



Ruby on Rails :: An Introduction

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The Ruby Programming Language



Ruby
A Programmer's Best Friend

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Ruby is...

A dynamic, open source programming language with a focus on simplicity and productivity. It has an elegant syntax that is natural to read and easy to write.

[Read More...](#)

```
# Output "I love Ruby"
say = "I love Ruby"
puts say

# Output "I *LOVE* RUBY"
say['love'] = "*love*"
puts say.upcase

# Output "I *love* Ruby"
# five times
5.times { puts say }
```

- Interpreted with Garbage Collection
- Optimized for People over Computers
- Extremely Powerful
- Very Object-Oriented: Everything is an Object
- Strong Dynamic Typing

Ruby Classes & Inheritance

```
# Define Classes
class Animal

end

class Dog < Animal

end

class Cat < Animal

end

# Create Objects
animal = Animal.new
dog = Dog.new
cat = Cat.new
```

Ruby Methods & Instance Variables

```
class Person
  def initialize(name)
    @name = name
  end

  def say_hello
    puts "Hello, my name is " + @name
  end
end

oscar = Person.new("Oscar Peterson")
oscar.say_hello
# => "Hello, my name is Oscar Peterson"
```

```
class Person
  def initialize(name)
    @name = name
  end

  def name
    @name
  end

  def name=(value)
    @name = value
  end
end
```

```
charlie = Person.new("Charlie Parker")
clifford.name
# => "Charlie Parker"
clifford.name = "Bird"
clifford.name
# => "Bird"
```

Symbols & Strings

```
# USING SYMBOLS:  
# :economics stored once in memory  
ben.major = :economics  
john.major = :economics  
  
# USING STRINGS:  
# 'economics' stored twice in memory  
ben.major = 'economics'  
john.major = 'economics'
```

Hashes & Arrays

```
bill = { :name => 'Bill Evans', :age => 78 }
```

```
bill = Hash.new  
bill[:name] = 'Bill Evans'  
bill[:age] = 78
```

```
names = ['Ben', 'John', 'Bill']
```

```
names = %w(Ben John Bill)
```

```
names = Array.new  
names << 'Ben'  
names << 'John'  
names << 'Bill'
```

Code Blocks & Closures

```
def introduce(name)
  puts "Hello! My name is #{name}"
  yield
  puts "And that's it!"
end

introduce('Ben') do
  puts "I'm a web developer."
end

# Same as:

introduce('Ben') { puts "I'm a Web Developer" }

# => Hello! My name is Ben
#     I'm a web developer.
#     And that's it!
```

Cool Tricks with Closures & Arrays

```
names = ['Ben', 'John', 'Tim']

names.each do |name|
  puts name
end

# => Ben
#     John
#     Tim

names.join(',')      # => Ben, John, Tim
names * ','          # => Ben, John, Tim

names.include?('Ben') # => true

names.delete_if { |name| name.ends_with?('n') }
# => ['Tim']

names.select { |name| name.ends_with?('n') }
# => ['Ben', 'John']

names.map { |name| name.upcase }
# => ['BEN', 'JOHN', 'TIM']

names.any? { |name| name.length > 3 } # => true
names.all? { |name| name.length > 3 } # => false
```

```
numbers = [1, 2, 3, 4]

numbers.map { |number| "Number #{number}" }
# => ['Number 1' 'Number 2' 'Number 3', 'Number 4']

numbers.inject { |sum, n| sum + n }
# => 10

numbers.inject { |product, n| product * n }
# => 24
```

PHP vs. Ruby:

```
// PHP: Prints a list of names of people who are over 18

$names = array()
foreach $people as $person {
    if ($people->age > 18) {
        array_push($names, $person)
    }
}

echo join(", ", $names)
```

```
# RUBY: Prints a list of names of people who are over 18.

puts @people.select{|p| p.age > 18}.map{|p| p.name} * ', '
```

Crack Open Those Classes!

```
class String
  def length_with_value
    "#{self.length} : #{self}"
  end
end

"Hello".length_with_value
```

```
2 + 1  # => 3

class Fixnum
  def +(value)
    self - value
  end
end

2 + 1  # => 1 !!!
```

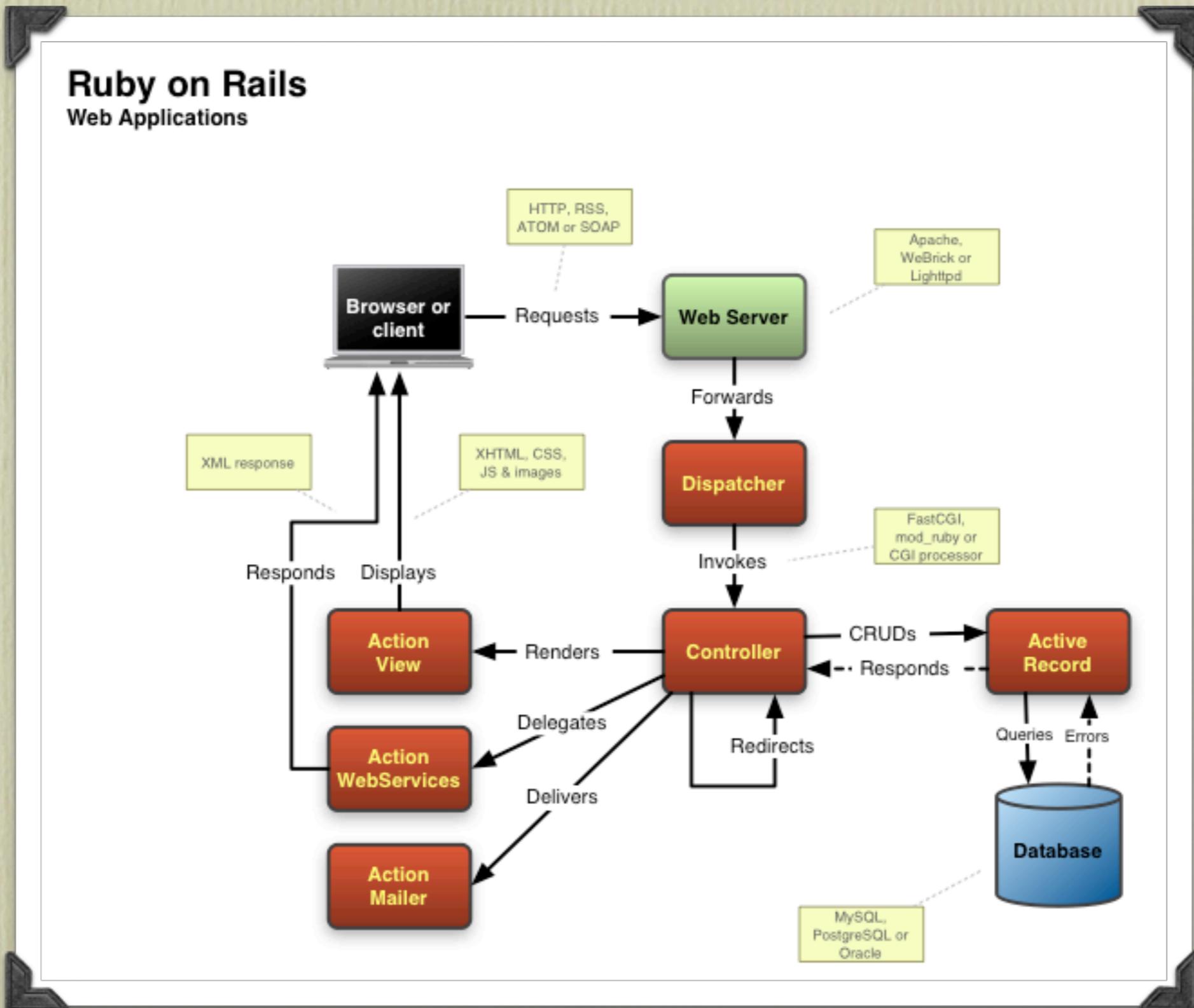
The Ruby on Rails Framework



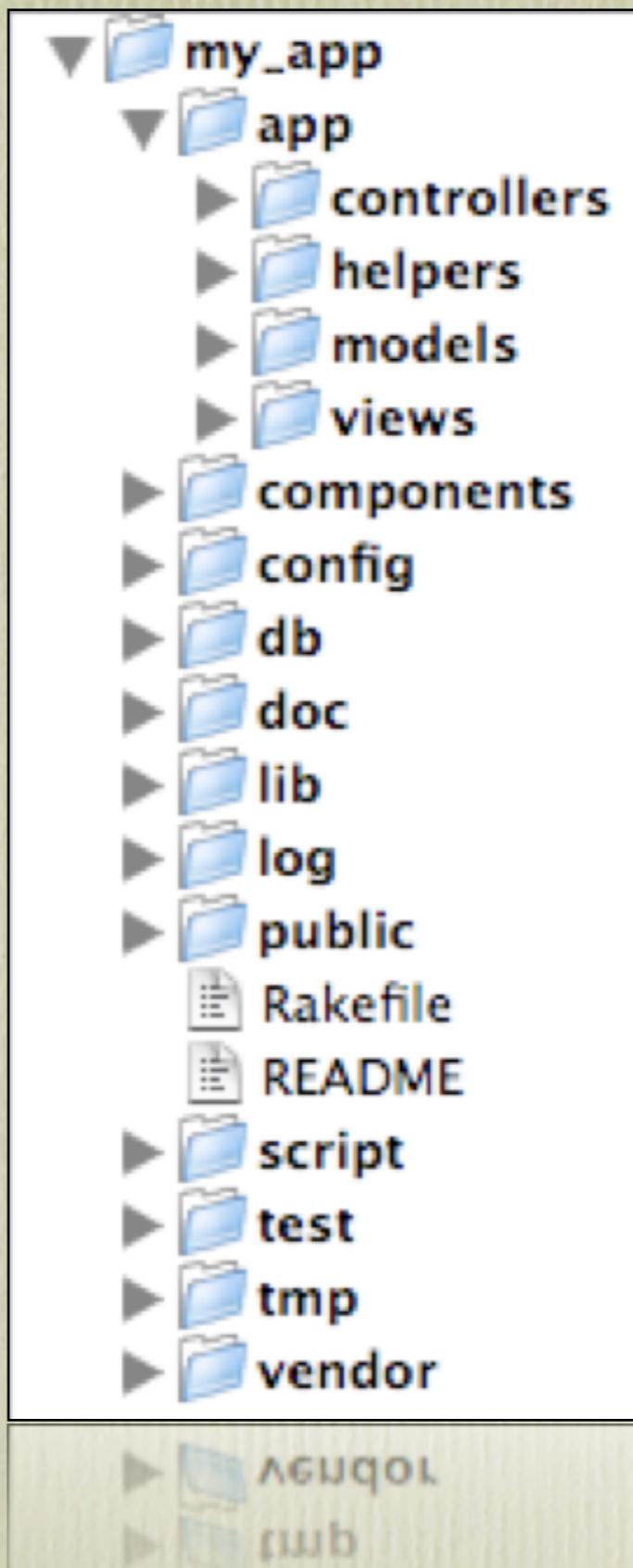
“Ruby on Rails is an open-source web framework that’s optimized for programmer happiness and sustainable productivity. It let’s you write beautiful code by favoring convention over configuration.”

- David Heinemeier Hanson (DHH)
- Derives its Power from Ruby
- Convention over Configuration
- Model View Controller (MVC)
- Don’t Repeat Yourself (DRY)
- Excellent at Anticipating your Needs
- Exploding Popularity

Model - View - Controller



Application Layout



ActiveRecord :: Basics

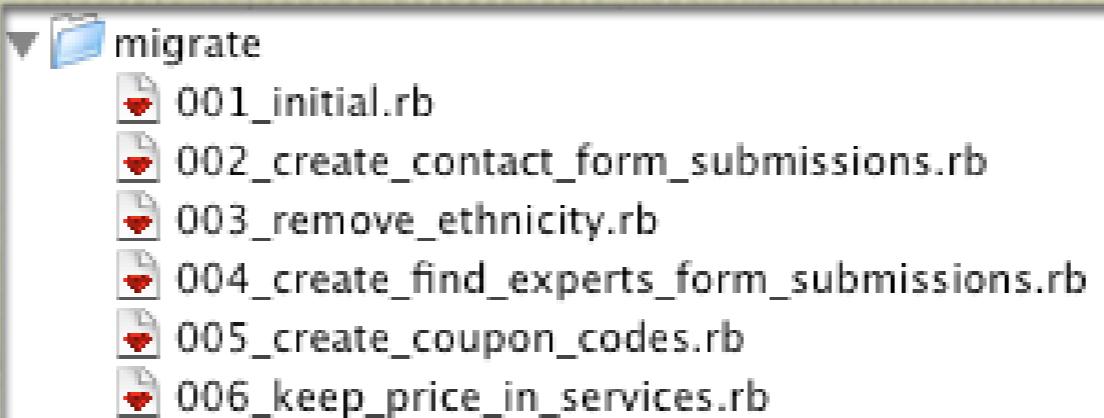
```
class ForumTopic < ActiveRecord::Base
  acts_as_paranoid

  belongs_to :forum
  belongs_to :user
  has_many :forum_posts

  validates_presence_of :title
  validates_presence_of :forum_id
  validates_presence_of :user_id
end
```

- Database / Object Mapping
- CRUD Operations
- Relationships Between Objects
- Finding
- Validations

ActiveRecord :: Migrations



```
class CreateContactFormSubmissions < ActiveRecord::Migration
  def self.up
    create_table :contact_form_submissions do |t|
      t.column :user_id, :integer
      t.column :name, :string
      t.column :email, :string
      t.column :subject, :string
      t.column :body, :text
      t.column :created_at, :datetime
    end
  end

  def self.down
    drop_table :contact_form_submissions
  end
end
```

ActiveRecord :: Relationships

```
class ForumTopic < ActiveRecord::Base
  acts_as_paranoid

  belongs_to :forum
  belongs_to :user
  has_many :forum_posts

  validates_presence_of :title
  validates_presence_of :forum_id
  validates_presence_of :user_id
end
```

```
topic = ForumTopic.find(1)

topic.forum.name      # => 'Other'
topic.user.username   # => 'bhughes'
topic.forum_posts.count # => 4

topic.forum_posts.create(:user_id => 1, :body => 'Post')
```

- has_many
- belongs_to
- has_and_belongs_to_many
- has_one
- Polymorphic
- Single Table Inheritance (STI)

ActiveRecord :: Validations

```
class ForumTopic < ActiveRecord::Base
  acts_as_paranoid

  belongs_to :forum
  belongs_to :user
  has_many :forum_posts

  validates_presence_of :title
  validates_presence_of :forum_id
  validates_presence_of :user_id
end
```

- validates_presence_of
- validates_numericality_of
- validates_length_of
- validates_format_of
- validates_email_veracity_of
- validates_uniqueness_of

ActiveRecord :: Callbacks

- before_save / after_save
- before_create / after_create
- before_destroy / after_destroy

```
class BankAccount < ActiveRecord::Base
  before_save    EncryptionWrapper.new("credit_card_number")
  after_save     EncryptionWrapper.new("credit_card_number")
  after_initialize EncryptionWrapper.new("credit_card_number")
end
```

```
class ForumPost < ActiveRecord::Base
  acts_as_paranoid

  belongs_to :forum_topic
  belongs_to :user

  before_save { |post| post.body_text = ActionView::Base.new.strip_tags(post.body) }

  validates_presence_of :body, :user_id
end
```

ActionController :: Basics

```
class EventsController < ApplicationController
  def index
    @events = Event.find(:all)
  end

  def show
    @event = Event.find(params[:id])
  end

  def new
    @event = Event.new
  end

  def edit
    @event = Event.find(params[:id])
  end

  def create
    @event = Event.new(params[:event])

    if @event.save
      flash[:notice] = 'Event was successfully created.'
      redirect_to(@event)
    else
      render :action => 'new'
    end
  end

  def destroy
    @event = Event.find(params[:id])
    @event.destroy

    redirect_to(events_url)
  end
end
```

- Traffic Cop
- Conducts Operations
- (Some) Business Logic

ActionController :: Routing

```
ActionController::Routing::Routes.draw do |map|
  # named routes
  map.login '/signup', :controller => 'people', :action => 'new'
  # default
  map.connect ':controller/:action/:id'
end
```

end

mob:controller

- Index/Lookup Table for your Site
- Decouples Code from URL Interface
- SEO-Friendly

ActionView :: Basics

```
<h1>New event</h1>

<% error_messages_for :event %>

<% form_for(@event) do |f| %>
  <p>
    <b>Name</b><br />
    <%= f.text_field :name %>
  </p>

  <p>
    <b>Description</b><br />
    <%= f.text_area :description %>
  </p>

  <p>
    <b>Price</b><br />
    <%= f.text_field :price %>
  </p>

  <p>
    <b>Starts at</b><br />
    <%= f.datetime_select :starts_at %>
  </p>

  <p>
    <%= f.submit "Create" %>
  </p>
<% end %>

<%= link_to 'Back', events_path %>
```

- ERB Layouts with:
`<%= @variable %>`
- Helpers
- Form Field Simplicity
- Layouts
- Partials

```
<h1>List of people</h1>
<ul>
  <% people.each do |person| %>
    <li><%= person.name %></li>
  <% end %>
</ul>
```

AJAX / JavaScript Integration

```
<!--  
Generates (Ajax.Updater is Prototype control):  
  <a href="#" onclick="new Ajax.Updater('posts',  
    '/blog/destroy/3', {asynchronous:true, evalScripts:true});  
    return false;">Delete this post</a>  
-->  
  
<%= link_to_remote "Delete this post",  
  :update => "posts",  
  :url => { :action => "destroy", :id => post.id },  
  :complete =>  
    visual_effect(:highlight, "posts", :duration => 0.5)  
%>  
  
<!-- Others -->  
<%= observe_field :url => { :action => :find_suggestion},  
  :frequency => 0.25,  
  :update => :suggest,  
  :with => 'q'  
%>  
  
<%= remote_form_for(@post) do |f| %>  
  ...  
<% end %>  
  
<%= draggable_element("my_image", :revert => true) %>  
  
<%= sortable_element("my_list", :url => { :action => "order" }) %>
```

- Prototype/
Script.aculo.us
- AJAX Helpers
- RJS Templates

RJS Templates

```
@comments.each do |comment|
  page["comment-#{comment.id}"].add_class_name 'disabled'
end

page[:confirmation].show
page[:comments].visual_effect :highlight
```

```
# Generates:
#   new Insertion.Bottom("list", "<li>Some item</li>");
#   new Effect.Highlight("list");
#   ["status-indicator", "cancel-link"].each(Element.hide);
update_page do |page|
  page.insert_html :bottom, 'list', "<li>#{@item.name}</li>"
  page.visual_effect :highlight, 'list'
  page.hide 'status-indicator', 'cancel-link'
end
```

- Proxies JavaScript through Ruby
- It's Magic! (Sort of...)
- Keeps code centralized to controllers
- Easier to Manage
- Extensible Through Helpers: Extend RJS how you want to!

RESTful Design

- Using HTTP as it was intended
- GET Create (Index, Show) : /events, /events/3
- POST Create : /events
- PUT Update : /events/3
- DELETE Destroy : /events/3
- Easy to Modularize Output Formats / Views:
HTML, XML, JSON, RSS Representations:

```
def index
  @blog_entries = BlogEntry.find(:all, :order => 'created_at DESC', :limit => ENTRIES_LIMIT)

  respond_to do |format|
    format.html
    format.xml { render :xml => @blog_entries.to_xml }
  end
end
```

Testing

```
class AccountsControllerTest < Test::Unit::TestCase
  fixtures :users, :blogs

  def test_index
    get :index
    assert_response :success
    assert_template "index"
  end

  def test_invalid_login
    post :login, :user_login => "bob", :user_password => "wrong"

    assert_session_has_no :user_id
    assert_template_has "login"
  end

  def test_login_logoff
    post :login, :user_login => "bob", :user_password => "test"
    assert_session_has :user_id

    get :logout
    assert_session_has_no :user_id
  end
end
```

- A comprehensive testing framework: Test::Unit
- Unit Tests (Models)
- Functional Tests (Controllers)
- Integration Tests (Whole Application)

An Alternative to Test::Unit :: RSpec

```
describe Account, " when first created" do
  before do
    @account = Account.new
  end

  it "should have a balance of $0" do
    @account.balance.should eql(Money.new(0, :dollars))
  end

  after do
    @account = nil
  end
end
```

- Define how your application should “behave”
- Very Elegant API
- Demonstrates the Highly-Dynamic Nature of Ruby

Best Practice :: Subversion

- Standard Source Code Management tool in Software Engineering
- File repository with added dimension of time
- Change merging for multiple developers
- Full history with comments and ability to revert - Never loose data again

Best Practice :: Capistrano

- Rails-Standard Deployment Tool
- Checks out code from latest Subversion revision
- Maintains multiple “releases” on server, making it easy to go roll back to previous releases
- Works well with multiple deployment environments and multiple application/database servers
- Deploy code, perform database migrations, and restart server all with one command on your local machine:
\$ cap production deploy

Sites Using Rails

37signals

Project Collaboration Utopia

Join over 500,000 people like you who've discovered Basecamp - the smarter, easier, more elegant way to get your internal and client projects done

"It's so simple you can't do anything wrong. Addictively easy to use."

-Robert D Hof, BusinessWeek Silicon Valley Bureau Chief ([more buzz...](#))

Take a tour or Sign up for a free Basecamp account

Sign-up just takes a minute. No contracts or sign-up fees. Cancel at any time. If you have an account, [log in](#).

What is Basecamp?

Basecamp is a unique project collaboration tool. Projects don't fail from a lack of charts, graphs, or reports, they fail from a lack of communication and collaboration. Basecamp makes it simple to communicate and collaborate on projects.

Simple, safe, and hassle-free

Basecamp is elegant, dead simple, and web-based (and it [even looks great on paper](#)). You don't need to download, install, or configure anything (no IT staff required). All you need is a web browser and an internet connection. And don't worry, [your data is safe](#) with us.

Sites Using Rails

 **Backpack™** [Overview](#) | [Examples](#) | [Manifesto](#) | [Weblog](#) | [Forum](#) | [Shuffle](#) | [Signup Free](#)

Collect, organize, and get things done

Keep your to-dos, notes, ideas, and your calendar together online with Backpack

"A cool organizational tool. How very cool." -David Pogue, **The New York Times**
"Best of the Web 2005 award" -**BusinessWeek Magazine**
"Tremendous" -PC World, 2006 review

Take a tour or Sign up for a free Backpack account

Join 200,000 people and businesses who've already discovered Backpack. If you have an account, [log in](#).

MAKE TO-DO LISTS

- Book flight to San Diego
- Book hotel room and B&B
- Call babysitter to finalize
[Add Item](#) | [Reorder](#)
- Get travelers checks
- Set up sales meeting
- Pick up dry cleaning

SHARE PHOTOS



KEEP YOUR CALENDAR ONLINE

Wed	Thur	Fri	Sat
Today 26	27	28	29
Sales trip (Seattle)			
	+ Game at Oz Park		
* Haircut	2	3	4
Vacation (San Diego)			

What can I use Backpack for? Any examples I can see?

Backpack's simple to-do lists, notes, and reminders help you stay organized. Check out the [example library](#) for inspiration or [take a tour](#).

[West coast sales trip](#) [Wedding planner](#) [Candidates for the Vice President of Marketing position](#)

Videos & tutorials

Backpack reviewed by
Sarah on *Attack of the*
Geeks

 **Selected by 299k+ sites**

Sites Using Rails

twitter

Username Log In Remember me [Forgot?](#)

What are your friends doing?



Twitter asks,
"What are you doing?"



Friends answer with
short messages.



Updates are sent
everywhere—instantly!

Recent updates

 **aubiematt** Blinded by the light! I need sunglasses for my office. At least I'm getting tan! [less than 5 seconds ago](#) from txt

 **iPunkForos** KAKA DE MURCIELAGO en el Psychomeeting!!!! <http://tinyurl.com/2cgpqw> [less than 5 seconds ago](#) from web

 **djstarr** Contemplating laser eye surgery after staring at this computer monitor for nine hours with contacts. [less than 5 seconds ago](#) from [twitterrific](#)

 **breanne** Cant get blood from a turnip [less than 5 seconds ago](#) from txt

 **?** [less than 5 seconds ago](#) from [Twitter for iPhone](#)

Create Your Account

Join!

Already using Twitter via SMS or IM? [Click here.](#)

Twitter is Flexible

Stay connected with friends in a variety of ways.

- Mobile Texts
- Instant Messages
- Desktop Apps
- Web Timeline

You decide when and how you get updates—even set quiet times.

What is Twitter?

"Twitter is on its way to becoming the next killer app."

TIME Magazine

Find People You Know

Find folks!

Sites Using Rails

Home | Zeitgeist | Log In | Search | GO

43 Things

What do you want to do with your life?

I want to do this

645,743 people in 9,686 cities are doing 713,436 things including...

start a band fight zombies meet new people see U2 in concert cook more go to London be unique learn french  tron774 wants to stop throwing clothes on the floor read A Clockwork Orange Visit Thailand have perfect teeth Lose 10 pounds in 10 days go to Hollywood loved, learn to sing Love without fear Type 100 words per minute party more direct a feature film  pepper wants to be more organized Stop being afraid of death learn to ride a horse be a Jeopardy contestant Have a koi pond in my backyard, get a free playstation portable  klboyd75 wants to excercise regularly Run be a photographer travel around the world have more time Retire before I'm 55 play The Sims Meet Bruce Springsteen Get A Life See a shooting star carry my camera with me, everywhere Get more sleep be an artist Learn ninjutsu completely free Visit New Orleans travel the world, discover new landscapes and meet people  Meredith wants to Memorize Scripture watch the world cup live Go to Yosemite become a rockstar Stop being depressed Learn British Sign Language be teh 1337 live forever stop whining feel butterflies in my stomach  Volatile Verena wants to commit acts of anonymous kindness learn to play the viola have more self control Get The Sims 2 University increase my height Improve my self-esteem

Discover what's important, make it happen, share your progress. Find your 43 things. [Learn more...](#)

Top Cities

- New York City 2045 people
- Seattle 1890 people
- London 1687 people
- Chicago 1283 people
- Los Angeles 1137 people
- San Francisco 1105 people
- Toronto 1056 people
- Austin 798 people
- Boston 777 people
- Atlanta 765 people
- Portland 738 people
- San Diego 717 people
- Vancouver 717 people
- Houston 680 people
- California 678 people

→ [See more](#)

Today's Tags

- travel 6351
- fun 6268
- life 6083
- health 4858
- love 4548
- success 4130
- TOE 4248
- TOP100 4028
- III 3083
- END 2509
- TOP100 2321
- good 2000

Sites Using Rails

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Charlotte	Indianapolis	Miami	Phoenix	Seattle
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Some data provided by [Amacai](#) and [Axiom](#).

Does Rails Scale? Real Rails Application

The screenshot shows a web-based application interface for managing rare newspapers. At the top, there's a header with the text "TIMOTHY HUGHES" and "RARE & EARLY NEWSPAPERS". Below the header is a navigation menu with links for Main, Customers, Orders, Items, eBay, Reporting, Settings, and Logout Ben Hughes. The main content area has tabs for All, Web, Inventory, Volumes, Abstract, Catalogs, Titles, CIL, Messages, and Images. Under the Web tab, there's a section titled "Recently-Added Web Items" with a table. The table has columns for ID and Description. It lists two items: one from June 24, 1773, and another from June 21, 1773.

ID	Description
541626	THE MASSACHUSETTS GAZETTER & THE BOSTON WEEKLY NEWS-LETTER, June 24, 1773 All of the ftpg. & some of pg. 2 are concerning the infamous letters of Thomas Hutchinson and Andrew Oliver. As a bit of ...
541625	THE BOSTON EVENING-POST, June 21, 1773

The screenshot shows the public website for Timothy Hughes Rare & Early Newspapers. The header features a logo of a man in historical clothing and the text "TIMOTHY HUGHES RARE & EARLY NEWSPAPERS". On the right side of the header is a sidebar with links for Customer Login, View Cart (0), and Make a Payment. Below the header is a navigation menu with links for Home, Birthday & Gift Issues, Catalog, eBay, Storage & Display, Latest Supplement, and Recent Additions. A search bar is labeled "Search Our Inventory:" with a placeholder "Please enter a date (m/d/yyyy), keyword, or phrase:" and buttons for "Search" and "Advanced Search". To the right of the search bar is a "Welcome to History's Newsstand..." section with text about collecting rare newspapers. Below these sections are "Featured Categories:" with links to "The 1600's & 1700's", "The Wild West", "The Revolutionary War", and "Triumphs & Tragedies". A "Browse by Era:" dropdown menu is also visible.

- Summer Project:
Rarenewspapers.com
Business Application & Website
- Customer, Order, Inventory Management & More
- 23,000 lines of code
- 71 Models, 53 Controllers
- Extensive Business Logic
- Tightly Integrated with eBay XML API
- Rails Does Scale

Any Questions?

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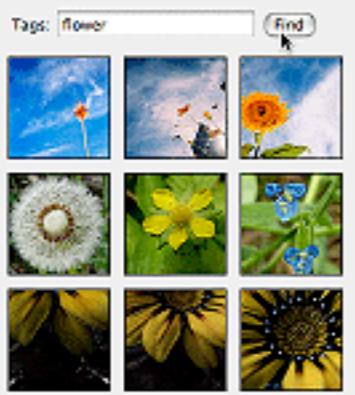


Web development that doesn't hurt

Ruby on Rails™ is an open-source web framework that's optimized for programmer happiness and sustainable productivity. It lets you write beautiful code by favoring convention over configuration.

[Rails 2.0.2: Some new defaults and a few fixes](#), [Rails 2.0: It's done!](#), [Rails 1.2.6: Maintenance](#)

Get Excited



Tags: flower Find

Flower thumbnails include: sunflower, dandelion, yellow flower, blue flower, and various close-ups.

[Screencasts & presentations](#)

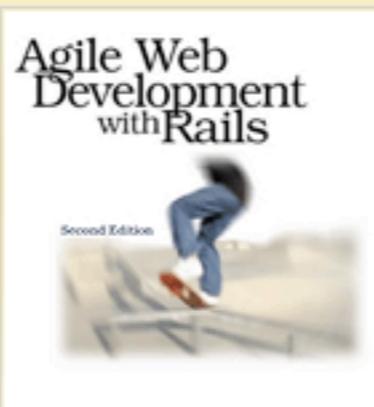
Get Started



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2.0

Released December 17, 2007

Get Better



Agile Web Development with Rails
Second Edition

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Get Involved



IRC
Mailing lists
Bug tracker
Wiki

[Join the community](#)

“Rails is the most well thought-out web development framework I've ever used. And that's in a decade of doing web applications for a living. I've built my own frameworks, helped develop the Servlet API, and have created more than a few web servers from scratch. Nobody has done it like this before.”

-James Duncan Davidson, Creator of Tomcat and Ant