

Hello Rails

Goals

- Know the basic ideas behind Rails
- Obtain Rails
- Create a new Rails Project
- Use generators to create project components
- Create the 'Hello World' rails project

Ruby on Rails Core Concepts

- Don't Repeat Yourself (DRY)
- Convention over Configuration
- REST
- Model View Controller

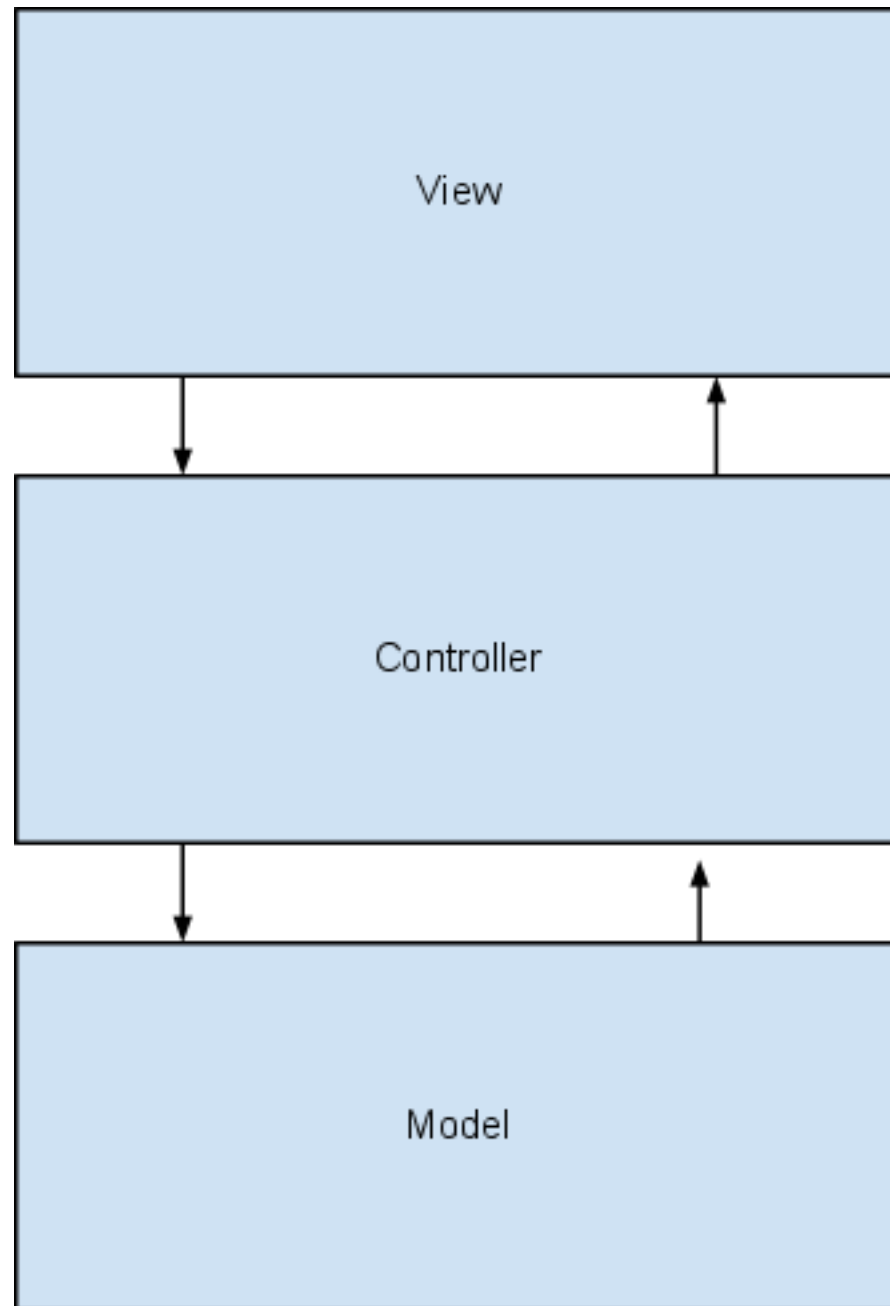
Convention Over Configuration

- Sane defaults are provided
- Naming conventions are important
 - Models look for tables named after their class
 - Actions look for templates with the same name

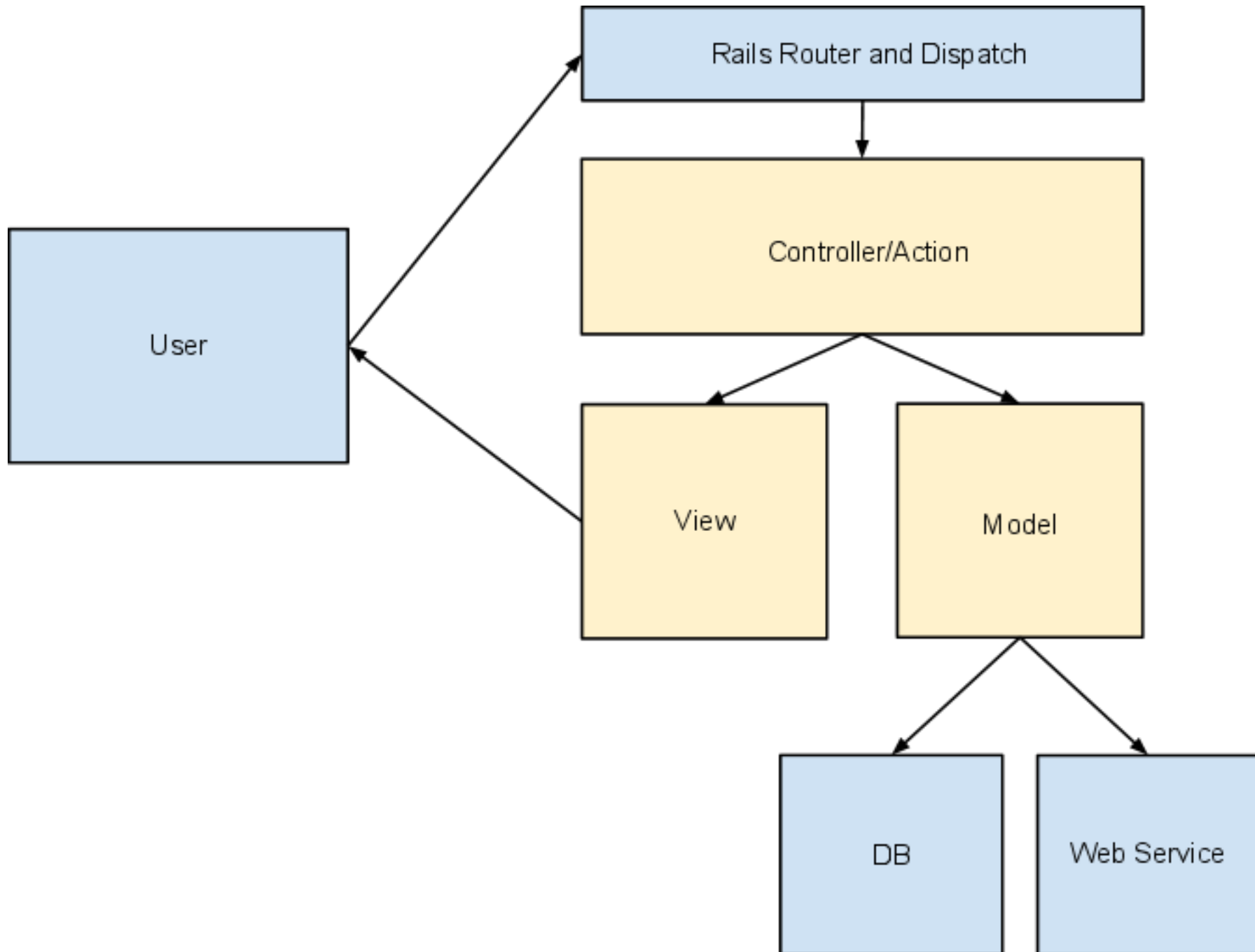
Don't Repeat Yourself

REST

- Use the HTTP Verbs as their meaning
 - GET retrieves data
 - POST creates things
 - PUT updates things
 - Delete deletes things
- Provide resources



Rails Request Pattern



The Tools

The Tools

- Ruby
- gem
- rails
- rake
- Your IDE of choice
 - Eclipse
 - Netbeans
 - Emacs
 - Vim

Ruby

- Object-Oriented
- Dynamic
- Interpreted
- Metaprogramming

Gem: The Ruby Package Manager

- gem manages Ruby Gems
- What is a Ruby Gem?
 - a package much like a jar file
 - can provide the system with programs
 - accepted distribution method within the Ruby community

gem install rails

```

sauron:workshop abugosh$ gem install rails
Fetching: activestorage-3.1.1.gem (100%)
Fetching: activemodel-3.1.1.gem (100%)
Fetching: rack-cache-1.1.gem (100%)
Fetching: sprockets-2.0.2.gem (100%)
brewbygems: Sorry, you don't seem to have Homebrew installed.
Fetching: actionpack-3.1.1.gem (100%)
Fetching: tzinfo-0.3.38.gem (100%)
Fetching: activerecord-3.1.1.gem (100%)
Fetching: activerecord-3.1.1.gem (100%)
brewbygems: Sorry, you don't seem to have Homebrew installed.
Fetching: actionmailer-3.1.1.gem (100%)
Fetching: json-1.6.1.gem (100%)
Building native extensions. This could take a while...
Fetching: rdock-3.10.gem (100%)
Depending on your version of ruby, you may need to install ruby rdock/ri data:

>= 1.8.6 : unsupported
= 1.8.7 : gem install rdock-data; rdock-data --install
= 1.9.1 : gem install rdock-data; rdock-data --install
>= 1.9.2 : nothing to do! Yay!

brewbygems: Sorry, you don't seem to have Homebrew installed.
Fetching: railties-3.1.1.gem (100%)
Fetching: rails-3.1.1.gem (100%)
brewbygems: Sorry, you don't seem to have Homebrew installed.
Successfully installed multi_json-1.0.3
Successfully installed activestorage-3.1.1
Successfully installed builder-3.0.0
Successfully installed i18n-0.6.0
Successfully installed activemodel-3.1.1
Successfully installed rack-cache-1.1
Successfully installed rack-test-0.6.1
Successfully installed rack-mount-0.8.3
Successfully installed hike-1.2.1
Successfully installed tilt-1.3.3
Successfully installed sprockets-2.0.2
Successfully installed erubis-2.7.0
Successfully installed actionpack-3.1.1
Successfully installed arel-2.2.1
Successfully installed tzinfo-0.3.38
Successfully installed activerecord-3.1.1
Successfully installed activerecord-3.1.1
Successfully installed mime-types-1.16
Successfully installed polyglot-0.3.2
Successfully installed treeport-1.4.10
Successfully installed mail-2.3.0
Successfully installed actionmailer-3.1.1
Successfully installed rack-ssl-1.3.2
Successfully installed json-1.6.1
Successfully installed rdock-3.10
Successfully installed railties-3.1.1
Successfully installed rails-3.1.1
27 gems installed
Installing ri documentation for multi_json-1.0.3...
Installing ri documentation for activestorage-3.1.1...
Installing ri documentation for builder-3.0.0...
unable to convert "\xF1" from ASCII-8BIT to UTF-8 for README, skipping
unable to convert "\xF1" from ASCII-8BIT to UTF-8 for README.rdoc, skipping
Installing ri documentation for i18n-0.6.0...
Installing ri documentation for activemodel-3.1.1...
Installing ri documentation for rack-cache-1.1...
Installing ri documentation for rack-test-0.6.1...
Installing ri documentation for rack-mount-0.8.3...
Installing ri documentation for hike-1.2.1...
Installing ri documentation for tilt-1.3.3...
Installing ri documentation for sprockets-2.0.2...
Installing ri documentation for erubis-2.7.0...
Installing ri documentation for actionpack-3.1.1...
Installing ri documentation for arel-2.2.1...
Installing ri documentation for tzinfo-0.3.38...
Installing ri documentation for activerecord-3.1.1...

```

gem basics

- `gem install <gem name or file>`
 - Install the gem from the internet or local .gem file
- `gem list`
 - Lists all the installed gems
- `gem search --remote <gem name>`
 - Search the internet for a gem with that string in the name

Rails: the program behind the framework

- rails new <project name>
 - Create a new project
- rails generate controller <controller>
 - Add a controller to a project
- rails generate model <model>
 - Add a model to a project
- rails server
 - Start a rails server
- rails console
 - Start a console with the project loaded into it

rails generate controller Foo

```
sauron:hello_class abugosh$ rails generate controller Foo
/usr/local/Cellar/gems/1.8/gems/rack-1.3.4/lib/rack/backports/uri/common_192.rb:53: warning: already initialized constant WFKV_
  create    app/controllers/foo_controller.rb
  invoke    erb
  create    app/views/foo
  invoke    test_unit
  create    test/functional/foo_controller_test.rb
  invoke    helper
  create    app/helpers/foo_helper.rb
  invoke    test_unit
  create    test/unit/helpers/foo_helper_test.rb
  invoke    assets
  invoke    coffee
  create    app/assets/javascripts/foo.js.coffee
  invoke    scss
  create    app/assets/stylesheets/foo.css.scss
```


rails new hello_class

```
sauron:workshop abugosh$ rails new hello_class
create
create  README
create  Rakefile
create  config.ru
create  .gitignore
create  Gemfile
create  app
create  app/assets/images/rails.png
create  app/assets/javascripts/application.js
create  app/assets/stylesheets/application.css
create  app/controllers/application_controller.rb
create  app/helpers/application_helper.rb
create  app/mailers
create  app/models
create  app/views/layouts/application.html.erb
create  app/mailers/.gitkeep
create  app/models/.gitkeep
create  config
create  config/routes.rb
create  config/application.rb
create  config/environment.rb
create  config/environments
create  config/environments/development.rb
create  config/environments/production.rb
create  config/environments/test.rb
create  config/initializers
create  config/initializers/backtrace_silencers.rb
create  config/initializers/inflections.rb
create  config/initializers/mime_types.rb
create  config/initializers/secret_token.rb
create  config/initializers/session_store.rb
create  config/initializers/wrap_parameters.rb
create  config/locales
create  config/locales/en.yml
create  config/boot.rb
create  config/database.yml
create  db
create  db/seeds.rb
create  doc
create  doc/README_FOR_APP
create  lib
create  lib/tasks
create  lib/tasks/.gitkeep
create  lib/assets
create  lib/assets/.gitkeep
create  log
create  log/.gitkeep
create  public
create  public/404.html
create  public/422.html
create  public/500.html
create  public/favicon.ico
create  public/index.html
create  public/robots.txt
create  script
create  script/rails
create  test/fixtures
create  test/fixtures/.gitkeep
create  test/functional
create  test/functional/.gitkeep
create  test/integration
create  test/integration/.gitkeep
create  test/unit
create  test/unit/.gitkeep
create  test/performance/browsing_test.rb
create  test/test_helper.rb
create  tmp/cache
create  tmp/cache/assets
create  vendor/assets/stylesheets
create  vendor/assets/stylesheets/.gitkeep
```

rails server

```
sauron:hello_class abugosh$ rails server
/usr/local/Cellar/gems/1.8/gems/rack-1.3.4/lib/rack/backports/uri/common_192.rb:53: warning: already initialized constant WFKV_
=> Booting WEBrick
=> Rails 3.1.1 application starting in development on http://0.0.0.0:3000
=> Call with -d to detach
=> Ctrl-C to shutdown server
[2011-10-18 18:12:57] INFO  WEBrick 1.3.1
[2011-10-18 18:12:57] INFO  ruby 1.9.2 (2011-02-18) [x86_64-darwin10.7.0]
[2011-10-18 18:12:57] INFO  WEBrick::HTTPServer#start: pid=4496 port=3000
```

rails console

```
sauron:hello_class abugosh$ rails console
/usr/local/Cellar/gems/1.8/gems/rack-1.3.4/lib/rack/backports/uri/common_192.rb:53: warning: already initialized constant VFXY_
Loading development environment (Rails 3.1.1)
ruby-1.9.2-p188 :001 > puts 'Hello class!'
Hello class!
=> nil
ruby-1.9.2-p188 :002 >
```

rake

- Rake is a command-line program along the same lines as Make
- Rails ships with many built-in rake tasks

rake -T

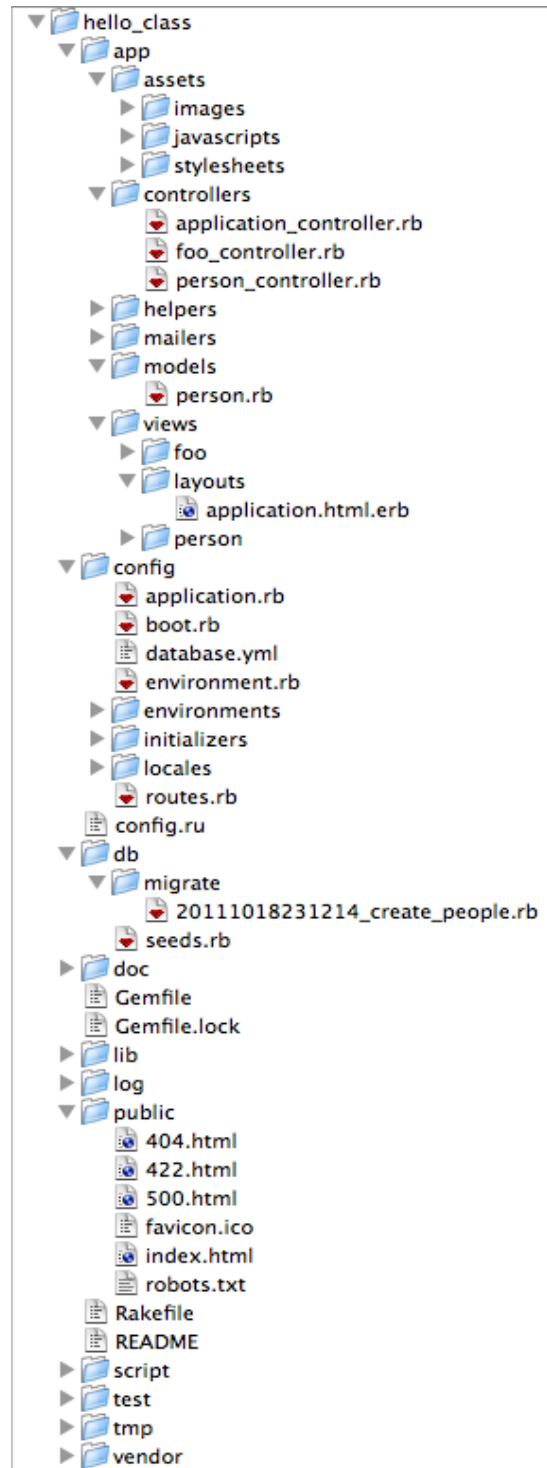
```
sauron:hello_class abugosh$ rake -T
rake about                # List versions of all Rails frameworks and the environment
rake assets:clean          # Remove compiled assets
rake assets:precompile     # Compile all the assets named in config.assets.precompile
rake db:create             # Create the database from config/database.yml for the current Rails.env (use db:create:all to create all dbs in the config)
rake db:drop               # Drops the database for the current Rails.env (use db:drop:all to drop all databases)
rake db:fixtures:load      # Load fixtures into the current environment's database.
rake db:migrate            # Migrate the database (options: VERSION=x, VERBOSE=false).
rake db:migrate:status     # Display status of migrations
rake db:rollback           # Rolls the schema back to the previous version (specify steps w/ STEP=n).
rake db:schema:dump        # Create a db/schema.rb file that can be portably used against any DB supported by AR
rake db:schema:load        # Load a schema.rb file into the database
rake db:seed               # Load the seed data from db/seeds.rb
rake db:setup              # Create the database, load the schema, and initialize with the seed data (use db:reset to also drop the db first)
rake db:structure:dump     # Dump the database structure to an SQL file
rake db:version            # Retrieves the current schema version number
rake doc:app               # Generate docs for the app -- also available doc:rails, doc:guides, doc:plugins (options: TEMPLATE=/rdoc-template.rb, TITLE="Custom Title")
rake log:clear             # Truncates all *.log files in log/ to zero bytes
rake middleware            # Prints out your Rack middleware stack
rake notes                # Enumerate all annotations (use notes:optimize, :fixme, :todo for focus)
rake notes:custom          # Enumerate a custom annotation, specify with ANNOTATION=CUSTOM
rake rails:template        # Applies the template supplied by LOCATION=(/path/to/template) or URL
rake rails:update           # Update configs and some other initially generated files (or use just update:configs, update:scripts, or update:application_controller)
rake routes               # Print out all defined routes in match order, with names.
rake secret                # Generate a cryptographically secure secret key (this is typically used to generate a secret for cookie sessions).
rake stats                 # Report code statistics (KLOCs, etc) from the application
rake test                  # Runs test:units, test:functionals, test:integration together (also available: test:benchmark, test:profile, test:plugins)
rake test:recent           # Run tests for (:recent=>"test:prepare") / Test recent changes
rake test:single           # Run tests for (:single=>"test:prepare")
rake test:uncommitted      # Run tests for (:uncommitted=>"test:prepare") / Test changes since last checkin (only Subversion and Git)
rake time:zones:all        # Displays all time zones, also available: time:zones:us, time:zones:local -- filter with OFFSET parameter, e.g., OFFSET=-6
rake tmp:clear             # Clear session, cache, and socket files from tmp/ (narrow w/ tmp:sessions:clear, tmp:cache:clear, tmp:sockets:clear)
rake tmp:create            # Creates tmp directories for sessions, cache, sockets, and pids
```

Rails Project Structure

A Rails Project

- Apps
 - controllers
 - views
 - models
- config
 - config stuff
- public
 - javascripts
 - stylesheets
 - images

Rails Project Structure



The Model

What is a Rails model?

- Data access layer
- Default ORM is called ActiveRecord
- ActiveRecord is a thin wrapper over the DB structure
- Most of your business logic should live down at this level
- More on this in the next Module

Example Model

```
class User < ActiveRecord::Base
  has_many :posts
  has_one :address

  def full_name
    "#{first_name} #{last_name}"
  end
end
```

The Controller

What is a Rails controller?

- Serves as the entrance point for your code
- Sits between the view and the model
- Should be fairly simple
 - Complex controller code is a code smell

Controller Structure

- Controllers represent a resource
- Named FooController
- Each public method represents an action
- All instance variables (@foo) are forwarded to the view
- By default the view named after the action is rendered

Example Controller

```
class MenuSectionsController < ApplicationController
  respond_to :json

  before_filter :authenticate_user!, :except => [:index, :show]

  def index
    respond_with(MenuSection.all)
  end

  def show
    respond_with(MenuSection.find(params[:id]).menu_items)
  end

  def create
    section = MenuSection.new(params)

    section.save

    respond_with(section)
  end

  def update
    section = MenuSection.find(params[:id])

    section.update_attributes(params)

    respond_with(section)
  end

  def destroy
    section = MenuSection.find(params[:id])

    respond_with(section.delete)
  end
end
```

The View

What is a Rails view?

- Template
- Usually a combination of HTML and JavaScript
- Rendered by default at the end of an action

Embedded Ruby Syntax (erb)

- `<% foo = 10 %>`
 - Embed ruby code between `<% %>` tags
- `<%= foo %>`
 - Use `<%= %>` tags to embed the value into the page
- Instance variables (`@vars`) are shared with the controller

Example View

```
<%= @questions.each do |question| %>
  <div>
    <h2><%= link_to question.title, question %></h2>
    <p><%= question.body %></p>
    <span>Added on <%= question.created_at %> (<%= link_to 'Edit', edit_question_path(question) %>)</span>
    <h3><%= question.answers.count %> Answers</h3>
  </div>
<%= end %>
```