

wDCoder

Tuesday, January 22, 13

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Thank you. Good evening everybody. My name is Daniel Hedrick. Before I begin my presentation tonight, I wanted to take a brief moment to say thanks to Nathan for running tonight's show, allowing me to present and giving me the idea for its subject matter. I'd also like to thank him for helping me learn that writing tests before or while I write my code makes me a better programmer.

PICTURE

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Capybara

Daniel Hedrick
@dcoder

https://github.com/dcoder2099/intro_to_capybara

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This evening I'm going to be talking about Capybara. Capybara, or [HydroKOH-erus] [HydroKAY-eris]*, the largest living rodent in the world, and native to South America. It's closest relatives are the Agouti, Chinchilla, Nutria, and Guinea Pig. They can grow 4' in length; 2' in height at the shoulder, and weigh upwards of 150 pounds. What does that have to do with this presentation? Nothing... just thought it was interesting.

* Hydrochoerus hydrochaeris

Step I: Quiz

Tuesday, January 22, 13

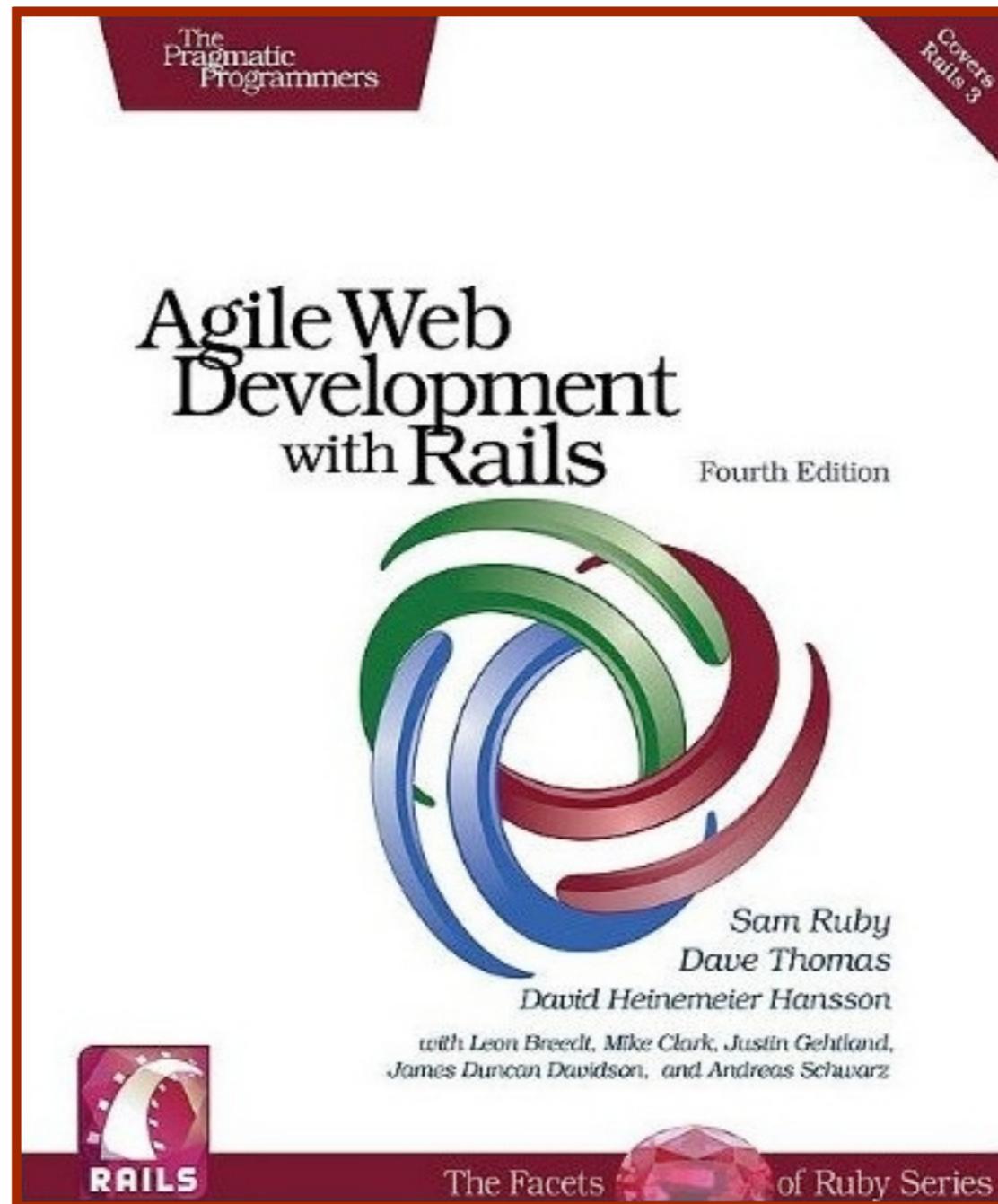
So, as always, I'll begin with a brief quiz...

- * How many "rails beginners" do we have here tonight?
 - * How many of you (all of you) began your learning with the book "Agile Web Development With Rails"?
- [txn click]
- * How many of you remember working your way through it's "Depot" web store application?

This book, now in its 4th edition is still considered by many to be the seminal "getting started". I'll be referring to it's Depot application as I discuss Capybara later on.

[slide]

Step I: Quiz



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[slide]

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But first, let's talk briefly about tests. Tests are useful. They help validate understanding and they help verify behavior. In the case of well-written tests, they are AWESOME. And in my case, they keep senility at bay....

On Sunday, as I was working on some of the test code for this presentation, I got a little peckish, so I went to the kitchen, got myself a drink and a little bowl of chips. Returning to my office desk, I sat down, sat the bowl of chips down, opened the liter bottle of mineral water and proceeded to pour it over the pita chips. What. The. Hell.

[click]

Clearly, I'm losing my mind. But after a moment staring at my soggy chips and finally shaking off the "What. The. Hell." feeling, I got back to the code, test plans, and actual tests that I was writing. This combination of test planning and written tests is a huge benefit, and whether I return to it after a brief lapse of reason or if I return after months of being away (likely committed at Belview or Arkham)

[slide]



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[slide]



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I'm able to relearn how the application is supposed to work with very little effort. There's another way that we frequently perform these sanity checks of our application development, especially after making numerous changes.

[slide]

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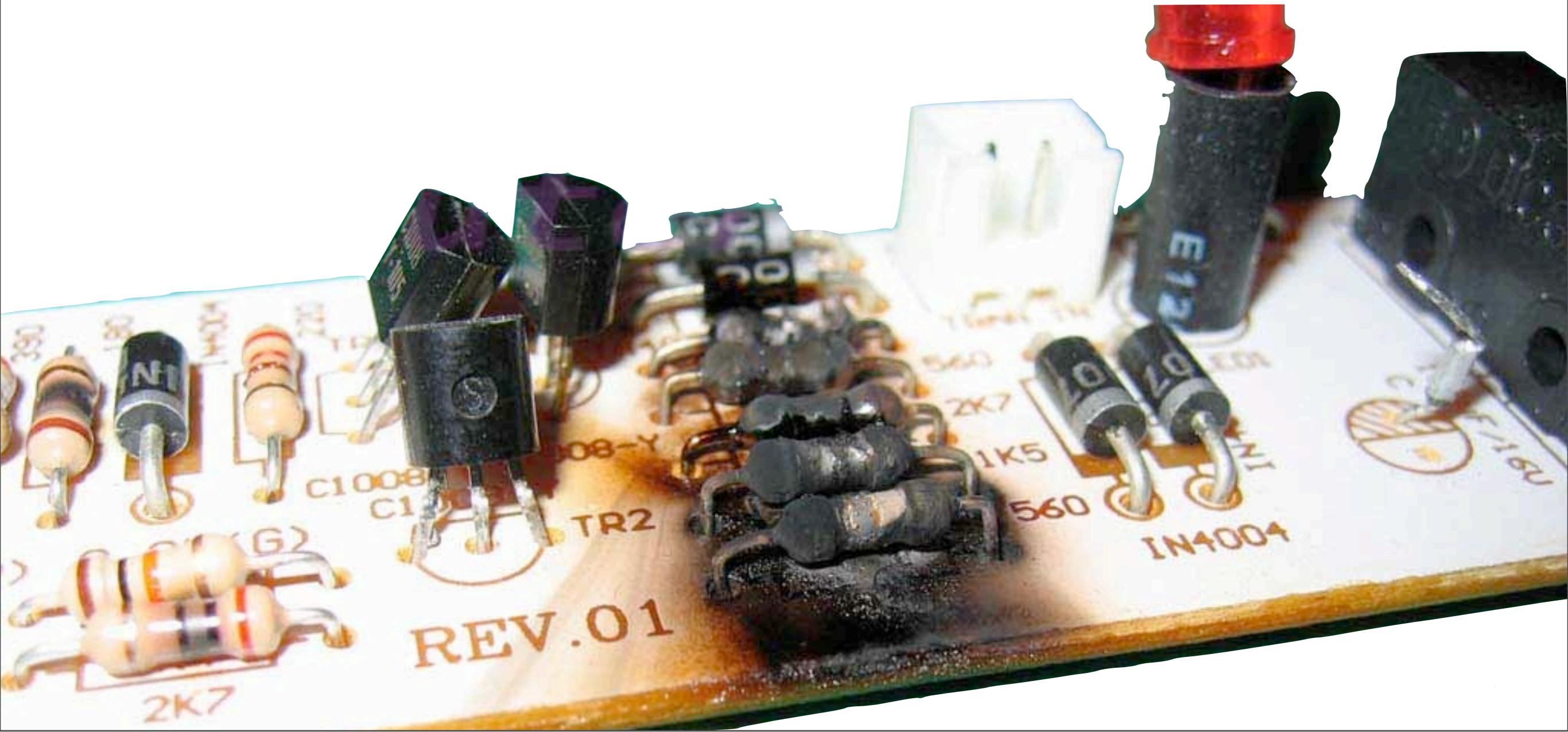
[blank slide]

A "Smoke Test" is a run-through of specific, known application behavior that can confirm the application is basically working. In other industries, this sort of test is also known as a "pressure test" or "leak test" and according to Wikipedia, its etymology can be traced back to late 19th century plumbing practices where a closed plumbing loop is filled with smoke while the lines are checked for leaks. A more-likely link to our industry comes from electrical engineering, where an improperly wired circuit, when powered, would cause the board and components to start smoking.

[click]

In any case the idea is that if these tests pass, then the product is basically functional and more thorough regression tests can be run. A failure in a smoke test is a quick indicator that something is amiss.

Smoke if you got 'em



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[blank slide]

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<https://github.com/jnicklas/capybara>

Tuesday, January 22, 13

By employing Capybara in our Rails and RSpec test automation we gain a straightforward and useful DSL for automating these smoke tests.

From Capybara's own README.md:

[click]

"Capybara helps you test web applications by simulating how a real user would interact with your app."

Real user interacting with our app, huh? That sounds exactly like something we could use to drastically improve our verification time of a smoke test, right?

We'll get into more detail about exactly how Capybara does this in just a minute, but first, let's focus a little on what, exactly, our application does and what, exactly, a smoke test plan _is_.

[slide]



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[slide]

The Depot

Tuesday, January 22, 13

Remember a few minutes ago, when I asked about the "Agile Web Development With Rails" book? The application the reader builds while working through that book is a rudimentary shopping cart that demonstrates several of the core features of Ruby on Rails, and I could think of no better starting point for this talk.

The application is a simple product browser: [click]: [store/pragprog_depot.png]
It manages the cart[slide]



PRAGMATIC BOOKSHELF

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Your Pragmatic Catalog

CoffeeScript

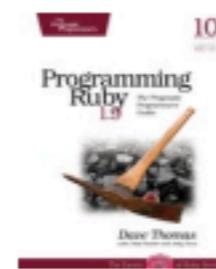


CoffeeScript is JavaScript done right. It provides all of JavaScript's functionality wrapped in a cleaner, more succinct syntax. In the first book on this exciting new language, CoffeeScript guru Trevor Burnham shows you how to hold onto all the power and flexibility of JavaScript while writing clearer, cleaner, and safer code.

\$36.00

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Programming Ruby 1.9

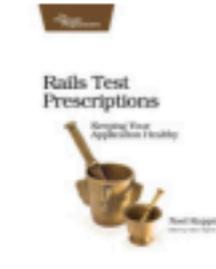


Ruby is the fastest growing and most exciting dynamic language out there. If you need to get working programs delivered fast, you should add Ruby to your toolbox.

\$49.95

[Add to Cart](#)

Rails Test Prescriptions



Rails Test Prescriptions is a comprehensive guide to testing Rails applications, covering Test-Driven Development from both a theoretical perspective (why to test) and from a practical perspective (how to test effectively). It covers the core Rails testing tools and procedures for Rails 2 and Rails 3, and introduces popular add-ons, including Cucumber, Shoulda, Machinist, Mocha, and Rcov.

\$34.95

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Pragprog Books Online Store

Pragmatic Bookshelf

PRAGMATIC BOOKSHELF

English

Your Cart

1x Programming Ruby 1.9 \$49.95
Total \$49.95

[Checkout](#) [Empty cart](#)

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Your Pragmatic Catalog

CoffeeScript
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\$34.95 [Add to Cart](#)

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Includes forms. [slide]



English ▾

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Your Cart

1x Programming Ruby 1.9 \$49.95
Total \$49.95

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Please Enter Your Details

Name

Address

Email

Pay type

Tuesday, January 22, 13

and performs field validation.



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English ▾

Your Cart

1x Programming Ruby 1.9 \$49.95
Total \$49.95

[Checkout](#) [Empty cart](#)

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Please Enter Your Details

4 errors prohibited this Order from being saved.

There were problems with the following fields:

- Name can't be blank
- Address can't be blank
- Email can't be blank
- Pay type is not included in the list

Name

Address

Email

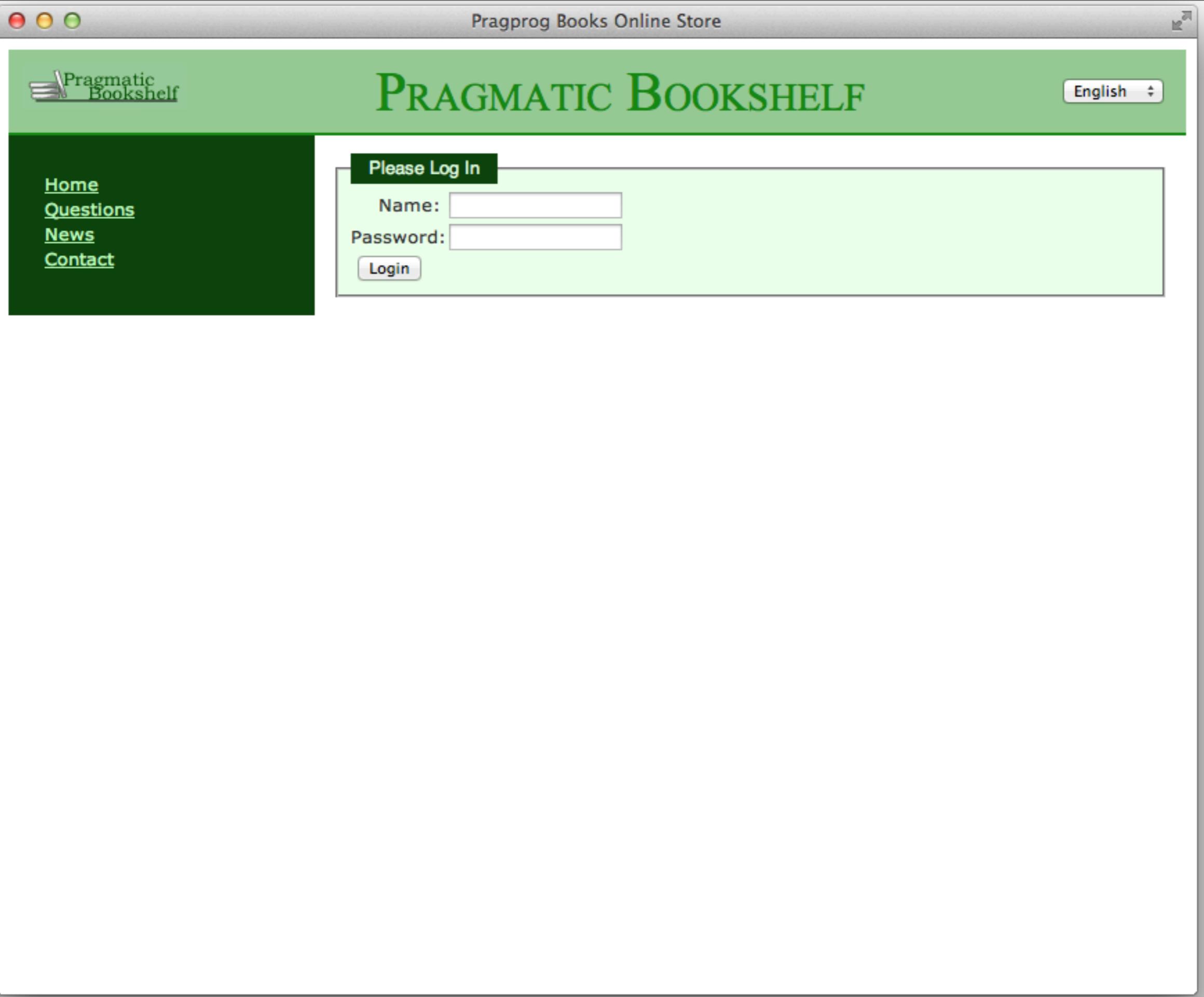
Pay type

Select a payment method ▾

[Place Order](#)

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In addition, there's a backoffice component: [slide]



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That provides CRUD operations for Users [slide]

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Listing users

Namedaniel [Show](#) [Edit](#) [Destroy](#)[New User](#)

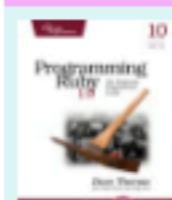
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Listing products



CoffeeScript

CoffeeScript is JavaScript done right. It provides all of JavaScript...

[Show](#)[Edit](#)[Destroy](#)

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[Show](#)[Edit](#)[Destroy](#)

Rails Test Prescriptions

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[Show](#)[Edit](#)[Destroy](#)[New product](#)

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And Orders.
[slide]

[Home](#)[Questions](#)[News](#)[Contact](#)[Orders](#)[Products](#)[Users](#)[Logout](#)

Listing orders

Name	Address	Email	Pay type
Katie Hedrick	1234 Main St.	katie@hedrick.org	Credit card

[Show](#) [Edit](#) [Destroy](#)

Dave Thomas	123 Street Dr	dave@pragprog.com	Check
-------------	---------------	-------------------	-------

[Show](#) [Edit](#) [Destroy](#)

[New Order](#)

Tuesday, January 22, 13

It even has javascript modal dialogs.
[slide]



PRAGMATIC BOOKSHELF

English ▾

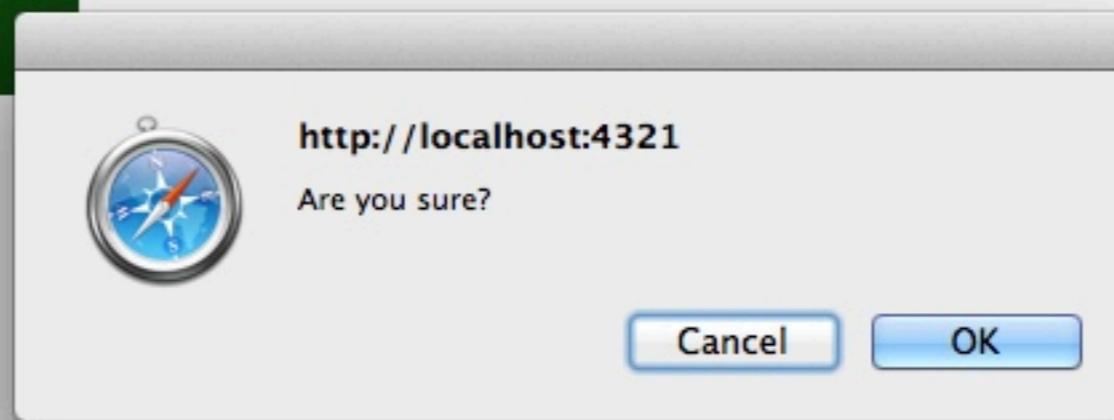
[Home](#)
[Questions](#)
[News](#)
[Contact](#)
[Orders](#)
[Products](#)
[Users](#)

[Logout](#)

Listing orders

Name	Address	Email	Pay type
Katie Hedrick	1234 Main St.	katie@hedrick.org	Credit card Show Edit Destroy
Dave Thomas	123 Street Dr	dave@pragprog.com	Check Show Edit Destroy

[New Order](#)



Tuesday, January 22, 13

[pause]
[slide]

Smoke Test Plan

Pragmatic Bookshelf
Depot Application

Tuesday, January 22, 13

My first task, after I had the cart running, was to walk through the various features of the application and build a "smoke test plan" -- a set of use cases made up of procedural steps that any tester could use to confirm the basic operation of the application.

Smoke Test Plan

Tuesday, January 22, 13

I divided this test plan into two major parts:[click] the Store and the Back Office.

Digging deeper, for the Store, I wrote out four specific procedures that sufficiently exercised the front-end so we can trust that the core functionality was operational (remember our definition of smoke test). Those four operations were:

- * [click]Adding Items to the Cart
- * [click]Emptying the Cart
- * [click] Checking Out
- * [click] Placing an Order

On the Back Office side, there's the CRUD for Orders [click], Products [click], and Users [click].

For each of these tests, I wrote out a set of steps that any user could follow to help in verifying the smoke test. That means that each test starts "fresh" from the home page and follows all the necessary setup and work to confirm the test.[slide]

Smoke Test Plan

The Store Back Office

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Smoke Test Plan

The Store

Back Office

- Adding Items to the Cart

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Smoke Test Plan

The Store

Back Office

- Adding Items to the Cart
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Smoke Test Plan

The Store

- Adding Items to the Cart
- Emptying the Cart
- Checking Out
- Placing an Order

Back Office

- Orders CRUD

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Smoke Test Plan

The Store

- Adding Items to the Cart
- Emptying the Cart
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Back Office

- Orders CRUD
- Products CRUD

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Adding Items to the Cart

Tuesday, January 22, 13

For example, in the test case, "Adding Items to the Cart", the tester should start by:
*[click] visiting the homepage.
*[click] then add one of the items to their cart.
*[click] After confirming that the cart, displayed in the left rail of the application, shows the item they've added...
*[click] the tester adds a different item
*[click] and confirms that it replaces the original item.
[slide]

Adding Items to the Cart

- Visit the homepage ("/")

Tuesday, January 22, 13

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[slide]

Adding Items to the Cart

- Visit the homepage ("/")
- Click the "Add to Cart" button for the CoffeeScript book

Tuesday, January 22, 13

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[slide]

Adding Items to the Cart

- Visit the homepage ("")
- Click the "Add to Cart" button for the CoffeeScript book
- Confirm (after a second) that the cart (left rail) refreshes with the CoffeeScript book contained within it.

Tuesday, January 22, 13

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- Confirm (after a second) that the cart (left rail) refreshes with the CoffeeScript book contained within it.
- Click the "Add to Cart" button for the Programming Ruby 1.9 book

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[slide]

Adding Items to the Cart

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*[click] and confirms that it replaces the original item.

[slide]

Emptying the Cart

Tuesday, January 22, 13

For the test case, "Emptying the Cart", a potentially different tester follows the same steps as the beginning of the first...

*[click] visiting the homepage [click] and adding an item to the cart.

But then, [click] after confirming that it shows up

*[click] this tester clicks the "Empty Cart" button

*[click] and then confirms the cart is truly empty.

[slide]

Emptying the Cart

- Visit the homepage ("/")

Tuesday, January 22, 13

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But then, [click] after confirming that it shows up

*[click] this tester clicks the "Empty Cart" button

*[click] and then confirms the cart is truly empty.

[slide]

Emptying the Cart

- Visit the homepage ("")
- Click the "Add to Cart" button for the Programming Ruby 1.9 book

Tuesday, January 22, 13

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*[click] and then confirms the cart is truly empty.

[slide]

Emptying the Cart

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- Click the "Add to Cart" button for the Programming Ruby 1.9 book
- Confirm (after a second) that the cart (left rail) refreshes with the Programming Ruby 1.9 book contained within it.

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[slide]

Emptying the Cart

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- Click the "Add to Cart" button for the Programming Ruby 1.9 book
- Confirm (after a second) that the cart (left rail) refreshes with the Programming Ruby 1.9 book contained within it.
- Click the "Empty cart" button (left rail)

Tuesday, January 22, 13

For the test case, "Emptying the Cart", a potentially different tester follows the same steps as the beginning of the first...

*[click] visiting the homepage [click] and adding an item to the cart.

But then, [click] after confirming that it shows up

*[click] this tester clicks the "Empty Cart" button

*[click] and then confirms the cart is truly empty.

[slide]

Emptying the Cart

- Visit the homepage ("")
- Click the "Add to Cart" button for the Programming Ruby 1.9 book
- Confirm (after a second) that the cart (left rail) refreshes with the Programming Ruby 1.9 book contained within it.
- Click the "Empty cart" button (left rail)
- Confirm (after a second) that the cart is empty (hidden? zero dollars? no item rows?)

Tuesday, January 22, 13

For the test case, "Emptying the Cart", a potentially different tester follows the same steps as the beginning of the first...

*[click] visiting the homepage [click] and adding an item to the cart.

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*[click] this tester clicks the "Empty Cart" button

*[click] and then confirms the cart is truly empty.

[slide]

Adding Items to the Cart

- Visit the homepage ("")
- Click the "Add to Cart" button for the CoffeeScript book
- Confirm (after a second) that the cart (left rail) refreshes with the CoffeeScript book contained within it.
- Click the "Add to Cart" button for the Programming Ruby 1.9 book
- Confirm (after a second) that the cart (left rail) refreshes with the Programming Ruby 1.9 book contained within it.

Empty Cart

- Visit the homepage ("")
- Click the "Add to Cart" button for the Programming Ruby 1.9 book
- Confirm (after a second) that the cart (left rail) refreshes with the Programming Ruby 1.9 book contained within it.
- Click the "Empty cart" button (left rail)
- Confirm (after a second) that the cart is empty (hidden? zero dollars? no item rows?)

Checkout

- Visit the homepage ("")
- Click the "Add to Cart" button for the CoffeeScript book
- Confirm (after a second) that the cart (left rail) refreshes with the CoffeeScript book contained within it.
- Click the "Checkout" button (left rail)
- Confirm the order form is shown.

Place Order

- Visit the homepage ("")
- Click the "Add to Cart" button for the CoffeeScript book
- Confirm (after a second) that the cart (left rail) refreshes with the CoffeeScript book contained within it.
- Click the "Checkout" button (left rail)
- Confirm the order form is shown.
- Fill in the Name, Address, and Email text fields
- Select a Pay type of "Purchase order"
- Click the "Place Order" button
- Confirm returning to the homepage with a message of "Thank you for your order"

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The other "Store" tests follow a similar beginning, and then exercise their specific use case.
[slide]

Orders

- Visit the homepage ("")
- Click the "Add to Cart" button for the CoffeeScript book
- Confirm (after a second) that the cart (left rail) refreshes with the CoffeeScript book contained within it.
- Click the "Checkout" button (left rail)
- Fill in the Name,Address, and Email text fields
- Select a Pay type of "Credit card"
- Click the "Place Order" button
- Visit the login screen ("/login")
- Fill in the Name and Password fields
- Click the "Login" button
- Confirm the "Welcome" banner is present
- Click the "Orders" link
- Click the "Show" link for the order
- Confirm the value of the Pay type is "Credit card"
- Click the "Edit" link
- Select a Pay type of "Check"
- Click the "Place Order" button
- Confirm the flash "Order was successfully updated"
- Confirm the value of the Pay type is "Check"
- Click the "Back" link
- Click the "Destroy" link for the order
- Click the "Cancel" button on the popup
- Click the "Orders" link
- Confirm the order is still there
- Click the "Destroy" link for the order
- Click the "Okay" button on the popup
- Confirm the order is gone

Products

- Visit the login screen ("/login")
- Fill in the Name and Password fields
- Click the "Login" button
- Confirm the "Welcome" banner is present
- Click the "Products" link
- Confirm there are three rows in the table
- Click the "New product" link
- Fill in the Title and Description fields
- Click the "Create Product" button
- Confirm the error flash appears with "Image url can't be blank" and "Price is not a number" messages.
- Fill in the Image url and Price fields
- Click the "Create Product" button
- Confirm the flash "Product was successfully created"
- Click the "Edit" link
- Change the Price field
- Click the "Update Product" button
- Confirm the flash "Product was successfully updated"
- Click the "Back" link
- Confirm there are four rows in the table
- Click the "Destroy" link for the last row
- Click the "Okay" button on the popup
- Confirm there are three rows in the table

Users

- Visit the login screen ("/login")
- Fill in the Name and Password fields
- Click the "Login" button
- Confirm the "Welcome" banner is present
- Click the "Users" link
- Click the "New User" link
- Fill in the Name, Password, and Confirm fields
- Click the "Create User" button
- Confirm the flash "User #{name} was successfully created."
- Click the "Logout" button (left rail)
- Visit the login screen ("/login")
- Enter the Name and Password fields
- Click the "Login" button
- Confirm the "Welcome" banner is present
- Click the "Users" link
- Click the "Destroy" link for the user
- Click the "OK" button on the popup
- Confirm the login screen is displayed

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The "Back Office" test plans also follow similar procedures with a few added steps, notably logging in, and also editing and deleting items, which follow the basic CRUD operations that these pages provide...

[slide]

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[blank slide]

All of these test plans adhere to a rudimentary (and foretelling) syntax:

[click] Visit a page

[click] Click a button or a link

[click] Fill in a form

[click] Confirm behavior or expectation

[slide]

- Visit a page

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[blank slide]

All of these test plans adhere to a rudimentary (and foretelling) syntax:

[click] Visit a page

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[click] Fill in a form

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[slide]

- Visit a page
- Click a button or a link

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[blank slide]

All of these test plans adhere to a rudimentary (and foretelling) syntax:

[click] Visit a page
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[click] Confirm behavior or expectation
[slide]

- Visit a page
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[blank slide]

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[slide]

- Visit a page
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[blank slide]

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[click] Fill in a form
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[slide]

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[blank slide]

So, after all this talk, let's start looking at some code. I've focused quite a bit on behavior and procedure and a lot of "meta" work about testing, but all-in-all, that's really the core value of Capybara. Given a solid test plan, setting Capybara up and writing the smoke tests we've documented is actually quite straightforward.

We start by adding Capybara to our Gemfile.

[click] In the case of the Depot app, I also needed to install RSpec since the book (and code) uses Rails' testing framework.

As a minor bit of housekeeping for this project, [click] I also ran the "rspec:install" Rails generator, as well as added a symlink from "spec/fixtures" to the "test/fixtures" directory, so that our specs could access the same fixtures as the existing tests.

If you look through the GitHub commit history, you'll also see an upgrade to the latest version of rails (3.2.11) and a few minor configuration tweaks to eliminate some console warnings.

[beat, slide]

```
13 # RSpec
14 group :test, :development do
15   gem "rspec-rails", "~> 2.0"
16   gem "capybara"
17 end
```

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[blank slide]

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[beat, slide]

```

13 # RSpec
14 group :test, :development do
15   gem "rspec-rails", "~> 2.0"
16   gem "capybara"
17 end

~/Development/pragprog_book_depot [master_Δ_]
$ rails generate rspec:install
  create .rspec
  create spec
  create spec/spec_helper.rb

~/Development/pragprog_book_depot [master_Δ_]
$ cd spec/

~/Development/pragprog_book_depot/spec [master_Δ_]
$ ls -alt
total 16
drwxr-xr-x  5 daniel  staff  170 Jan 19 00:42 .
lrwxr-xr-x  1 daniel  staff   16 Jan 19 00:42 fixtures -> ../test/fixtures
drwxr-xr-x  3 daniel  staff  102 Jan 19 00:40 features
drwxr-xr-x@ 26 daniel  staff  884 Jan 19 00:32 ..
-rw-r--r--  1 daniel  staff 1472 Jan 19 00:14 spec_helper.rb

~/Development/pragprog_book_depot/spec [master_Δ_]
$ _

```

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[blank slide]

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[beat, slide]

```

1 require 'spec_helper'
2
3 describe 'user stories', type: :feature do
4   fixtures :products
5
6   it 'buys a product' do
7     LineItem.delete_all
8     Order.delete_all
9     ruby_book = products(:ruby)
10
11   visit "/"
12   page.should have_content 'Your Pragmatic Catalog'
13
14   find("#product_#{ruby_book.id}").click
15
16   find('div#cart').should have_content 'Your Cart'
17   find('div#cart').should have_content ruby_book.title
18
19   find('div#cart input[value="Checkout"]').click
20   page.should have_content 'Please Enter Your Details'
21
22   fill_in 'Name', with: 'Dave Thomas'
23   fill_in 'Address', with: '123 The Street'
24   fill_in 'Email', with: 'dave@example.com'
25   select 'Check', from: 'Pay type'
26   find('input[value="Place Order"]').click
27   page.should have_content 'Thank you for your order'
28
29   orders = Order.all
30   orders.size.should eq(1)
31   order = orders[0]
32   order.name.should eq('Dave Thomas')
33   order.address.should eq('123 The Street')
34   order.email.should eq('dave@example.com')
35   order.pay_type.should eq('Check')
36
37   order.line_items.size.should eq(1)
38   line_item = order.line_items[0]
39   line_item.product.should eq(ruby_book)
40
41   mail = ActionMailer::Base.deliveries.last
42   mail.to.should include('dave@example.com')
43   mail[:from].value.should eq('Sam Ruby <depot@example.com>')
44   mail.subject.should eq('Pragmatic Store Order Confirmation')
45 end
46 end
~
```

RSpec + Capybara

```

1 require 'test_helper'
2
3 class UserStoriesTest < ActionDispatch::IntegrationTest
4   fixtures :products
5
6   test "buying a product" do
7     LineItem.delete_all
8     Order.delete_all
9     ruby_book = products(:ruby)
10
11   get "/"
12   assert_response :success
13   assert_template "index"
14
15   xml_http_request :post, '/line_items', product_id: ruby_book.id
16   assert_response :success
17
18   cart = Cart.find(session[:cart_id])
19   assert_equal 1, cart.line_items.size
20   assert_equal ruby_book, cart.line_items[0].product
21
22   get "/orders/new"
23   assert_response :success
24   assert_template "new"
25
26   post_via_redirect "/orders",
27                     order: { name: "Dave Thomas",
28                               address: "123 The Street",
29                               email: "dave@example.com",
30                               pay_type: "Check" }
31   assert_response :success
32   assert_template "index"
33   cart = Cart.find(session[:cart_id])
34   assert_equal 0, cart.line_items.size
35
36   orders = Order.all
37   assert_equal 1, orders.size
38   order = orders[0]
39
40   assert_equal "Dave Thomas", order.name
41   assert_equal "123 The Street", order.address
42   assert_equal "dave@example.com", order.email
43   assert_equal "Check", order.pay_type
44
45   assert_equal 1, order.line_items.size
46   line_item = order.line_items[0]
47   assert_equal ruby_book, line_item.product
48
49   mail = ActionMailer::Base.deliveries.last
50   assert_equal ["dave@example.com"], mail.to
51   assert_equal 'Sam Ruby <depot@example.com>', mail[:from].value
52   assert_equal "Pragmatic Store Order Confirmation", mail.subject
53 end
54 end
```

ActionDispatch::IntegrationTest

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Speaking of the existing tests, as a side note, I converted the existing integration test "test/integration/user_stories_test.rb", seen here on the right, to an RSpec+Capybara test, here on the left, just to ensure everything was working properly.

I won't detail that conversion, but it's also documented in the git history for the project on GitHub.

Let's Go Shopping!

```
1 require 'spec_helper'  
2  
3 describe "let's go shopping", type: :feature do  
4   fixtures :products  
5   it 'adds an item to the cart' do  
6     cs_book = products :coffee  
7     ruby_book = products :ruby  
8  
9     visit '/'  
10    find("#product_#{cs_book.id}").click  
11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
22    find('div#cart').should have_content ruby_book.title  
23    find('div#cart input[value="Empty cart"]').click  
24    find('div#cart').should_not have_content ruby_book.title
```

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To exercise the four tests of our Store test plan, I wrote a spec, "spec/features/lets_go_shopping_spec.rb" that will enumerate those four tests.
[beat, slide]

Let's Go Shopping!

```
1 require 'spec_helper'  
2  
3 describe "let's go shopping", type: :feature do  
4   fixtures :products  
5   it 'adds an item to the cart' do  
6     cs_book = products :coffee  
7     ruby_book = products :ruby  
8  
9     visit '/'  
10    find("#product_#{cs_book.id}").click  
11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
22    find('div#cart').should have_content ruby_book.title  
23    find('div#cart input[value="Empty cart"]').click  
24    find('div#cart').should_not have_content ruby_book.title
```

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We begin by describing this spec as a :feature,
[pause, slide]

Let's Go Shopping!

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2  
3 describe "let's go shopping", type: :feature do  
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11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
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20    visit '/'  
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```

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then load the fixtures for products
[pause, slide]

Let's Go Shopping!

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2  
3 describe "let's go shopping", type: :feature do  
4   fixtures :products  
5   it 'adds an item to the cart' do  
6     cs_book = products :coffee  
7     ruby_book = products :ruby  
8  
9     visit '/'  
10    find("#product_#{cs_book.id}").click  
11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
22    find('div#cart').should have_content ruby_book.title  
23    find('div#cart input[value="Empty cart"]').click  
24    find('div#cart').should_not have_content ruby_book.title
```

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and begin our first test, "adds an item to the cart".

This test begins with some setup of local variables, [click]cs_book and [click]ruby_book, which we load from the fixture, then we employ the Capybara DSL and describe the procedure... almost exactly the same way that our test plan describes.

[click]The "visit" method tells Capybara to access the route described. Here we use a string, but you can also use the equivalent rails routing path, for example "store_path".

[click]Then, using other simple functions of the DSL, we find a specific DOM element on the page (in this case, an input tag with the id of the CoffeeScript book from our fixture and we click it. That click adds the item to the cart and then renders that cart in the left rail of the Depot.

[click]We use a standard RSpec "should" assertion to ensure that the title of the item in the cart is the same as the title we clicked.

[click]The code then repeats the find/click for the Ruby book and asserts its [click] title and

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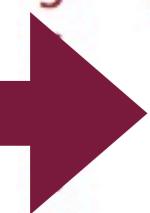
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13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
22    find('div#cart').should have_content ruby_book.title  
23    find('div#cart input[value="Empty cart"]').click  
24    find('div#cart').should_not have_content ruby_book.title
```

Tuesday, January 22, 13

and begin our first test, "adds an item to the cart".

This test begins with some setup of local variables, [click]cs_book and [click]ruby_book, which we load from the fixture, then we employ the Capybara DSL and describe the procedure... almost exactly the same way that our test plan describes.

[click]The "visit" method tells Capybara to access the route described. Here we use a string, but you can also use the equivalent rails routing path, for example "store_path".

[click]Then, using other simple functions of the DSL, we find a specific DOM element on the page (in this case, an input tag with the id of the CoffeeScript book from our fixture and we click it. That click adds the item to the cart and then renders that cart in the left rail of the Depot.

[click]We use a standard RSpec "should" assertion to ensure that the title of the item in the cart is the same as the title we clicked.

[click]The code then repeats the find/click for the Ruby book and asserts its [click] title and

Let's Go Shopping!

```
1 require 'spec_helper'  
2  
3 describe "let's go shopping", type: :feature do  
4   fixtures :products  
5   it 'adds an item to the cart' do  
6     cs_book = products :coffee  
7     ruby_book = products :ruby  
8  
9     visit '/'  
10    find("#product_#{cs_book.id}").click  
11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
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12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
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Let's Go Shopping!

```
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2  
3 describe "let's go shopping", type: :feature do  
4   fixtures :products  
5   it 'adds an item to the cart' do  
6     cs_book = products :coffee  
7     ruby_book = products :ruby  
8  
9     visit '/'  
10    find("#product_#{cs_book.id}").click  
11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
22    find('div#cart').should have_content ruby_book.title  
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Tuesday, January 22, 13

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Let's Go Shopping!

```
1 require 'spec_helper'  
2  
3 describe "let's go shopping", type: :feature do  
4   fixtures :products  
5   it 'adds an item to the cart' do  
6     cs_book = products :coffee  
7     ruby_book = products :ruby  
8  
9     visit '/'  
10    find("#product_#{cs_book.id}").click  
11    find('div#cart').should have_content cs_book.title  
12    find("#product_#{ruby_book.id}").click  
13    find('div#cart').should have_content ruby_book.title  
14    find('div#cart').should have_content ruby_book.price  
15  end  
16  
17  it 'empties the cart' do  
18    ruby_book = products :ruby  
19  
20    visit '/'  
21    find("#product_#{ruby_book.id}").click  
22    find('div#cart').should have_content ruby_book.title  
23    find('div#cart input[value="Empty cart"]').click  
24    find('div#cart').should_not have_content ruby_book.title
```

Tuesday, January 22, 13

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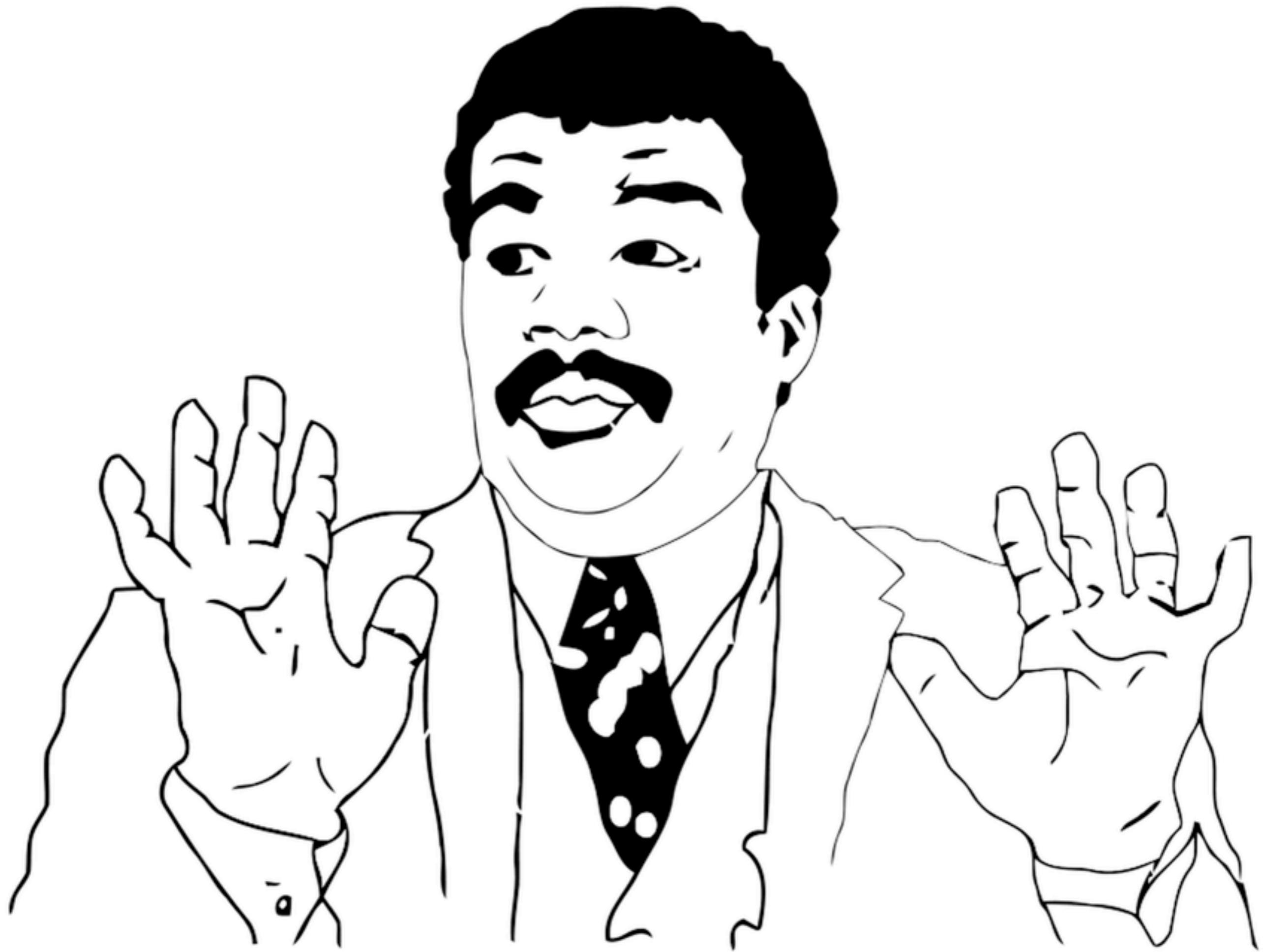
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[click]Then, using other simple functions of the DSL, we find a specific DOM element on the page (in this case, an input tag with the id of the CoffeeScript book from our fixture and we click it. That click adds the item to the cart and then renders that cart in the left rail of the Depot.

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[click]The code then repeats the find/click for the Ruby book and asserts its [click] title and



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So that's it. That's the Capybara DSL. Visit. Find. Click. Pretty simple, right? The other three tests are more of the same. In fact, they're all almost exactly the same. Let's look at a few of the differences...

[slide]

Let's Go Shopping!

```
17 it 'empties the cart' do
18   ruby_book = products :ruby
19
20   visit '/'
21   find("#product_#{ruby_book.id}").click
22   find('div#cart').should have_content ruby_book.title
23   find('div#cart input[value="Empty cart"]').click
24   find('div#cart').should_not have_content ruby_book.title
25   find('div#cart').should_not have_content ruby_book.price
26 end
```

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To empty the cart, or to proceed to the checkout, we need to click some buttons. Well, we've already clicked one button, right? Except that one was easy to identify with a specific DOM id. These others just require a slightly different selector syntax that uses an attribute bracket, which you can see here on line 23.

[slide]

Let's Go Shopping!

```
38 it 'can place an order' do
39   cs_book = products :coffee
40
41   visit '/'
42   find("#product_#{cs_book.id}").click
43   find('div#cart').should have_content cs_book.title
44   find('div#cart input[value="Checkout"]').click
45   find('div#main').should have_content 'Please Enter Your Details'
46   fill_in 'Name', with: 'Daniel Hedrick'
47   fill_in 'Address', with: '1234 Main Street'
48   fill_in 'Email', with: 'daniel@hedrick.org'
49   select 'Check', from: 'Pay type'
50   find('input[value="Place Order"]').click
51   page.should have_content 'Order Placed'
52 end
```

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To actually place an order, we need to fill out the form with our purchase detail. It turns out, that's also pretty simple. The "fill_in" method, seen on lines 46, 47, and 48, is pretty smart in identifying labels, elements and input tags in a way that makes our job easy (at least for this smoke test). Simply tell Capybara to "fill_in" a specific field (eg "Name") with a specific value (eg "Daniel Hedrick") and continue on our merry way. The same with the drop-down, we use the "select" method to tell the control "Pay type" to select "Check".

The final line of our "can place an order" spec is an assertion via flash message that the order has been placed: page.should have_content 'Order Placed'.

We run these tests and...[slide]

Let's Go Shopping!

```
~/Development/pragprog_book_depot [(no branch)_Δ_]
$ brake spec
/Users/daniel/.rvm/rubies/ruby-1.9.3-p194/bin/ruby -S rspec ./spec/features/lets_go_shopping_spec.rb ./spe
No DRb server is running. Running in local process instead ...

let's go shopping
  adds an item to the cart
  can place an order (FAILED - 1)
  can check out
  empties the cart

user stories
  buys a product

Failures:

1) let's go shopping can place an order
   Failure/Error: page.should have_content 'Order Placed'
     expected there to be text "Order Placed" in "EnglishEspañol Pragmatic Bookshelf Home Questions News
of JavaScript's functionality wrapped in a cleaner, more succinct syntax. In the first book on this exciti
e writing clearer, cleaner, and safer code. $36.00 MyString MyText $9.99 MyString MyText $9.99 Programming
ered fast, you should add Ruby to your toolbox. $49.50 Rails Test Prescriptions Rails Test Prescriptions i
why to test) and from a practical perspective (how to test effectively). It covers the core Rails testing
and Rcov. $34.95"
     # ./spec/features/lets_go_shopping_spec.rb:51:in `block (2 levels) in <top (required)>'"

Finished in 1.14 seconds
5 examples, 1 failure
```

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it fails.

It turns out that the actual flash message is "Thank you for your order" and after a brief (simulated) conversation with our product manager (yes, I'm talking to myself here), we determine that the application's flash message is correct, and the test's (and transitively the test plan's) message is inaccurate.

[slide]

Let's Go Shopping!

```
38  it 'can place an order' do
39    cs_book = products :coffee
40
41    visit '/'
42    find("#product_#{cs_book.id}").click
43    find('div#cart').should have_content cs_book.title
44    find('div#cart input[value="Checkout"]').click
45    find('div#main').should have_content 'Please Enter Your Details'
46    fill_in 'Name', with: 'Daniel Hedrick'
47    fill_in 'Address', with: '1234 Main Street'
48    fill_in 'Email', with: 'daniel@hedrick.org'
49    select 'Check', from: 'Pay type'
50    find('input[value="Place Order"]').click
51    page.should have_content 'Thank you for your order'
52  end
```

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The updated assertion reads "page should have content 'Thank you for your order' seen here on line 51.

[click]

And we also update the test plan as this diff shows, some might say, just to be pedantic.

It's at this point, after looking through all the test plans and seeing the redundant code setting up a cart, that we can simplify all four of the smoke test procedures for the store into a single, comprehensive test. Remember, the purpose of a smoke test is to confirm basic functionality and to do it as quickly as possible so that we can pass the build off to our regression testers -- be they automated, a testing team, or an outsourced company of Saturnian contractors

[slide] stationed on Mimas.

Let's Go Shopping!

```
38  it 'can place an order' do
39    cs_book = products :coffee
40
41    visit '/'
42    find("#product_#{cs_book.id}").click
43    find('div#cart').should have_content cs_book.title
44    find('div#cart input[value="Checkout"]').click
45    find('div#main').should have_content 'Please Enter Your Details'
46    fill_in 'Name', with: 'Daniel Hedrick'
47    fill_in 'Address', with: '1234 Main Street'
48    fill_in 'Email', with: 'daniel@hedrick.org'
49    select 'Check', from: 'Pay type'
50    find('input[value="Place Order"]').click
51    page.should have_content 'Thank you for your order'
52  end
```

3 SMOKE_TEST.md

[View file @ 7d07204](#)

```
...
...
@@ -44,7 +44,8 @@
44  44  1. Fill in the Name, Address, and Email text fields
45  45  1. Select a Pay type of "Purchase order"
46  46  1. Click the "Place Order" button
47 -1. Confirm returning to the homepage with a message of "Order Placed"
+1. Confirm returning to the homepage with a message of "Thank you for
+  your order"
48 49
49 50  ### Backoffice
50 51
```

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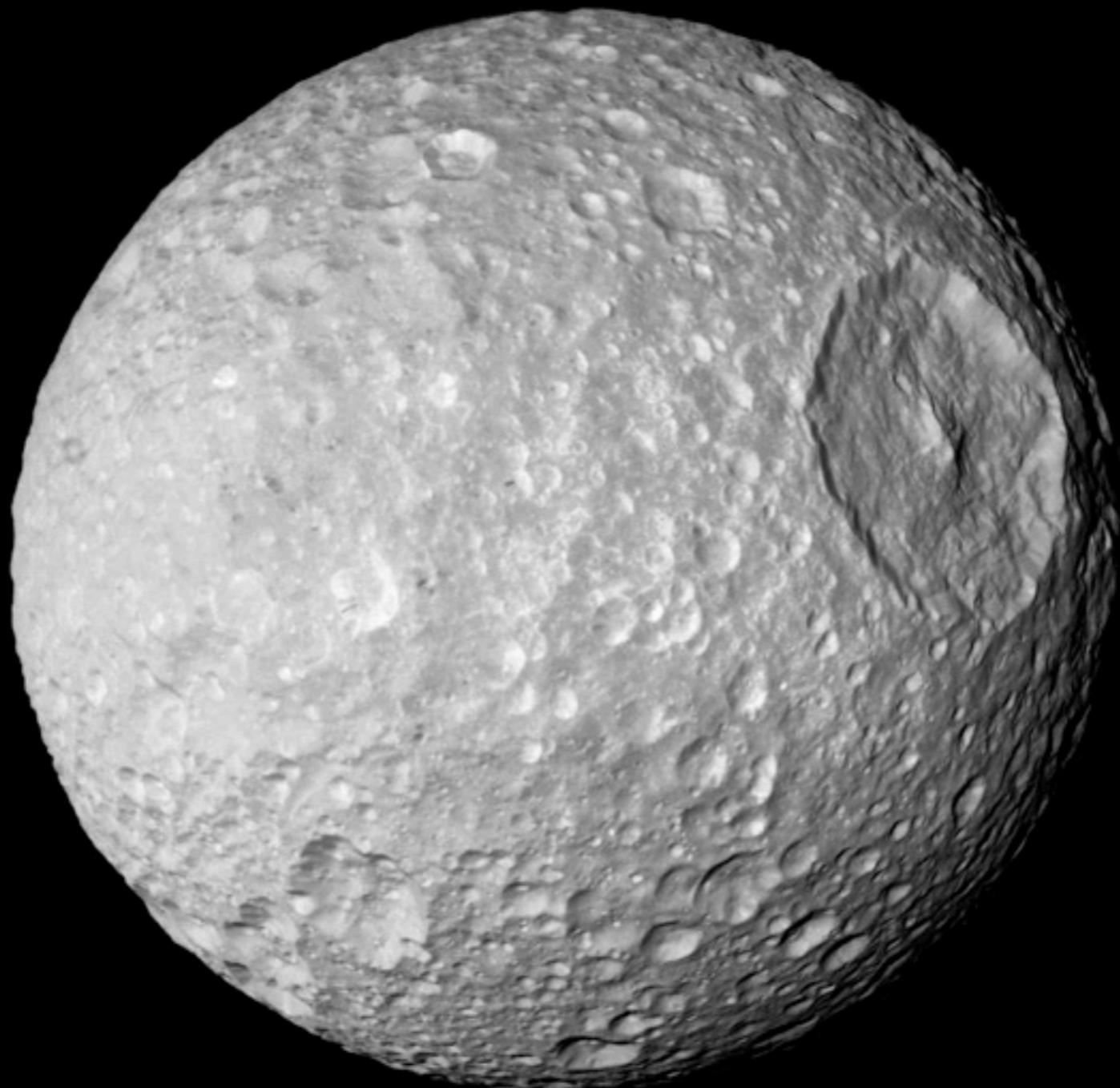
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[click]

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[slide] stationed on Mimas.

Why, yes *that* is a moon.



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[slide] stationed on Mimas.

When we collapse all these four tests into a single flow,
[slide]

Put it altogether...

- Visit the homepage ("/").
- Click the "Add to Cart" button for the CoffeeScript book.
- Confirm that the cart contains the CoffeeScript book.
- Click the "Add to Cart" button for the Programming Ruby 1.9 book.
- Confirm that the cart contains the Programming Ruby 1.9 book.
- Click the "Empty cart" button.
- Confirm that the cart is empty.
- Click the "Add to Cart" button for the Rails Test Prescriptions book.
- Confirm that the cart contains the Rails Test Prescriptions book.
- Click the "Checkout" button.
- Confirm the order form is shown.
- Click the "Place Order" button.
- Confirm that error messages are displayed for the name, address, email, and pay type fields.
- Fill in the Name, Address, and Email text fields.
- Select a Pay type of "Purchase order".
- Click the "Place Order" button.
- Confirm returning to the homepage with a message of "Thank you for your order".

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we end up with a single test that does everything each of the others does, but in a single web transaction.

[pause]

In the GitHub repository, I've left all five tests present, and I leave it as an exercise to the reader to confirm that this holistic test covers all the bases and trust that the other four tests can be deleted.

[slide]

Put it altogether...

```
54  it 'is unified, grandly (with a failure case)' do
55    cs_book = products :coffee
56    ruby_book = products :ruby
57    test_book = products :test
58
59    # Humble beginnings
60    visit '/'
61
62    # First item into cart
63    find("#product_#{cs_book.id}").click
64    find('div#cart').should have_content cs_book.title
65    find('div#cart').should have_content cs_book.price
66
67    # Second item replaces first
68    find("#product_#{ruby_book.id}").click
69    find('div#cart').should have_content ruby_book.title
70    find('div#cart').should have_content ruby_book.price
71
72    # Empty the cart
73    find('div#cart input[value="Empty cart"]').click
74    find('div#cart').should_not have_content ruby_book.title
75    find('div#cart').should_not have_content ruby_book.price
76
77    # Now add something back (can you imagine how tedious this is, manually?!)
78    find("#product_#{test_book.id}").click
79    find('div#cart').should have_content test_book.title
80    find('div#cart').should have_content test_book.price
81
82    # Checking out
83    find('div#cart input[value="Checkout"]').click
84    find('div#main').should have_content 'Please Enter Your Details'
85
86    # Ensure proper errors show up
87    find('input[value="Place Order"]').click
88    find('div#error_explanation').should have_content "Name can't be blank"
89    find('div#error_explanation').should have_content "Address can't be blank"
90    find('div#error_explanation').should have_content "Email can't be blank"
91    find('div#error_explanation').should have_content "Pay type is not included in the list"
92
93    # Fill out the form (demo of scoping behavior)
94    within('form#new_order') do
95      fill_in 'Name', with: 'Daniel Hedrick'
96      fill_in 'Address', with: '1234 Main Street'
97      fill_in 'Email', with: 'daniel@hedrick.org'
98      select 'Check', from: 'Pay type'
99      find('input[value="Place Order"]').click
100   end
101
102  page.should have_content 'Thank you for your order'
103 end
```

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The interesting thing in all of these tests, is their simple use of Capybara's DSL to confirm assertions using a basic HTTP request and response process. The store, as written, uses ajax and javascript, however the code from the book is smart enough not to fail when there's no javascript available.

If you were to actually use the browser to manually perform the "empty the cart" test plan, you'd find that there's a javascript confirmation popup before the cart can actually be deleted. Rather than revise that test, we'll press on to the back office and use Capybara's Selenium driver to test the javascript confirmation.

The Back Office

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Selenium is a front-end driver that's built-in to Capybara in its default configuration. Rather than simply accessing the response blob for tests (and DOM inspection), it actually uses Firefox to act as a front-end and drives the tests via honest-to-goodness client-side execution. There are several other Capybara drivers like Selenium that operate "client-side" -- most notably WebKit and Poltergeist.

The primary benefit we get by using Selenium is that it can execute javascript, and thus, will behave exactly like a user's browser.

[slide]

Pragprog Books Online Store

Pragmatic Bookshelf English

Listing orders

Name	Address	Email	Pay type
Katie Hedrick	1234 Main St.	katie@hedrick.org	Credit card Show Edit Destroy
Dave Thomas	123 Street Dr	dave@pragprog.com	Check Show Edit Destroy

[New Order](#)

http://localhost:4321
Are you sure?

Cancel OK

Tuesday, January 22, 13

For this application, that means that when we click on a "Destroy" link for a Product, Order, or User, we can expect that the javascript confirmation modal is working the way we intended it.
[slide]

1 Gemfile

[View file @ 9da55ca](#)

```
... ... @@ -14,6 +14,7 @@ end
14 14   group :test, :development do
15 15     gem "rspec-rails", "~> 2.0"
16 16     gem "capybara"
17 17 +   gem "database_cleaner"
18 18 end
19 19
20 20 # Gems used only for assets and not required
```

2 spec/spec_helper.rb

[View file @ 9da55ca](#)

```
... ... @@ -24,7 +24,7 @@
24 24   # If you're not using ActiveRecord, or you'd prefer not to run each of your
25 25   # examples within a transaction, remove the following line or assign false
26 26   # instead of true.
27 27 - config.use_transactional_fixtures = true
27 27 + #config.use_transactional_fixtures = true
28 28
29 29   # If true, the base class of anonymous controllers will be inferred
30 30   # automatically. This will be the default behavior in future versions of
```

11 spec/support/database_cleaner.rb

[View file @ 9da55ca](#)

```
... ... @@ -0,0 +1,11 @@
1 +DatabaseCleaner.strategy = :truncation
2 +
3 +RSpec.configure do |config|
4 +  config.use_transactional_fixtures = false
5 +  config.before :each do
6 +    DatabaseCleaner.start
7 +  end
8 +  config.after :each do
9 +    DatabaseCleaner.clean
10 +  end
11 +end
```

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As another bit of house-keeping, please make sure you review this particular commit in the git history, as it was a little bit more involved to get the Selenium driver working. In the Rails environment 'test' each action is wrapped in a database transaction, which we need to change. We'll employ the DatabaseCleaner gem to scrub our tables between each test since we change the behavior of RSpec so that it does NOT use transactional fixtures (transactional in the HTTP request/response sense).

Tuesday, January 22, 13

Pretty much everything in the back office tests are identical to the store tests, with only a couple notable additions.

The first, we've talked about -- the javascript -- is specified by adding a "js: true" directive to the test.[click]

This will tell Capybara to use the Selenium driver (or whatever javascript-capable driver you've specified) to execute the test. We use it because we want to pretend to interact with the browser's modal js dialog. The other notable behavior we employ in this test is the use of ActiveRecord query methods [click] to confirm counts of records in the database.

The "processes an order" script starts out, just as the store tests, by adding an item to the cart, then processing the checkout and placing the order.

After that comes the meat. [slide]

```

1 require 'spec_helper'
2
3 describe 'backoffice', type: :feature do
4   fixtures :products
5   fixtures :users
6
7   it 'processes an order', js: true do
8     cs_book = products :coffee
9     user = users :one
10
11   Order.count.should eq(0)
12
13   visit '/'
14   find("#product_#{cs_book.id}").click
15   find('div#cart').should have_content cs_book.title
16   find('div#cart input[value="Checkout"]').click
17   find('div#main').should have_content 'Please Enter Your Details'
18   fill_in 'Name', with: 'Daniel Hedrick'
19   fill_in 'Address', with: '1234 Main Street'
20   fill_in 'Email', with: 'daniel@hedrick.org'
21   select 'Credit card', from: 'Pay type'
22   find('input[value="Place Order"]').click
23   page.should have_content 'Thank you for your order'
24
25   Order.count.should eq(1)
26
27   visit '/login'

```

Tuesday, January 22, 13

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The first, we've talked about -- the javascript -- is specified by adding a "js: true" directive to the test.[click]

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The "processes an order" script starts out, just as the store tests, by adding an item to the cart, then processing the checkout and placing the order.

After that comes the meat. [slide]

```
1 require 'spec_helper'  
2  
3 describe 'backoffice', type: :feature do  
4   fixtures :products  
5   fixtures :users  
6  
7   it 'processes an order', js: true do  
8     cs_book = products :coffee  
9     user = users :one  
10  
11   Order.count.should eq(0)  
12  
13   visit '/'  
14   find("#product_#{cs_book.id}").click  
15   find('div#cart').should have_content cs_book.title  
16   find('div#cart input[value="Checkout"]').click  
17   find('div#main').should have_content 'Please Enter Your Details'  
18   fill_in 'Name', with: 'Daniel Hedrick'  
19   fill_in 'Address', with: '1234 Main Street'  
20   fill_in 'Email', with: 'daniel@hedrick.org'  
21   select 'Credit card', from: 'Pay type'  
22   find('input[value="Place Order"]').click  
23   page.should have_content 'Thank you for your order'  
24  
25   Order.count.should eq(1)  
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27   visit '/login'
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Tuesday, January 22, 13

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The "processes an order" script starts out, just as the store tests, by adding an item to the cart, then processing the checkout and placing the order.

After that comes the meat. [slide]

```

1 require 'spec_helper'
2
3 describe 'backoffice', type: :feature do
4   fixtures :products
5   fixtures :users
6
7   it 'processes an order', js: true do
8     cs_book = products :coffee
9     user = users :one
10
11   Order.count.should eq(0)
12
13   visit '/'
14   find("#product_#{cs_book.id}").click
15   find('div#cart').should have_content cs_book.title
16   find('div#cart input[value="Checkout"]').click
17   find('div#main').should have_content 'Please Enter Your Details'
18   fill_in 'Name', with: 'Daniel Hedrick'
19   fill_in 'Address', with: '1234 Main Street'
20   fill_in 'Email', with: 'daniel@hedrick.org'
21   select 'Credit card', from: 'Pay type'
22   find('input[value="Place Order"]').click
23   page.should have_content 'Thank you for your order'
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```

27 visit '/login'
28 page.should have_content 'Please Log In'
29 fill_in 'Name', with: user.name
30 fill_in 'Password', with: 'secret'
31 find('input[value="Login"]').click
32 page.should have_content 'Welcome'
33
34 click_link 'Orders'
35 page.should have_content 'Daniel Hedrick'
36 page.should have_content '1234 Main Street'
37 within('div#main table') do
38   click_link 'Show'
39 end
40 page.should have_content 'Credit card'
41
42 click_link 'Edit'
43 select 'Check', from: 'Pay type'
44 find('input[value="Place Order"]').click
45 page.should have_content 'Order was successfully updated'
46 page.should have_content 'Check'
47
48 click_link 'Back'
49 page.execute_script 'window.confirm = function() { return false; }'
50 click_link 'Destroy'
51
52 click_link 'Orders'
53 page.should have_content 'Daniel Hedrick'
54 page.should have_content '1234 Main Street'
55 page.execute_script 'window.confirm = function() { return true; }'
56 click_link 'Destroy'
57
58 page.should_not have_content 'Daniel Hedrick'
59 page.should_not have_content '1234 Main Street'
60
61 Order.count.should eq(0)
62 end

```

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We visit the '/login' route and authenticate using a fixtured user, shown in lines 27-32. Then we confirm that the order placed shows up in the list of orders: lines 34-36. Lines 37-39 shows the use of a scoping method, within, to demonstrate that the behavior can be narrowed down within a DOM block.

Next we edit the order's payment type to confirm the Update function of our CRUD test in lines 42-46.

The last two parts of this test are to cancel our attempt to destroy the record (via a javascript stub returning false on line 49) and then to follow through with the deletion of the record, again by stubbing the javascript with true, this time on line 55.

[slide]

A little bit of javascript

```
48 click_link 'Back'  
49 page.execute_script 'window.confirm = function() { return false; }'  
50 click_link 'Destroy'  
51  
52 click_link 'Orders'  
53 page.should have_content 'Daniel Hedrick'  
54 page.should have_content '1234 Main Street'  
55 page.execute_script 'window.confirm = function() { return true; }'  
56 click_link 'Destroy'  
57  
58 page.should_not have_content 'Daniel Hedrick'  
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61 Order.count.should eq(0)
```

Tuesday, January 22, 13

So, how is it that we go about "stubbing the javascript"? Before we have the test click the "Destroy" link, we shim the client's "window.confirm" function to return false automatically. This simulates the behavior of clicking the 'Cancel' button of the confirmation modal. Once we refresh the page (via 'click_link "Orders"' on line 52), we re-shim the function to return true and click the "Destroy" link again. The last assertions in this test verify that the content is no longer there, and that the Order count is again zero.

[slide]

Users

1. Visit the login screen ("/login")
2. Fill in the Name and Password fields
3. Click the "Login" button
4. Confirm the "Welcome" banner is present
5. Click the "Users" link
6. Click the "New User" link
7. Fill in the Name, Password, and Confirm fields
8. Click the "Create User" button
9. Confirm the flash "User #{name} was successfully created."
10. Click the "Logout" button (left rail)
11. Visit the login screen ("/login")
12. Enter the Name and Password fields
13. Click the "Login" button
14. Confirm the "Welcome" banner is present
15. Click the "Users" link
16. Click the "Destroy" link for the user
17. Click the "OK" button on the popup
18. Confirm the login screen is displayed

Tuesday, January 22, 13

With little exception, the CRUD tests for products and users is very similar to the test for managing orders. One unique feature that is worth mentioning here, and that we've documented in our test plan[click], is that when a user is deleted from the database, that user's session is immediately invalidated and no longer has the ability to perform administrative functions.

[slide]

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[slide]

```

102  it 'manages users', js: true do
103    user = users :one
104
105    visit '/login'
106    page.should have_content 'Please Log In'
107    fill_in 'Name', with: user.name
108    fill_in 'Password', with: 'secret'
109    find('input[value="Login"]').click
110    page.should have_content 'Welcome'
111
112    click_link 'Users'
113    click_link 'New User'
114    fill_in 'Name', with: 'newuser'
115    fill_in 'Password', with: 'apass'
116    fill_in 'Confirm', with: 'apass'
117    find('input[value="Create User"]').click
118    page.should have_content 'User newuser was successfully created.'
119
120    find('input[value="Logout"]').click
121
122    visit '/login'
123    page.should have_content 'Please Log In'
124    fill_in 'Name', with: 'newuser'
125    fill_in 'Password', with: 'apass'
126    find('input[value="Login"]').click
127    page.should have_content 'Welcome'
128
129    click_link 'Users'
130
131    page.execute_script 'window.confirm = function() { return true; }'
132    within('div#main table tr:last') do
133      click_link 'Destroy'
134    end
135
136    page.should have_content 'Please Log In'
137  end

```

Tuesday, January 22, 13

In our "manages users" test, we log in using our fixture'd user, then we create a new user; log out; then log back in using this newly created account. The last step of this test procedure is to delete the user (yes, we're effectively deleting ourselves from the database).

[click]

Once that happens, the user should immediately be redirected to the login screen.

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[click]

Once that happens, the user should immediately be redirected to the login screen.

Debugging

```
click_link('foo')
print page.html
page.should have_content('bar')
```

save_and_open_page

save_screenshot('myfile.png')

Tuesday, January 22, 13

Capybara has several features for debugging tests (and applications). The feature I found most useful was the ability to grab the entire document response in a single string and print it out. In this example, if the assertion for the content 'bar' fails, the print statement outputs to standard out and you can review the document to see what might be the issue.

```
click_link('foo')
print page.html
page.should have_content('bar')
```

Additionally, the function `#save_and_open_page` is supposed to take a snapshot of the page as it currently exists and open it for inspection. I tried once to use this and was unsuccessful. The `page.html` was always sufficient and so I did not explore it further. Another useful debugging feature is that, with drivers that support it (such as WebKit or Selenium), you can call `page.save_screenshot('myfile.png')` to save a screenshot.

[slide]

AJAX

Tuesday, January 22, 13

We saw some basic testing against ajax functionality in the back-office tests but I wanted to take just a second to drill into that... If you've ever used a testing tool like WinRunner, you might have been wondering how Capybara deals with the intrinsic pauses during network activity in the ajax calls. Wonderfully, Capybara automatically deals with dynamic pages by waiting for elements to appear on the page. The default wait is 2 seconds, but can be adjusted in Capybara's configuration. And this is very powerful. If, for example, you have the following:

```
[click]
find('#foo').click_link('bar')
```

Capybara's engine will monitor the #foo for the link 'bar'. #foo could leave the page (via ajax/ DOM manipulation) and then return, still without the 'bar' link, and then inject it into the DOM. As long as you're within your configured default wait time, Capybara will click that link when it arrives.

In the tests that I wrote for Depot application, I never had any sort of issue with DOM manipulation, and I expect that with the debugging tools and a focus on simplicity in your test syntax, it should be pretty capable. Ultimately, if it's hard to write tests for something,

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Core Behavior of DSL:

- visit, find, click
- fill_in, choose, check, select
- page.should have_content('foo')

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So, Capybara in a not-so-small nutshell. The core of its behavior lies in the DSL's "visit", "find", and "click" functions. To populate forms, use the "fill_in", "choose", "check", and "select" functions. To assert that the application responds with what we expect, we use RSpec's "should" syntax to verify that certain content exists. To learn more about the form-handling features in the DSL for "choose"ing radio buttons, "check"ing check-boxes, "select"ing dropdowns, and attaching files, review Capybara's README.md on GitHub.

That's pretty much it. Simple setup, simple syntax, simple automation. And now, after every build, we know whether our Depot is "basically working" within just a minute rather than the 10 minutes it used to take us to run through our smoke test.

Realistically, we spent only a fraction of this discussion talking about Capybara's feature set, but all-in-all, I think it's comprehensive. The core thesis here, is that if you start with a well-founded and reliable test plan for your "smoke test", translating that into a script that can run in a fraction of the time it takes somebody to perform it manually is simple and straightforward with Capybara.

Daniel Hedrick, @dcoder
daniel@hedrick.org

[https://github.com/dcoder2099
/intro_to_capybara](https://github.com/dcoder2099/intro_to_capybara)

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The code, including annotated commits of all the tests I wrote, is available on my GitHub page. If you found this useful, please tell others; if you think I bombed, tell me.

Any questions?