Jasmine

The first steps to *finally* test-driving your JavaScript

@searls

http://github.com/searls/jasmine-intro

You can find this presentation & code at:

http://v.gd/jasmine_intro

Who?

You!

What?

Jasmine!

Where?

http://pivotal.github.com/jasmine

When?

As soon as you’re ready to jump in

Why?

Unfortunately, not enough time to cover the “why TDD my JavaScript?” question today

More on Why:

http://v.gd/javascript

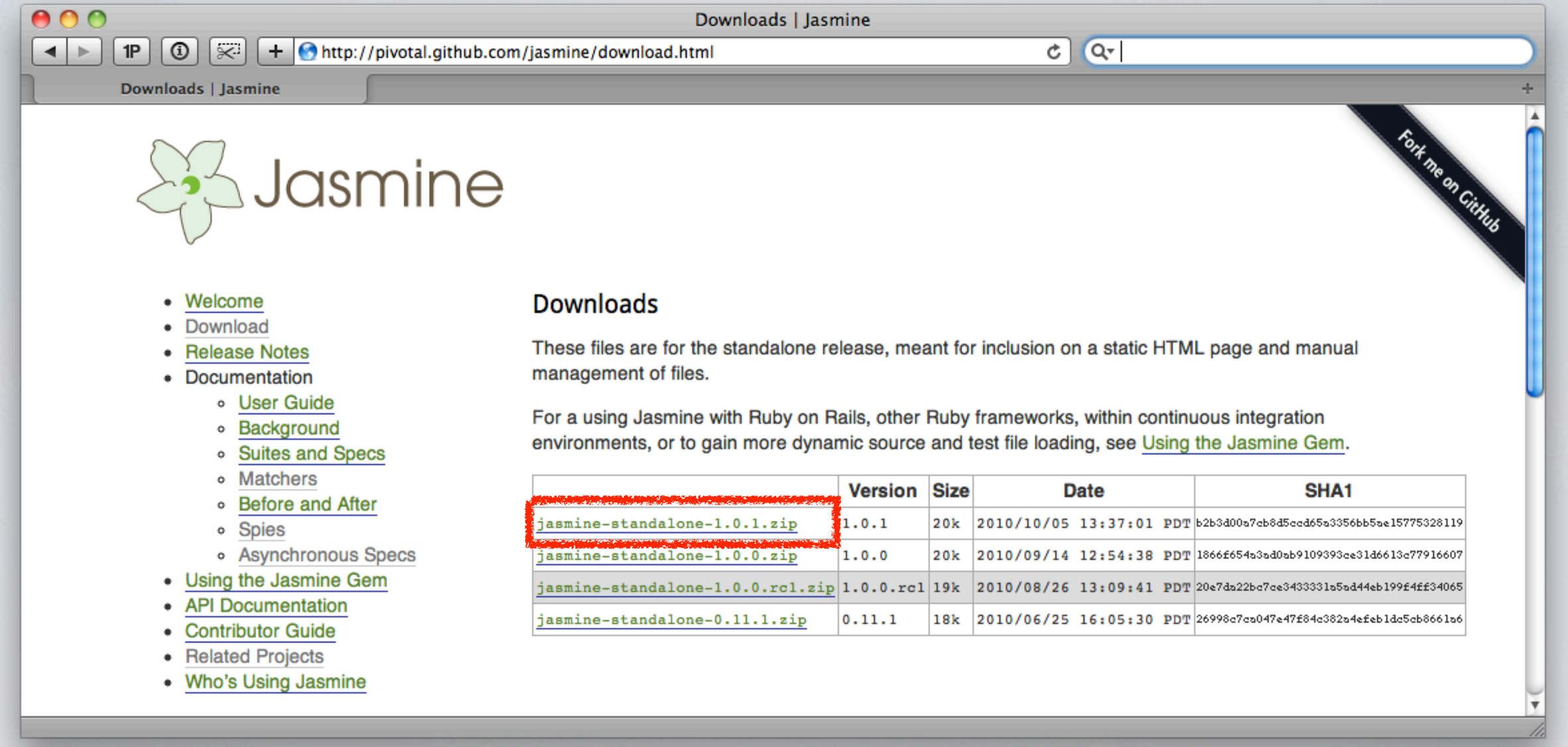
However, I did recently give a talk about why JavaScript is worthy of TDD.

iWork slides:
http://public.iwork.com/document/?a=p94397438&d=JavaScript_CraftsmanShip__38__TDD_-_Searls_9_47_13_47_2010.key

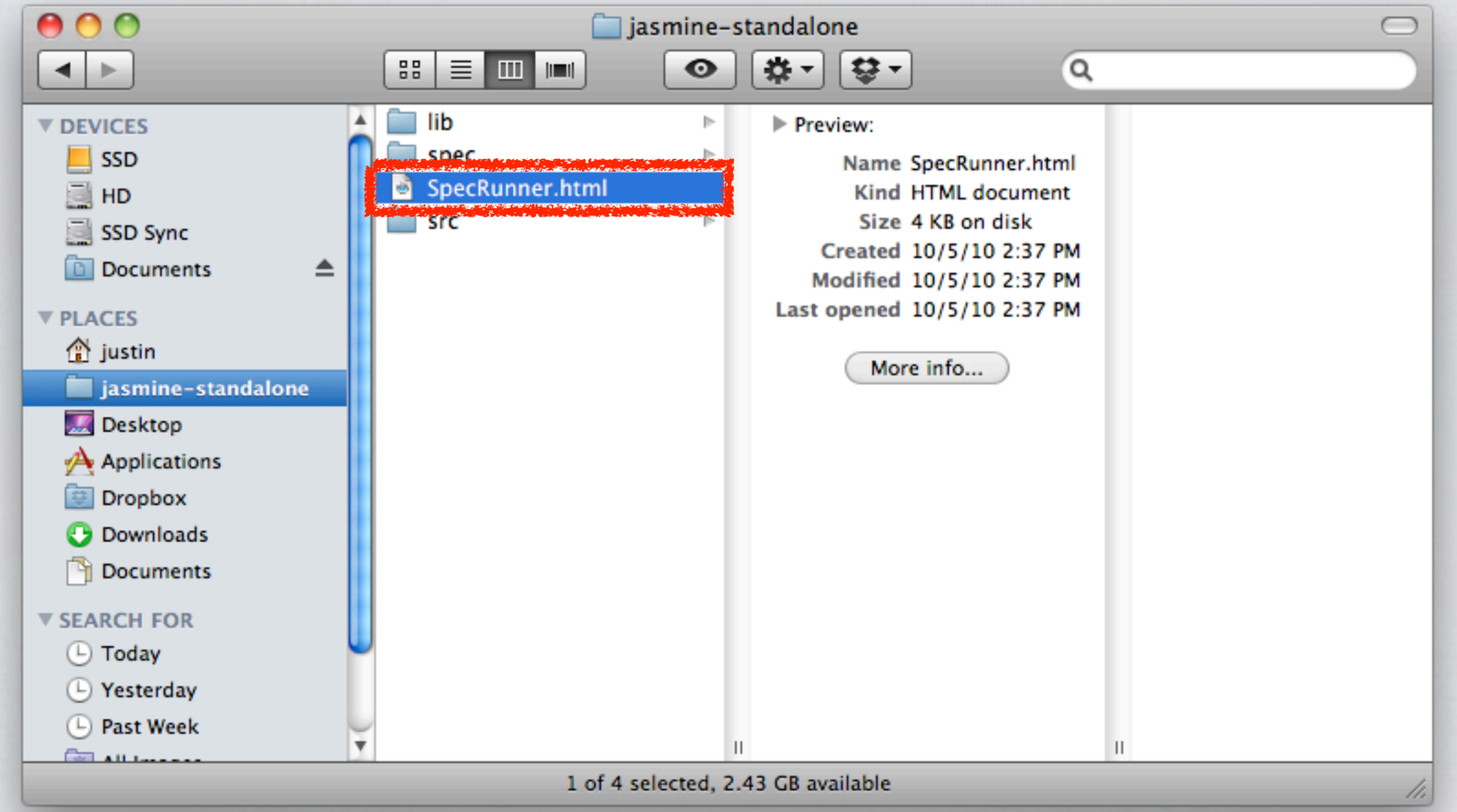
Slideshare:
http://www.slideshare.net/searls/javascript-craftsmanship-why-javascript-is-worthy-of-tdd

How?

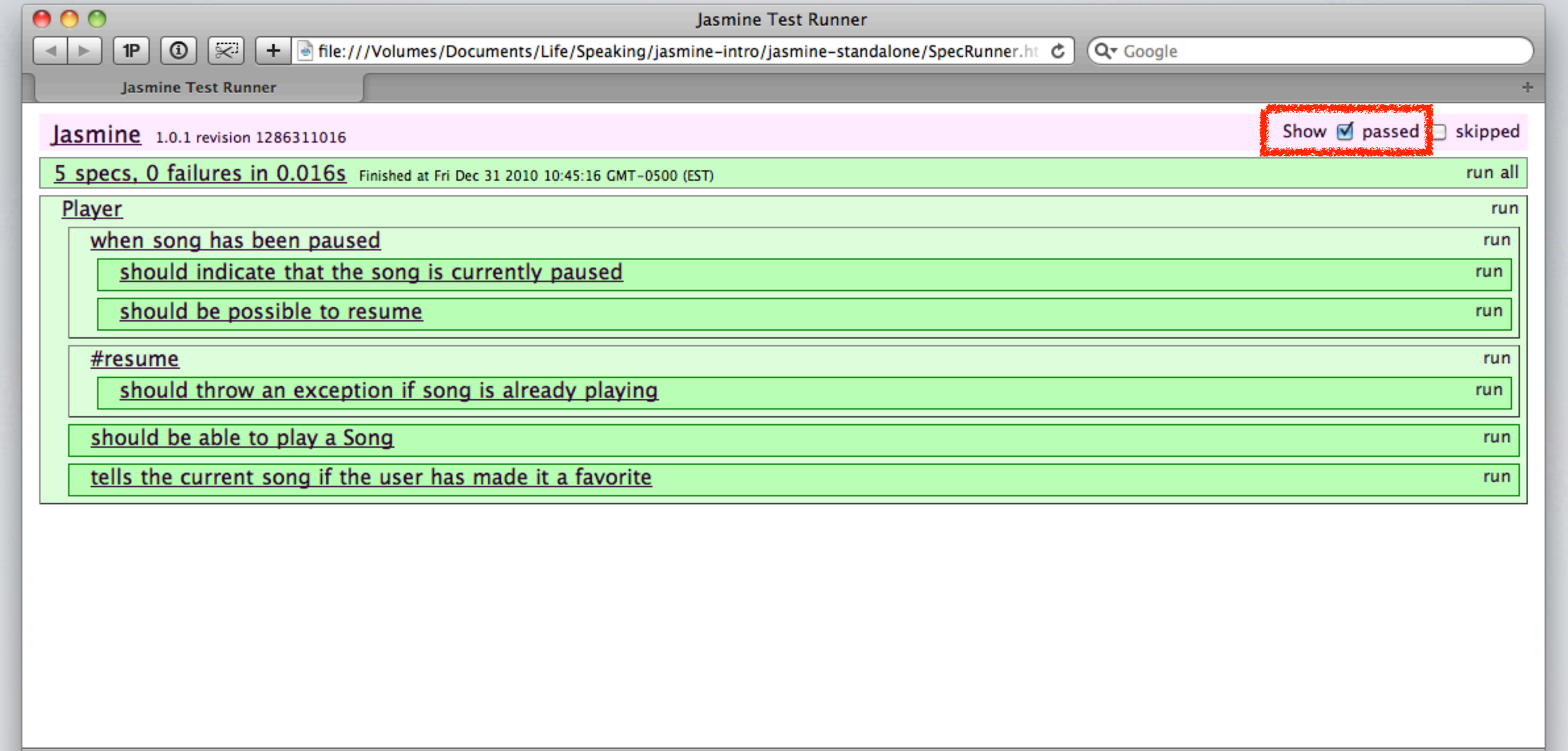
1. Get Jasmine



For starters, download the latest standalone



Open `SpecRunner.html` in a browser



Check "passed" to see the example specs

2. Start Spec'ing!

PlayerSpec.js — jasmine-standalone

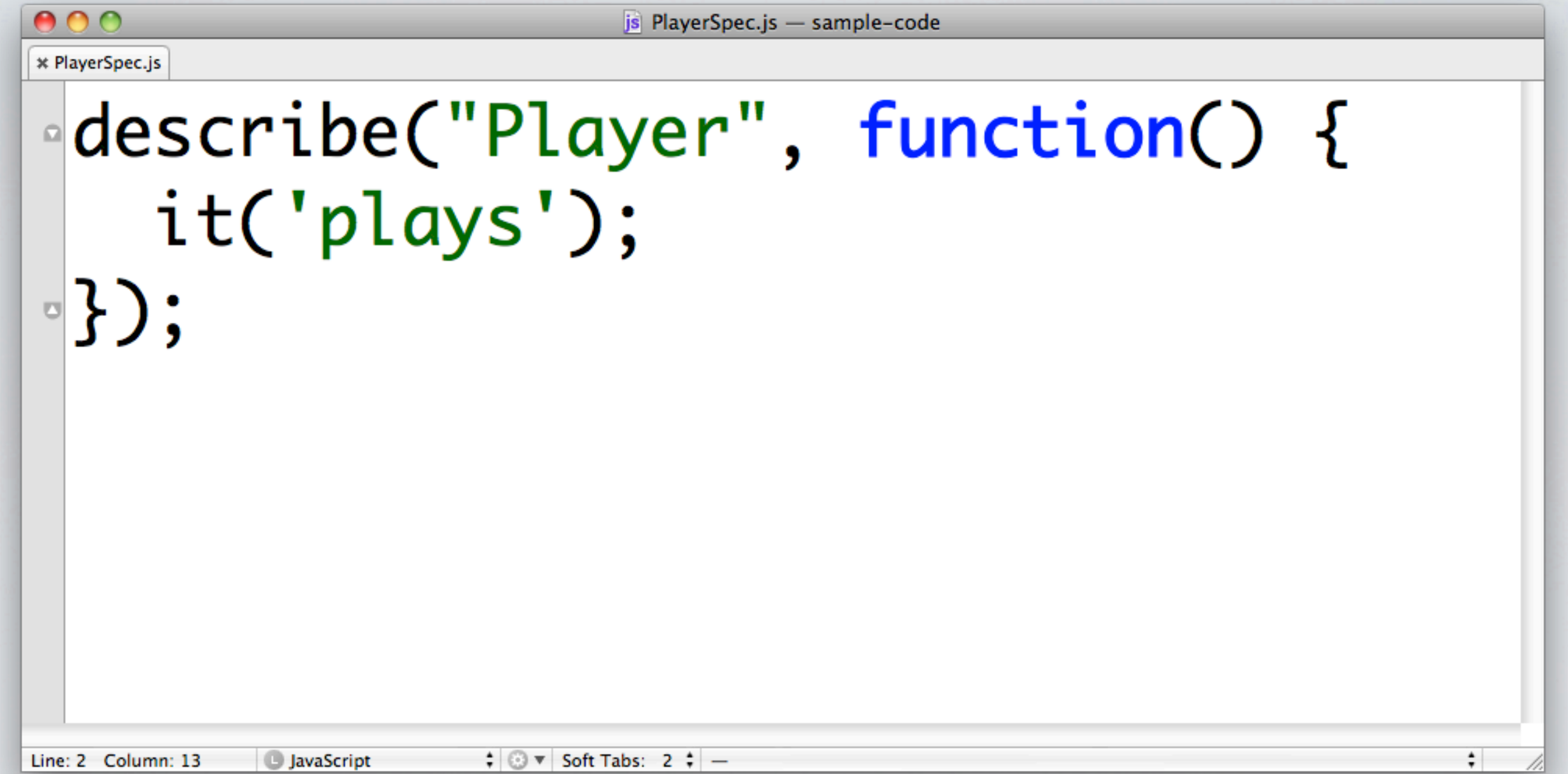
PlayerSpec.js

```
describe("Player", function() {
    //...
});
```

Line: 2 Column: 5 JavaScript Soft Tabs: 2

Let's start fresh!

This is a top-level example group; most spec files are arranged 1-to-1 with the code in the files they specify so they can be easily located and contain a single outer-most example group specified by invoking the `describe` function.



Pending examples

A pending example specifies something we know we want our code to do, but that we may not be implementing quite yet. If you have an existing expectation that you need to make pending, you can prepend it with an ‘x’, a la:

```
xit(“description”,function(){
  expect(code).toBePerfect();
});
```

PlayerSpec.js — sample-code

PlayerSpec.js | SongSpec.js

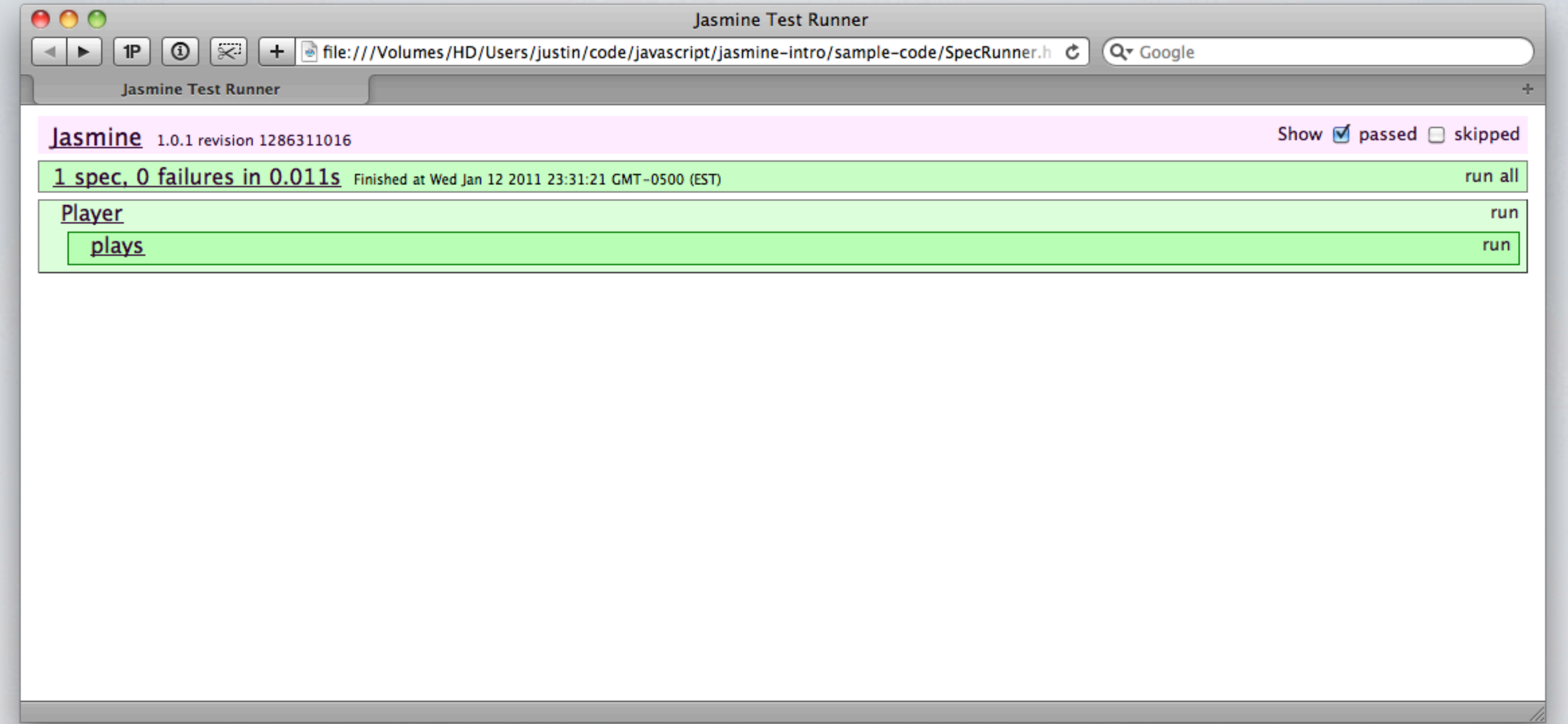
```
describe("Player", function() {
  it('plays',function(){
    var player = new Player();

    player.play();

    expect(player.isPlaying).toBe(true);
  });
});
```

Line: 9 Column: 4 | JavaScript | Soft Tabs: 2 | Player

Great expectations

You can find all of Jasmine's default matchers here: http://pivotal.github.com/jasmine/matchers.html

If you're using jQuery, you can there's a great collection of handy jQuery-specific matchers too: https://github.com/velesin/jasmine-jquery



Green!

Simply refresh the page to re-run your specs.

A fun trick is to automatically refresh the page every given interval to implement a rudimentary autotest: <meta http-equiv="refresh" content="3">

PlayerSpec.js — sample-code

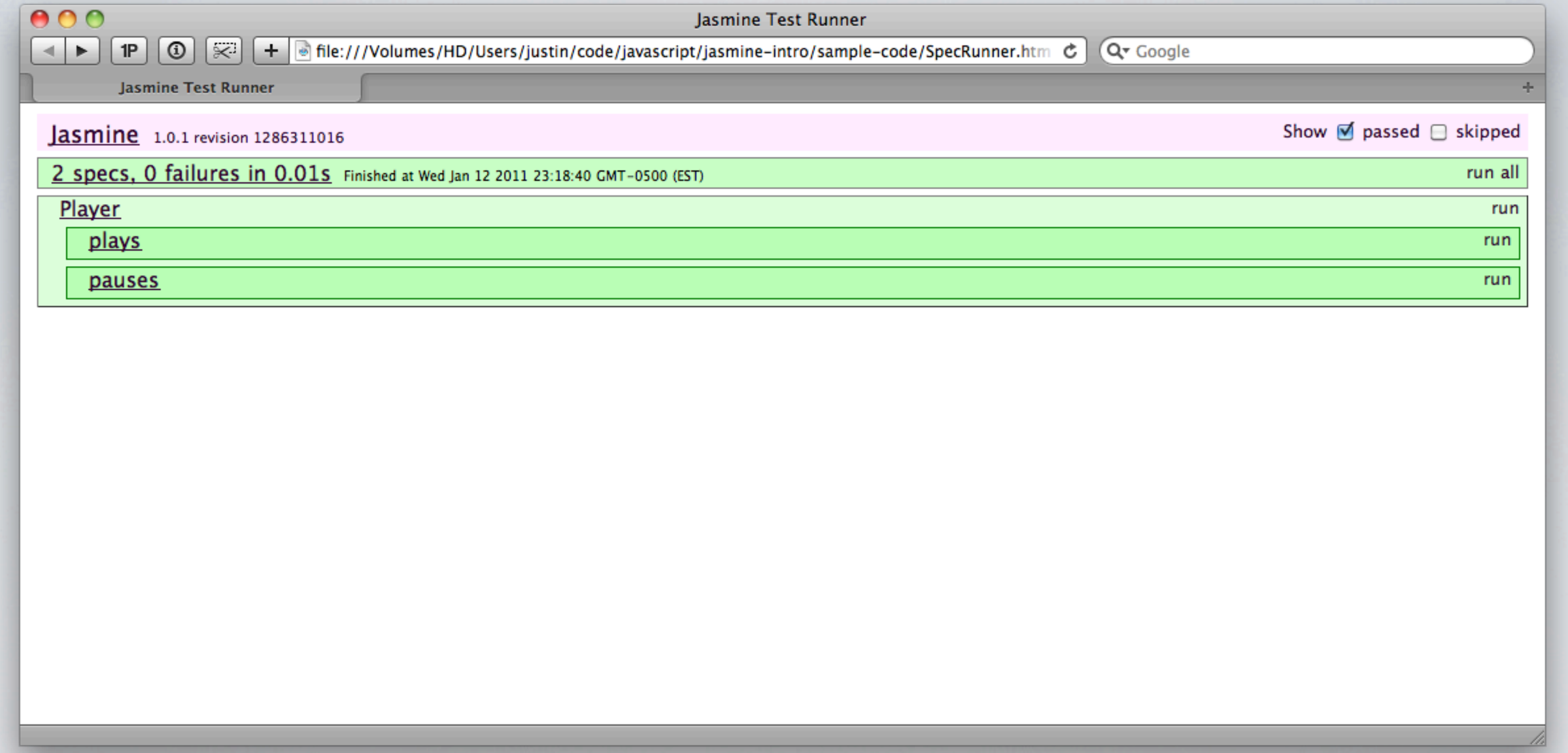
PlayerSpec.js | SongSpec.js

```
  });
  it('pauses',function() {
    var player = new Player();
    player.play();

    player.pause();

    expect(player.isPlaying).not.toBe(true);
  })
});
```

Line: 1 Column: 32 | JavaScript | Soft Tabs: 2

Our second example

Let’s create a similar spec for the player’s pause function


Jasmine Test Runner
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Google
Jasmine Test Runner
Jasmine 1.0.1 revision 1286311016
Show passed skipped
2 specs, 0 failures in 0.01s Finished at Wed Jan 12 2011 23:18:40 GMT-0500 (EST)
run all
Player
run
plays
run
pauses
run

Green!

PlayerSpec.js — sample-code

PlayerSpec.js | SongSpec.js

```
describe("Player", function() {
  it('plays',function(){
    var player = new Player();

    player.play();

    expect(player.isPlaying).toBe(true);
  });
  it('pauses',function() {
    var player = new Player();
    player.play();

    player.pause();

    expect(player.isPlaying).not.toBe(true);
  })
});
```

Line: 17 Column: 4 | JavaScript | Soft Tabs: 2 | Player

duplication!

Let’s create a similar spec for the player’s pause function

PlayerSpec.js — sample-code

PlayerSpec.js | SongSpec.js

```
describe("Player", function() {
  it('plays',function(){
    var player = new Player();

    player.play();

    expect(player.isPlaying).toBe(true);
  });
  it('pauses',function() {
    var player = new Player();
    player.play();

    player.pause();

    expect(player.isPlaying).not.toBe(true);
  })
});
```

Line: 17 Column: 4 | JavaScript | Soft Tabs: 2 | Player

duplication!

Let’s create a similar spec for the player’s pause function

PlayerSpec.js — sample-code

PlayerSpec.js | SongSpec.js

```
describe("Player", function() {
  it('plays',function(){
    var player = new Player();

    player.play();

    expect(player.isPlaying).toBe(true);
  });
  it('pauses',function() {
    var player = new Player();
    player.play();

    player.pause();

    expect(player.isPlaying).not.toBe(true);
  })
});
```

Line: 17 Column: 4 | JavaScript | Soft Tabs: 2 | Player

duplication!

Let’s create a similar spec for the player’s pause function

PlayerSpec.js — sample-code

PlayerSpec.js | SongSpec.js

```
describe("Player", function() {
  it('plays',function(){
    var player = new Player();

    player.play();

    expect(player.isPlaying).toBe(true);
  });
  it('pauses',function() {
    var player = new Player();
    player.play();

    player.pause();

    expect(player.isPlaying).not.toBe(true);
  })
});
```

Line: 17 Column: 4 | JavaScript | Soft Tabs: 2 | Player

duplication!

Let’s create a similar spec for the player’s pause function

PlayerSpec.js — sample-code

PlayerSpec.js | SongSpec.js

```
describe("Player", function() {
  it('plays',function(){
    var player = new Player();

    player.play();

    expect(player.isPlaying).toBe(true);
  });
  it('pauses',function() {
    var player = new Player();
    player.play();

    player.pause();

    expect(player.isPlaying).not.toBe(true);
  })
});
```

Line: 17 Column: 4 | JavaScript | Soft Tabs: 2 | Player

duplication!

Let’s create a similar spec for the player’s pause function

PlayerSpec.js — sample-code

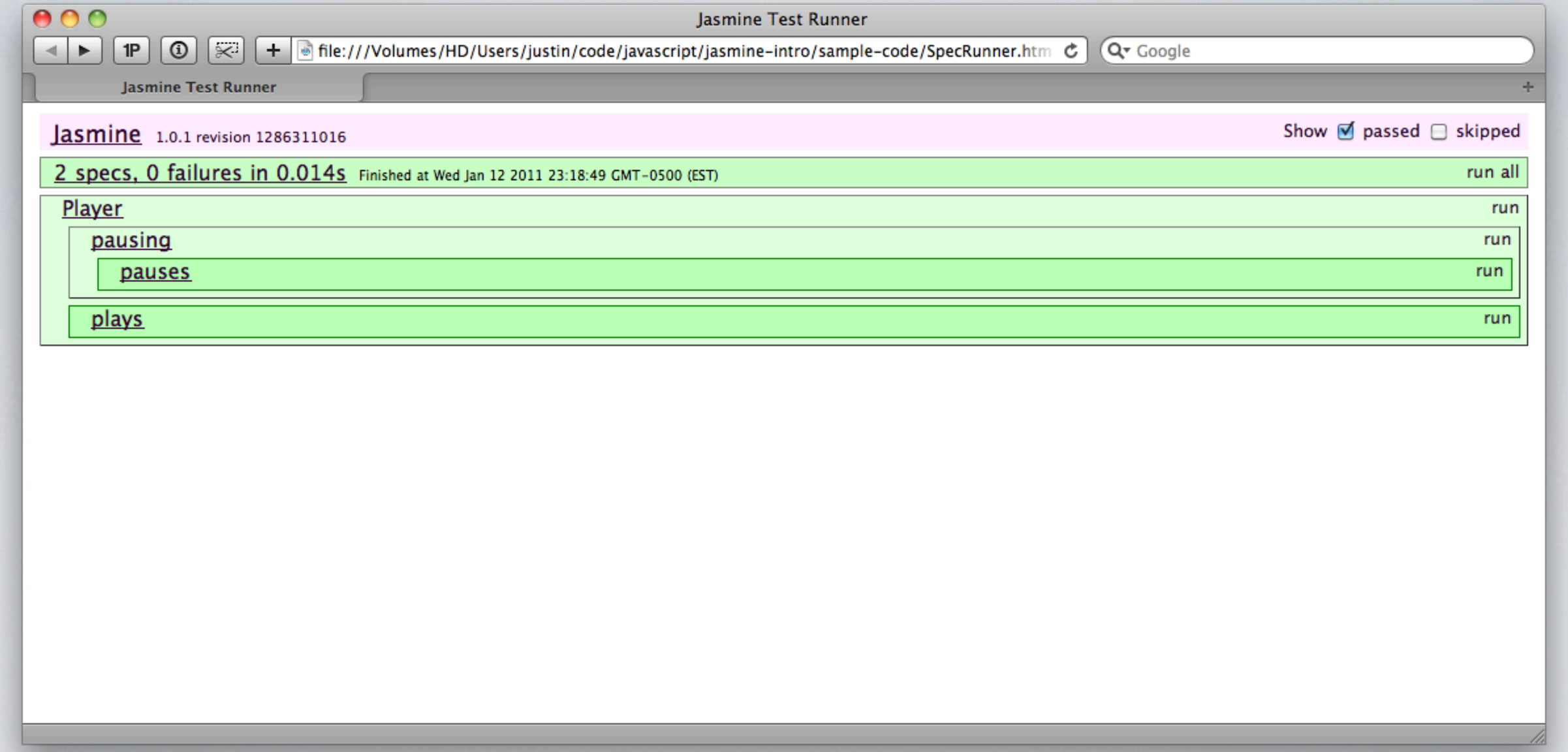
PlayerSpec.js | SongSpec.js

```
describe("Player", function() {
  var player;
  beforeEach(function(){
    player = new Player();
    player.play();
  });
  it('plays',function(){
    expect(player.isPlaying).toBe(true);
  });
  describe('pausing',function(){
    beforeEach(function(){
      player.pause();
    });
    it('pauses',function() {
      expect(player.isPlaying).not.toBe(true);
    });
  });
});
```

Line: 12 Column: 22 | JavaScript | Soft Tabs: 2 | Player

nesting

In Jasmine, you can nest example groups to specify cascading behavior. This can be really powerful at DRYing up your tests while retaining readability. I tend to introduce a new nested example group whenever I need to specify the behavior of code following a state change (in this case, playing the Player). So that each nested example group can inherit the state of the parent, I often find myself performing arrange & act in a “beforeEach()” function and keep each “it()” focused on a single expectation regarding the behavior being specified.


Jasmine Test Runner
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Google
Jasmine Test Runner
Jasmine 1.0.1 revision 1286311016
Show passed skipped
2 specs, 0 failures in 0.014s Finished at Wed Jan 12 2011 23:18:49 GMT-0500 (EST)
run all
Player
run
pausing
run
pauses
run
plays
run

Still green

3. Custom Matchers

```
expect(player.isPlaying).not.toBe(true);
```


Looking back on it, that matcher is a bit tough to read. Custom matchers can be great for refactoring expectations that are too complex, will be frequently duplicated, or could do a better job of revealing their intent.

```
expect(player).not.toBePlaying();
```

SpecHelper.js — sample-code

PlayerSpec.js | SpecRunner.html | SpecHelper.js

```
beforeEach(function() {
  this.addMatchers({
    toBePlaying: function() {
      var player = this.actual;
      return player.isPlaying;
    }
  })
});
```

Line: 8 Column: 4 | JavaScript | Soft Tabs: 2 | toBePlaying

Adding a custom matcher

It's as simple as adding an object literal of named matchers as above. You can even customize the message that's printed on expectation failures by providing a this.message function inside the matcher that returns a string.

PlayerSpec.js — sample-code

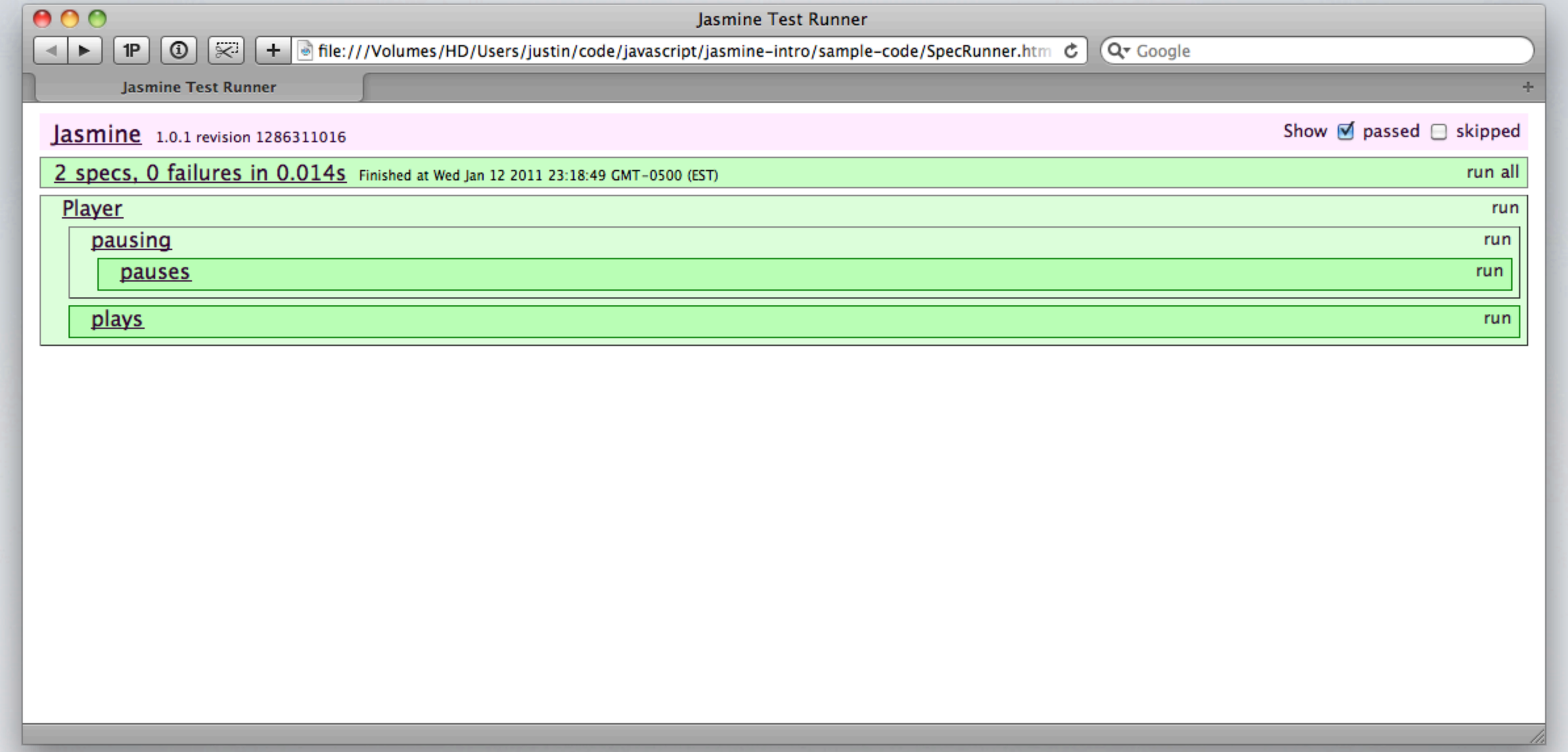
PlayerSpec.js

```
  });
  describe('pausing',function(){
    beforeEach(function(){
      player.pause();
    });
    it('pauses',function() {
      expect(player).not.toBePlaying();
    });
  });
});
```

Line: 18 Column: 4 JavaScript Soft Tabs: 2 Player

Using our custom matcher

And any expectation can be inverted with a `.not` prefix, without any custom work on the matcher's part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Jasmine Test Runner
Jasmine 1.0.1 revision 1286311016
Show passed skipped
2 specs, 0 failures in 0.014s Finished at Wed Jan 12 2011 23:18:49 GMT-0500 (EST)
run all
Player
run
pausing
run
pauses
run
plays
run

Still green

4. Spies

Specify a behavior

Specify a loading animation 

Let’s say that when the jukebox starts playing, a loading indicator needs to be shown.

But because the loading indicator feature is covered by specs elsewhere and animating the real thing would slow down our test execution dramatically, we want to specify only that we invoke it (isolating ourselves from what the internal logic of showing and hiding the loading indicator).

PlayerSpec.js — sample-code

PlayerSpec.js

```
describe("Player", function() {
  var player;
  beforeEach(function(){
    player = new Player();
    spyOn(loading,'show');
    player.play();
  });
  it('plays',function(){
    expect(player.isPlaying).toBe(true);
```

Line: 1 Column: 1 JavaScript Soft Tabs: 2

Tell Jasmine to spy on loading.show()

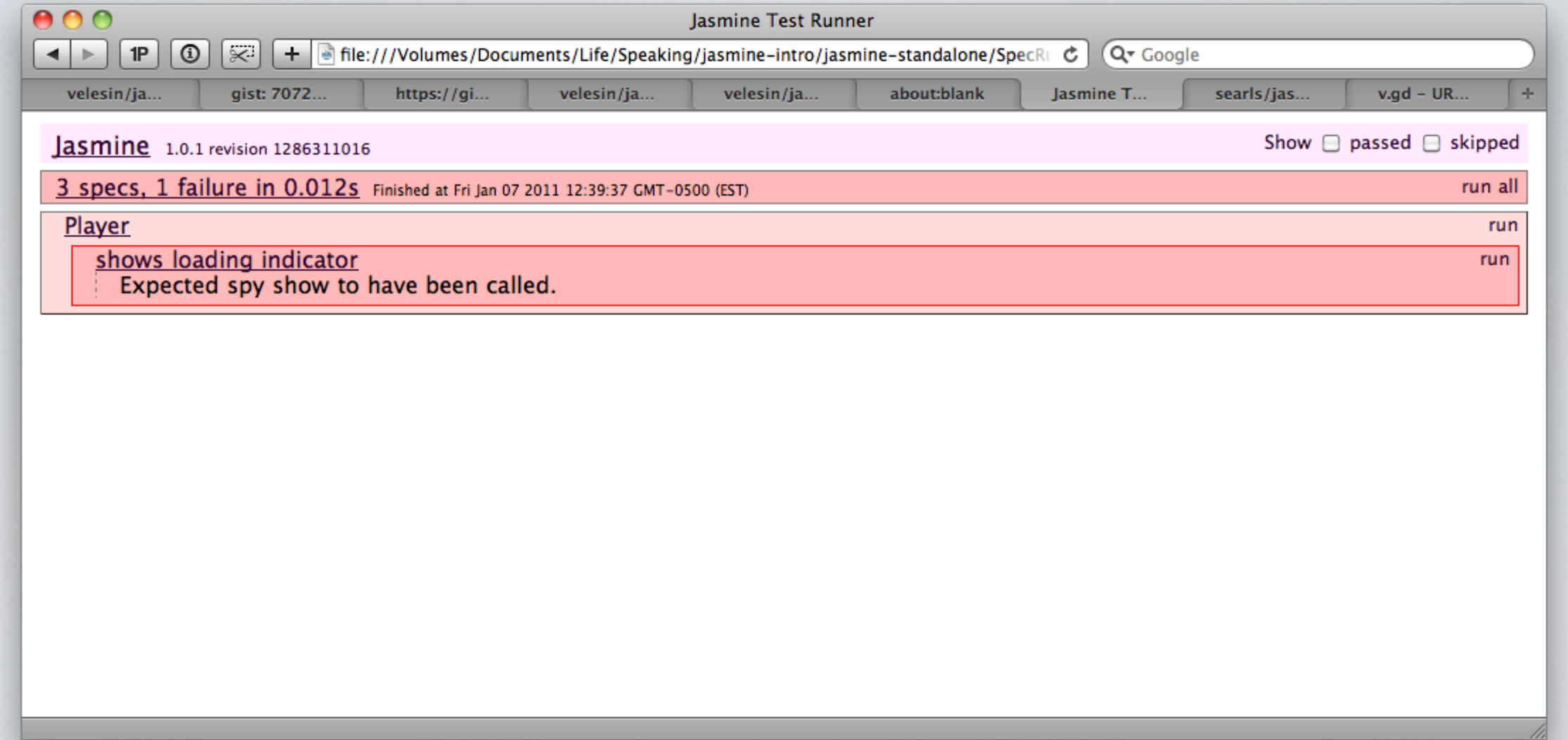
PlayerSpec.js — sample-code

PlayerSpec.js

```
describe("Player", function() {
  var player;
  beforeEach(function(){
    player = new Player();
    spyOn(loading,'show');
    player.play();
  });
  it('shows a loading indicator',function(){
    expect(loading.show).toHaveBeenCalled();
  });
```

Line: 12 Column: 41 JavaScript Soft Tabs: 2 Player

Expect the invocation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Jasmine 1.0.1 revision 1286311016
Show passed skipped
3 specs, 1 failure in 0.012s Finished at Fri Jan 07 2011 12:39:37 GMT-0500 (EST)
run all
Player
run
shows loading indicator
run
Expected spy show to have been called.

Go red

Player.js — jasmine-standalone

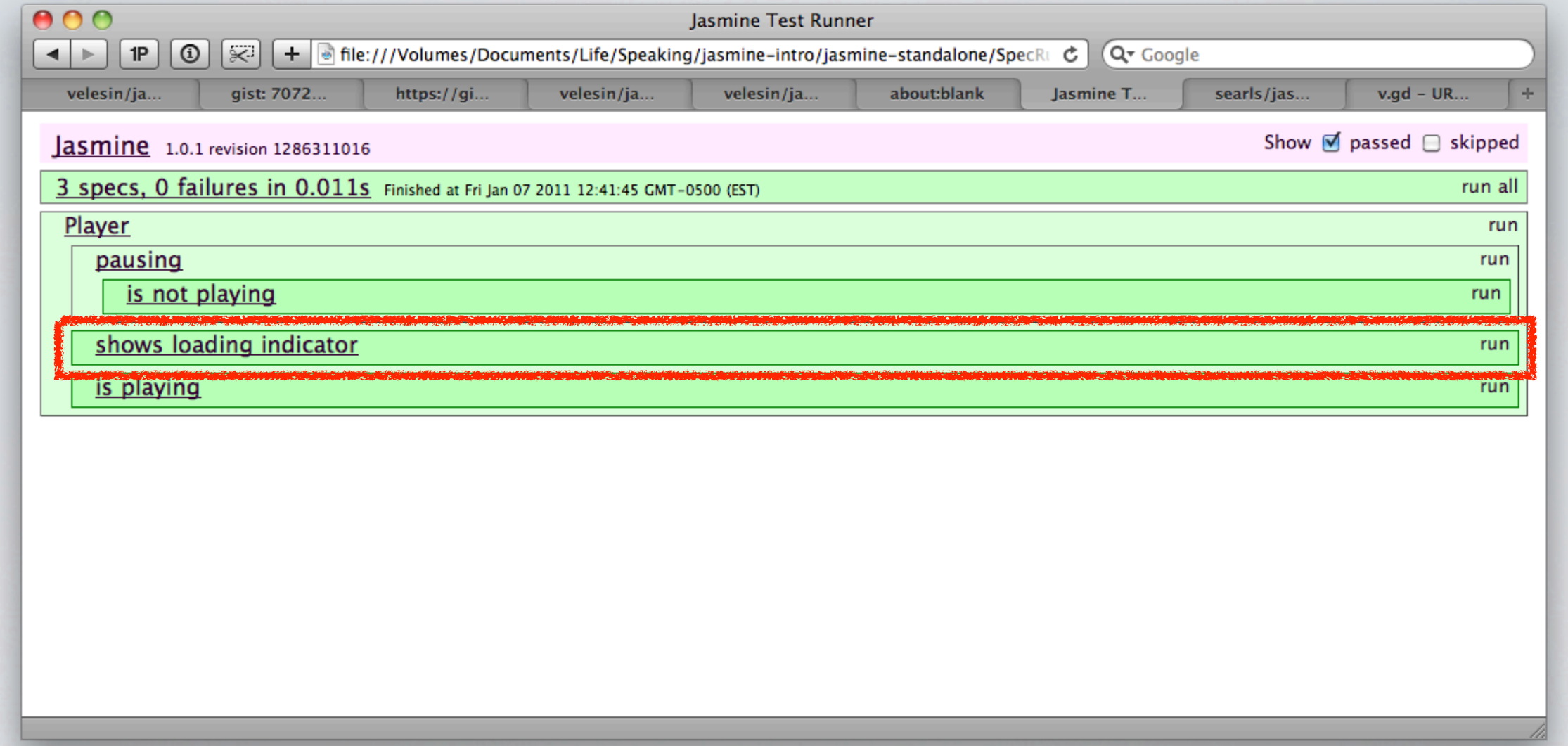
PlayerSpec.js | Player.js | SpecRunner.html | SpecHelper.js | SongSpec.js | Song.js

```
function Player() {
}
Player.prototype.play = function(song) {
  loading.show();
  this.currentlyPlayingSong = song;
  this.isPlaying = true;
};

Player.prototype.pause = function() {
  this.isPlaying = false;
};
```

Line: 4 Column: 18 | JavaScript | Soft Tabs: 2 | play

Implement


Jasmine Test Runner
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Jasmine 1.0.1 revision 1286311016
Show passed skipped
3 specs, 0 failures in 0.011s Finished at Fri Jan 07 2011 12:41:45 GMT-0500 (EST)
run all
Player
run
pausing
run
is not playing
run
shows loading indicator
run
is playing
run

Go green!

5. HTML Fixtures

"How do my specs see my HTML?"

This is the first question I usually hear when I people are first introduced to JavaScript testing. Most JavaScript written today is one-time-use

First, make an attempt to resist the temptation to dunk your delicious JavaScript in the milky DOM!

Specifying your JavaScript in a way that's independent from the exact markup it's used with has numerous benefits. Right out the gate, your JavaScript has two customers (your spec and your page), meaning that it's immediately reusable. With practice, it will probably be more modular and better abstracted, too!

However

But, in reality, the majority of people new to JavaScript use it only for the DOM interactions that can't be performed on the server-side. Especially when you're starting out, having a way to easily and safely inject HTML fixtures into the DOM is really important.

A lightweight script for injecting HTML

http://v.gd/fixture

Link expands to:
https://github.com/searls/jasmine-fixture

SongSpec.js — jasmine-standalone

jasmine-fixture.js | SpecHelper.js | SongSpec.js

```
describe('Song',function(){
  var song,$currentSongSpan;
  beforeEach(function(){
    song = new Song();
    song.title = 'Some Song Title';
    $.jasmine.inject('<span id="currentSong"></span>');
    $currentSongSpan = $('#currentSong');
  });

});
```

Line: 9 Column: 1 | JavaScript | Soft Tabs: 2 | Song

Injecting HTML

We can simply inject some HTML into the DOM to facilitate our test.

SongSpec.js — jasmine-standalone

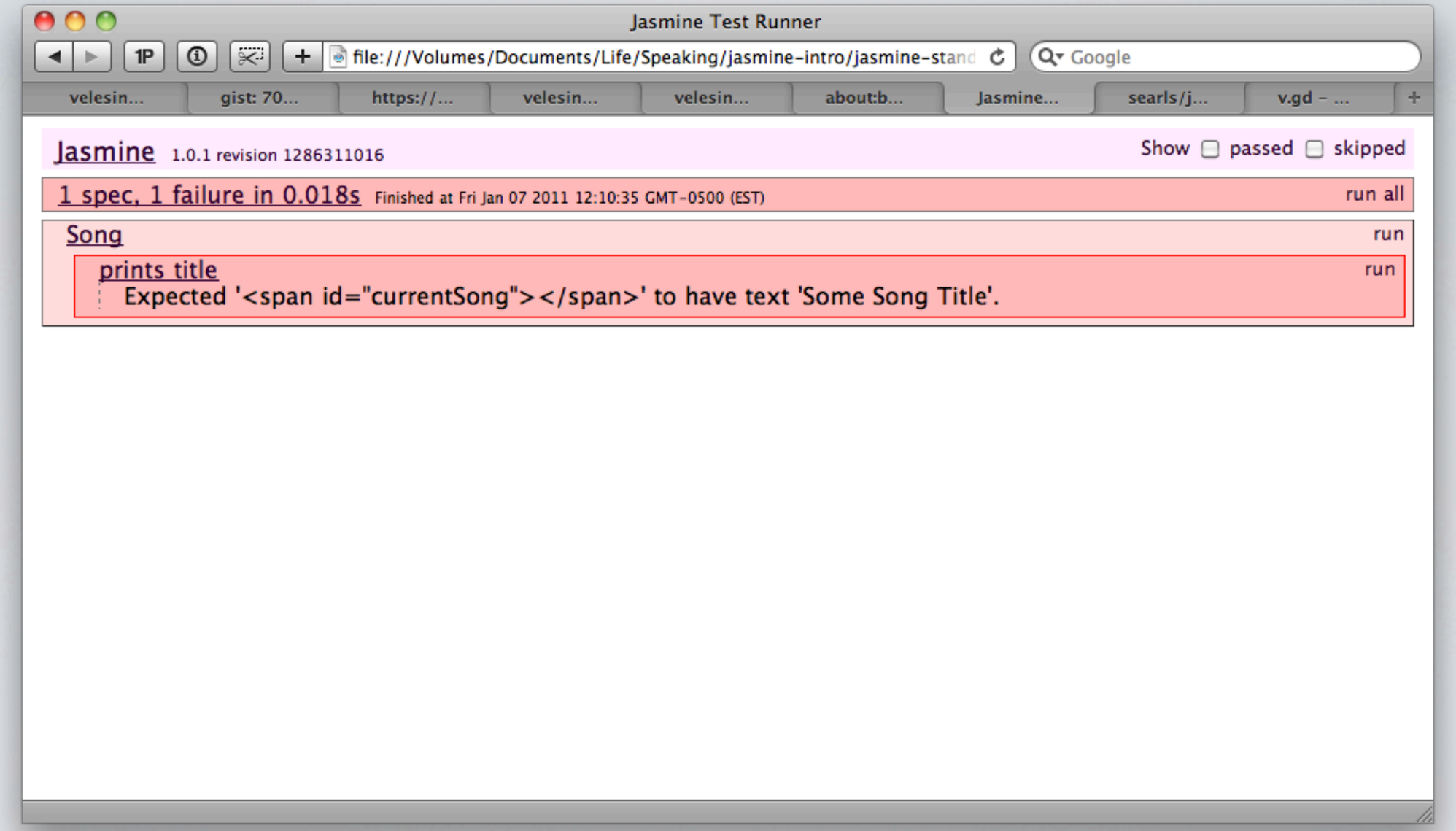
jasmine-fixture.js | SpecHelper.js | SongSpec.js

```
describe('Song',function(){
  var song,$currentSongSpan;
  beforeEach(function(){
    song = new Song();
    song.title = 'Some Song Title';
    $.jasmine.inject('<span id="currentSong"></span>');
    $currentSongSpan = $('#currentSong');
  });
  it('prints title',function(){
    song.printTitle();
    expect($currentSongSpan).toHaveText(song.title);
  })
});
```

Line: 13 Column: 4 | JavaScript | Soft Tabs: 2 | Song

Injecting HTML

This way we can confidently specify the behavior of code interacting with the DOM, while minimizing the coupling to specific markup.



Go red

Now we have a nice clear failure.

Song.js — jasmine-standalone

Song.js

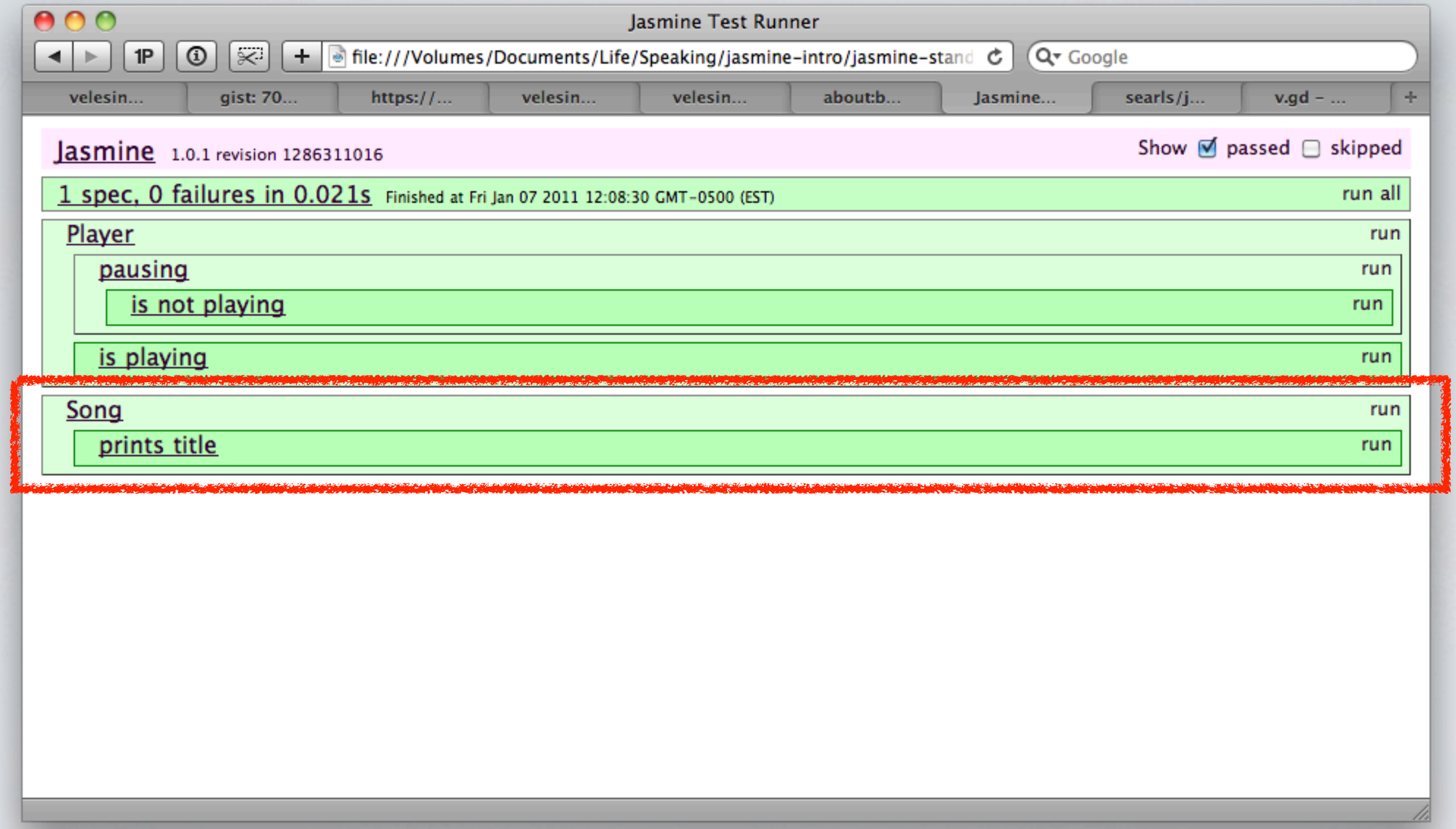
```
function Song() {
}

Song.prototype.printTitle = function(){
  $('#currentSong').text(this.title);
}
```

Line: 7 Column: 1 JavaScript Soft Tabs: 2 printTitle

Injecting HTML

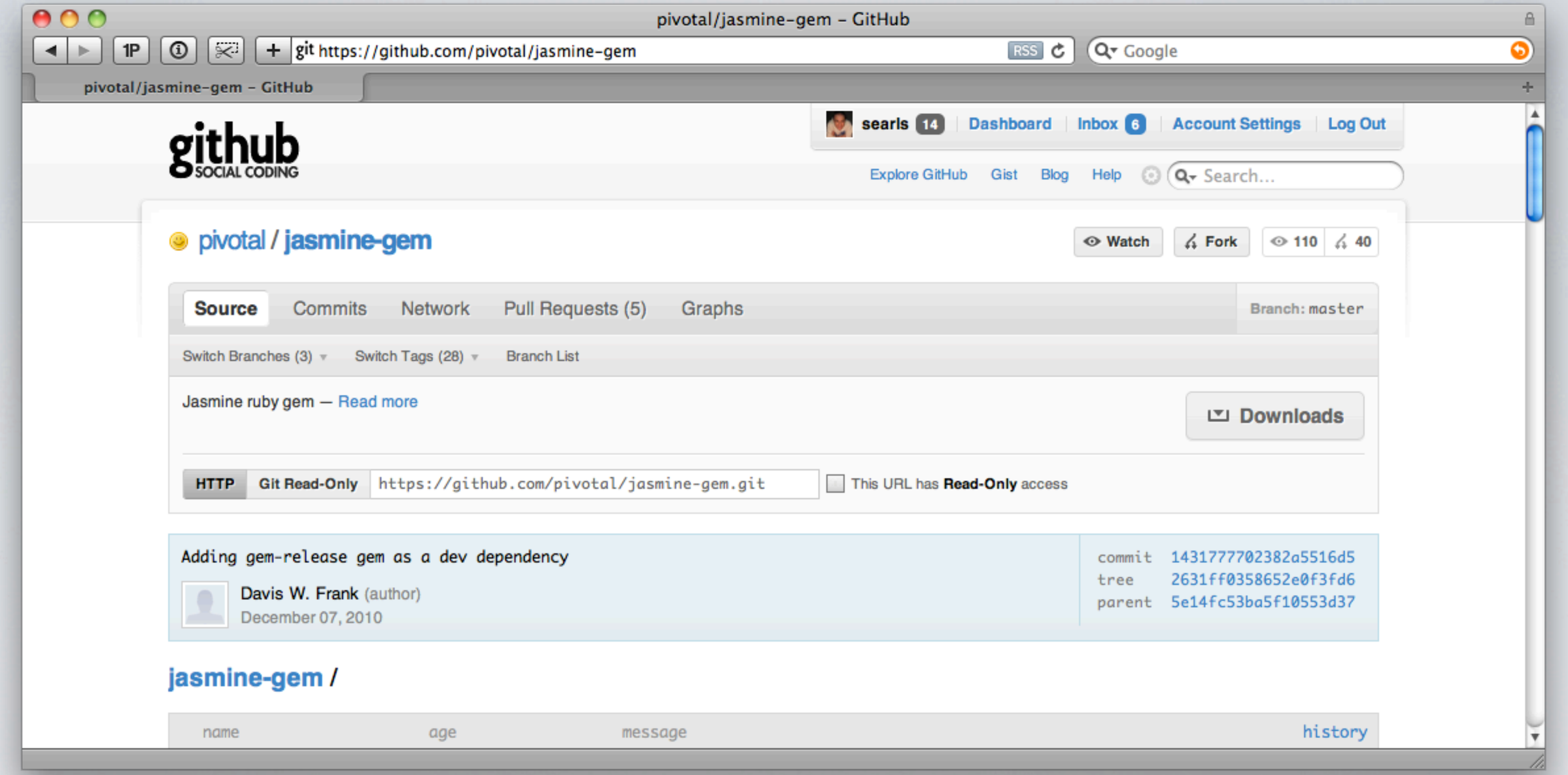
Now our implementation is free to interact with the specific DOM element our test provides



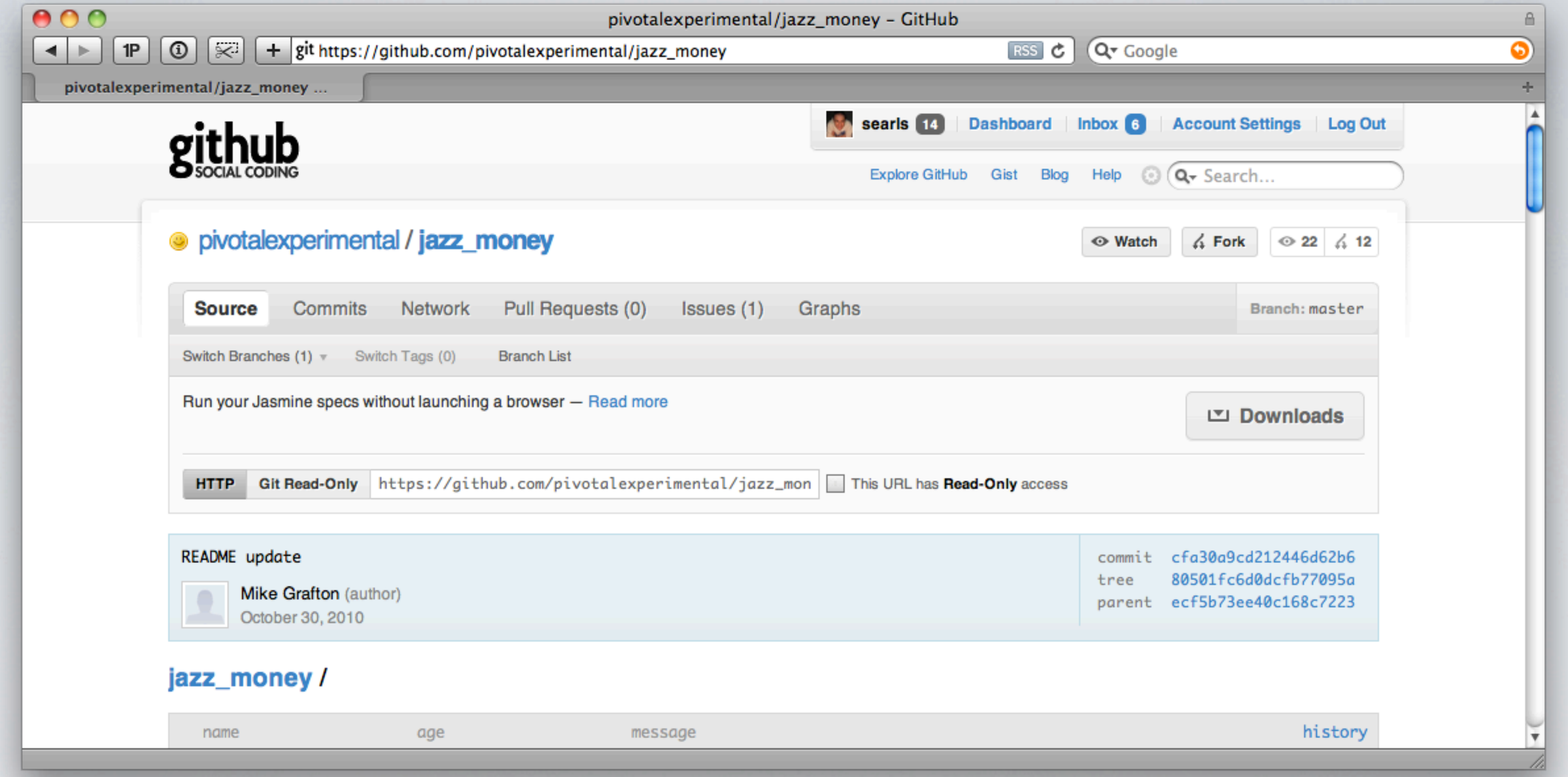
Go green!

And our spec goes green!

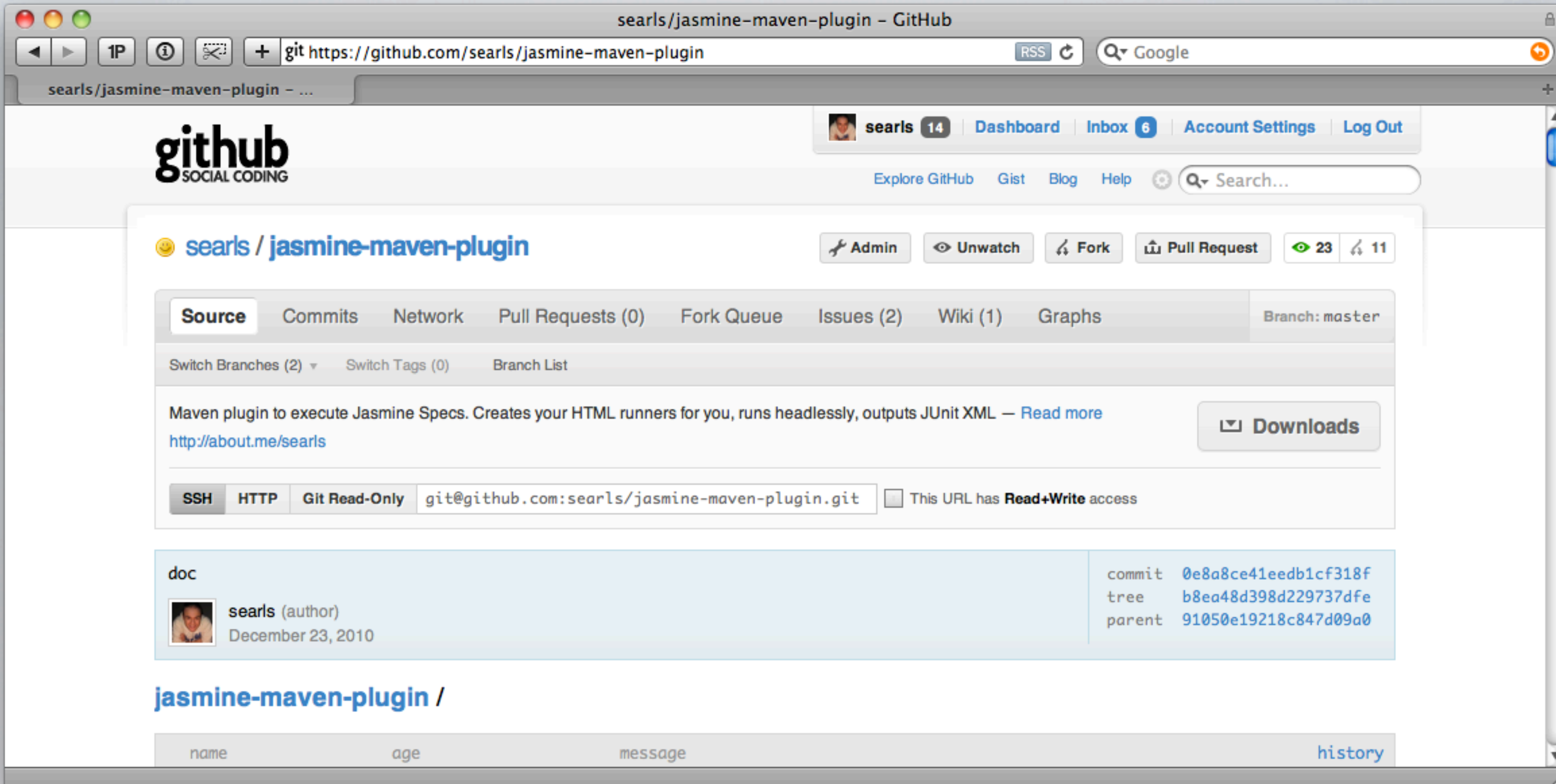
6. Continuous Integration / Project Comprehension



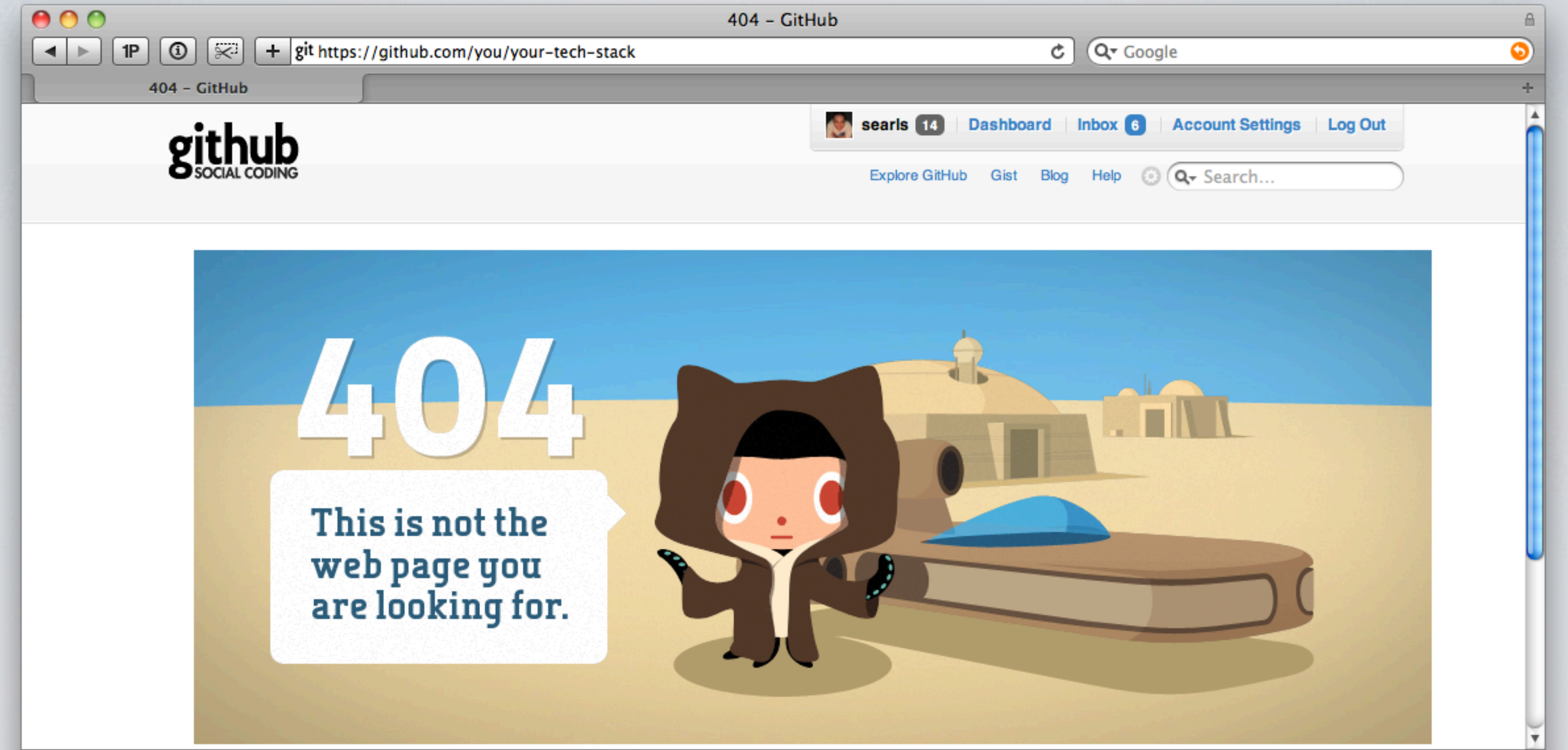
jasmine-gem for Ruby/Rails under Selenium



jazz_money for headless Ruby



jasmine-maven-plugin for Java projects



Let's build tools for your tech stack together!

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http://github.com/searls/jasmine-intro