In this lecture, we will discuss...

✦ What will our example application do?

✦ Documenting requirements in tests

✦ Filling in the details of the tests

What will our example application do?

✧ RDBMS-backed
  - create RDBMS-backed model
  - expose RDBMS-backed API resource

✧ MongoDB-backed
  - create MongoDB-backed model
  - expose MongoDB-backed API resource

How Do We Document Requirements?

✧ Create a document or Wiki page?

- Hope not
- Documents are dead as soon as we stop writing them

✧ Write them in Ruby code?

- Isn't that too techy?
- Can be
- Doesn't have to be

Jamess-MacBook-Pro:capstone_demoapp jim$ vi Gemfile

```ruby
1 #
2 source 'https://rubygems.org'
3
4 gem 'rails', '4.2.6'
5 gem 'rails-api', '~>0.4', '>=0.4.0'
6
7 group :development do
8   gem 'spring', '~>2.0', '>=2.0.0'
9   gem 'tzinfo-data', :platforms=>[:mingw, :mswin, :x64_mingw, :jruby]
10
11   gem 'rspec-rails', '~> 3.5', '>=3.5.2'
12 end
13
14 gem 'pg', '~>0.19', '>=0.19.0'
~
~
~
~
~
~
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~
~
~
~
~
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ vi Gemfile
Jamess-MacBook-Pro:capstone_demoapp jim$ bundle
```

```
Using tzinfo 1.2.2
Using nokogiri 1.6.8.1
Using rack-test 0.6.3
Using mime-types 3.1
Using sprockets 3.7.0
Using rspec-core 3.5.4
Using rspec-expectations 3.5.0
Using rspec-mocks 3.5.0
Using activesupport 4.2.6
Using loofah 2.0.3
Using mail 2.6.4
Using rails-deprecated_sanitizer 1.0.3
Using globalid 0.3.7
Using activemodel 4.2.6
Using spring 2.0.0
Using rails-html-sanitizer 1.0.3
Using rails-dom-testing 1.0.7
Using activejob 4.2.6
Using activerecord 4.2.6
Using actionview 4.2.6
Using actionpack 4.2.6
Using actionmailer 4.2.6
Using railties 4.2.6
Using sprockets-rails 3.2.0
Using rails-api 0.4.0
Using rspec-rails 3.5.2
Using rails 4.2.6
Bundle complete! 6 Gemfile dependencies, 44 gems now installed.
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ rails g rspec:install
Running via Spring preloader in process 15062
      create  .rspec
       exist  spec
      create  spec/spec_helper.rb
      create  spec/rails_helper.rb
Jamess-MacBook-Pro:capstone_demoapp jim$
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ rails g rspec:install
Running via Spring preloader in process 15062
      create  .rspec
       exist  spec
      create  spec/spec_helper.rb
      create  spec/rails_helper.rb
Jamess-MacBook-Pro:capstone_demoapp jim$ cat .rspec
--color
--require spec_helper
Jamess-MacBook-Pro:capstone_demoapp jim$ █
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ rails g rspec:request APIDevelopment
```

```
bash        ⌘1        bash        ⌘2        bash        ⌘3

Jamess-MacBook-Pro:capstone_demoapp jim$ rails g rspec:request APIDevelopment
Running via Spring preloader in process 15161
      create  spec/requests/api_developments_spec.rb
Jamess-MacBook-Pro:capstone_demoapp jim$
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/r
rails_helper.rb   requests/
Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
```

```ruby
require 'rails_helper'

RSpec.describe "ApiDevelopments", type: :request do
  describe "GET /api_developments" do
    it "works! (now write some real specs)" do
      get api_developments_path
      expect(response).to have_http_status(200)
    end
  end
end
```

```ruby
require 'rails_helper'

RSpec.describe "ApiDevelopments", type: :request do
  describe "GET /api_developments" do
    it "works! (now write some real specs)" do
      get api_developments_path
      expect(response).to have_http_status(200)
    end
  end
end
```

```ruby
1 require 'rails_helper'
2
3 RSpec.describe "ApiDevelopments", type: :request do
4 end
```

```ruby
require 'rails_helper'

RSpec.describe "ApiDevelopments", type: :request do
  describe "RDBMS-backed" do
    it "create RDBMS-backed model"
    it "expose RDBMS-backed API resource"
  end

  describe "MongoDB-backed" do
    it "create MongoDB-backed model"
    it "expose MongoDB-backed API resource"
  end
end
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ rspec
Running via Spring preloader in process 15442
****


Pending: (Failures listed here are expected and do not affect your suite's status)

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:5

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:6

  3) ApiDevelopments MongoDB-backed create MongoDB-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:10

  4) ApiDevelopments MongoDB-backed expose MongoDB-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:11


Finished in 0.00127 seconds (files took 2.74 seconds to load)
4 examples, 0 failures, 4 pending

Jamess-MacBook-Pro:capstone_demoapp jim$ 
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ rspec
Running via Spring preloader in process 15442
****


Pending: (Failures listed here are expected and do not affect your suite's status)

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:5

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:6

  3) ApiDevelopments MongoDB-backed create MongoDB-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:10

  4) ApiDevelopments MongoDB-backed expose MongoDB-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:11


Finished in 0.00127 seconds (files took 2.74 seconds to load)
4 examples, 0 failures, 4 pending

Jamess-MacBook-Pro:capstone_demoapp jim$ rspec -fd
```

4 examples, 0 failures, 4 pending

Jamess-MacBook-Pro:capstone_demoapp jim$ rspec -fd
Running via Spring preloader in process 15474

ApiDevelopments
  RDBMS-backed
    create RDBMS-backed model (PENDING: Not yet implemented)
    expose RDBMS-backed API resource (PENDING: Not yet implemented)
  MongoDB-backed
    create MongoDB-backed model (PENDING: Not yet implemented)
    expose MongoDB-backed API resource (PENDING: Not yet implemented)

Pending: (Failures listed here are expected and do not affect your suite's status)

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:5

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     # Not yet implemented
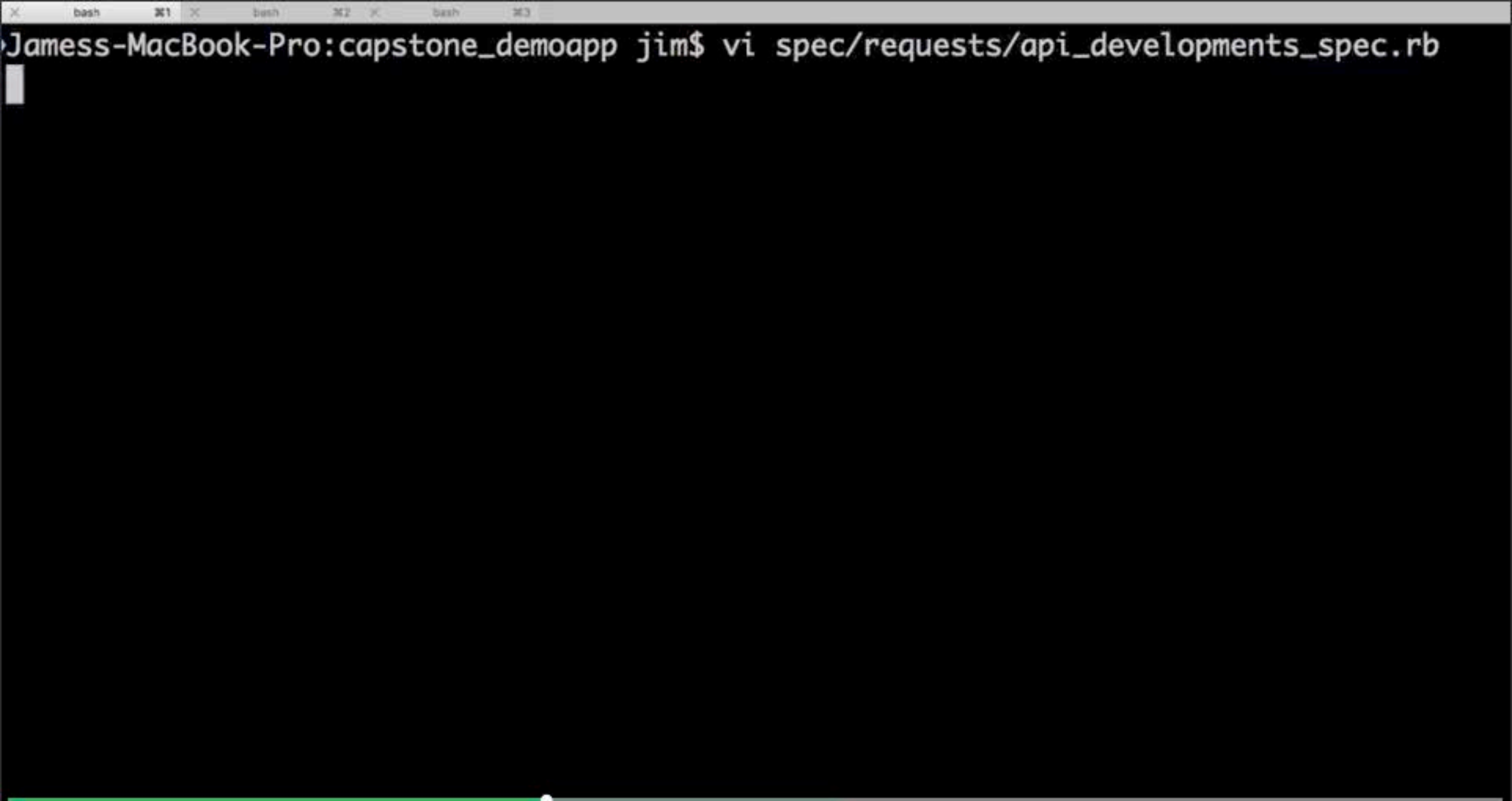   # ./spec/requests/api_developments_spec.rb:6

  3) ApiDevelopments MongoDB-backed create MongoDB-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:10

  4) ApiDevelopments MongoDB-backed expose MongoDB-backed API resource
     # Not yet implemented

```
Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
```

```ruby
1 require 'rails_helper'
2
3 RSpec.describe "ApiDevelopments", type: :request do
4   describe "RDBMS-backed" do
5     it "create RDBMS-backed model"
6     it "expose RDBMS-backed API resource"
7   end
8
9   describe "MongoDB-backed" do
10     it "create MongoDB-backed model"
11     it "expose MongoDB-backed API resource"
12   end
13 end
```

```ruby
1 require 'rails_helper'
2
3 RSpec.describe "ApiDevelopments", type: :request do
4   describe "RDBMS-backed" do
5     it "create RDBMS-backed model" do
6     end
7     it "expose RDBMS-backed API resource"
8   end
9
10  describe "MongoDB-backed" do
11    it "create MongoDB-backed model"
12    it "expose MongoDB-backed API resource"
13  end
14 end
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
Jamess-MacBook-Pro:capstone_demoapp jim$ rspec
Running via Spring preloader in process 16382
.***


Pending: (Failures listed here are expected and do not affect your suite's status)

  1) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:7


  2) ApiDevelopments MongoDB-backed create MongoDB-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:11


  3) ApiDevelopments MongoDB-backed expose MongoDB-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:12



Finished in 0.00186 seconds (files took 2.82 seconds to load)
4 examples, 0 failures, 3 pending
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
Jamess-MacBook-Pro:capstone_demoapp jim$ rspec
Running via Spring preloader in process 16382
.***


Pending: (Failures listed here are expected and do not affect your suite's status)

  1) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:7

  2) ApiDevelopments MongoDB-backed create MongoDB-backed model
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:11

  3) ApiDevelopments MongoDB-backed expose MongoDB-backed API resource
     # Not yet implemented
     # ./spec/requests/api_developments_spec.rb:12


Finished in 0.00186 seconds (files took 2.82 seconds to load)
4 examples, 0 failures, 3 pending
```

```ruby
 1 require 'rails_helper'
 2
 3 RSpec.describe "ApiDevelopments", type: :request do
 4   def parsed_body
 5     JSON.parse(response.body)
 6   end
 7
 8   describe "RDBMS-backed" do
 9     it "create RDBMS-backed model" do
10       object=Foo.create(:name=>"test")
11       expect(Foo.find(object.id).name).to eq("test")
12     end
13
14     it "expose RDBMS-backed API resource" do
15       object=Foo.create(:name=>"test")
16       expect(foos_path).to eq("/api/foos")
17       get foo_path(object.id)
18       expect(response).to have_http_status(:ok)
19       expect(parsed_body["name"]).to eq("test")
20     end
21   end
22
23   describe "MongoDB-backed" do
24     it "create MongoDB-backed model"
25     it "expose MongoDB-backed API resource"
26   end
27 end
```

```
Jamess-MacBook-Pro:capstone_demoapp jim$ rspec
```

```
# Not yet implemented
# ./spec/requests/api_developments_spec.rb:25


Failures:

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:10:in `block (3 levels) in <top (required)>'

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:15:in `block (3 levels) in <top (required)>'

Finished in 0.00347 seconds (files took 3.06 seconds to load)
4 examples, 2 failures, 2 pending

Failed examples:

rspec ./spec/requests/api_developments_spec.rb:9 # ApiDevelopments RDBMS-backed create RDBMS-backed model
rspec ./spec/requests/api_developments_spec.rb:14 # ApiDevelopments RDBMS-backed expose RDBMS-backed API resourc
e
```

```
# ./spec/requests/api_developments_spec.rb:25


Failures:

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:10:in `block (3 levels) in <top (required)>'

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:15:in `block (3 levels) in <top (required)>'

Finished in 0.00347 seconds (files took 3.06 seconds to load)
4 examples, 2 failures, 2 pending

Failed examples:

rspec ./spec/requests/api_developments_spec.rb:9 # ApiDevelopments RDBMS-backed create RDBMS-backed model
rspec ./spec/requests/api_developments_spec.rb:14 # ApiDevelopments RDBMS-backed expose RDBMS-backed API resourc
e
```

```
Failures:

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:10:in `block (3 levels) in <top (required)>'

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:15:in `block (3 levels) in <top (required)>'

Finished in 0.00347 seconds (files took 3.06 seconds to load)
4 examples, 2 failures, 2 pending

Failed examples:

rspec ./spec/requests/api_developments_spec.rb:9 # ApiDevelopments RDBMS-backed create RDBMS-backed model
rspec ./spec/requests/api_developments_spec.rb:14 # ApiDevelopments RDBMS-backed expose RDBMS-backed API resourc
e

Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
```

```ruby
 1  require 'rails_helper'
 2
 3  RSpec.describe "ApiDevelopments", type: :request do
 4    def parsed_body
 5      JSON.parse(response.body)
 6    end
 7
 8    describe "RDBMS-backed" do
 9      before(:each) { Foo.delete_all }
10      after(:each)  { Foo.delete_all }
11
12      it "create RDBMS-backed model" do
13        object=Foo.create(:name=>"test")
14        expect(Foo.find(object.id).name).to eq("test")
15      end
16
17      it "expose RDBMS-backed API resource" do
18        object=Foo.create(:name=>"test")
19        expect(foos_path).to eq("/api/foos")
20        get foo_path(object.id)
21        expect(response).to have_http_status(:ok)
22        expect(parsed_body["name"]).to eq("test")
23      end
24    end
25
26    describe "MongoDB-backed" do
27      it "create MongoDB-backed model"
28      it "expose MongoDB-backed API resource"
```

```
Failures:

  1) ApiDevelopments RDBMS-backed create RDBMS-backed model
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:10:in `block (3 levels) in <top (required)>'

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     Failure/Error: object=Foo.create(:name=>"test")

     NameError:
       uninitialized constant Foo
     # ./spec/requests/api_developments_spec.rb:15:in `block (3 levels) in <top (required)>'

Finished in 0.00347 seconds (files took 3.06 seconds to load)
4 examples, 2 failures, 2 pending

Failed examples:

rspec ./spec/requests/api_developments_spec.rb:9 # ApiDevelopments RDBMS-backed create RDBMS-backed model
rspec ./spec/requests/api_developments_spec.rb:14 # ApiDevelopments RDBMS-backed expose RDBMS-backed API resourc
e

Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
Jamess-MacBook-Pro:capstone_demoapp jim$ vi spec/requests/api_developments_spec.rb
```

```
       NameError:
         uninitialized constant Foo
       # ./spec/requests/api_developments_spec.rb:10:in `block (3 levels) in <top (required)>'

  2) ApiDevelopments RDBMS-backed expose RDBMS-backed API resource
     Got 0 failures and 2 other errors:

     2.1) Failure/Error: before(:each) { Foo.delete_all }

          NameError:
            uninitialized constant Foo
          # ./spec/requests/api_developments_spec.rb:9:in `block (3 levels) in <top (required)>'

     2.2) Failure/Error: after(:each)  { Foo.delete_all }

          NameError:
            uninitialized constant Foo
          # ./spec/requests/api_developments_spec.rb:10:in `block (3 levels) in <top (required)>'

Finished in 0.00408 seconds (files took 2.54 seconds to load)
4 examples, 2 failures, 2 pending

Failed examples:

rspec ./spec/requests/api_developments_spec.rb:12 # ApiDevelopments RDBMS-backed create RDBMS-backed model
rspec ./spec/requests/api_developments_spec.rb:17 # ApiDevelopments RDBMS-backed expose RDBMS-backed API resourc
e
```

```ruby
 1  require 'rails_helper'
 2
 3  RSpec.describe "ApiDevelopments", type: :request do
 4    def parsed_body
 5      JSON.parse(response.body)
 6    end
 7
 8    describe "RDBMS-backed" do
 9      before(:each) { Foo.delete_all }
10      after(:each)  { Foo.delete_all }
11
12      it "create RDBMS-backed model" do
13        object=Foo.create(:name=>"test")
14        expect(Foo.find(object.id).name).to eq("test")
15      end
16
17      it "expose RDBMS-backed API resource" do
18        object=Foo.create(:name=>"test")
19        expect(foos_path).to eq("/api/foos")
20        get foo_path(object.id)
21        expect(response).to have_http_status(:ok)
22        expect(parsed_body["name"]).to eq("test")
23      end
24    end
25
26    describe "MongoDB-backed" do
27      it "create MongoDB-backed model"
28      it "expose MongoDB-backed API resource"
```

```ruby
1 require 'rails_helper'
2
3 RSpec.describe "ApiDevelopments", type: :request do
4   def parsed_body
5     JSON.parse(response.body)
6   end
7
8   describe "RDBMS-backed" do
9     before(:each) { Foo.delete_all }
10    after(:each)  { Foo.delete_all }
11
12    it "create RDBMS-backed model" do
13      object=Foo.create(:name=>"test")
14      expect(Foo.find(object.id).name).to eq("test")
15    end
16
17    it "expose RDBMS-backed API resource" do
18      object=Foo.create(:name=>"test")
19      expect(foos_path).to eq("/api/foos")
20      get foo_path(object.id)
21      expect(response).to have_http_status(:ok)
22      expect(parsed_body["name"]).to eq("test")
23    end
24  end
25
26  describe "MongoDB-backed" do
27    before(:each) { Bar.delete_all }
28    after(:each)  { Bar.delete_all }
```

Summary

✧ Don't just write code and don't write dead documents
- Use RSpec tests to document acceptance statements
- Fill in the details to re-use as a living verification

✧ We are implementing a sample model and API for
- RDBMS-backed resource
- MongoDB backed resource

✧ ...to
- Verify our development environment for the course
- Brush up on some of our Rails development skills

What's Next?

- Developing Active Record API Resource