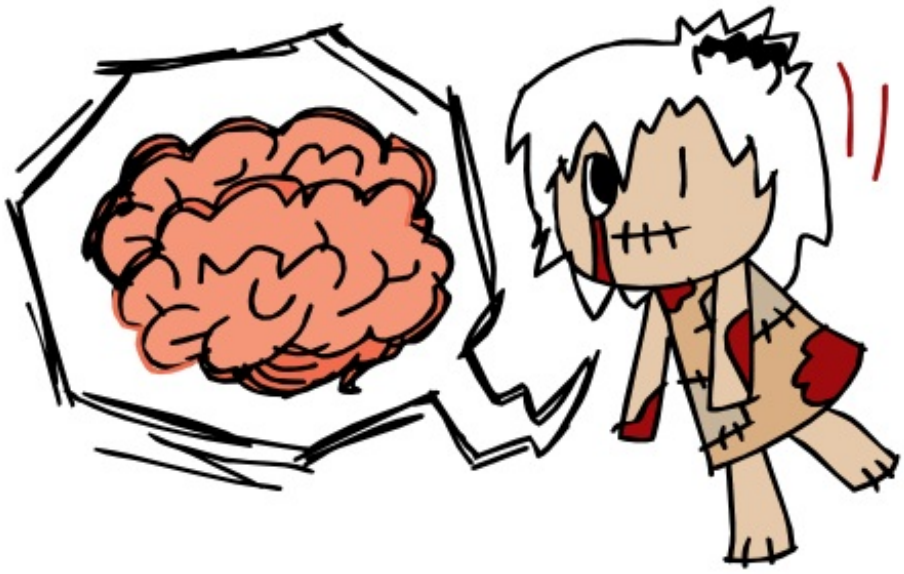
Zombie.js



Insanely fast, full-stack, headless browser testing

Table Of Contents

Zombie.js

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Insanely fast, headless full-stack testing using Node.js

The Bite

If you're going to write an insanely fast, headless browser, how can you not call it Zombie? Zombie it is.

Zombie.js is a lightweight framework for testing client-side JavaScript code in a simulated environment. No browser required.

Let's try to sign up to a page and see what happens:

```
var zombie = require("zombie");
var assert = require("assert");

// Load the page from localhost
zombie.visit("http://localhost:3000/", function (err, browser, status) {

  // Fill email, password and submit form
  browser.
    fill("email", "zombie@underworld.dead").
    fill("password", "eat-the-living").
    pressButton("Sign Me Up!", function(err, browser, status) {

      // Form submitted, new page loaded.
      assert.equal(browser.text("title"), "Welcome To Brains Depot");

    })

});
```

Well, that was easy.

Infection

To install Zombie.js you need Node.js, NPM, a C++ compiler and Python.

On OS X start by installing XCode, or use the OSX GCC installer (less to download).

Next, assuming you're using the mighty Homebrew:

```
$ brew install node
$ node --version
v0.4.10
$ curl http://npmjs.org/install.sh | sudo sh
$ npm --version
1.0.22
$ npm install zombie
```

On Ubuntu try these steps:

```
$ apt-get install build-essential python node
$ node --version
v0.4.0
$ curl http://npmjs.org/install.sh | sudo sh
$ npm --version
1.0.22
$ npm install zombie
```

On Windows you'll need Cygwin to get access to GCC, Python, etc. Read this for detailed instructions and troubleshooting.

Walking

To start off we're going to need a browser. A browser maintains state across requests: history, cookies, HTML 5 local and session stroage. A browser has a main window, and typically a document loaded into that window.

You can create a new `zombie.Browser` and point it at a document, either by setting the `location` property or calling its `visit` function. As a shortcut, you can just call the `zombie.visit` function with a URL and callback.

The browser will load the document and if the document includes any scripts, also load and execute these scripts. It will then process some events, for example, anything your scripts do on page load. All of that, just like a real browser, happens asynchronously.

To wait for the page to fully load and all events to fire, you pass `visit` a callback function. This function takes two arguments. If everything is successful (page loaded, events run), the callback is called with `null` and a reference to the browser. If anything went wrong (page not loaded, event errors), the callback is called with an error.

If you worked with Node.js before you're familiar with this callback pattern. Every time you see a callback in the Zombie.js API, it works that way: the first argument is an error, or null if there is no error. And if there are no errors, the remaining arguments may hold interesting values.

For example, the callback you pass to `visit` receives the browser as the second argument and HTTP status code as the third argument.

Whenever you want to wait for all events to be processed, just call `browser.wait` with a callback.

Read more on the Browser API

Hunting

There are several ways you can inspect the contents of a document. For starters, there's the DOM API, which you can use to find elements and traverse the document tree.

You can also use CSS selectors to pick a specific element or node list. Zombie.js implements the DOM Selector API. These functions are available from every element, the document, and the `Browser` object itself.

To get the HTML contents of an element, read its `innerHTML` property. If you want to include the element itself with its attributes, read the element's `outerHTML` property instead. Alternatively, you can call the `browser.html` function with a CSS selector and optional context element. If the function selects multiple elements, it will return the combined HTML of them all.

To see the textual contents of an element, read its `textContent` property. Alternatively, you can call the `browser.text` function with a CSS selector and optional context element. If the function selects multiple elements, it will return the combined text contents of them all.

Here are a few examples for checking the contents of a document:

```
// Make sure we have an element with the ID brains.
assert.ok(browser.querySelector("#brains"));

// Make sure body has two elements with the class hand.
assert.equal(browser.body.querySelectorAll(".hand").length, 2);

// Check the document title.
```

```
assert.equal(browser.text("title"), "The Living Dead");

// Show me the document contents.
console.log(browser.html());

// Show me the contents of the parts table:
console.log(browser.html("table.parts"));
```

CSS selectors are implemented by Sizzle.js. In addition to CSS 3 selectors you get additional and quite useful extensions, such as `:not(selector)`, `[NAME!=VALUE]`, `:contains(TEXT)`, `:first`/`:last` and so forth. Check out the Sizzle.js documentation for more details.

Read more on the Browser API and CSS selectors

Feeding

You're going to want to perform some actions, like clicking links, entering text, submitting forms. You can certainly do that using the DOM API, or several of the convenience functions we're going to cover next.

To click a link on the page, use `clickLink` with selector and callback. The first argument can be a CSS selector (see *Hunting*), the `A` element, or the text contents of the `A` element you want to click.

The second argument is a callback, which much like the `visit` callback gets fired after all events are processed, with either an error, or `null`, the browser and the HTTP status code.

Let's see that in action:

```
// Now go to the shopping cart page and check that we have
// three bodies there.
browser.clickLink("View Cart", function(err, browser, status) {
  assert.equal(browser.querySelectorAll("#cart .body"), 3);
});
```

To submit a form, use `pressButton`. The first argument can be a CSS selector, the button/input element. the button name (the value of the `name` argument) or the text that shows on the button. You can press any `BUTTON` element or `INPUT` of type `submit`, `reset` or `button`. The second argument is a callback, just like `clickLink`.

Of course, before submitting a form, you'll need to fill it with values. For text fields, use the `fill` function, which takes two arguments: selector and

the field value. This time the selector can be a CSS selector, the input element, the field name (its `name` attribute), or the text that shows on the label associated with that field.

Zombie.js supports text fields, password fields, text areas, and also the new HTML 5 fields types like email, search and url.

The `fill` function returns a reference to the browser, so you can chain several functions together. Its sibling functions `check` and `uncheck` (for check boxes), `choose` (for radio buttons) and `select` (for drop downs) work the same way.

Let's combine all of that into one example:

```
// Fill in the form and submit.
browser.
  fill("Your Name", "Arm Biter").
  fill("Profession", "Living dead").
  select("Born", "1968").
  uncheck("Send me the newsletter").
  pressButton("Sign me up", function(err, browser, status) {
    // Make sure we got redirected to thank you page.
    assert.equal(browser.location, "http://localhost:3003/thankyou");
  });
```

Read more on the Browser API

Readiness

Zombie.js supports the following:

- HTML5 parsing and dealing with tag soups
- DOM Level 3 implementation
- HTML5 form fields (`search`, `url`, etc)
- CSS3 Selectors with some extensions
- Cookies and Web Storage
- `XMLHttpRequest` in all its glory
- `setTimeout`/`setInterval` and messing with the system clock
- `pushState`, `popstate` and `hashchange` events
- Scripts that use `document.write`
- `alert`, `confirm` and `prompt`

In The Family

capybara-zombie -- Capybara driver for zombie.js running on top of node.

zombie-jasmine-spike -- Spike project for trying out Zombie.js with Jasmine

Vows BDD -- A BDD wrapper for Vows, allowing for easy writing of tests in a given-when-then format

Mink -- PHP 5.3 acceptance test framework for web applications

Reporting Glitches

Step 1: Run Zombie with debugging turned on, the trace will help figure out what it's doing. For example:

```
var browser = new zombie.Browser({ debug: true });
browser.visit("http://thedead", function(err, browser, status) {
  if (err)
    throw(err.message);
  ...
});
```

Step 2: Wait for it to finish processing, then dump the current browser state:

brower.dump();

Step 3: If publicly available, include the URL of the page you're trying to access. Even better, provide a test script I can run from the Node.js console (similar to step 1 above).

Read more about troubleshooting

Giving Back

- Find assaf/zombie on Github
- Fork the project
- Add tests
- Make your changes
- Send a pull request

Read more about the guts of Zombie.js and check out the outstanding to-

dos.

Follow announcements, ask questions on the Google Group

Get help on IRC: join zombie.js on Freenode or web-based IRC

Brains

Blood, sweat and tears of joy:

Damian Janowski aka djanowski

JosÃ© Valim aka josevalim

Bob Lail boblail

And all the fine people mentioned in the changelog.

Zombie.js is written in CoffeeScript for Node.js

DOM emulation by Elijah Insua's JSDOM

HTML5 parsing by Aria Stewart's HTML5

CSS selectors by John Resig's Sizzle.js

XPath support using Google's AJAXSLT

Magical Zombie Girl by Toho Scope

See Also

zombie-api(7), **zombie-troubleshoot**(7), **zombie-selectors**(7), **zombie-changelog**(7), **zombie-todo**(7)

Zombie.js brought to you by very alive people.

Zombie.js

The Zombie API

The Browser

new zombie.Browser(options?) : Browser

Creates and returns a new browser. A browser maintains state across requests: history, cookies, HTML 5 local and session stroage. A browser has a main window, and typically a document loaded into that window.

You can pass options when initializing a new browser, or set them on an existing browser instance. For example:

```
browser = new zombie.Browser({ debug: true })
browser.runScripts = false
```

Browser Options

You can use the following options:

- `debug` -- True to have Zombie report what it's doing. Defaults to false.
- `runScripts` -- Run scripts included in or loaded from the page. Defaults to true.
- `userAgent` -- The User-Agent string to send to the server.

Browser.visit(url, callback)

Browser.visit(url, options, callback)

Shortcut for creating new browser and calling `browser.visit` on it. If the second argument are options, initializes the browser with these options. See *Navigation* below for more information about the `visit` method.

browser.open() : Window

Opens a new browser window.

browser.window : Window

Returns the main window. A browser always has one window open.

Document Content

You can inspect the document content using the DOM API traversal methods or the DOM Selector API.

To find an element with ID "item-23":

var item = document.getElementById("item-32");

For example, to find out the first input field with the name "email":

var field = document.querySelector(":input[name=email]");

To find out all the even rows in a table:

var rows = table.querySelectorAll("tr:even");

CSS selectors support is provied by Sizzle.js, the same engine used by jQuery. You're probably familiar with it, if not, check the list of supported selectors.

browser.body : Element

Returns the body element of the current document.

browser.css(selector, context?) => NodeList

Evaluates the CSS selector against the document (or context node) and return a node list. Shortcut for `document.querySelectorAll`.

browser.document : Document

Returns the main window's document. Only valid after opening a

document (see `browser.visit`).

browser.evaluate(expr) : Object

Evaluates a JavaScript expression in the context of the current window and returns the result. For example:

```
browser.evaluate("document.title");
```

browser.html(selector?, context?) : String

Returns the HTML contents of the selected elements.

With no arguments returns the HTML contents of the document. This is one way to find out what the page looks like after executing a bunch of JavaScript.

With one argument, the first argument is a CSS selector evaluated against the document body. With two arguments, the CSS selector is evaluated against the element given as the context.

For example:

```
console.log(browser.html("#main"));
```

browser.querySelector(selector) : Element

Select a single element (first match) and return it. This is a shortcut that calls `querySelector` on the document.

browser.querySelectorAll(selector) : NodeList

Select multiple elements and return a static node list. This is a shortcut that calls `querySelectorAll` on the document.

browser.text(selector, context?) : String

Returns the text contents of the selected elements.

With one argument, the first argument is a CSS selector evaluated against

the document body. With two arguments, the CSS selector is evaluated against the element given as the context.

For example:

```
console.log(browser.text("title"));
```

browser.xpath(expression, context?) => XPathResult

Evaluates the XPath expression against the document (or context node) and return the XPath result. Shortcut for `document.evaluate`.

Navigation

Zombie.js loads pages asynchronously. In addition, a page may require loading additional resources (such as JavaScript files) and executing various event handlers (e.g. `jQuery.onready`).

For that reason, navigating to a new page doesn't land you immediately on that page: you have to wait for the browser to complete processing of all events. You can do that by calling `browser.wait` or passing a callback to methods like `visit` and `clickLink`.

browser.clickLink(selector, callback)

Clicks on a link. The first argument is the link text or CSS selector. Second argument is a callback, invoked after all events are allowed to run their course.

Zombie.js fires a `click` event and has a default event handler that will to the link's `href` value, just like a browser would. However, event handlers may intercept the event and do other things, just like a real browser.

For example:

```
browser.clickLink("View Cart", function(err, browser, status) {
  assert.equal(browser.querySelectorAll("#cart .body"), 3);
});
```

browser.link(selector) : Element

Finds and returns a link (`A`) element. You can use a CSS selector or find a link by its text contents (case sensitive, but ignores leading/trailing spaces).

browser.location : Location

Return the location of the current document (same as `window.location`).

browser.location = url

Changes document location, loading a new document if necessary (same as setting `window.location`). This will also work if you just need to change the hash (Zombie.js will fire a `hashchange` event), for example:

```
browser.location = "#bang";
browser.wait(function(err, browser) {
  // Fired hashchange event and did something cool.
  ...
});
```

browser.statusCode : Number

Returns the status code returned for this page request (200, 303, etc).

browser.visit(url, callback)

browser.visit(url, options, callback)

Loads document from the specified URL, processes all events in the queue, and finally invokes the callback.

In the second form, sets the options for the duration of the request, and resets before passing control to the callback. For example:

```
browser.visit("http://localhost:3000", { debug: true },
  function(err, browser, status) {
    if (err)
      throw(err.message);
    console.log("The page:", browser.html());
  }
);
```

browser.redirected : Boolean

Returns true if the page request followed a redirect.

Forms

Methods for interacting with form controls (e.g. `fill`, `check`) take a first argument that tries to identify the form control using a variety of approaches. You can always select the form control using an appropriate CSS selector, or pass the element itself.

Zombie.js can also identify form controls using their name (the value of the `name` attribute) or using the text of the label associated with that control. In both case, the comparison is case sensitive, but to work flawlessly, ignores leading/trailing whitespaces when looking at labels.

If there are no event handlers, Zombie.js will submit the form just like a browser would, process the response (including any redirects) and transfer control to the callback function when done.

If there are event handlers, they will all be run before transferring control to the callback function. Zombie.js can even support jQuery live event handlers.

browser.attach(selector, filename) : this

Attaches a file to the specified input field. The second argument is the file name (you cannot attach streams).

browser.check(field) : this

Checks a checkbox. The argument can be the field name, label text or a CSS selector.

Returns itself.

browser.choose(field) : this

Selects a radio box option. The argument can be the field name, label text

or a CSS selector.

Returns itself.

browser.field(selector) : Element

Find and return an input field (`INPUT`, `TEXTAREA` or `SELECT`) based on a CSS selector, field name (its `name` attribute) or the text value of a label associated with that field (case sensitive, but ignores leading/trailing spaces).

browser.fill(field, value) : this

Fill in a field: input field or text area. The first argument can be the field name, label text or a CSS selector. The second argument is the field value.

For example:

```
browser.fill("Name", "ArmBiter").fill("Password", "Brains...")
```

Returns itself.

browser.button(selector) : Element

Finds a button using CSS selector, button name or button text (`BUTTON` or `INPUT` element).

browser.pressButton(selector, callback)

Press a button. Typically this will submit the form, but may also reset the form or simulate a click, depending on the button type.

The first argument is either the button name, text value or CSS selector. Second argument is a callback, invoked after the button is pressed, form submitted and all events allowed to run their course.

For example:

```
browser.fill("email", "zombie@underworld.dead").
  pressButton("Sign me Up", function(err) {
    // All signed up, now what?
```

```
});
```

Returns nothing.

browser.select(field, value) : this

Selects an option. The first argument can be the field name, label text or a CSS selector. The second value is the option to select, by value or label.

For example:

```
browser.select("Currency", "brain$")
```

See also `selectOption`.

Returns itself.

browser.selectOption(option) : this

Selects the option (an `OPTION` element) and returns itself.

browser.uncheck(field) : this

Unchecks a checkbox. The argument can be the field name, label text or a CSS selector.

browser.unselect(field, value) : this

Unselects an option. The first argument can be the field name, label text or a CSS selector. The second value is the option to unselect, by value or label.

You can use this (or `unselectOption`) when dealing with multiple selection.

Returns itself.

browser.unselectOption(option) : this

Unselects the option (an `OPTION` element) and returns itself.

State Management

The browser maintains state as you navigate from one page to another. Zombie.js supports both cookies and HTML5 Web Storage.

Note that Web storage is specific to a host/port combination. Cookie storage is specific to a domain, typically a host, ignoring the port.

browser.cookies(domain, path?) : Cookies

Returns all the cookies for this domain/path. Path defaults to "/".

For example:

```
browser.cookies("localhost").set("session", "567");
```

The `Cookies` object has the methods `clear()`, `get(name)`, `set(name, value)`, `remove(name)` and `dump()`.

The `set` method accepts a third argument which may include the options `expires`, `maxAge` and `secure`.

browser.fork() : Browser

Return a new browser using a snapshot of this browser's state. This method clones the forked browser's cookies, history and storage. The two browsers are independent, actions you perform in one browser do not affect the other.

Particularly useful for constructing a state (e.g. sign in, add items to a shopping cart) and using that as the base for multiple tests, and for running parallel tests in Vows.

browser.loadCookies(String)

Load cookies from a text string (e.g. previously created using `browser.saveCookies`.

browser.loadHistory(String)

Load history from a text string (e.g. previously created using `browser.saveHistory`.

browser.loadStorage(String)

Load local/session stroage from a text string (e.g. previously created using `browser.saveStorage`.

browser.localStorage(host) : Storage

Returns local Storage based on the document origin (hostname/port).

For example:

```
browser.localStorage("localhost:3000").setItem("session", "567");
```

The `Storage` object has the methods `key(index)`, `getItem(name)`, `setItem(name, value)`, `removeItem(name)`, `clear()` and `dump`. It also has the read-only property `length`.

browser.saveCookies() : String

Save cookies to a text string. You can use this to load them back later on using `browser.loadCookies`.

browser.saveHistory() : String

Save history to a text string. You can use this to load the data later on using `browser.loadHistory`.

browser.saveStorage() : String

Save local/session storage to a text string. You can use this to load the data later on using `browser.loadStorage`.

browser.sessionStorage(host) : Storage

Returns session Storage based on the document origin (hostname/port). See `localStorage` above.

Interaction

browser.onalert(fn)

Called by `window.alert` with the message. If you just want to know if an alert was shown, you can also use `prompted` (see below).

browser.onconfirm(question, response)

browser.onconfirm(fn)

The first form specifies a canned response to return when `window.confirm` is called with that question. The second form will call the function with the question and use the respone of the first function to return a value (true or false).

The response to the question can be true or false, so all canned responses are converted to either value. If no response available, returns false.

For example:

```
browser.onconfirm "Are you sure?", true
```

browser.onprompt(message, response)

browser.onprompt(fn)

The first form specifies a canned response to return when `window.prompt` is called with that message. The second form will call the function with the message and default value and use the response of the first function to return a value or false.

The response to a prompt can be any value (converted to a string), false to indicate the user cancelled the prompt (returning null), or nothing to have the prompt return the default value or an empty string.

For example:

```
browser.onprompt (message)-> Math.random()
```

browser.prompted(message) => boolean

Returns true if user was prompted with that message by a previous call to `window.alert`, `window.confirm` or `window.prompt`.

Events

Since events may execute asynchronously (e.g. XHR requests, timers), the browser maintains an event queue. Occasionally you will need to let the browser execute all the queued events before proceeding. This is done by calling `wait`, or one of the many methods that accept a callback.

In addition the browser is also an `EventEmitter`. You can register any number of event listeners to any of the emitted events.

browser.clock

The current system clock according to the browser (see also `browser.now`).

browser.now : Date

The current system time according to the browser (see also `browser.clock`).

browser.fire(name, target, calback?)

Fires a DOM event. You can use this to simulate a DOM event, e.g. clicking a link or clicking the mouse. These events will bubble up and can be cancelled.

The first argument it the event name (e.g. `click`), the second argument is the target element of the event. With a callback, this method will transfer control to the callback after running all events.

browser.wait(callback)

browser.wait(terminator, callback)

Process all events in the queue and calls the callback when done.

You can use the second form to pass control before processing all events. The terminator can be a number, in which case that many events are processed. It can be a function, which is called after each event; processing stops when the function returns the value `false`.

Event: 'done'

```
function (browser) { }
```

Emitted whenever the event queue goes back to empty.

Event: 'loaded'

```
function (browser) { }
```

Emitted whenever new page loaded. This event is emitted before `DOMContentLoaded`.

Event: 'error'

```
function (error) { }
```

Emitted if an error occurred loading a page or submitting a form.

Debugging

When trouble strikes, refer to these functions and the troubleshooting guide.

browser.dump()

Dump information to the console: Zombie version, current URL, history, cookies, event loop, etc. Useful for debugging and submitting error reports.

browser.lastError : Object

Returns the last error received by this browser in lieu of response.

browser.lastRequest : Object

Returns the last request sent by this browser.

browser.lastResponse : Object

Returns the last response received by this browser.

browser.log(arguments)

browser.log(function)

Call with multiple arguments to spit them out to the console when debugging enabled (same as `console.log`). Call with function to spit out the result of that function call when debugging enabled.

browser.viewInBrowser(name?)

Views the current document in a real Web browser. Uses the default system browser on OS X, BSD and Linux. Probably errors on Windows.

Notes

Callbacks

By convention the first argument to a callback function is the error. If the first argument is null, no error occurred, and other arguments may have meaningful data.

For example, the second and third arguments to the callback of `visit`, `clickLink` and `pressButton` are the browser itself and the status code.

```
pressButton("Create", function(error, browser, status) {
  if (error)
    throw error;
  assert.equal(status, 201, "Expected status 201 Created")
});
```

Zombie.js brought to you by very alive people.

Zombie.js

CSS Selectors

Zombie.js uses Sizzle.js which provides support for most CSS 3 selectors with a few useful extension.

Sizzle.js is the selector engine used in jQuery, so if you're familiar with jQuery selectors, you're familiar with Sizzle.js.

The following list summarizes which selectors are currently supported:

`*` Any element

`E` An element of type E

`E#myid` An E element with ID equal to "myid"

`E.foo` An E element whose class is "foo"

`E[foo]` An E element with a "foo" attribute

`E[foo="bar"]` An E element whose "foo" attribute value is exactly equal to "bar"

`E[foo!="bar"]` An E element whose "foo" attribute value does not equal to "bar"

`E[foo~="bar"]` An E element whose "foo" attribute value is a list of whitespace-separated values, one of which is exactly equal to "bar"

`E[foo^="bar"]` An E element whose "foo" attribute value begins exactly with the string "bar"

`E[foo$="bar"]` An E element whose "foo" attribute value ends exactly with the string "bar"

`E[foo*="bar"]` An E element whose "foo" attribute value contains the substring "bar"

`E[foo|="en"]` An E element whose "foo" attribute has a hyphen-separated list of values beginning (from the left) with "en"

`E:nth-child(n)` An E element, the n-th child of its parent

`E:first-child` An E element, first child of its parent

`E:last-child` An E element, last child of its parent

`E:only-child` An E element, only child of its parent

`E:empty` An E element that has no children (including text nodes)

`E:link` A link

`E:focus` An E element during certain user actions

`E:enabled` A user interface element E which is enabled

`E:disabled` A user interface element E which is disabled

`E:checked` A user interface element E which is checked (for instance a radio-button or checkbox)

`E:input` An E element that is an input element (includes `textarea`, `select` and `button`)

`E:text` An E element that is an input text field or text area

`E:checkbox` An E element that is an input checkbox

`E:file` An E element that is an input file

`E:password` An E element that is an input password

`E:submit` An E element that is an input or button of type `submit`

`E:image` An E element that is an input of type `image`

`E:button` An E element that is an input or button of type `button`

`E:reset` An E element that is an input or button of type `reset`

`E:header` An header element, one of h1, h2, h3, h4, h5, h6

`E:parent` A parent element, an element that contains another element

`E:not(s)` An E element that does not match the selector `s` (multiple selectors supported)

`E:contains(t)` An E element whose textual contents contains `t` (case sensitive)

`E:first` An E element whose position on the page is first in document order

`E:last` An E element whose position on the page is last in document order

`E:even` An E element whose position on the page is even numbered (counting starts at 0)

`E:odd` An E element whose position on the page is odd numbered (counting starts at 0)

`E:eq(n)/:nth(n)` An E element whose Nth element on the page (e.g `:eq(5)`)

`E:lt(n)` An E element whose position on the page is less than `n`

`E:gt(n)` An E element whose position on the page is less than `n`

`E F` An F element descendant of an E element

`E > F` An F element child of an E element

`E + F` An F element immediately preceded by an E element

`E ~ F` An F element preceded by an E element

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Zombie.js

Troubleshooting guide

The Dump

Get the browser to dump its current state. You'll be able to see the current document URL, history, cookies, local/session storage, and portion of the current page:

```
browser.dump()

URL: http://localhost:3003/here/#there

History:
  1. http://localhost:3003/here
  2: http://localhost:3003/here/#there

Cookies:
  session=e62ab205; domain=localhost; path=/here

Storage:
  localhost:3003 session:
    day = Monday

Document:
  <html>
    <head>
      <script src="/jquery.js"></script>
      <script src="/sammy.js"></script>
      <script src="/app.js"></script>
  </head>
    <body>
    ...
```

The actual report will have much more information.

Debugging

When running in debug mode, Zombie.js will spit out messages to the console. These could help you see what's going on as your tests execute, especially useful around stuff that happens in the background, like XHR requests.

To turn debugging on/off set `browser.debug` to true/false. You can also set

this option when creating a new `Browser` object (the constructor takes an options argument), or for the duration of a single call to `visit` (the second argument being the options).

For example:

```
zombie.visit("http://thedead", { debug: true}, function(err, browser) {
  if (err)
    throw(err.message);
  ...
});
```

If you're working on the code and you want to add more debug statements, call `browser.log` with any sequence of arguments (same as `console.log`), or with a function. In the later case, it will call the function only when debugging is turned on, and spit the value returned from the console.

For example:

```
browser.log("Currently visiting", browser.location);
browser.log(function() {
  return "Currently visiting " + browser.location;
});
```

Request/response

Each window keeps a trail of every resource request it makes (to load the page itself, scripts, XHR requests, etc). You can inspect these by obtaining the `window.resources` array and looking into it.

For example:

```
window.resources.dump()
```

The browser object provides the convenient methods `lastRequest`, `lastResponse` and `lastError` that return, respectively, the request, response and error associated with the last resources loaded by the current window.

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