) [DOCUMENTATION](#) [CONTRIBUTE](#) [SUPPORT](#)

# CasperJS

Navigation scripting & testing for PhantomJS and SlimerJS

Install [PhantomJS](#) or [SlimerJS](#), then:

```
npm install casperjs  
node_modules/casperjs/bin/casperjs selftest
```

# CasperJS

[Other install options](#)

# NAVIGATION & SCRIPTING

[View on GitHub](#) [Star](#) 5,605 [Stargazers](#) [Fork](#) 896 [Forks](#)

## NAVIGATION & AUTOMATION

CasperJS allows you to build full navigation scenarios using high-level functions and a straight forward interface to accomplish all sizes of tasks.

```
var casper = require('casper').create();  
casper.start('http://casperjs.org');
```



This repository Search Pull requests Issues Gist Watch 168 Star 3,739 Fork 211

Huddle / PhantomCSS

Code Issues 9 Pull requests 0 Wiki Pulse Graphs

Visual/CSS regression testing with PhantomJS

228 commits 2 branches 28 releases 26 contributors

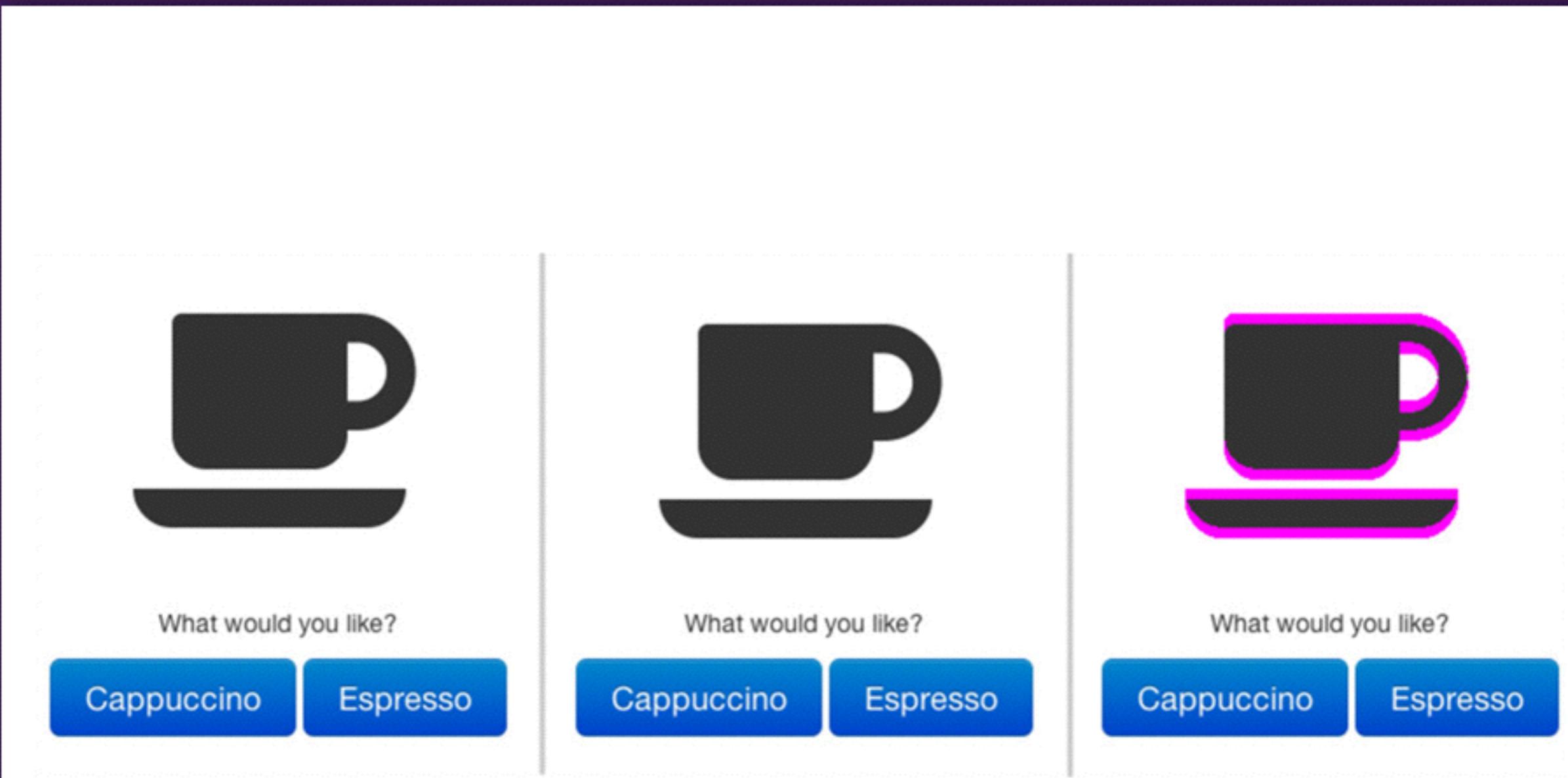
Branch: master New pull request Create new file Upload files Find file Clone or download

Latest commit 6226f5e on May 10

# PhantomCSS SCREENSHOT COMPARISON

huddle™

File	Description	Time Ago
casperjs.bat	Small updates for PhantomJS 2 support including dependency update. Re...	4 months ago
package.json	v1.1.2	a month ago
phantomcss.js	PhantomJS 2 requires URLs to have a protocol. This change fixes the r...	2 months ago
resemblejscontainer.html	re-introduced resemblecontainer. now resolves resemble sub directory	2 years ago
README.md		



# SCREENSHOT COMPARISON



A screenshot of a GitHub repository page for "Huddle / PhantomXHR".

The repository has 46 stars, 120 forks, and 19 contributors.

Key features listed include:

- Ajax mocking in PhantomJS
- 44 commits
- 1 branch
- 5 releases
- 9 contributors

The main content area displays the following text:

# PhantomXHR

## API MOCKING - SinonJS

**huddle™**

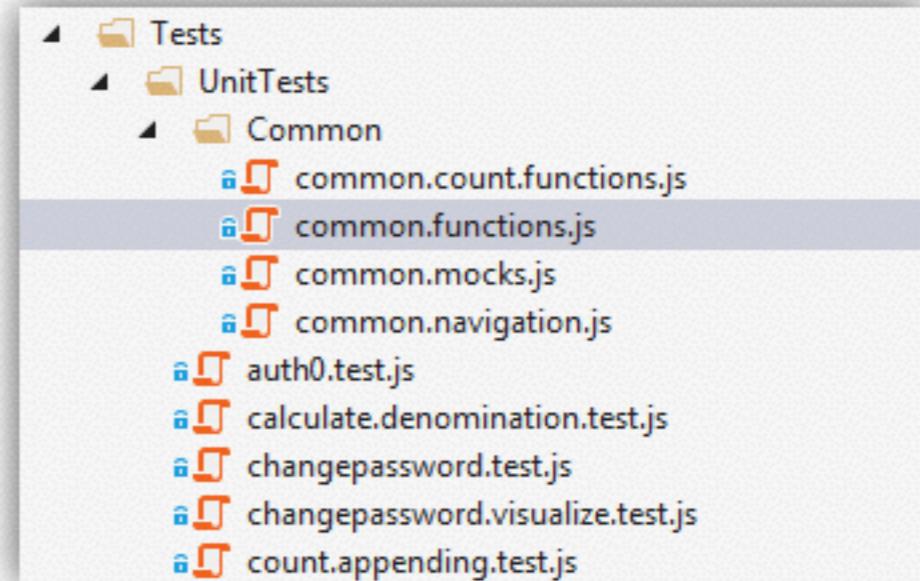
The repository has 5 commits in total, with the most recent commit being "jamescryer Merge pull request #19 from CasperJS" (2 years ago).

File	Description	Date
README.md	Update README.md	10 months ago
casperjs.bat	Added demo and tweaked README	2 years ago
package.json	v0.2.1	6 months ago
phantomxhr.js	Correct message typo	5 months ago
sinon.js	upload progress support	2 years ago

```
flow("Get a coffee", function () {
    step("Go to the kitchen", goToKitchen);
    step("Go to the coffee machine", goToMachine);
    decision({
        "Wants Latte": function () {
            chance({
                "There is no milk": function () {
                    step("Request Latte", requestLatte_fail);
                    decision({
                        "Give up": function () {
                            step("Walk away from the coffee machine", walkAway);
                        },
                        "Wants Espresso instead": wantsEspresso
                    });
                },
                "There is some milk": function () {
                    step("Request Latte", requestLatte_success);
                }
            });
        },
        "Wants Cappuccino": function () {
            chance({
                "There is no milk": function () {
                    step("Request Cappuccino", requestCappuccino_fail);
                    decision({
                        "Request Espresso instead": wantsEspresso
                    });
                },
                "There is some milk": function () {
                    step("Request Cappuccino", requestCappuccino_success);
                }
            });
        }
    });
});
```

# DEMO

```
function clickButton(selector, fakes, name, isDoubleClick) {
    return casper.waitForSelector(
        selector,
        function success() {
            if (fakes) {
                fakes.forEach(function (fake) {
                    xhr.fake(fake);
                });
            }
            if (isDoubleClick) {
                this.mouse.doubleclick(selector);
            } else {
                casper.click(selector);
            }
            casper.test.pass(name + ' button clicked');
        },
        function timeout() {
            casper.test.fail('Could not find ' + name + ' button');
        }
    );
}
```



# COMMON

```
var xhr = require('phantomxhr');
var commonMocks = require(fs.absolute('../Tests/test/flows/helpers/common.mocks'));
var commonFunctions = require(fs.absolute('../Tests/test/flows/helpers/common.functions'));
var commonNavigation = require(fs.absolute('../Tests/test/flows/helpers/common.navigation'));
```

# COMMON

## compare text

```
function verifyTransactionTableTitle() {
    commonFunctions.compareText('[data-automation="transaction-table-title"]',
        'Recent Transactions', 'Transaction Table Title');
}

function compareText(selector, expectedText, name) {
    casper.test.assertSelectorHasText(selector, expectedText, name + ' is '
+ expectedText);
}
```

compare class  
ensure class != x  
count items

# ASSERTS

```
function viewRebuildSummaryBelowExpected() {
    casper.wait(500, function () {
        verifyRebuildLabel('Below Beginning Balance:');
        verifyRebuildAmount('$50.00');
        phantomCSS.screenshot('[data-automation="register-rebuild-container"]');
    });
}

function viewRebuildSummaryBelowExpected() {
    phantomCSS.screenshot('[data-automation="register-rebuild-container"]');
}
```

# SCREENSHOTS

```
function initCasper() {
    return casper.clear().
        //Clean up before we add more hooks
        removeAllListeners('remote.message').
        removeAllListeners('page.initialized').
        removeAllListeners('resource.error').
        removeAllListeners('page.error').

        on('remote.message', function (m) { console.log(m); }).
        then(function () {
            casper.viewport(1280, 800);
        }).
        on('page.initialized', function () {
            xhr.init(casper.page, sinonSrc);
        }).
        on("resource.error", function (error) {
            console.log('Unable to load resource #' + error.id + 'URL:' + error.url + ')');
            console.log('Error code: ' + error.errorCode + '. Description: ' + error.errorMessage);
        }).
        on('page.error', function (msg, trace) {
            console.log('Error: ' + msg, 'ERROR');
        });
}
```

# CASPER INIT

```
function expectChangePasswordSuccess() {  
    commonFunctions.clickButton('#changepwd', [commonMocks.password(true)], 'change pwd');  
    commonFunctions.waitUntilNotVisible('.modal-header', 'modal');  
}
```

# MOCKS

```
function clickButton(selector, fakes, name, isDoubleClick) {
    return casper.waitForSelector(
        selector,
        function success() {
            if (fakes) {
                fakes.forEach(function (fake) {
                    xhr.fake(fake);
                });
            }
            if (isDoubleClick) {
                this.mouse.doubleclick(selector);
            } else {
                casper.click(selector);
            }
            casper.test.pass(name + ' button clicked');
        },
        function timeout() {
            casper.test.fail('Could not find ' + name + ' button');
        }
    );
}
```

# MOCKS

```
function changePassword() {
  return {
    url: 'api/user/changepassword',
    method: 'POST',
    status: 200,
    responseBody: {

    }
  }
}
```

# MOCKS

```
//Done button no longer disabled
var hasAttribute = casper.evaluate(function() {
    var element = document.querySelector('#button');
    return element.hasAttribute('disabled');
});
casper.test.assert(!hasAttribute, 'Done button is not disabled');
```

# EVAL

# What this enabled us to do

- ▶ QA was now able to spend more time on edge cases
- ▶ We can automate UI changes
- ▶ Removes ambiguity of visual changes
- ▶ Currently 1,500+ tests in 3 page app

[Projects](#)[Changes](#)[Agents 4](#)[Build Queue 0](#)

Jonathan Harding

Administration



VeriBalanceCloud > UI > Master > 1. Build from master and run unit tests >  
#1.21.0-dev-0008 (20 Jun 16 10:40) ▾

[Run ...](#)[Actions](#)[Edit Configuration Settings](#)[Overview](#)[Changes 1](#)[Tests](#)[Build Log](#)[Parameters](#)[Dependencies](#)[Artifacts](#)[Visual Tests](#)[#1.21.0-dev-0007](#)[All history](#)[Last recorded build](#)[View all](#)

Mouse over a green or red circle to see its visual test below. If it is red, it has failed. If you want to accept the change, click the red rebase button.



# DEPLOYMENT

# UI REGRESSION TESTING

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<https://github.com/webedge/grunt-phantomflow-demo>