Rails 4 Quickly

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About the Author

Bala Paranj has a Master's degree in Electrical Engineering from The Wichita State University. He has over 15 years of experience in the software industry. He was a Java developer before he found Ruby in May 2006. He has also developed iPhone and iPad apps.

His academic background includes mathematics and electronics. Some of his clients include telecommunication, banks, financial and electronic design automation companies. He consults through his company Zepho, Inc. for clients within USA. He loves to learn and teach technical topics. He has spoken at Silicon Valley Ruby Meetup, San Francisco Ruby Meetup and Silicon Valley Code Camp. You can reach him at bala.paranj@zepho.com with any feedback.

About Reader

This book assumes that you have already installed Ruby 2.0, Rails 4 and your favorite IDE. The reader must already have a basic understanding of Ruby language. This is a short book. The objective is to bring you up to speed in Rails 4 quickly. Hence the title Rails 4 Quickly. This book is written for beginners who want to learn the fundamentals. It will give you a solid foundation for you to build upon.

The book's main focus is on Rails. You will not find any discussion of Cucumber, Git, Heroku, RSpec, FactoryGirl or any other irrelevant topics. It provides a practical and hands-on approach to learning Rails. You learn by doing so you will benefit the most by following the instructions as you read each chapter.

How to Read this Book

This step-by-step tutorial was written as a hands-on guide to Rails. You must read and follow the instructions to work through the application we will be developing. It is written to be read sequentially. Learning by doing is the best way to understand something new. So, make an attempt to do the exercises. This will make your brain more receptive to absorbing the concepts.

Software Versions Used

Ruby Gems : 2.1.5 Ruby : 2.0 Rails : 4.0

Source Code

Source code is available from bitbucket Git repo : https://bitbucket.org/bparanj/rails-4-blog

Acknowlegments

This book is the result of teaching Rails tutorials at the Silicon Valley Ruby meetup. The members of Silicon Valley Ruby meetup provided me early feedback on every chapter. This book is also an experiment in applying 'Lean Startup' principles to self publishing. The advice that was very powerful to me was 'Do not develop a product in a vacuum.'

I owe debts to the creator of Ruby, Matz for creating such a beautiful language; as well as the Ruby community for creating useful frameworks and gems to make a developer's life easy. I hope this book makes your learning process a little easier.

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A. Self Learning

1. Running the Server

Objective

- To run your rails application on your machine.

Steps

Step 1

Check the versions of installed ruby, rails and ruby gems by running the following commands in the terminal:

```
$ ruby -v
  ruby 2.0.0p247 (2013-06-27 revision 41674) [x86_64-darwin12.5.0]

 $ rails -v
   Rails 4.0.0

$ gem env
  RUBYGEMS VERSION: 2.1.5
```

Step 2

Change directory to where you want to work on new projects.

```
$ cd projects
```

Step 3

Create a new Rails project called blog by running the following command.

```
$ rails new blog
```

Step 4

Open a terminal and change directory to the blog project.

```
$ cd blog
```

Step 5

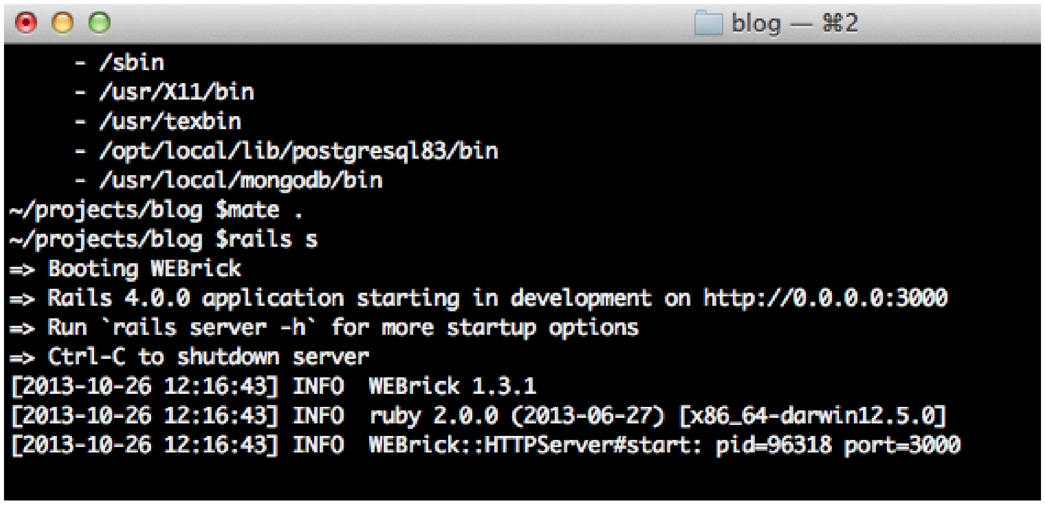
Open the blog project in your favorite IDE. For textmate :

```
$ mate .
```

Step 6

Run the rails server:

```
$ rails s
```

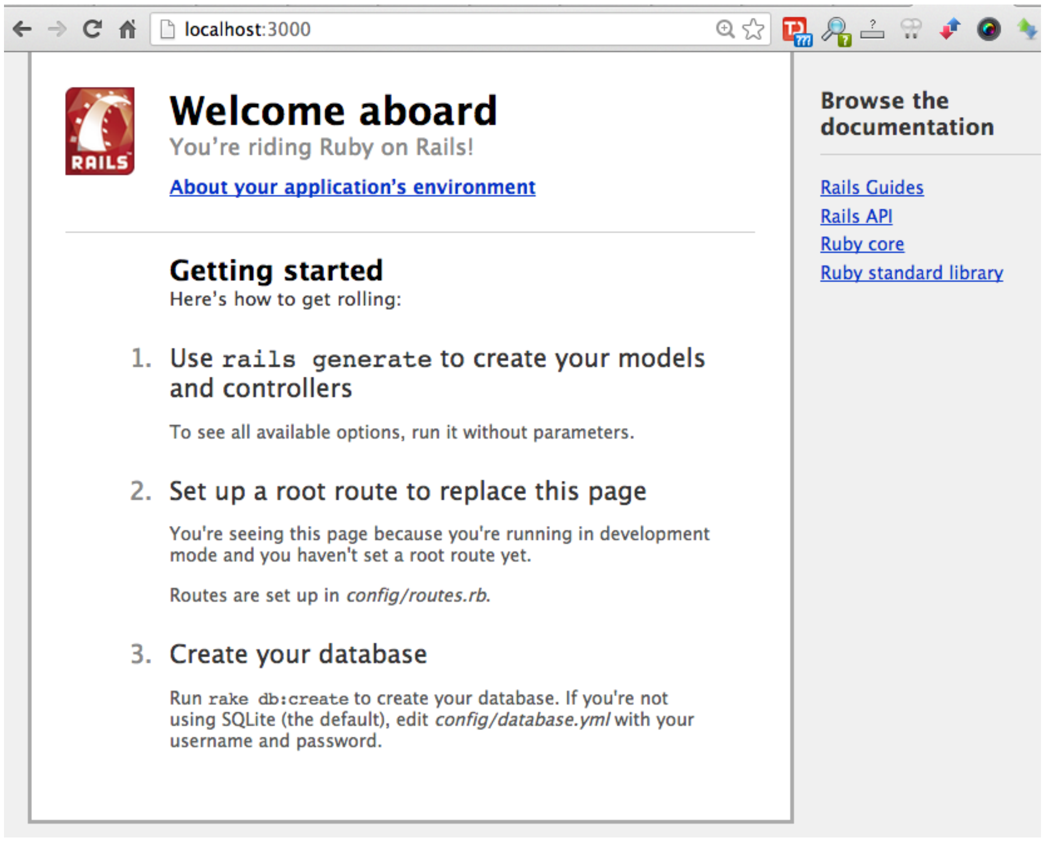


```
     - /sbin
     - /usr/X11/bin
     - /usr/texbin
     - /opt/local/lib/postgresql83/bin
     - /usr/local/mongodb/bin
~/projects/blog $mate .
~/projects/blog $rails s
=> Booting WEBrick
=> Rails 4.0.0 application starting in development on http://0.0.0.0:3000
=> Run `rails server -h` for more startup options
=> Ctrl-C to shutdown server
[2013-10-26 12:16:43] INFO  WEBrick 1.3.1
[2013-10-26 12:16:43] INFO  ruby 2.0.0 (2013-06-27) [x86_64-darwin12.5.0]
[2013-10-26 12:16:43] INFO  WEBrick::HTTPServer#start: pid=96318 port=3000
```

Figure 1: Rails Server

Step 7

Open a browser window and enter http://localhost:3000



localhost:3000

Welcome aboard

You're riding Ruby on Rails!

About your application's environment

Getting started

Here's how to get rolling:

1. Use `rails generate` to create your models and controllers

   To see all available options, run it without parameters.

2. Set up a root route to replace this page

   You're seeing this page because you're running in development mode and you haven't set a root route yet.

   Routes are set up in *config/routes.rb*.

3. Create your database

   Run `rake db:create` to create your database. If you're not using SQLite (the default), edit *config/database.yml* with your username and password.

Browse the documentation

Rails Guides

Rails API

Ruby core

Ruby standard library

Figure 2: Welcome Aboard

Step 8

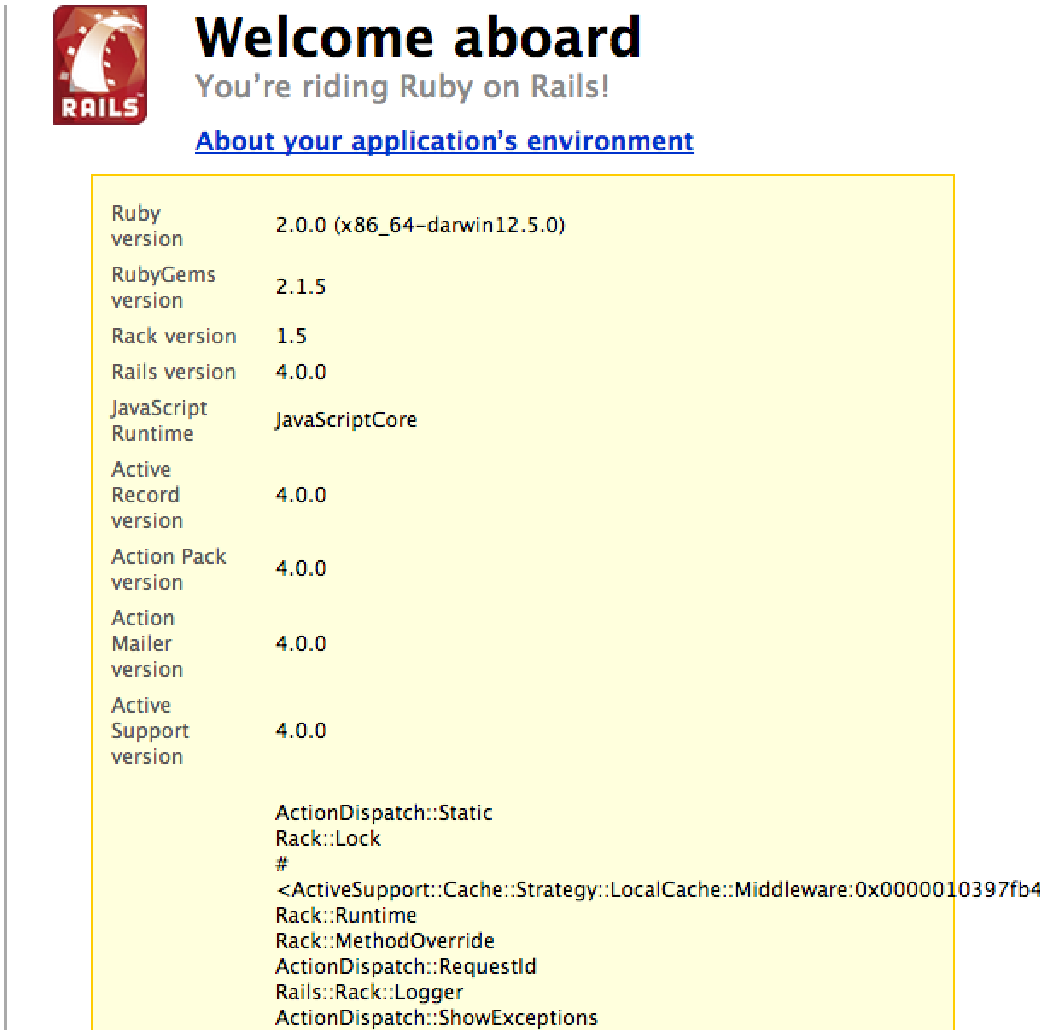
You can shutdown your server by pressing Control+C. If you use Control+Z, you will send the process to the background which means it will still be running but the terminal will be available for you to enter other commands. If you want to see the server running to see the log messages you can do :

```
$ fg
```

which will bring the background process to the foreground.

Step 9

Click on the 'About' link and check the versions of software installed. If the background of the about section is yellow, installation is fine. If it is red then something is wrong with the installation.


RAILS
Welcome aboard
You're riding Ruby on Rails!
About your application's environment

Ruby version	2.0.0 (x86_64-darwin12.5.0)
RubyGems version	2.1.5
Rack version	1.5
Rails version	4.0.0
JavaScript Runtime	JavaScriptCore
Active Record version	4.0.0
Action Pack version	4.0.0
Action Mailer version	4.0.0
Active Support version	4.0.0

```
ActionDispatch::Static
Rack::Lock
#
<ActiveSupport::Cache::Strategy::LocalCache::Middleware:0x0000010397fb4
Rack::Runtime
Rack::MethodOverride
ActionDispatch::RequestId
Rails::Rack::Logger
ActionDispatch::ShowExceptions
```

Figure 3: About Environment

Explanation

The rails generator automatically runs the Bundler command bundle to install your application dependencies by reading the Gemfile. The Gemfile contains all the gems that your application needs. rails s (s is a short-cut for server) runs your server on your machine on port 3000.

Summary

In this lesson you learned how to run the server locally. We also saw how to check if everything is installed properly on our machine. In the next lesson you will learn how to create a home page for your web appliction.

2. Hello Rails

Objective

- To create a home page for your web application.

Steps

Step 1

Open the config/routes.rb file in your IDE, routes.rb defines the routes that is installed on your web application. Rails will recognize the routes you define in this configuration file.

Step 2

Look for the line :

```
# root 'welcome#index'
```

Step 3

Uncomment that line by removing #.

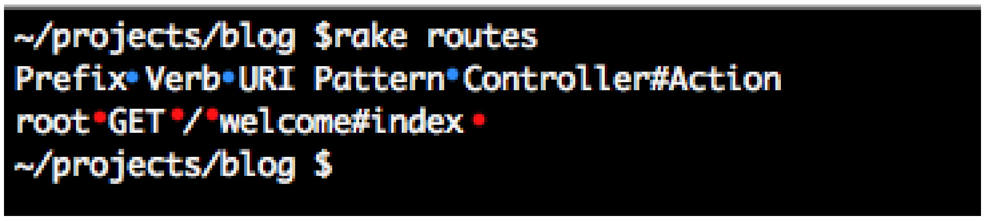
```
root 'welcome#index'
```

The method root() takes a string parameter. In this case it maps the home page of your site to welcome controller (class), index action (method).

Step 4

Go to the terminal and change directory to the blog project and run:

```
rake routes
```



```
~/projects/blog $rake routes
Prefix Verb URI Pattern Controller#Action
root GET / welcome#index
~/projects/blog $
```

Figure 4: Rake Output

The output of this command shows you the installed routes. Rails will be able to recognize the GET request for welcome page.

The output has four columns, namely Prefix, Verb, URI Pattern and Controller#Action.

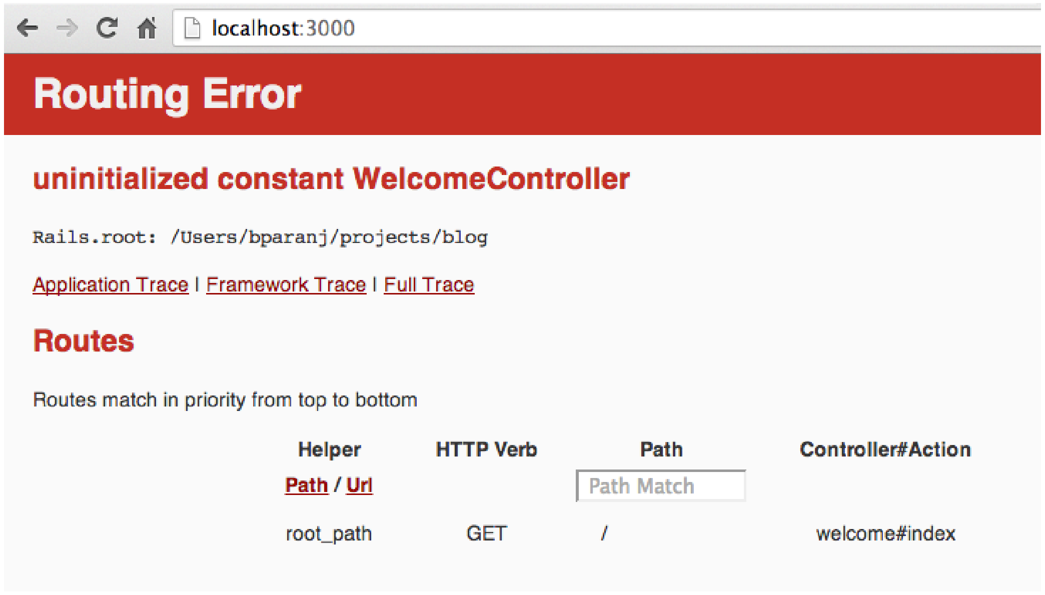
Prefix is the name of the helper that you can use in your view and controller to take the user to a given view or controller. In this case it is root_path or root_url that is mapped to your home page.

Verb is the Http Verb such as GET, POST, PUT, DELETE etc.

URI Pattern is what you see in the browser URL. In this case, it is www.example.com

Step 5

Go to the browser and reload the page : http://localhost:3000



```
Routing Error

uninitialized constant WelcomeController

Rails.root: /Users/bparanj/projects/blog

Application Trace | Framework Trace | Full Trace

Routes

Routes match in priority from top to bottom
```

Helper Path / Url	HTTP Verb	Path	Controller#Action
root_path	GET	/	welcome#index

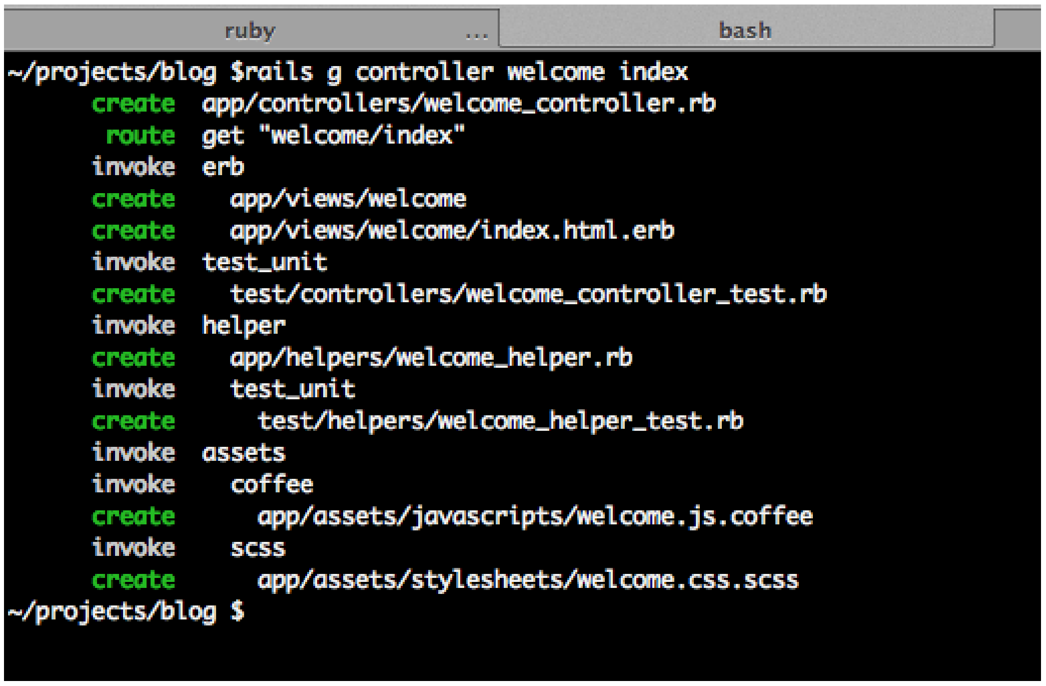
Figure 5: Create Controller

We see the uninitialized constant WelcomeController error. This happens because we don't have a welcome controller.

Step 6

Go the root of the project and type:

```
$ rails g controller welcome index
```



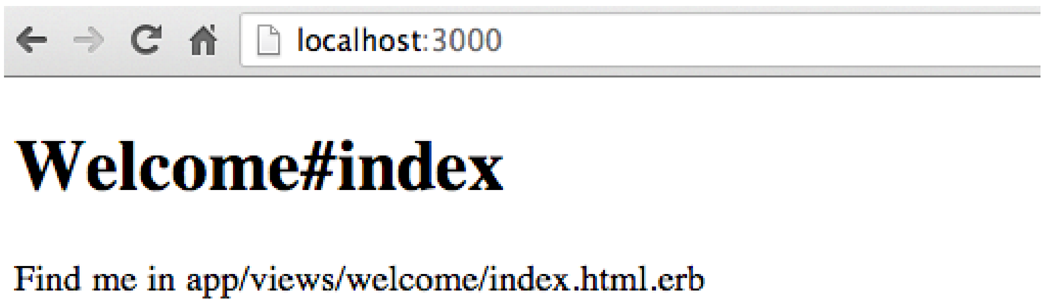
```
ruby                                      bash
~/projects/blog $rails g controller welcome index
      create  app/controllers/welcome_controller.rb
       route  get "welcome/index"
      invoke  erb
      create    app/views/welcome
      create    app/views/welcome/index.html.erb
      invoke  test_unit
      create    test/controllers/welcome_controller_test.rb
      invoke  helper
      create    app/helpers/welcome_helper.rb
      invoke    test_unit
      create      test/helpers/welcome_helper_test.rb
      invoke  assets
      invoke    coffee
      create      app/assets/javascripts/welcome.js.coffee
      invoke    scss
      create      app/assets/stylesheets/welcome.css.scss
~/projects/blog $
```

Figure 6: Create Controller

rails command takes the arguments g for generate, then the controller name and the action.

Step 7

Reload the web browser again.



Welcome#index

Find me in app/views/welcome/index.html.erb

Figure 7: Welcome Page

You will now see the above page.

Step 8

Go to app/views/index.html.erb and change it to 'Hello Rails' like this:

```
<h1>Hello Rails</h1>
```

Save the file.

You can embed ruby in .html.erb files. In this case we have html only. We will see how to embed ruby in views in the next lesson.

Step 9

Reload the browser.

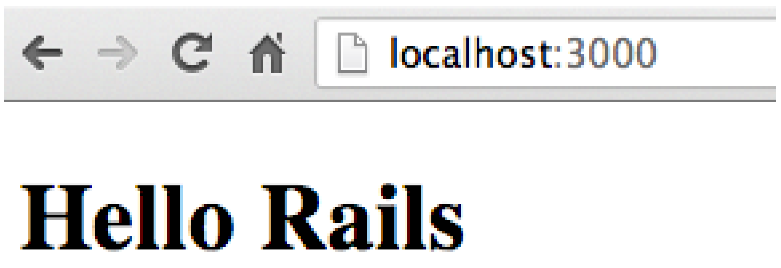


Figure 8: Hello Rails

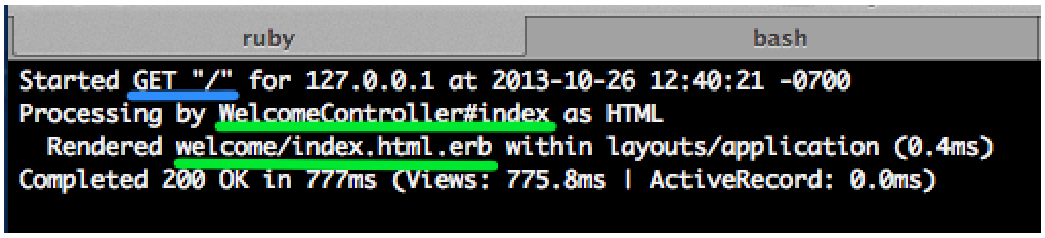
Now you will see 'Hello Rails'.

Step 10

Open the welcome_controller.rb in app/controllers directory and look at the index action.

Step 11

Look at the terminal where you have the rails server running, you will see the request shown in the following image:



```
Started GET "/" for 127.0.0.1 at 2013-10-26 12:40:21 -0700
Processing by WelcomeController#index as HTML
  Rendered welcome/index.html.erb within layouts/application (0.4ms)
Completed 200 OK in 777ms (Views: 775.8ms | ActiveRecord: 0.0ms)
```

Figure 9: Server Output

You can see that the browser made a GET request for the resource '/' which is the home page of your site. The request was processed by the server where Rails recognized the request and it routed the request to the welcome controller index action. Since we did not do anything in the index action, Rails looks for the view that has the same name as the action and renders that view. In this case, it is app/views/welcome/index.html.erb.

Step 12

Go to Rails console by running:

```
$ rails c
```

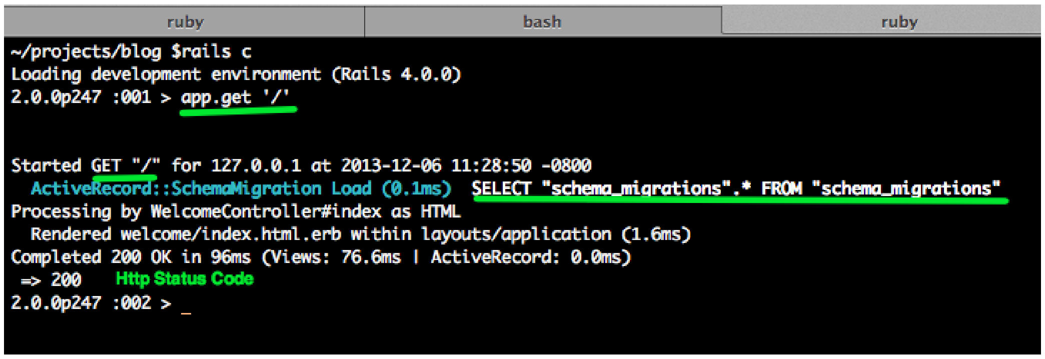
from the blog project directory.

Step 13

In Rails console run:

```
app.get '/'
```

Here we are simulating the browser GET request for the resource '/', which is your home page.



```
~/projects/blog $rails c
Loading development environment (Rails 4.0.0)
2.0.0p247 :001 > app.get '/'


Started GET "/" for 127.0.0.1 at 2013-12-06 11:28:50 -0800
  ActiveRecord::SchemaMigration Load (0.1ms)  SELECT "schema_migrations".* FROM "schema_migrations"
Processing by WelcomeController#index as HTML
  Rendered welcome/index.html.erb within layouts/application (1.6ms)
Completed 200 OK in 96ms (Views: 76.6ms | ActiveRecord: 0.0ms)
 => 200
2.0.0p247 :002 > _
```

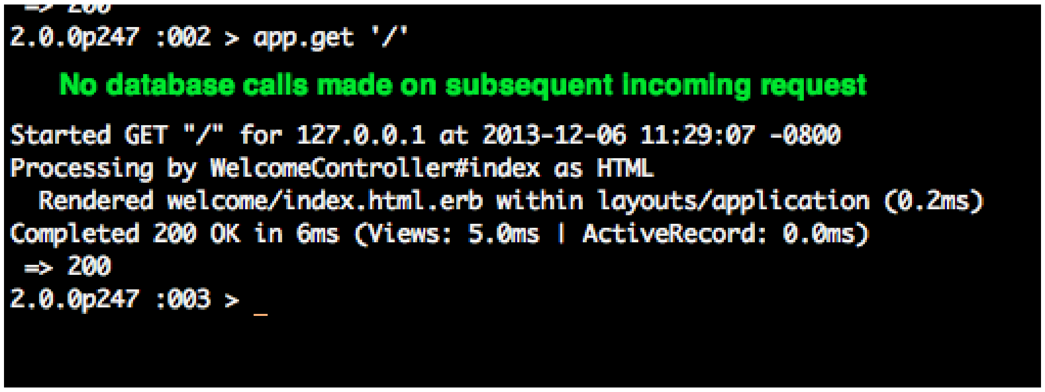
Figure 10: Simulating Browser GET Request

The first request makes database calls and processes the incoming request. You can see the http status code is 200. You can also see which view was rendered for this request.

Step 14

In Rails console run the same command again:

```
app.get '/'
```



```
2.0.0p247 :002 > app.get '/'
    No database calls made on subsequent incoming request
Started GET "/" for 127.0.0.1 at 2013-12-06 11:29:07 -0800
Processing by WelcomeController#index as HTML
  Rendered welcome/index.html.erb within layouts/application (0.2ms)
Completed 200 OK in 6ms (Views: 5.0ms | ActiveRecord: 0.0ms)
 => 200
2.0.0p247 :003 > _
```

Figure 11: Subsequent GET Request Cached Database Calls

Exercise

Can you go to http://localhost:3000/welcome/index and explain why you see the contents shown in the page?

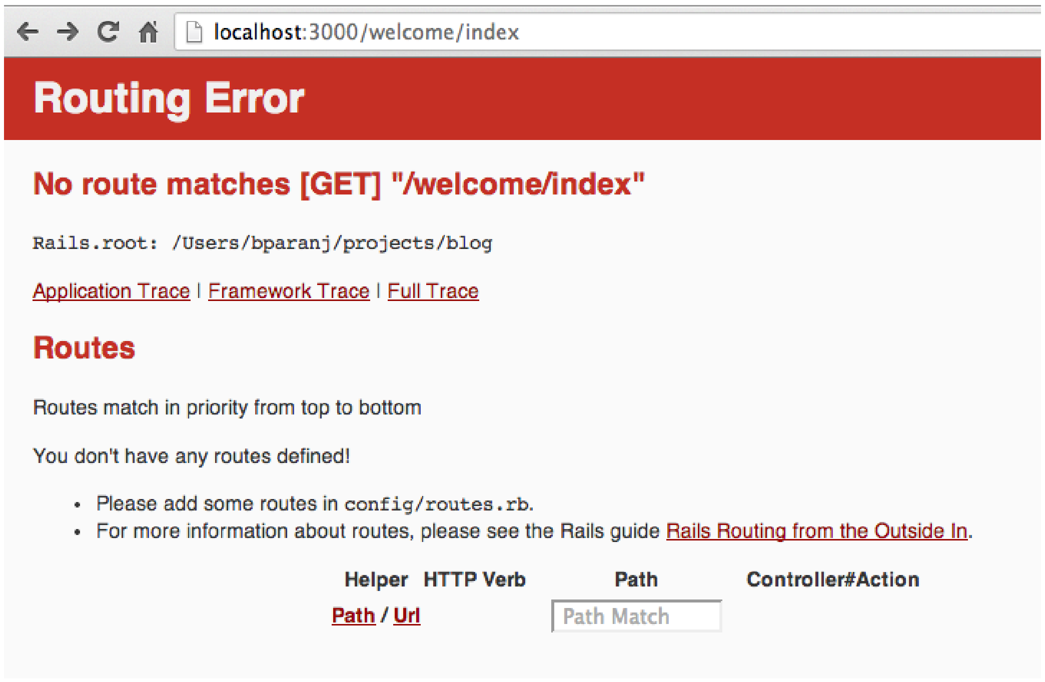
Before you go to the next page and read the answer, make an attempt to answer this question.

Answer : You will see the same 'Hello Rails' page. Because if you check the rails server log you can see it made a request : GET '/welcome/index' and if you look at the routes.rb file, you see :

```
get "welcome/index"
```

This definition is used by the Rails router to handle this request. It knows the URI pattern of the format 'welcome/index' with http verb GET must be handled by the welcome controller index action.

Delete the get "welcome/index" line in the routes.rb file. Reload the page : http://localhost:3000/welcome/index.


localhost:3000/welcome/index

Routing Error

No route matches [GET] "/welcome/index"

Rails.root: /Users/bparanj/projects/blog

Application Trace | Framework Trace | Full Trace

Routes

Routes match in priority from top to bottom

You don't have any routes defined!

- Please add some routes in config/routes.rb.
- For more information about routes, please see the Rails guide Rails Routing from the Outside In.

Helper	HTTP Verb	Path	Controller#Action
Path / Url		Path Match	

Figure 12: Welcome Index

You will now see the error page.

Summary

In this lesson we wrote a simple Hello Rails program. We saw how the view and controller work in Rails to handle browser requests. We have seen just the VC part of MVC framework. We will see how the model fits in the MVC framework in the next lesson.

3. Model

Objective

- To learn the model part M of the MVC framework

Steps

Step 1

In Rails, model is a persistent object that can also contain business logic. Model is the Object Relational Mapping (ORM) layer that uses ActiveRecord design pattern. Open config/routes.rb file and add :

```
resources :articles
```

Save the file. Your file should like this :

```
Blog::Application.routes.draw do
  root 'welcome#index'

  resources :articles
end
```

What is a resource? Resource can represent any concept. For instance if you read the documenation for Twitter API, you will see that Timeline is a resource. It is defined in the documenation as collections of Tweets, ordered with the most recent first.

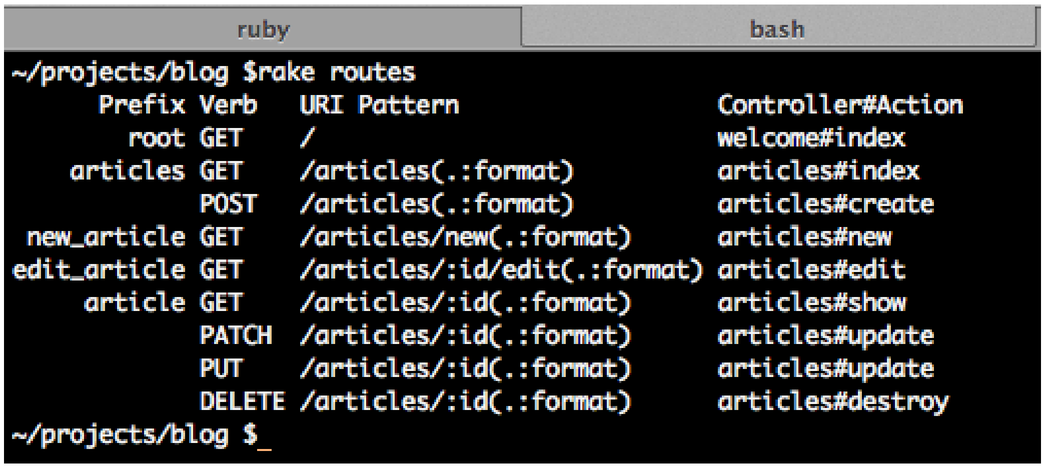
There may not be a one-to-one correspondence between a resource and database table. In our case we have one-to-one correspondence between the database table articles and the article resource.

We have a plural resource so we will have index page that displays a list of all the articles in our case. Singular resource can be used when you don't need index action, for instance if a customer has a billing profile then from the perspective of a customer you can use a singular resource for billing_profile. From an admin perspective you could have a plural resource to manage billing profiles of customers (most likely using admin namespace in the routes).

Step 2

Go to the blog directory in the terminal and run:

```
$ rake routes
```



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                      Controller#Action
        root GET    /                                welcome#index
    articles GET    /articles(.:format)              articles#index
             POST   /articles(.:format)              articles#create
 new_article GET    /articles/new(.:format)          articles#new
edit_article GET    /articles/:id/edit(.:format)     articles#edit
     article GET    /articles/:id(.:format)          articles#show
             PATCH  /articles/:id(.:format)          articles#update
             PUT    /articles/:id(.:format)          articles#update
             DELETE /articles/:id(.:format)          articles#destroy
~/projects/blog $_
```

Figure 13: Installed Routes

The output shows that defining the articles resource in the routes.rb gives us routing for :

Action	Purpose
create	creating a new article
update	updating a given article
delete	deleting a given article
show	displaying a given article
index	displaying a list of articles

Since we have plural resources in the routes.rb, we get the index action. If you had used a singular resource :

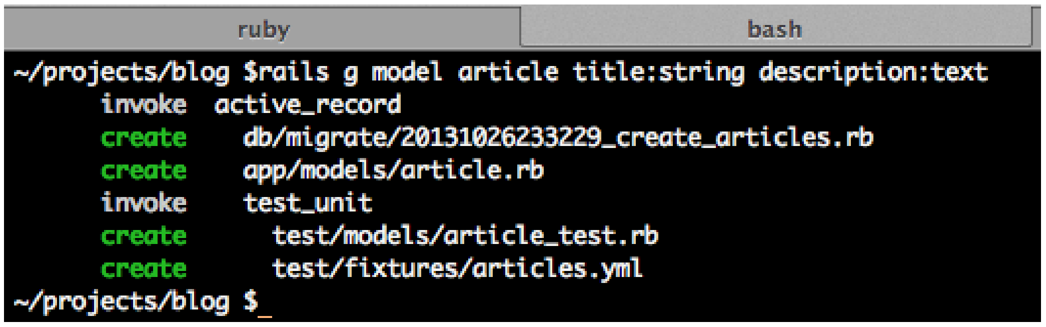
```
resource :article
```

then you will not have a routing for index action. Based on the requirements you will choose a singular or plural resources for your application.

Step 3

In the previous lesson we saw how the controller and view work together. Now let's look at the model. Create an active_record object by running the following command:

```
$ rails g model article title:string description:text
```



```
~/projects/blog $rails g model article title:string description:text
      invoke  active_record
      create    db/migrate/20131026233229_create_articles.rb
      create    app/models/article.rb
      invoke    test_unit
      create      test/models/article_test.rb
      create      test/fixtures/articles.yml
~/projects/blog $_
```

Figure 14: Article Model

In this command the rails generator generates a model by the name of article. The active_record is the singular form, the database will be plural form called as articles. The articles table will have a title column of type string and description column of type text.

Step 4

Open the file db/migrate/xyz_create_articles.rb file. The xyz will be a timestamp and it will differ based on when you ran the command.

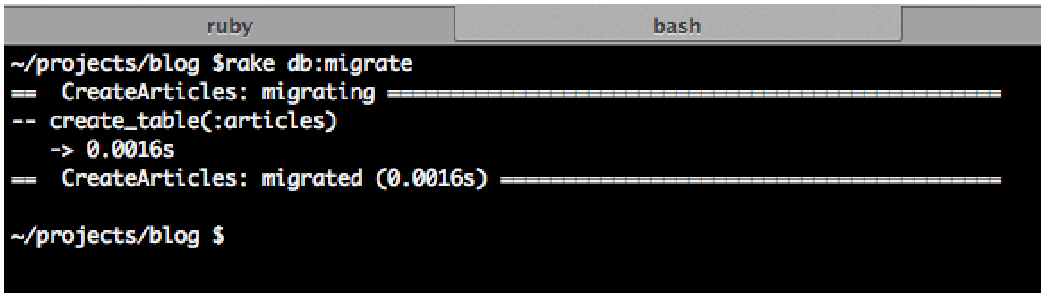
There is a change() method in the migration file. Inside the change() method there is create_table() method that takes the name of the table to create and also the columns and it's data type.

In our case we are creating the articles table. Timestamps gives created_at and updated_at timestamps that tracks when a given record was created and updated respectively. By convention the primary key of the table is id. So you don't see it explictly in the migration file.

Step 5

Go to the blog directory in the terminal and run :

```
$ rake db:migrate
```



```
~/projects/blog $rake db:migrate
==  CreateArticles: migrating ==================================================
-- create_table(:articles)
   -> 0.0016s
==  CreateArticles: migrated (0.0016s) =========================================

~/projects/blog $
```

Figure 15: Create Table

This will create the articles table.

Step 6

In the blog directory run:

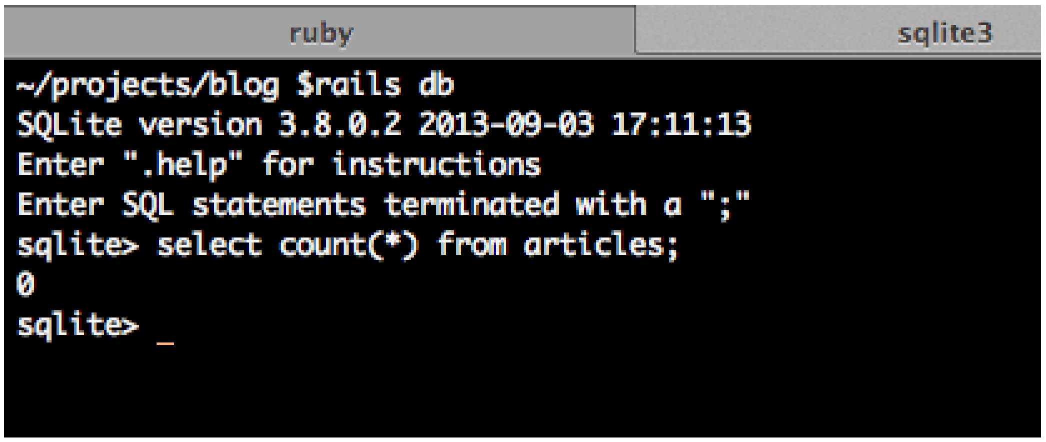
```
$ rails db
```

This will drop you into the database console. You can run SQL commands to query the development database.

Step 7

In the database console run:

```
select * from articles;
```



```
~/projects/blog $rails db
SQLite version 3.8.0.2 2013-09-03 17:11:13
Enter ".help" for instructions
Enter SQL statements terminated with a ";"
sqlite> select count(*) from articles;
0
sqlite> _
```

Figure 16: Rails Db Console

You can see from the output there are no records in the database.

Step 8

Open another tab in the terminal and go to the blog directory. Run the following command:

```
$ rails c
```

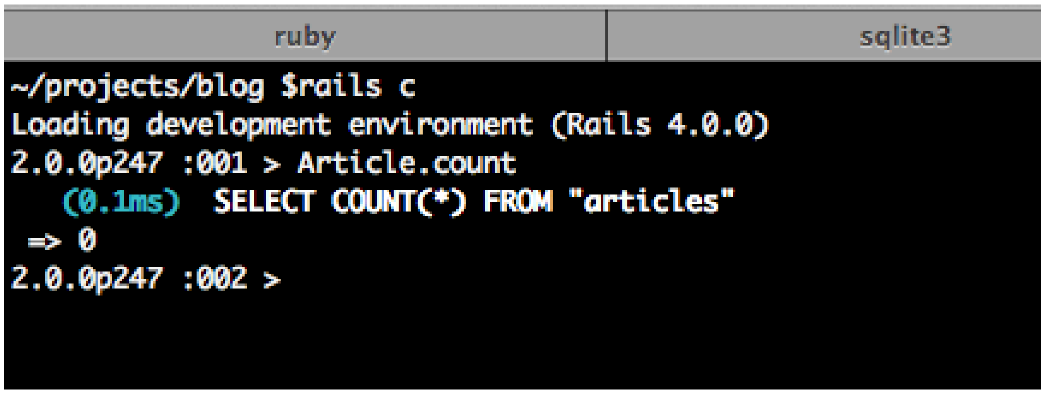
c is the alias for console. This will take you to rails console where you can execute Ruby code and experiment to learn Rails.

Step 9

Type :

```
Article.count
```

in the rails console.



```
~/projects/blog $rails c
Loading development environment (Rails 4.0.0)
2.0.0p247 :001 > Article.count
   (0.1ms)  SELECT COUNT(*) FROM "articles"
 => 0
2.0.0p247 :002 >
```

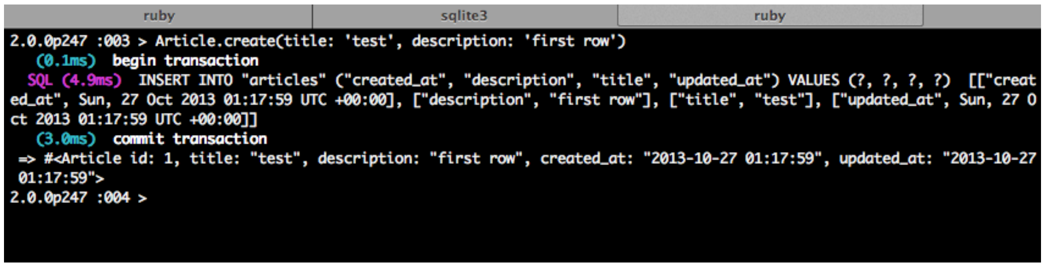
Figure 17: Rails Console

You will see the count is 0. Let's create a row in the articles table.

Step 10

Type :

```
Article.create(title: 'test', description: 'first row')
```



```
2.0.0p247 :003 > Article.create(title: 'test', description: 'first row')
   (0.1ms)  begin transaction
  SQL (4.9ms)  INSERT INTO "articles" ("created_at", "description", "title", "updated_at") VALUES (?, ?, ?, ?)  [["creat
ed_at", Sun, 27 Oct 2013 01:17:59 UTC +00:00], ["description", "first row"], ["title", "test"], ["updated_at", Sun, 27 O
ct 2013 01:17:59 UTC +00:00]]
   (3.0ms)  commit transaction
 => #<Article id: 1, title: "test", description: "first row", created_at: "2013-10-27 01:17:59", updated_at: "2013-10-27
 01:17:59">
2.0.0p247 :004 >
```

Figure 18: Create a Record

The Article class method create creates a row in the database. You can see the ActiveRecord generated SQL query in the output.

Exercise 1

Check the number of articles count by using the database console or the rails console.

Step 11

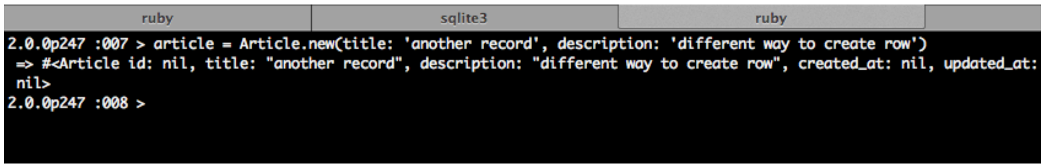
Let's create another record by running the following command in the rails console:

```
$ article = Article.new(title: 'record two', description: 'second row')
```

Now it's time for the second exercise.

Exercise 2

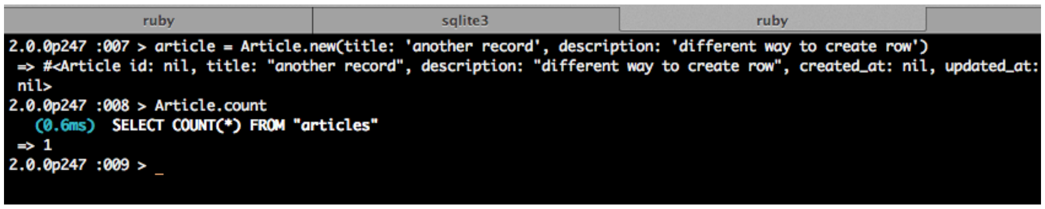
Check the number of articles count by using the database console or the rails console. How many rows do you see in the articles table? Why?



```
2.0.0p247 :007 > article = Article.new(title: 'another record', description: 'different way to create row')
 => #<Article id: nil, title: "another record", description: "different way to create row", created_at: nil, updated_at:
 nil>
2.0.0p247 :008 >
```

Figure 19: Article Instance

The reason you see only one record in the database is that creating an instance of Article does not create a record in the database. The article instance in this case is still in memory.

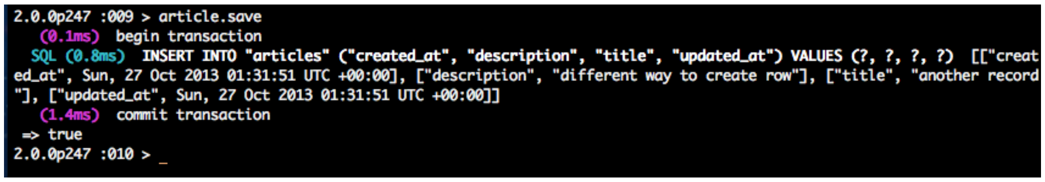


```
2.0.0p247 :007 > article = Article.new(title: 'another record', description: 'different way to create row')
 => #<Article id: nil, title: "another record", description: "different way to create row", created_at: nil, updated_at:
 nil>
2.0.0p247 :008 > Article.count
   (0.6ms)  SELECT COUNT(*) FROM "articles"
 => 1
2.0.0p247 :009 > _
```

Figure 20: Article Count

In order to save this instance to the articles table, you need to call the save method like this:

```
$ article.save
```



```
2.0.0p247 :009 > article.save
   (0.1ms)  begin transaction
  SQL (0.8ms)  INSERT INTO "articles" ("created_at", "description", "title", "updated_at") VALUES (?, ?, ?, ?)  [["creat
ed_at", Sun, 27 Oct 2013 01:31:51 UTC +00:00], ["description", "different way to create row"], ["title", "another record
"], ["updated_at", Sun, 27 Oct 2013 01:31:51 UTC +00:00]]
   (1.4ms)  commit transaction
 => true
2.0.0p247 :010 > _
```

Figure 21: Saving a Record

Now query the articles table to get the number of records. We now have some records in the database. In the next chapter we will display all the records in articles table on the browser.

Summary

In this chapter we focused on learning the model part M of the MVC framework. We experimented in the rails console and database console to create records in the database. In the next lesson we will see how the different parts of the MVC interact to create database driven dynamic web application.

4. Model View Controller

Objectives

- Learn how the View communicates with Controller
- Learn how Controller interacts with the Model and how Controller picks the next View to show to the user.

Context

Router knows which controller can handle the incoming request. Controller is like a traffic cop who controls the flow of traffic on busy streets. Controller has the knowledge of which model can get the job done, so it delegates the work to the appropriate model object. Controller also knows which view to display to the user after the incoming request has been processed.

Views can be in any format such as XML, CSV, Html, JSON etc. Html is displayed on the browser, JSON and other formats can be consumed by any client such as mobile devices, WebService client etc.

Why MVC architecture? The advantage of MVC is the clean separation of View from the Model and Controller. It allows you to allocate work to teams according to their strengths. The View layer can be developed in parallel by the front-end developers without waiting for the Model and Controller parts to be completed by the back-end developers.

If we agree on the contract between the front-end and back-end by defining the data representation exchanged between the client and server then we can develop in parallel.

Steps

Step 1

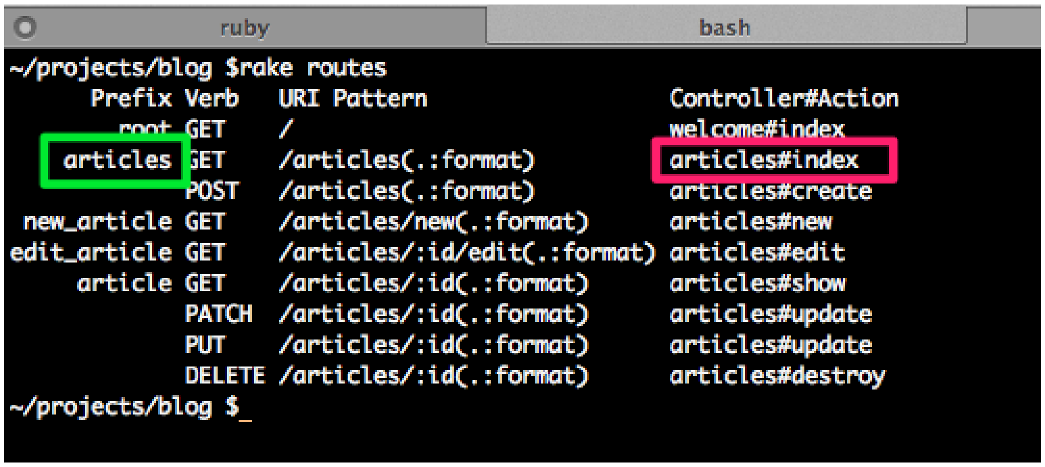
Let's modify the existing static page in welcome/index.html.erb to use a view helper for hyperlink:

```
<%= link_to 'My Blog', ? %>
```

The tag <%= should be used whenever you want the generated output to be shown in the browser. If it not to be shown to the browser and it is only for dynamic embedding of Ruby code then you should use <% %> tags.

The link_to(text, url) method is a view helper that will generate an html hyperlink that users can click to navigate to a web page. In this case we want the user to go to articles controller index page. Because we want to get all the articles from the database and display them in the app/views/articles/index.html.erb page.

So the question is what should replace the ? in the second parameter to the link_to view helper? Since we know we need to go to articles controller index action, let use the output of rake routes to find the name of the view_helper we can use.



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 22: Rake Routes

As you can see from the output, for articles#index the Prefix value is articles. So we can use either articles_path (relative url) or articles_url (absolute url).

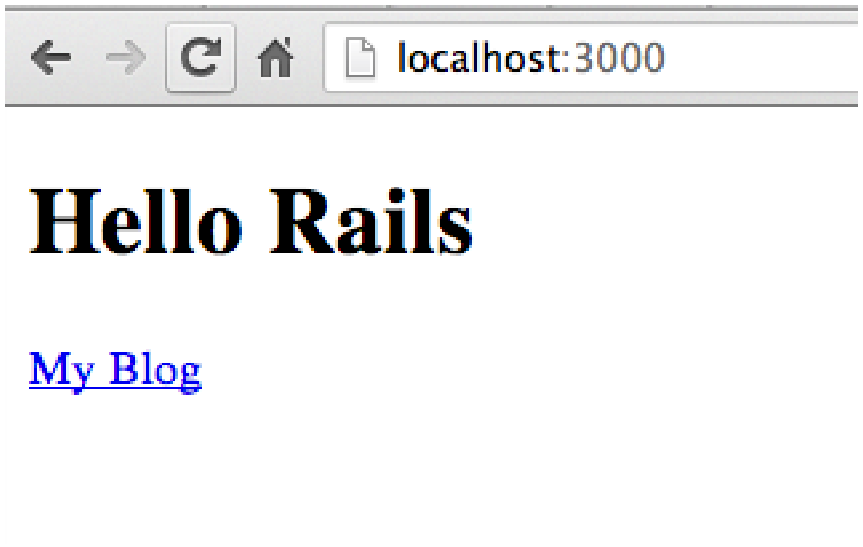
Step 2

Change the link as follows :

```
<%= link_to 'My Blog', articles_path %>
```

Step 3

Go to the home page by going to the http://localhost:3000 in the browser.



Hello Rails

My Blog

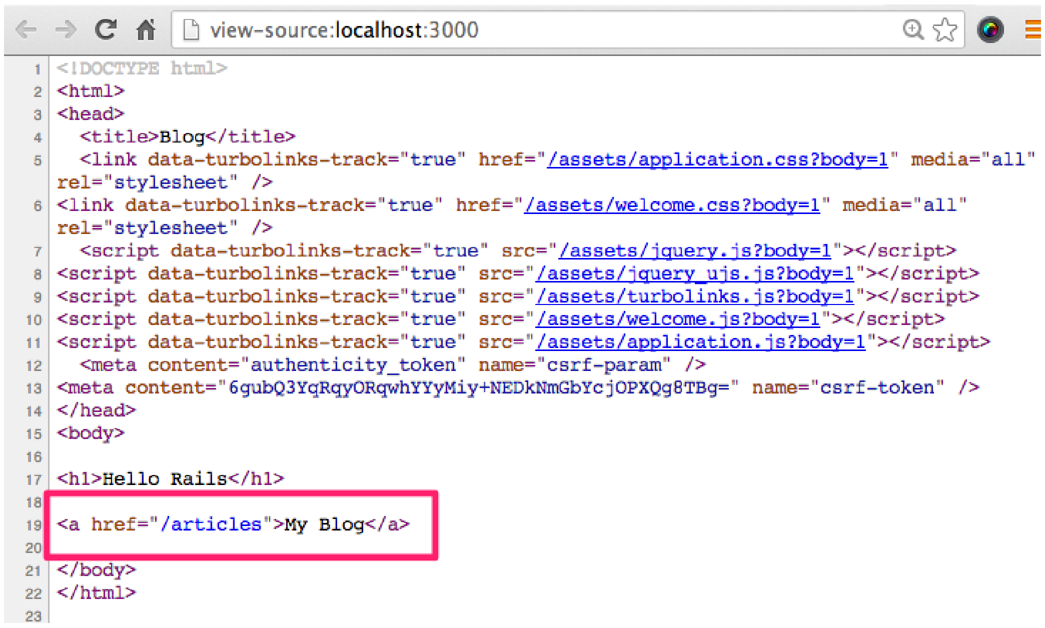
Figure 23: My Blog

What do you see in the home page?

You will see the hyper link in the home page.

Step 4

Right click and do ‘View Page Source’.



view-source:localhost:3000

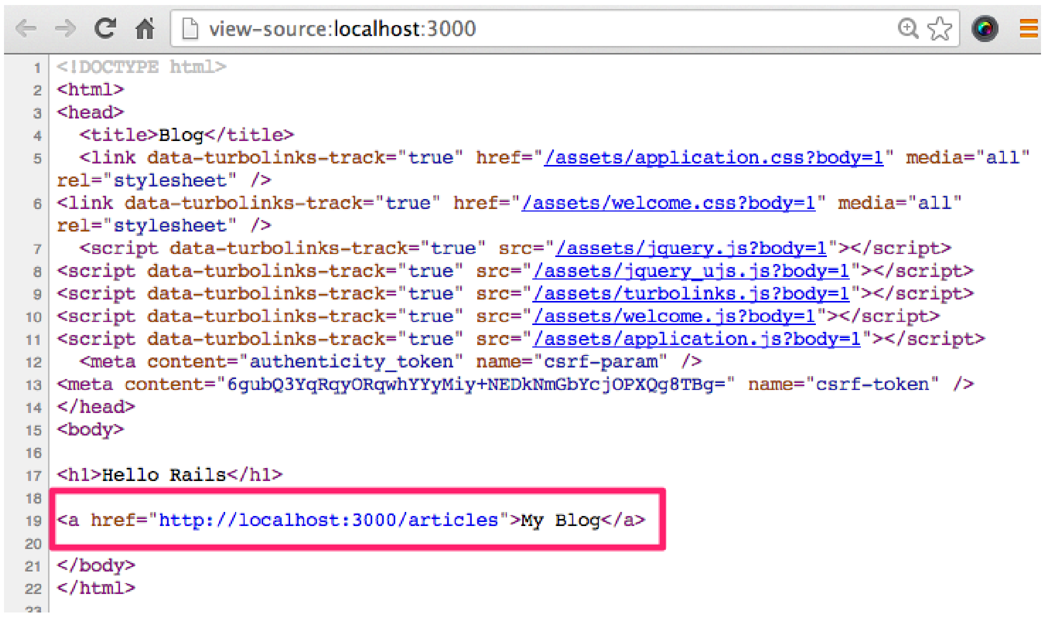
```
<!DOCTYPE html>
<html>
<head>
  <title>Blog</title>
  <link data-turbolinks-track="true" href="/assets/application.css?body=1" media="all"
rel="stylesheet" />
<link data-turbolinks-track="true" href="/assets/welcome.css?body=1" media="all"
rel="stylesheet" />
  <script data-turbolinks-track="true" src="/assets/jquery.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/jquery_ujs.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/turbolinks.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/welcome.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/application.js?body=1"></script>
  <meta content="authenticity_token" name="csrf-param" />
<meta content="6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=" name="csrf-token" />
</head>
<body>

<h1>Hello Rails</h1>

<a href="/articles">My Blog</a>

</body>
</html>
```

Figure 24: Relative URL

You will see the hyperlink which is a relative url.

Step 5

Change the articles_path to articles_url in the welcome/index.html.erb.



view-source:localhost:3000

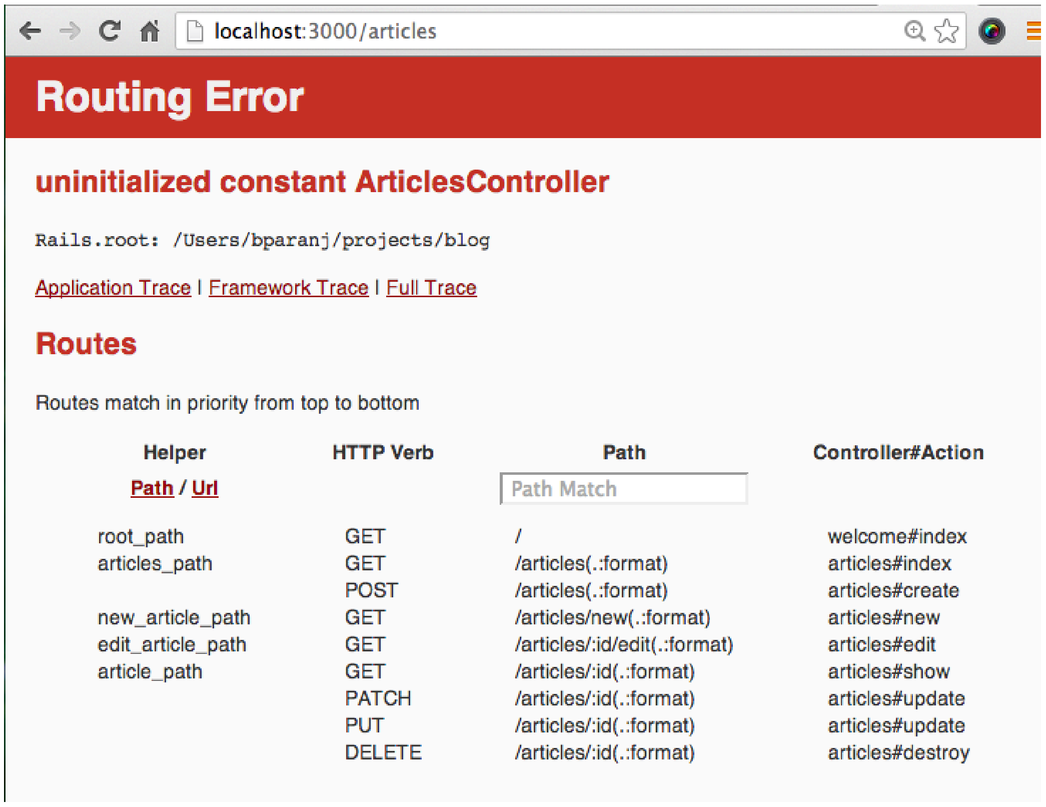
```
<!DOCTYPE html>
<html>
<head>
  <title>Blog</title>
  <link data-turbolinks-track="true" href="/assets/application.css?body=1" media="all"
rel="stylesheet" />
<link data-turbolinks-track="true" href="/assets/welcome.css?body=1" media="all"
rel="stylesheet" />
  <script data-turbolinks-track="true" src="/assets/jquery.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/jquery_ujs.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/turbolinks.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/welcome.js?body=1"></script>
<script data-turbolinks-track="true" src="/assets/application.js?body=1"></script>
  <meta content="authenticity_token" name="csrf-param" />
<meta content="6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=" name="csrf-token" />
</head>
<body>

<h1>Hello Rails</h1>

<a href="http://localhost:3000/articles">My Blog</a>

</body>
</html>
```

Figure 25: Absolute URL

View page source to see the absolute URL.

Step 6

Click on the 'My Blog' link.



localhost:3000/articles

Routing Error

uninitialized constant ArticlesController

`Rails.root: /Users/bparanj/projects/blog`

Application Trace | Framework Trace | Full Trace

Routes

Routes match in priority from top to bottom

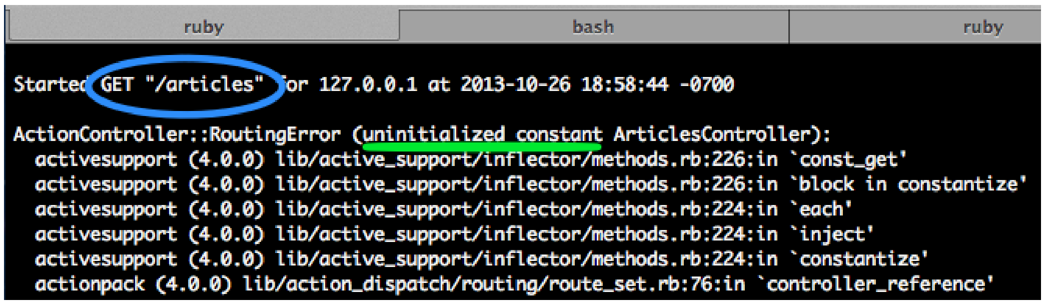
Helper	HTTP Verb	Path	Controller#Action
Path / Url		Path Match	
root_path	GET	/	welcome#index
articles_path	GET	/articles(.:format)	articles#index
	POST	/articles(.:format)	articles#create
new_article_path	GET	/articles/new(.:format)	articles#new
edit_article_path	GET	/articles/:id/edit(.:format)	articles#edit
article_path	GET	/articles/:id(.:format)	articles#show
	PATCH	/articles/:id(.:format)	articles#update
	PUT	/articles/:id(.:format)	articles#update
	DELETE	/articles/:id(.:format)	articles#destroy

Figure 26: Missing Articles Controller

You will see the above error page.

Step 7

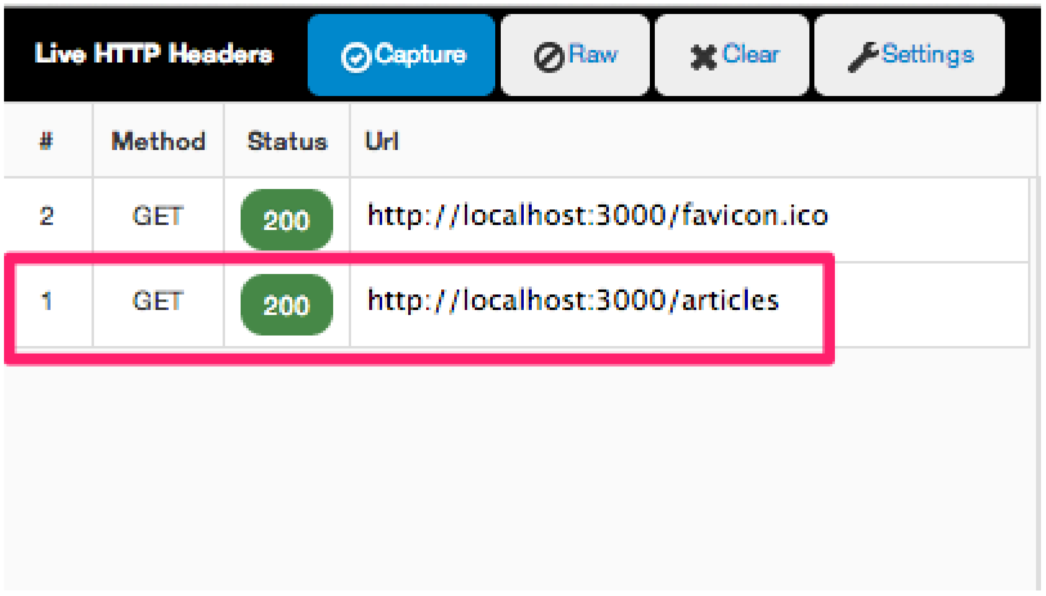
When you click on that link, you can see from rails server log that the client made a request:



```
Started GET "/articles" for 127.0.0.1 at 2013-10-26 18:58:44 -0700

ActionController::RoutingError (uninitialized constant ArticlesController):
  activesupport (4.0.0) lib/active_support/inflector/methods.rb:226:in `const_get'
  activesupport (4.0.0) lib/active_support/inflector/methods.rb:226:in `block in constantize'
  activesupport (4.0.0) lib/active_support/inflector/methods.rb:224:in `each'
  activesupport (4.0.0) lib/active_support/inflector/methods.rb:224:in `inject'
  activesupport (4.0.0) lib/active_support/inflector/methods.rb:224:in `constantize'
  actionpack (4.0.0) lib/action_dispatch/routing/route_set.rb:76:in `controller_reference'
```

Figure 27: Articles Http Request

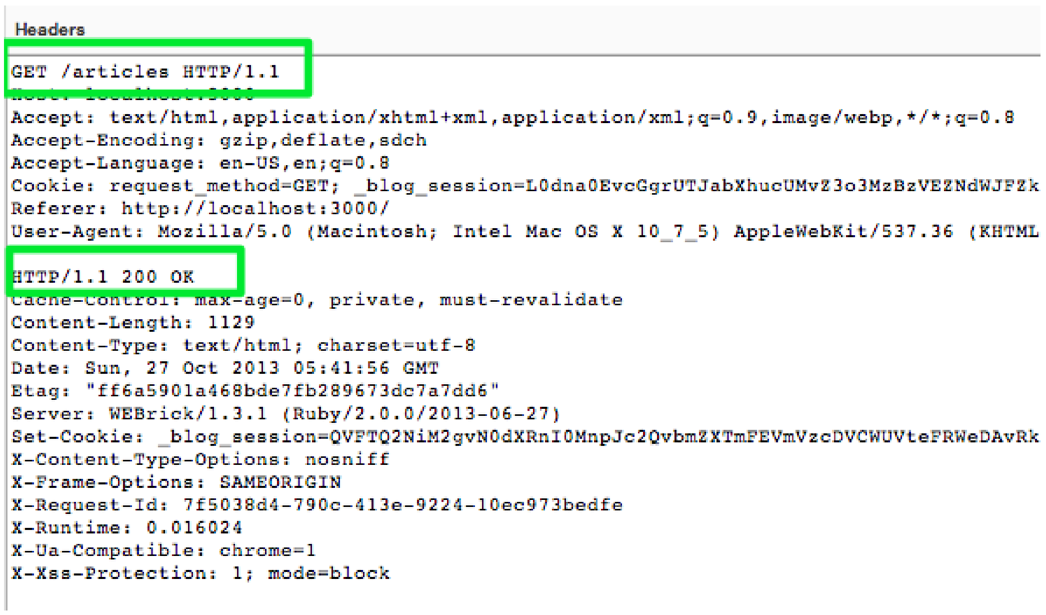
GET '/articles' that was recognized by the Rails router and it looked for articles controller. Since we don't have the articles controller, we get the error message for the uninitialized constant. In Ruby, class names are constant.



#	Method	Status	Url
2	GET	200	http://localhost:3000/favicon.ico
1	GET	200	http://localhost:3000/articles

Figure 28: Live HTTP Headers Client Server Interaction

You can also use HTTP Live Headers Chrome plugin to see the client and server interactions.



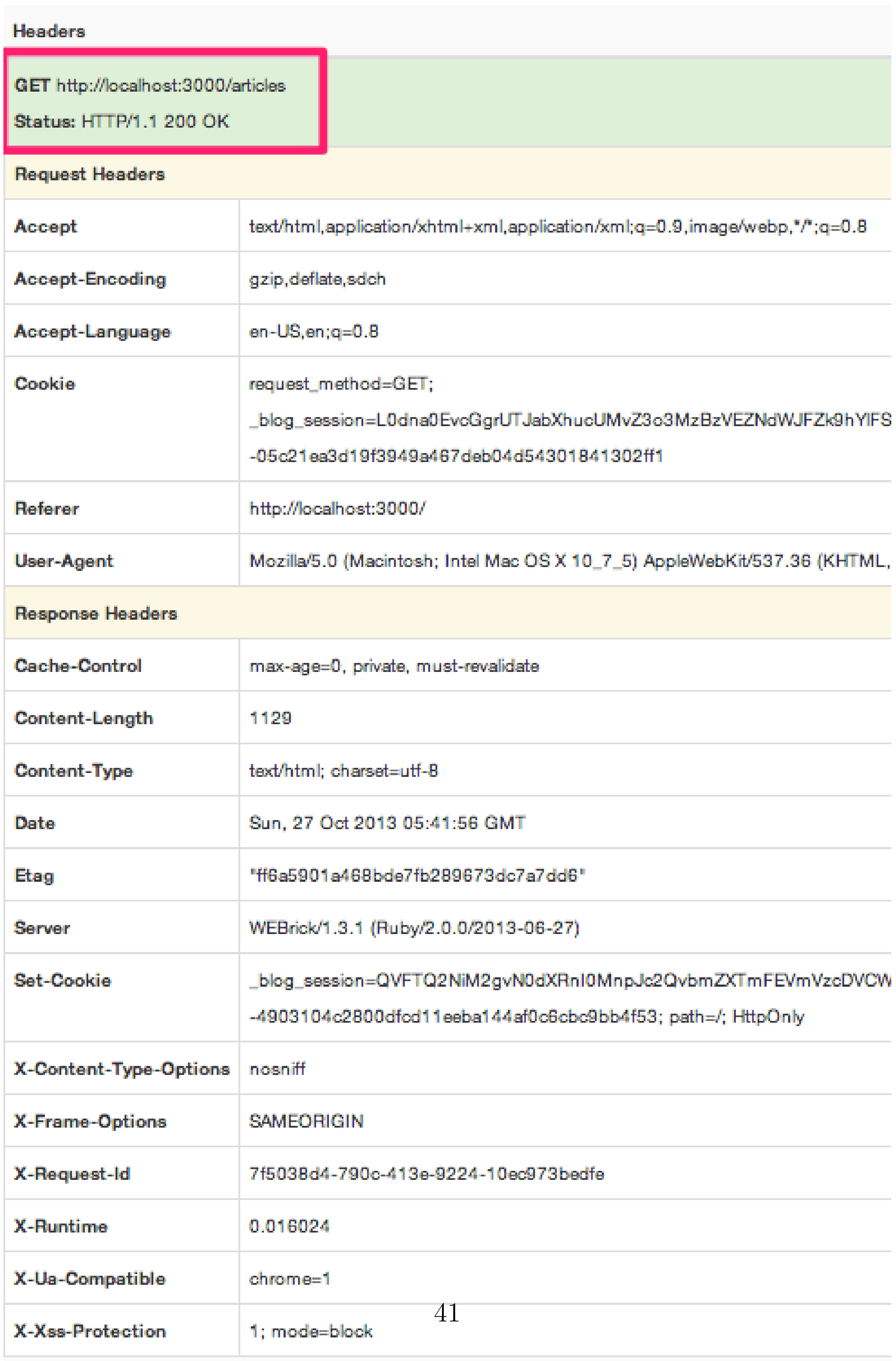
Headers

```
GET /articles HTTP/1.1
Host: localhost:3000
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Encoding: gzip,deflate,sdch
Accept-Language: en-US,en;q=0.8
Cookie: request_method=GET; _blog_session=L0dna0EvcGgrUTJabXhucUMvZ3o3MzBzVEZNdWJFZk
Referer: http://localhost:3000/
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_7_5) AppleWebKit/537.36 (KHTML

HTTP/1.1 200 OK
Cache-Control: max-age=0, private, must-revalidate
Content-Length: 1129
Content-Type: text/html; charset=utf-8
Date: Sun, 27 Oct 2013 05:41:56 GMT
Etag: "ff6a5901a468bde7fb289673dc7a7dd6"
Server: WEBrick/1.3.1 (Ruby/2.0.0/2013-06-27)
Set-Cookie: _blog_session=QVFTQ2NiM2gvN0dXRnI0MnpJc2QvbmZXTmFEVmVzcDVCWUVteFRWeDAvRk
X-Content-Type-Options: nosniff
X-Frame-Options: SAMEORIGIN
X-Request-Id: 7f5038d4-790c-413e-9224-10ec973bedfe
X-Runtime: 0.016024
X-Ua-Compatible: chrome=1
X-Xss-Protection: 1; mode=block
```

Figure 29: Live HTTP Headers Showing Client Server Interaction

Here you see the client-server interaction details.

You can learn a lot by looking at the Live HTTP Header details such as Etag which is used for caching by Rails.



Headers

GET http://localhost:3000/articles

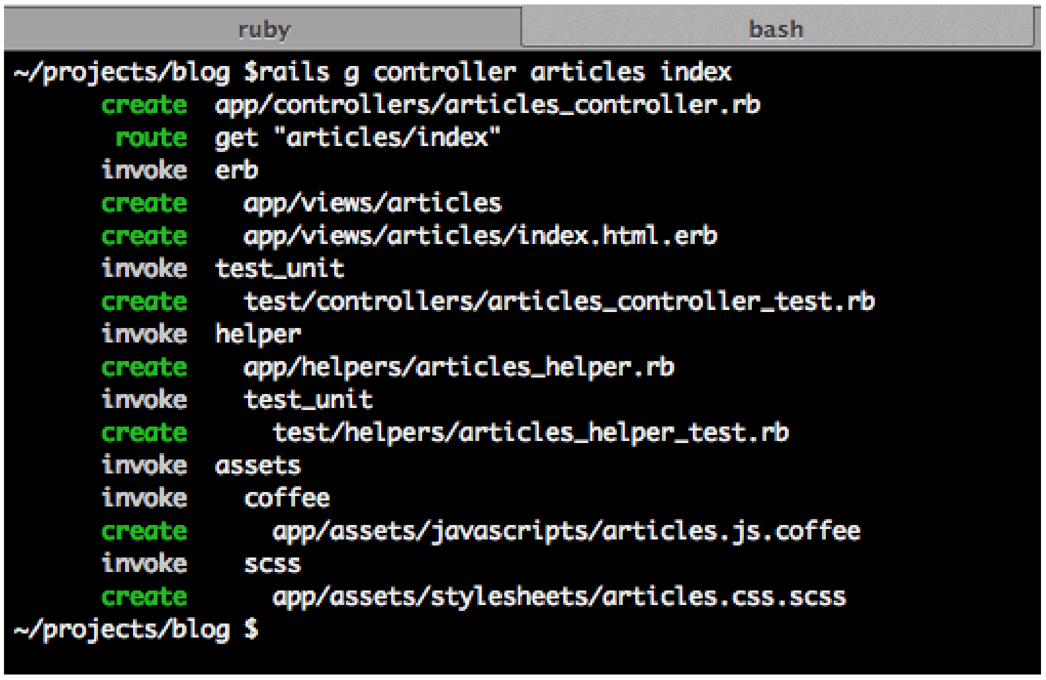
Status: HTTP/1.1 200 OK

Request Headers	
Accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Encoding	gzip,deflate,sdch
Accept-Language	en-US,en;q=0.8
Cookie	request_method=GET; _blog_session=L0dna0EvcGgrUTJabXhucUMvZ3o3MzBzVEZNdWJFZk9hYlFS -05c21ea3d19f3949a467deb04d54301841302ff1
Referer	http://localhost:3000/
User-Agent	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_7_5) AppleWebKit/537.36 (KHTML,
Response Headers	
Cache-Control	max-age=0, private, must-revalidate
Content-Length	1129
Content-Type	text/html; charset=utf-8
Date	Sun, 27 Oct 2013 05:41:56 GMT
Etag	"ff6a5901a468bde7fb289673dc7a7dd6"
Server	WEBrick/1.3.1 (Ruby/2.0.0/2013-06-27)
Set-Cookie	_blog_session=QVFTQ2NiM2gvN0dXRnI0MnpJc2QvbmZXTmFEVmVzcDVCW -4903104c2800dfcd11eeba144af0c6cbc9bb4f53; path=/; HttpOnly
X-Content-Type-Options	nosniff
X-Frame-Options	SAMEORIGIN
X-Request-Id	7f5038d4-790c-413e-9224-10ec973bedfe
X-Runtime	0.016024
X-Ua-Compatible	chrome=1
X-Xss-Protection	1; mode=block

Figure 30: Live HTTP Headers Gives Ton of Information

Step 8

Create the articles controller by running the following command in the blog directory:



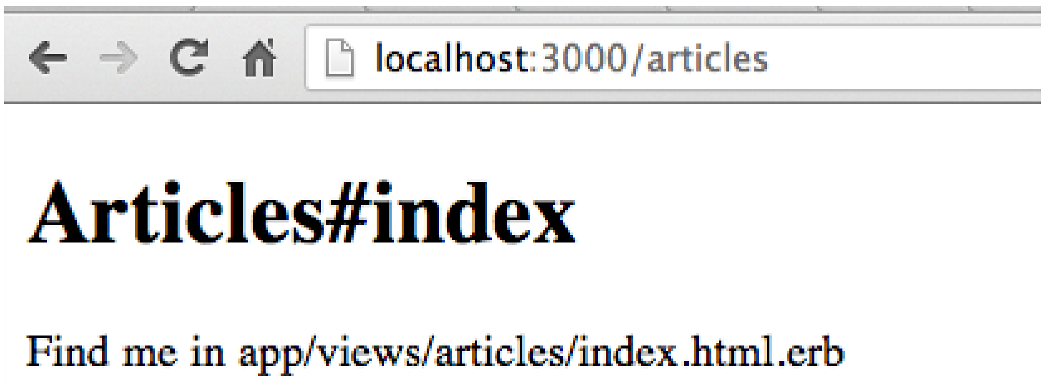
```
~/projects/blog $rails g controller articles index
      create  app/controllers/articles_controller.rb
       route  get "articles/index"
      invoke  erb
      create    app/views/articles
      create    app/views/articles/index.html.erb
      invoke  test_unit
      create    test/controllers/articles_controller_test.rb
      invoke  helper
      create    app/helpers/articles_helper.rb
      invoke    test_unit
      create      test/helpers/articles_helper_test.rb
      invoke  assets
      invoke    coffee
      create      app/assets/javascripts/articles.js.coffee
      invoke    scss
      create      app/assets/stylesheets/articles.css.scss
~/projects/blog $
```

Figure 31: Generate Controller

```
$ rails g controller articles index
```

Step 9

Go back to the home page and click on My Blog link.



localhost:3000/articles

Articles#index

Find me in app/views/articles/index.html.erb

Figure 32: Articles Page

You will see a static page.

Step 10

We need to replace the static page with the list of articles from the database. Open the articles_controller.rb and change the index method as follows :

```
def index
    @articles = Article.all
end
```

Here the @articles is an instance variable of the articles controller class. It is made available to the corresponding view class. In this case the view is app/views/articles/index.html.erb

The class method all retrieves all the records from the articles table.

Step 11

Open the app/views/articles/index.html.erb in your IDE and add the following code:

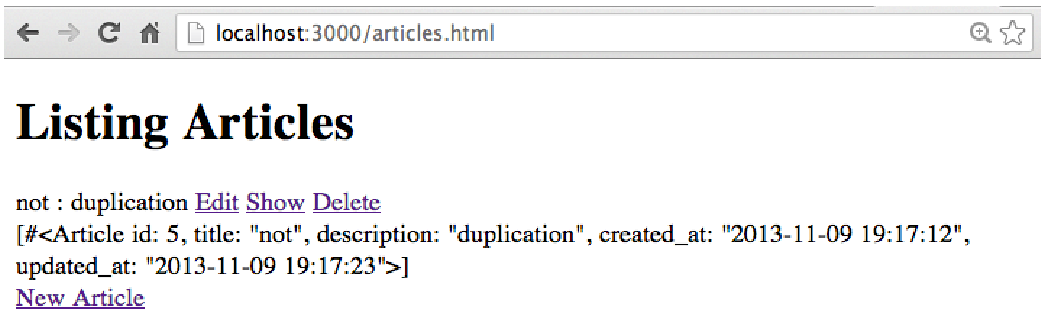
```
<h1>Listing Articles</h1>

<% @articles.each do |article| %>

  <%= article.title %> <br/>

  <%= article.description %>

<% end %>
```

Here we are using the Ruby scriptlet tag <% %> for looping through all the records in the articles collection and the values of each record is displayed using <%= %> tags.

If you make a mistake and use <%= %> tags instead of Ruby scriptlet tag in app/views/index.html.erb like this:

```
<%= @articles.each do |article| %>
```

You will see the objects in the array displayed on the browser.



localhost:3000/articles.html

Listing Articles

not : duplication Edit Show Delete
[#<Article id: 5, title: "not", description: "duplication", created_at: "2013-11-09 19:17:12", updated_at: "2013-11-09 19:17:23">]
New Article

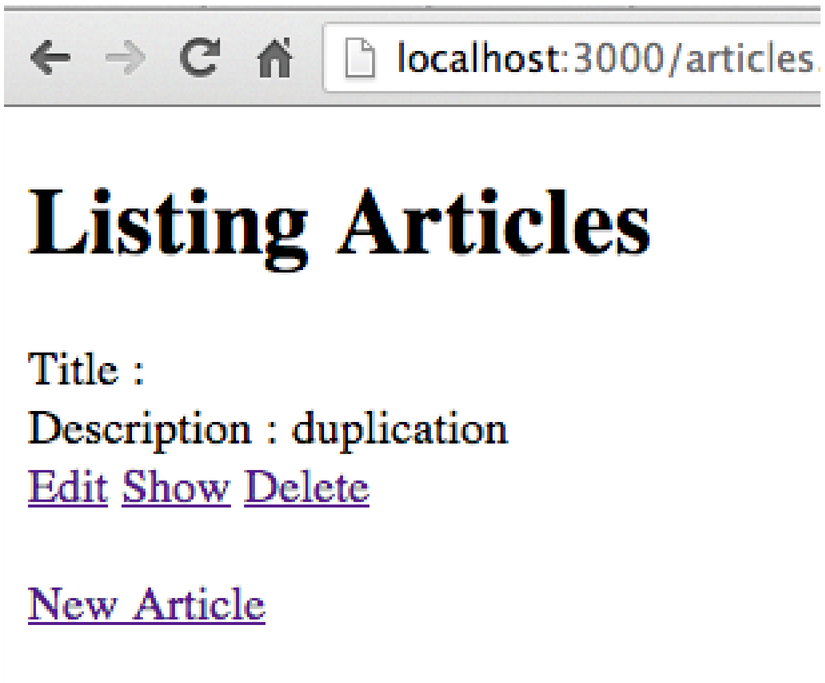
Figure 33: Using the Wrong Tags

Articles are displayed as objects inside an array.

If you use the Ruby scriptlet tag :

```
Title :     <% article.title %>
```

instead of the tags used to evaluate expressions and display to the browser then you will not see it in the browser.



Listing Articles

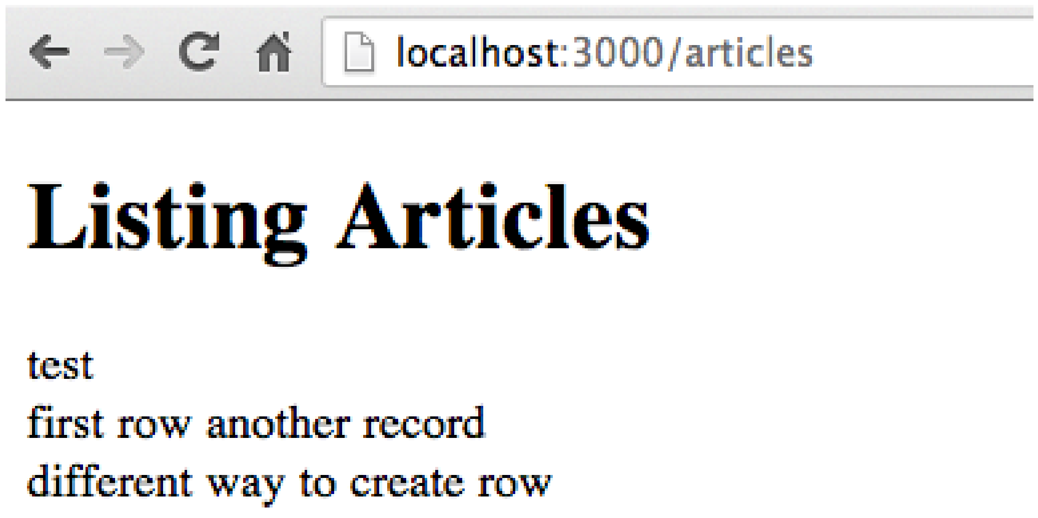
Title :
Description : duplication
Edit Show Delete

New Article

Figure 34: No Title Value in Browser

Step 12

Go to the browser and reload the page for http://localhost:3000/articles



Listing Articles

test
first row another record
different way to create row

Figure 35: List of Articles

You should see the list of articles now displayed in the browser.

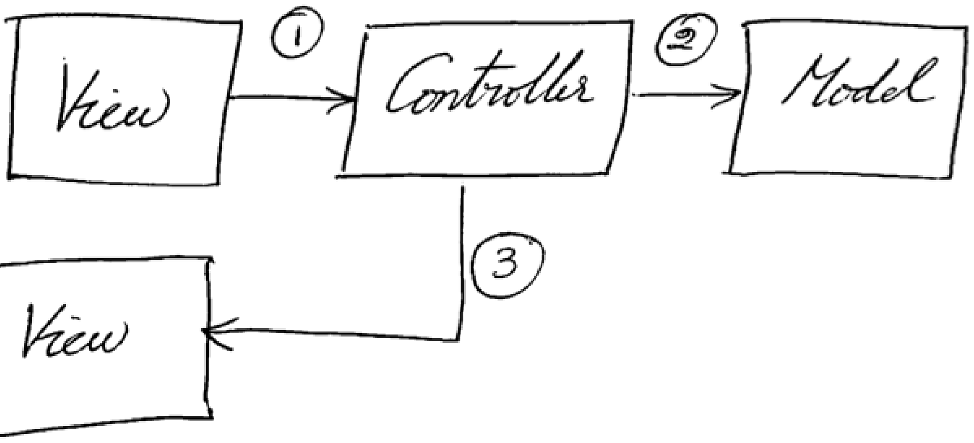


Figure 36: Model View Controller

As you can see from the diagram Controller controls the flow of data into and out of the database and also decides which View should be rendered next.

Exercise

Go to the rails server log terminal, what is the http verb used to make the request for displaying all the articles? What is the resource that was requested?

Summary

In this lesson we went from the view (home page) to the controller for articles and to the article model and back to the view (index page for articles). So the MVC components interaction as shown in the diagram:

1. View to Controller
2. Controller to Model
3. Controller to View.

The data flow was from the database to the user.

In real world the user data comes from the user so we cannot create them in the rails console or in the database directly. In the next lesson we will see how we can capture data from the view provided by the user and save it in the database.

5. View to Model

Objective

- Learn how to get data from the user and save it in the database

Steps

Step 1

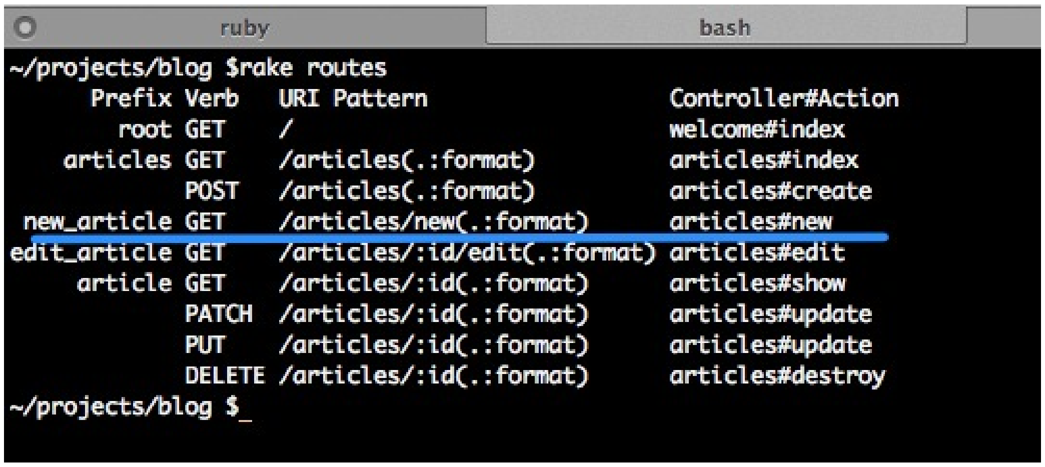
We need to display a form for the user to fill out the text field for the article title and text area for the description. In order for the user to go to this form, let's create a 'New Article' link to load an empty form in the articles index page.

Add the following code to the bottom of the app/views/articles/index.html file:

```
<%= link_to 'New Article', ? %>
```

Step 2

What is the url helper we should use? We know we need to display the articles/new.html.erb page. We also know that the action that is executed is new before new.html.erb is displayed. Take a look at the rake routes output:



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

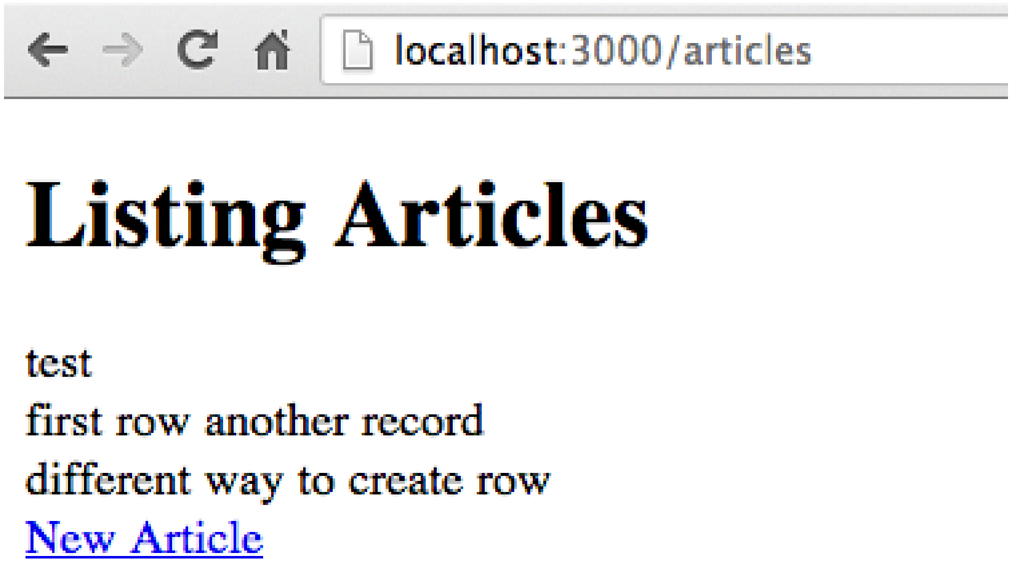
Figure 37: New Article URL Helper

The first column named Prefix gives us the URL helper we can use. We can either append url or path to the prefix. Let's fill in the url helper to load the new page as follows:

```
<%= link_to 'New Article', new_article_path %>
```

Step 3

Reload the page http://localhost:3000/articles in the browser.



Listing Articles

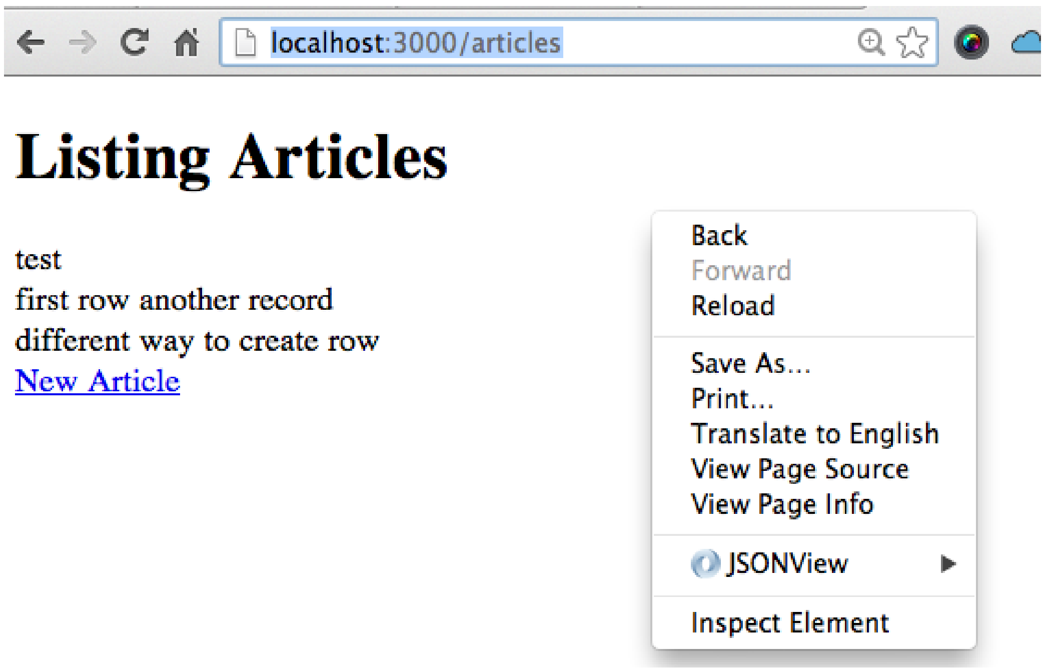
test
first row another record
different way to create row
New Article

Figure 38: New Article Link

The hyperlink for creating a new article will now be displayed.

Step 4

Right click on the browser and click 'View Page Source'.



Listing Articles

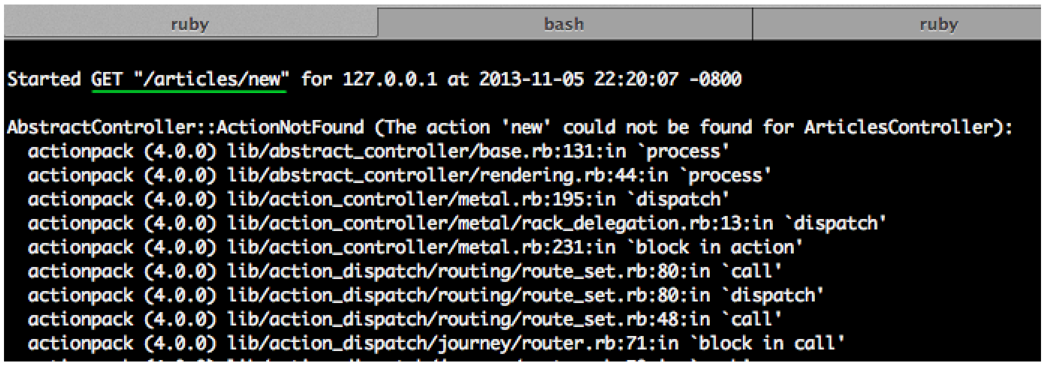
test
first row another record
different way to create row
New Article

Figure 39: View Page Source

You will see 'New Article' link pointing to the resource "/articles/new".

Step 5

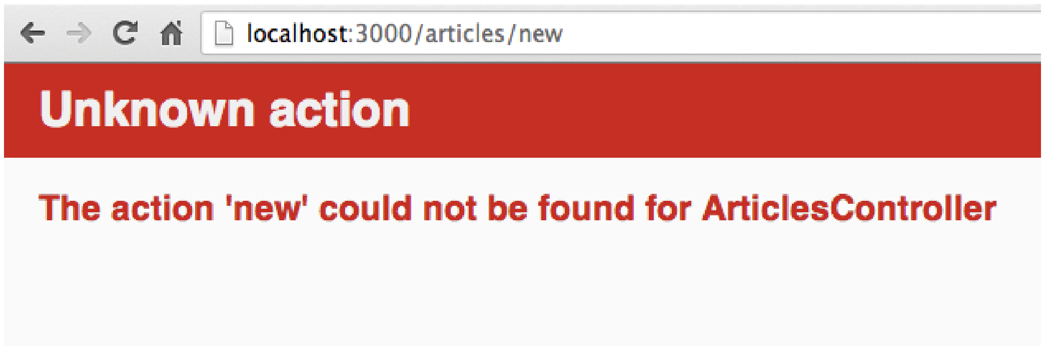
Click the 'New Article' link. Go to the terminal and look at the server output.



```
Started GET "/articles/new" for 127.0.0.1 at 2013-11-05 22:20:07 -0800

AbstractController::ActionNotFound (The action 'new' could not be found for ArticlesController):
  actionpack (4.0.0) lib/abstract_controller/base.rb:131:in `process'
  actionpack (4.0.0) lib/abstract_controller/rendering.rb:44:in `process'
  actionpack (4.0.0) lib/action_controller/metal.rb:195:in `dispatch'
  actionpack (4.0.0) lib/action_controller/metal/rack_delegation.rb:13:in `dispatch'
  actionpack (4.0.0) lib/action_controller/metal.rb:231:in `block in action'
  actionpack (4.0.0) lib/action_dispatch/routing/route_set.rb:80:in `call'
  actionpack (4.0.0) lib/action_dispatch/routing/route_set.rb:80:in `dispatch'
  actionpack (4.0.0) lib/action_dispatch/routing/route_set.rb:48:in `call'
  actionpack (4.0.0) lib/action_dispatch/journey/router.rb:71:in `block in call'
```

Figure 40: HTTP Verb Get

You can see that the browser made a http GET request for the resource "/articles/new".



Unknown action

The action 'new' could not be found for ArticlesController

Figure 41: Action New Not Found

You will see the above error page.

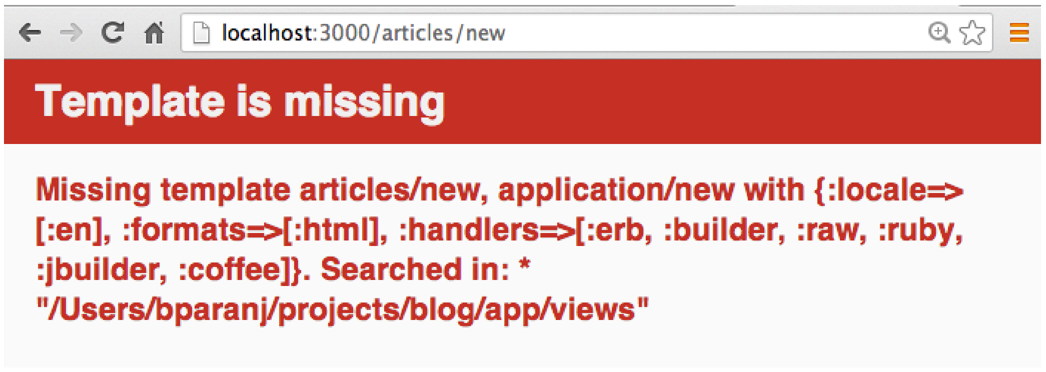
Step 6

Let's create the new action in articles controller. Add the following code to articles controller:

```
def new

end
```

Step 7

Reload the browser http://localhost:3000/articles/new page. You will see the missing template page.



localhost:3000/articles/new

Template is missing

Missing template articles/new, application/new with {:locale=>[:en], :formats=>[:html], :handlers=>[:erb, :builder, :raw, :ruby, :jbuilder, :coffee]}. Searched in: * "/Users/bparanj/projects/blog/app/views"

Figure 42: Missing Template

After the new action is executed Rails looks for view whose name is the same as the action, in this case app/views/articles/new.html.erb

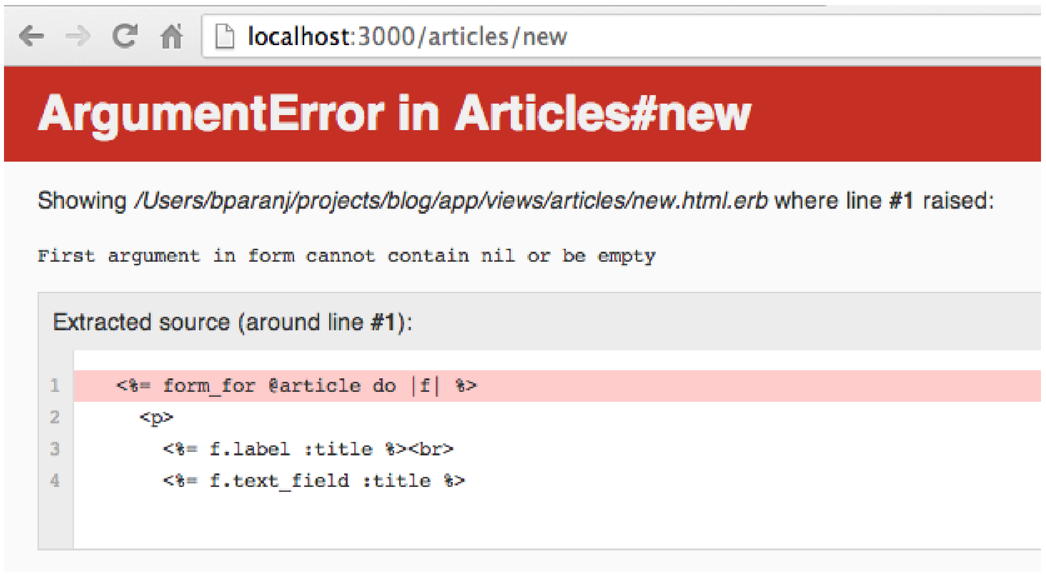
Step 8

So lets create new.html.erb under app/views/articles directory with the following content:

```
<%= form_for @article do |f| %>
  <p>
    <%= f.label :title %><br>
    <%= f.text_field :title %>
  </p>

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

  <p>
    <%= f.submit %>
  </p>
<% end %>
```

Step 9

Reload the browser http://localhost:3000/articles/new page.


localhost:3000/articles/new

ArgumentError in Articles#new

Showing */Users/bparanj/projects/blog/app/views/articles/new.html.erb* where line **#1** raised:

```
First argument in form cannot contain nil or be empty
```

Extracted source (around line **#1**):

```
<%= form_for @article do |f| %>
  <p>
    <%= f.label :title %><br>
    <%= f.text_field :title %>
```

Figure 43: Argument Error

You will now see the above error.

Step 10

Change the new method in articles controller as follows:

```
def new
  @article = Article.new
end
```

Here we are instantiating an instance of Article class, this gives Rails a clue that the form fields is for Article model.

Step 11

Reload the browser http://localhost:3000/articles/new page.

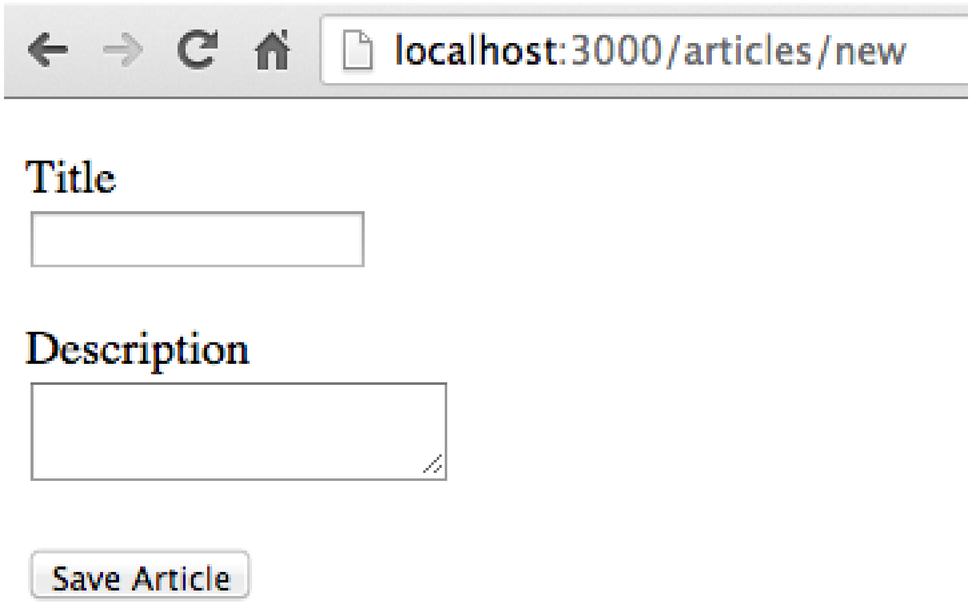
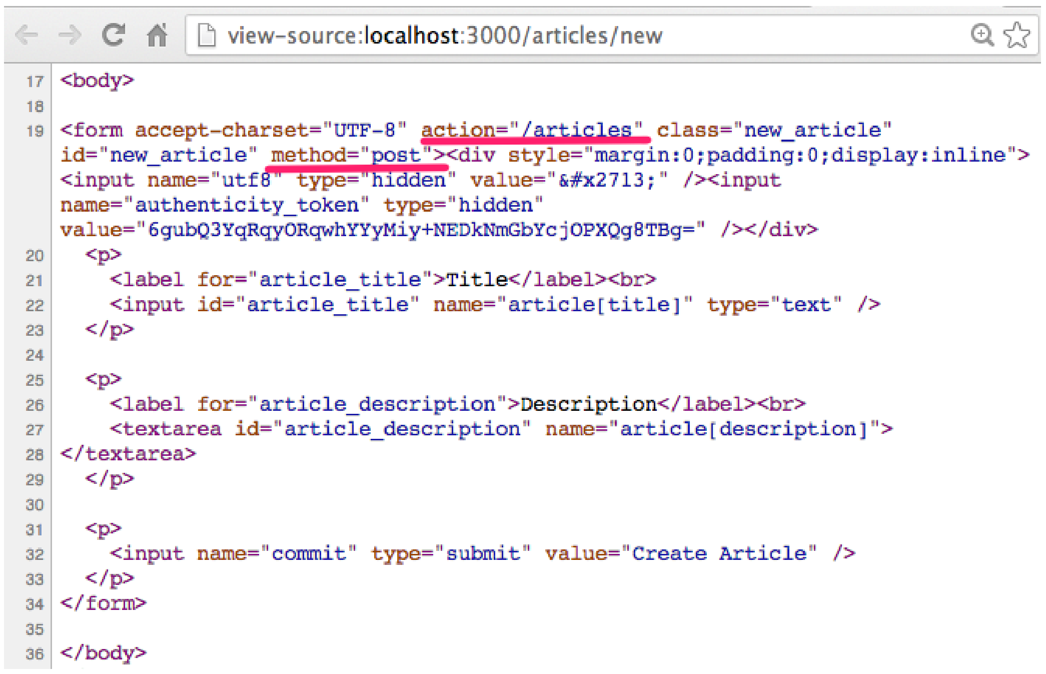


Figure 44: New Article Form

You will now see an empty form to create a new article.

Step 12

Right click and select ‘View Page Source’ on the new article form page.



view-source:localhost:3000/articles/new

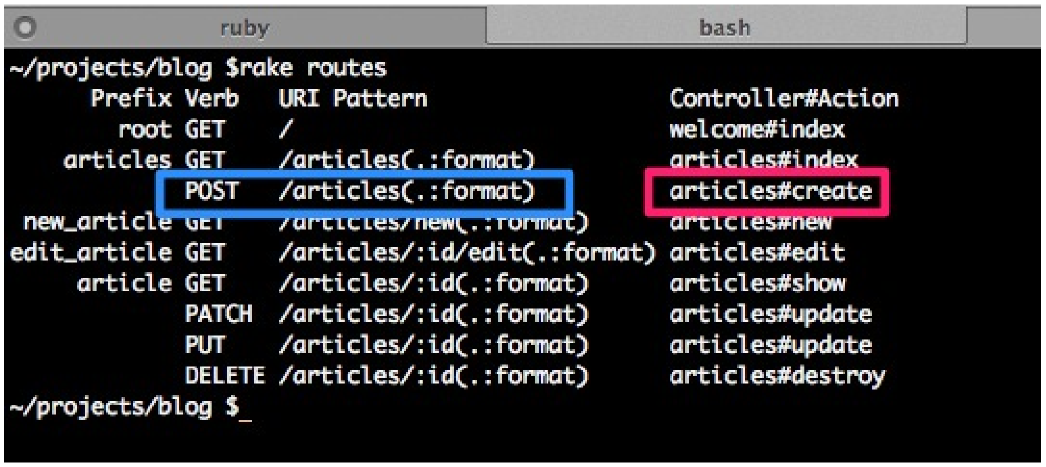
```
<body>

<form accept-charset="UTF-8" action="/articles" class="new_article"
id="new_article" method="post"><div style="margin:0;padding:0;display:inline">
<input name="utf8" type="hidden" value="&#x2713;" /><input
name="authenticity_token" type="hidden"
value="6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=" /></div>
  <p>
    <label for="article_title">Title</label><br>
    <input id="article_title" name="article[title]" type="text" />
  </p>

  <p>
    <label for="article_description">Description</label><br>
    <textarea id="article_description" name="article[description]">
</textarea>
  </p>

  <p>
    <input name="commit" type="submit" value="Create Article" />
  </p>
</form>

</body>
```

Figure 45: New Article Page Source

As you can see form will be submitted to the url ‘/articles’ and the http verb used is POST. When the user submits the form, which controller and which action will be executed?

Step 13

Look at the output of rake routes, the combination of the http verb and the URL uniquely identifies the resource end point.



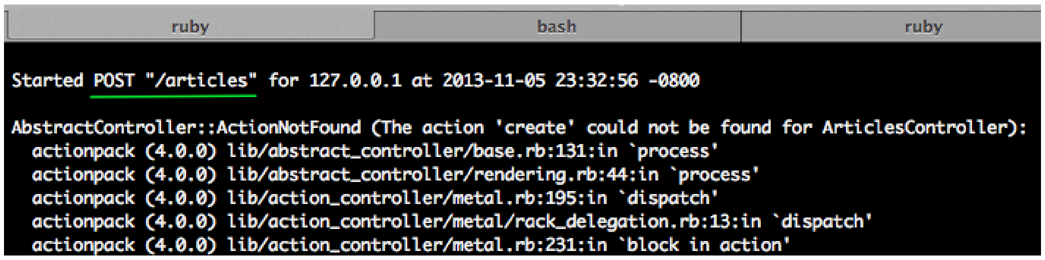
```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 46: Identifying Resource Endpoint

In this case we see that it maps to the articles controller and create action.

Step 14

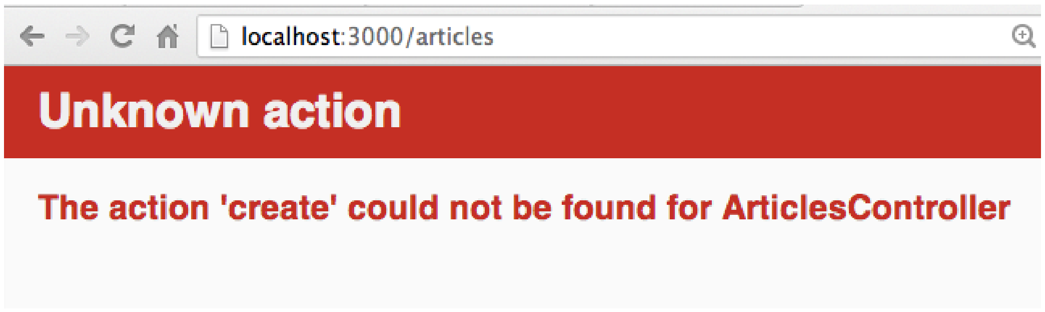
Fill out the form and click ‘Create Article’. Check the server log output.



```
Started POST "/articles" for 127.0.0.1 at 2013-11-05 23:32:56 -0800

AbstractController::ActionNotFound (The action 'create' could not be found for ArticlesController):
  actionpack (4.0.0) lib/abstract_controller/base.rb:131:in `process'
  actionpack (4.0.0) lib/abstract_controller/rendering.rb:44:in `process'
  actionpack (4.0.0) lib/action_controller/metal.rb:195:in `dispatch'
  actionpack (4.0.0) lib/action_controller/metal/rack_delegation.rb:13:in `dispatch'
  actionpack (4.0.0) lib/action_controller/metal.rb:231:in `block in action'
```

Figure 47: Post Article Server Log

You can see that the browser made a post to the URL ‘/articles’.



Unknown action

The action 'create' could not be found for ArticlesController

Figure 48: Unknown Action Create

This error is due to absence of create action in the articles controller.

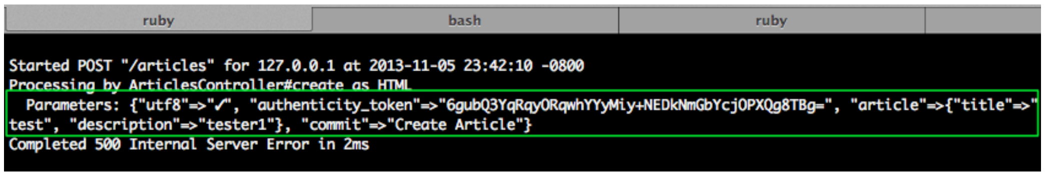
Step 15

Define the create method in the articles controller as follows:

```ruby
def create

end
```

Step 16

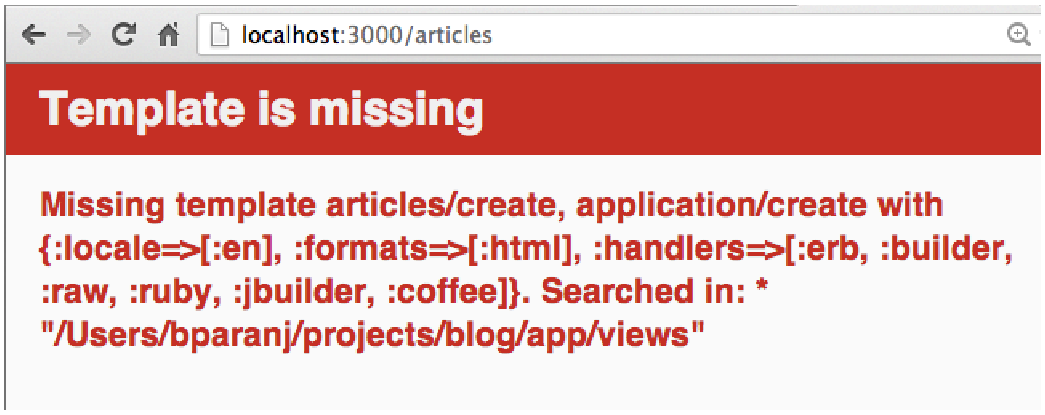
Fill out the form and click ‘Create Article’.



```
Started POST "/articles" for 127.0.0.1 at 2013-11-05 23:42:10 -0800
Processing by ArticlesController#create as HTML
  Parameters: {"utf8"=>"✓", "authenticity_token"=>"6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=", "article"=>{"title"=>"
test", "description"=>"tester1"}, "commit"=>"Create Article"}
Completed 500 Internal Server Error in 2ms
```

Figure 49: Article Form Values

You can see that the form values submitted by the user is sent to the server. Rails automatically populates a hash called params which contains a key whose name is the article symbol and the values are the different columns and its values.



Template is missing

Missing template articles/create, application/create with {:locale=>[:en], :formats=>[:html], :handlers=>[:erb, :builder, :raw, :ruby, :jbuilder, :coffee]}. Searched in: * "/Users/bparanj/projects/blog/app/views"

Figure 50: Article Create Missing Template

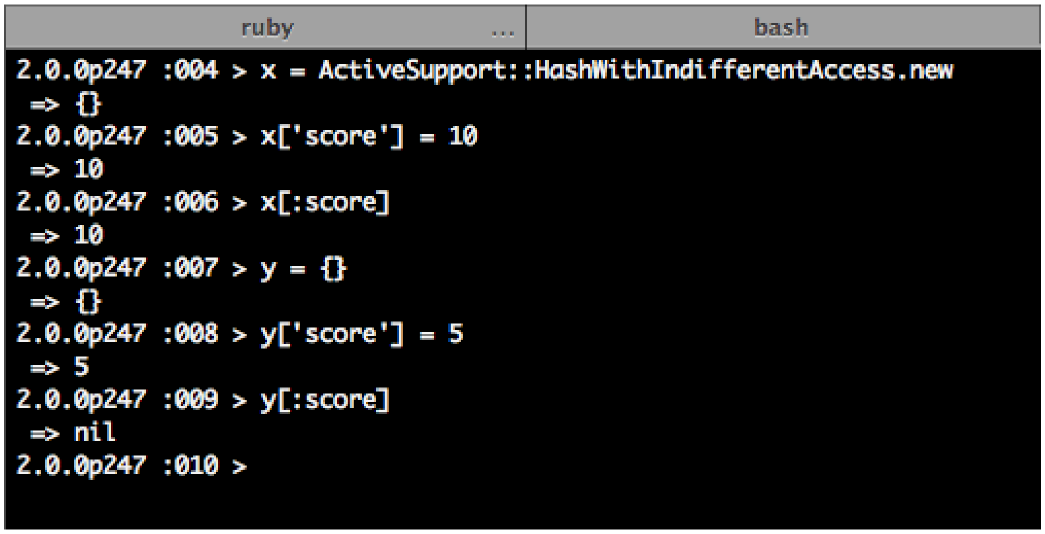
You will see missing tempate error.

Step 17

Before we fix the missing template issue, we need to save the data submitted by the user in the database. You already know how to use the ActiveRecord class method create to save a record. You also know how Rails populates the params hash, this hash is made available to you in the controller. So we can access it like this :

```ruby
def create
  Article.create(params[:article])
end
```

In Figure 49, you see that the hash key article is a string, but I am using the symbol :article in the create method. How does this work?



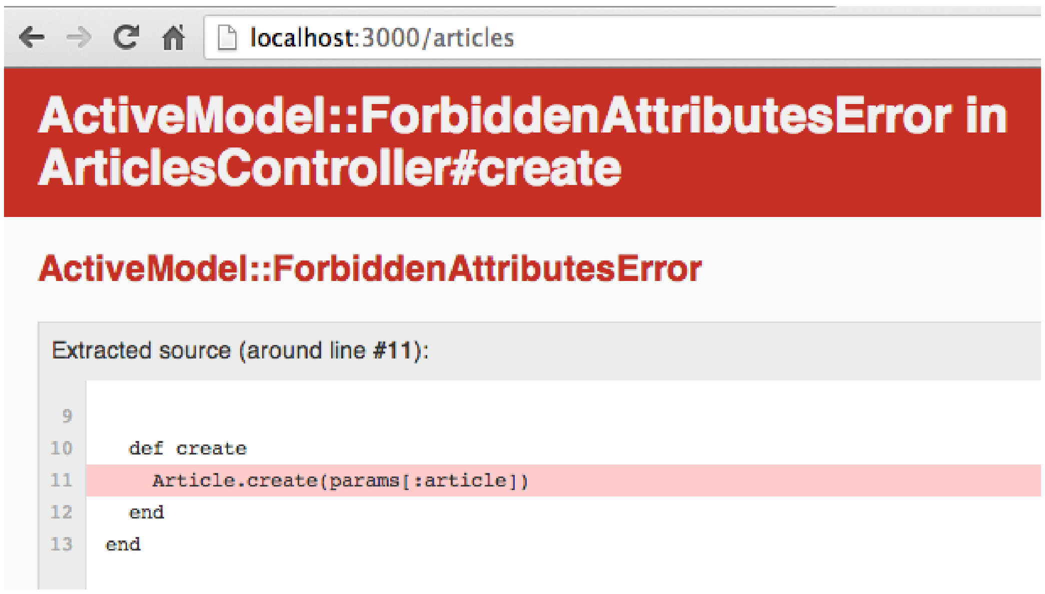
```
2.0.0p247 :004 > x = ActiveSupport::HashWithIndifferentAccess.new
 => {}
2.0.0p247 :005 > x['score'] = 10
 => 10
2.0.0p247 :006 > x[:score]
 => 10
2.0.0p247 :007 > y = {}
 => {}
2.0.0p247 :008 > y['score'] = 5
 => 5
2.0.0p247 :009 > y[:score]
 => nil
2.0.0p247 :010 >
```

Figure 51: HashWithIndifferentAccess

As you can see from the rails console, params hash is not a regular Ruby hash, it is a special hash called HashWithIndifferentAccess. It allows you to set the value of the hash with either a symbol or string and retreive the value using either string or symbol.

Step 18

Fill out the form and submit again.


localhost:3000/articles

ActiveModel::ForbiddenAttributesError in ArticlesController#create

ActiveModel::ForbiddenAttributesError

Extracted source (around line #11):

```

  def create
    Article.create(params[:article])
  end
end
```

Figure 52: Forbidden Attributes Error

Now we get a forbidden attributes error.

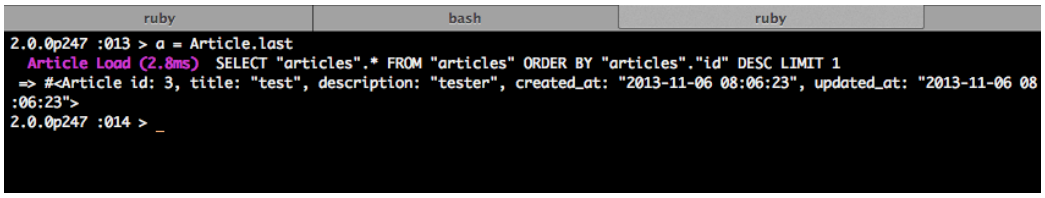
Step 19

Due to security reasons we need to specify which fields must be permitted as part of the form submission. Modify the create method as follows:

```
def create
  Article.create(params.require(:article).permit(:title, :description))
end
```

Step 20

Fill out the form and submit again. You will get the template missing error but you will now see that the user submitted data has been saved to the database.



```
2.0.0p247 :013 > a = Article.last
  Article Load (2.8ms)  SELECT "articles".* FROM "articles" ORDER BY "articles"."id" DESC LIMIT 1
 => #<Article id: 3, title: "test", description: "tester", created_at: "2013-11-06 08:06:23", updated_at: "2013-11-06 08
:06:23">
2.0.0p247 :014 > _
```

Figure 53: Save User Data

The ActiveRecord last method retrieves the last row in the articles table.

Step 21

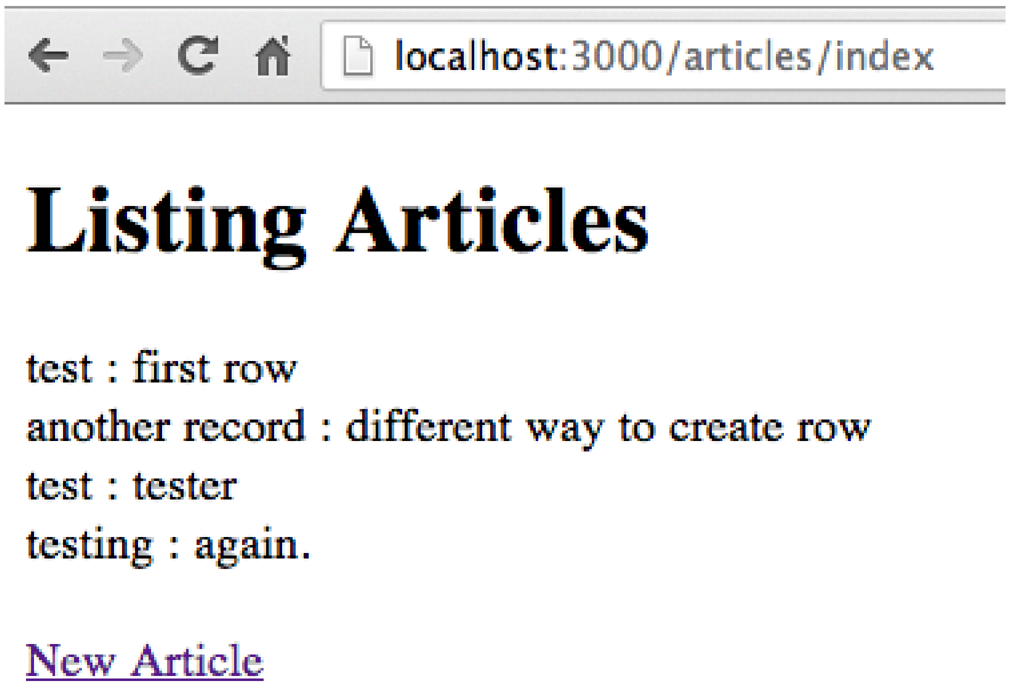
Let's now address the template is missing error. Once the data is saved in the database we can either display the index page or the show page for the article. Let's redirect the user to the index page. We will be able to see all the records including the new record that we created. Modify the create method as follows:

```ruby
def create
  Article.create(params.require(:article).permit(:title, :description))

  redirect_to articles_index_path
end
```

How do we know that we need to use articles_index_path url helper? We already saw how to find the URL helper to use in the view, we can do the same. If you see the output of rake routes command, we know the resource end point, to find the URL helper we look at the Prefix column.

Step 22

Fill out the form and submit again.



localhost:3000/articles/index

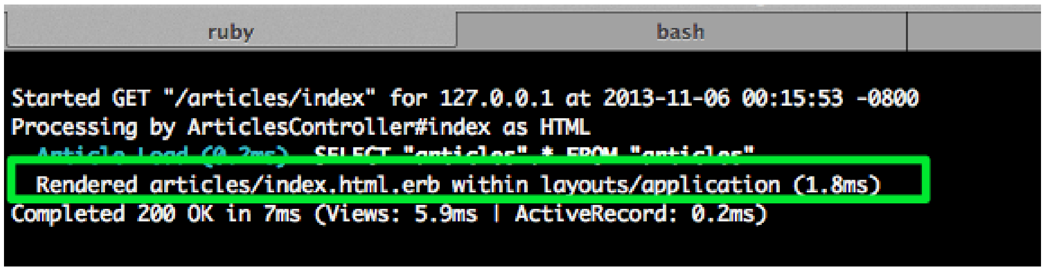
Listing Articles

test : first row
another record : different way to create row
test : tester
testing : again.

New Article

Figure 54: Displaying All Articles

You will now see all the articles displayed in the index page.



```
Started GET "/articles/index" for 127.0.0.1 at 2013-11-06 00:15:53 -0800
Processing by ArticlesController#index as HTML
  Article Load (0.2ms)  SELECT "articles".* FROM "articles"
  Rendered articles/index.html.erb within layouts/application (1.8ms)
Completed 200 OK in 7ms (Views: 5.9ms | ActiveRecord: 0.2ms)
```

Figure 55: Redirect to Articles Index Page

Redirecting user to the articles index page.

Summary

We saw how we can save the user submitted data in the database. We went from the View to the Controller to the Model. We also saw how the controller decides which view to render next. We learned about the http verb and identifying resource endpoint in our application. Now we know how the new and create works. In the next lesson we will see how edit and update works to make changes to an existing record in the database.

6. Update Article

Objective

- Learn how to update an existing record in the database

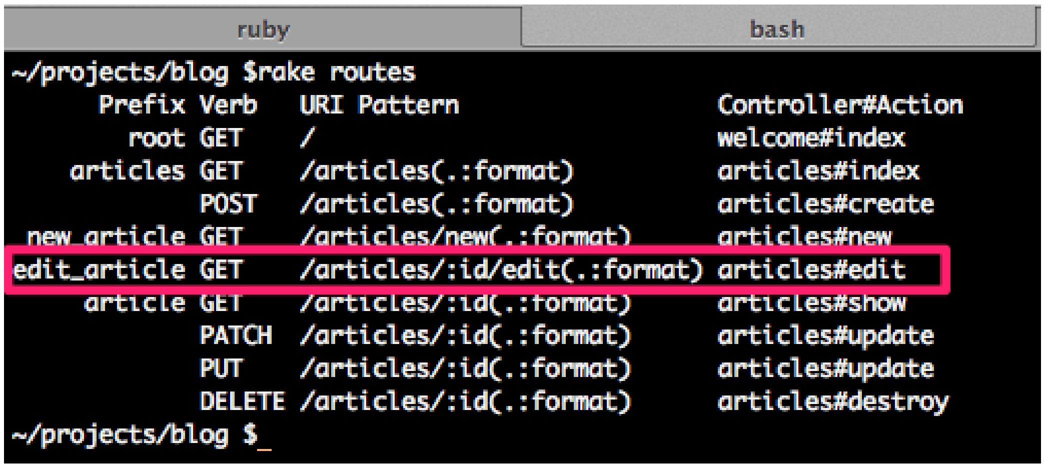
Steps

Step 1

Let's add 'Edit' link to each record that is displayed in the index page. Open the app/views/index.html.erb and add the edit link:

```
<%= link_to 'Edit', ? %>
```

What should be the url helper to use in the second parameter to the link_to method? We know that when someone clicks the 'Edit' link we need to load a form for that particular row with the existing values for that record. So we know the resource endpoint is articles#edit, if you look at the rake routes output, the Prefix column gives us the url helper to use.



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 56: Edit Article URL Helper

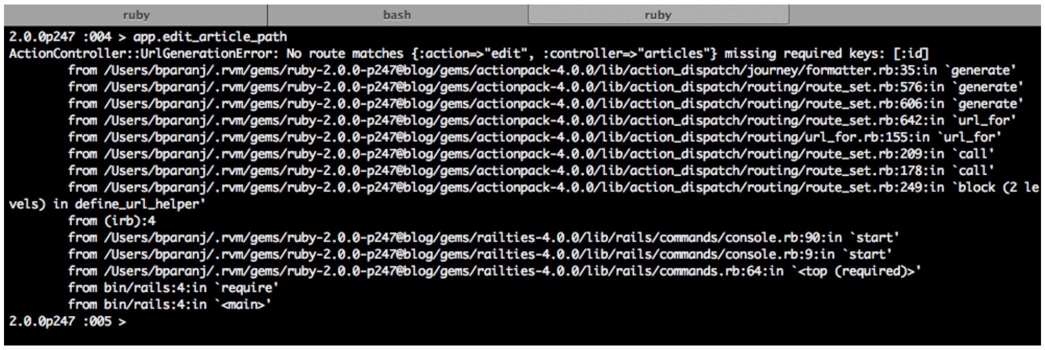
So we now have:

```
<%= link_to 'Edit', edit_article_path() %>
```

Step 2

Go to Rails console and type:

app.edit_article_path



```
2.0.0p247 :004 > app.edit_article_path
ActionController::UrlGenerationError: No route matches {:action=>"edit", :controller=>"articles"} missing required keys: [:id]
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/journey/formatter.rb:35:in `generate'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:576:in `generate'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:606:in `generate'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:642:in `url_for'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/url_for.rb:155:in `url_for'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:209:in `call'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:178:in `call'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:249:in `block (2 le
vels) in define_url_helper'
	from (irb):4
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails/commands/console.rb:90:in `start'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails/commands/console.rb:9:in `start'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails/commands.rb:64:in `<top (required)>'
	from bin/rails:4:in `require'
	from bin/rails:4:in `<main>'
2.0.0p247 :005 >
```

Figure 57: Edit Article URL Helper Error

Rails does not recognize edit_article_path helper method.

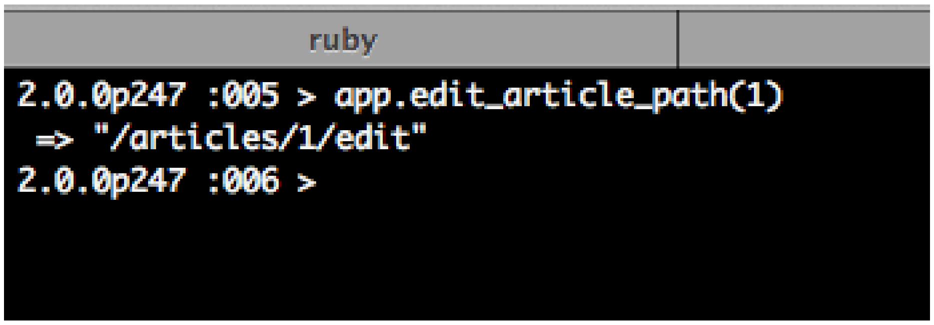
Step 3

Examine the output of rake routes command. In the URI Pattern column you see the pattern for edit as : /articles/:id/edit

URI Pattern can consist of symbols which represent variable. You can think of it as a place holder. The symbol :id in this case represents the primary key of the record we want to update. So we pass an instance of article to url helper. We could call the id method on article, since Rails automatically calls id on this instance, we will just let Rails do its magic.

```
<%= link_to 'Edit', edit_article_path(article) %>
```

Rails recognizes edit_article_path when the primary key :id value is passed as the argument.



```
2.0.0p247 :005 > app.edit_article_path(1)
 => "/articles/1/edit"
2.0.0p247 :006 >
```

Figure 58: Edit Article URL Helper

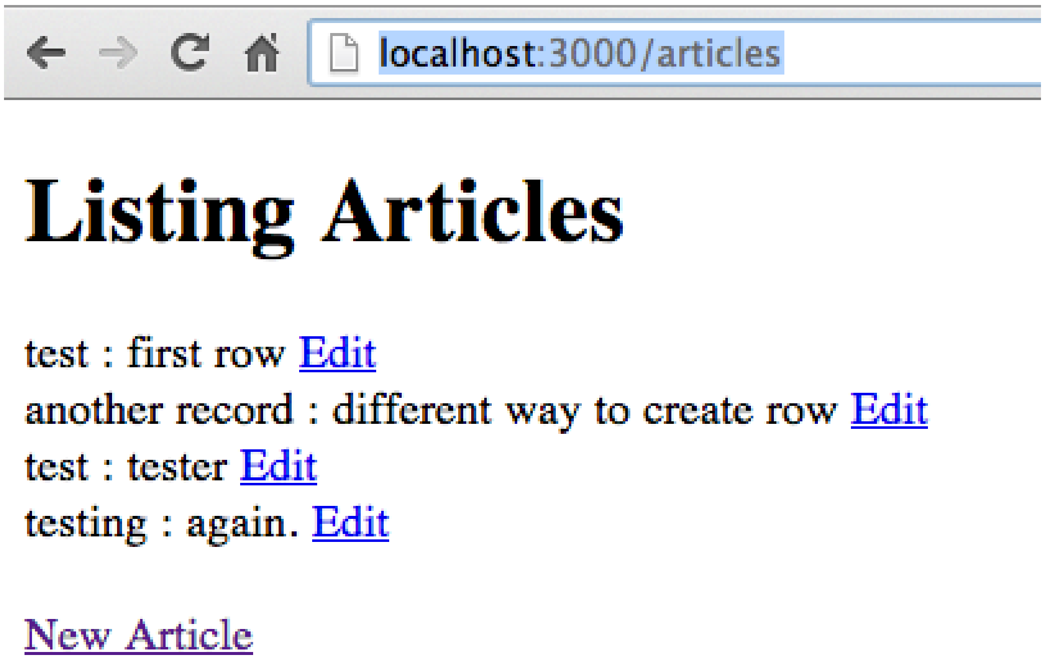
Step 4

The app/views/articles/index.html.erb will look like this :

```
<h1>Listing Articles</h1>

<% @articles.each do |article| %>

    <%= article.title %> :

    <%= article.description %>

    <%= link_to 'Edit', edit_article_path(article) %>

    <br/>

<% end %>
<br/>
<%= link_to 'New Article', new_article_path %>
```

Step 5

Reload the http://localhost:3000/articles page.


localhost:3000/articles

Listing Articles

test : first row Edit
another record : different way to create row Edit
test : tester Edit
testing : again. Edit

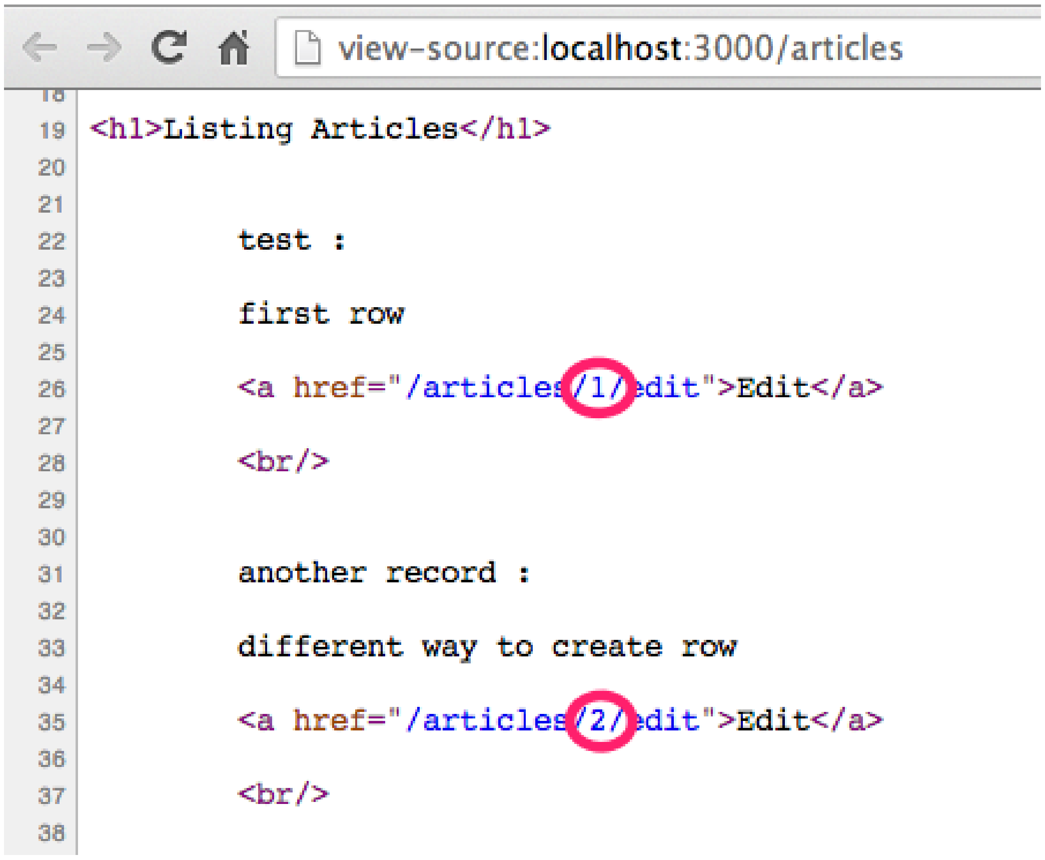
New Article

Figure 59: Edit Article Link

You will now see the 'Edit' link for each article in the database.

Step 6

Right click on the browser and select ‘View Page Source’.



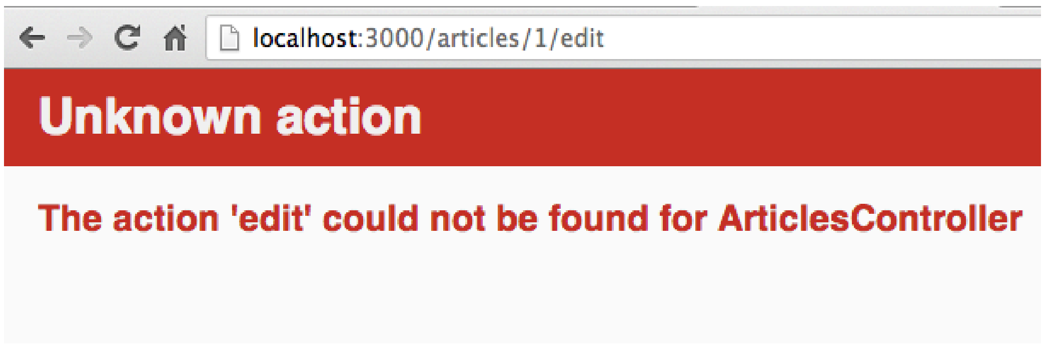
```
<h1>Listing Articles</h1>


        test :

        first row

        <a href="/articles/1/edit">Edit</a>

        <br/>


        another record :

        different way to create row

        <a href="/articles/2/edit">Edit</a>

        <br/>

```

Figure 60: Edit Article Page Source

You will see the primary keys of the corresponding row for the :id variable.

Step 7

Click on the 'Edit' link.



```
localhost:3000/articles/1/edit
```

Unknown action

The action 'edit' could not be found for ArticlesController

Figure 61: Unknown Action Edit

You will see unknown action edit error page.

Step 8

Let's define the edit action in the articles controller :

```
def edit

end
```

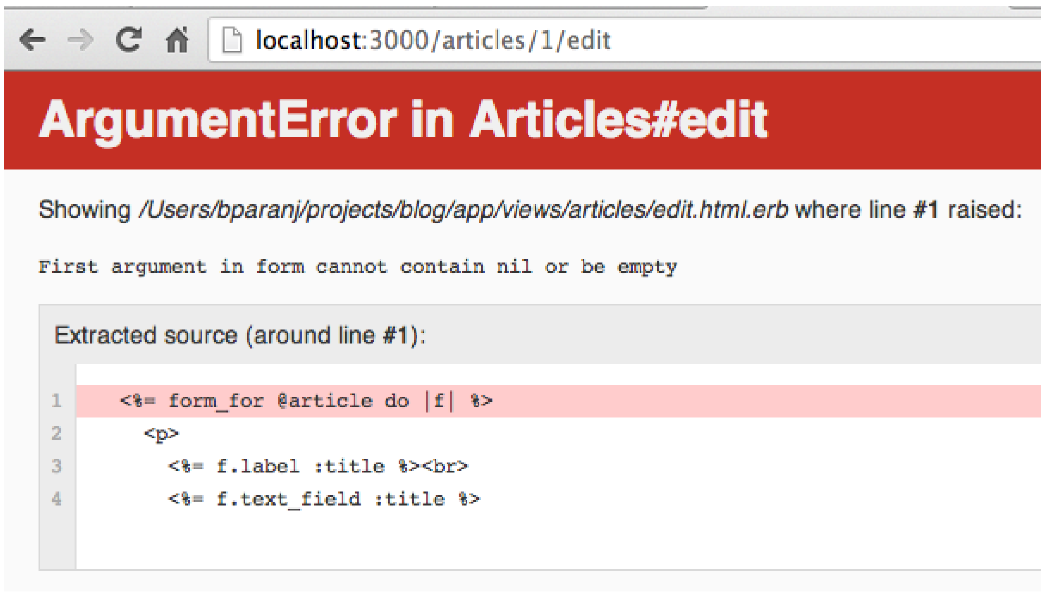
Step 9

Click on the ‘Edit’ link. You now get template is missing error. Let’s create app/views/articles/edit.html.erb with the following contents:

```
<%= form_for @article do |f| %>
  <p>
    <%= f.label :title %><br>
    <%= f.text_field :title %>
  </p>

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

  <p>
    <%= f.submit %>
  </p>
<% end %>
```

Step 10

Click on the 'Edit' link. You now get the following error page:



localhost:3000/articles/1/edit

ArgumentError in Articles#edit

Showing */Users/bparanj/projects/blog/app/views/articles/edit.html.erb* where line **#1** raised:

```
First argument in form cannot contain nil or be empty
```

Extracted source (around line **#1**):

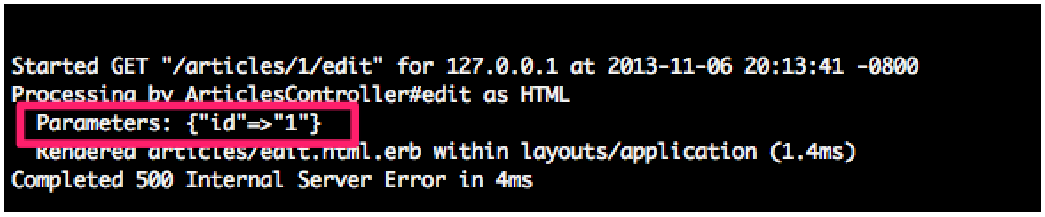
```
<%= form_for @article do |f| %>
  <p>
    <%= f.label :title %><br>
    <%= f.text_field :title %>
```

Figure 62: Argument Error in Articles Edit

We have already seen similar error when we implemented the create action.

Step 11

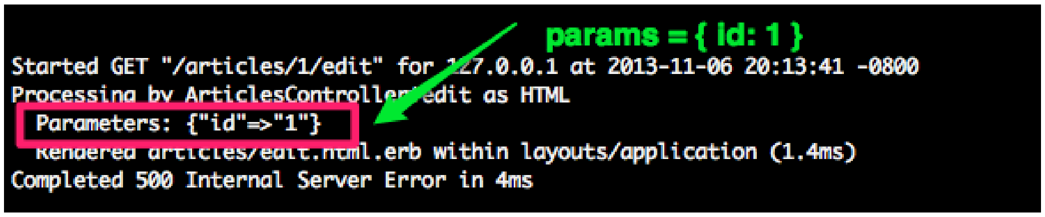
Look at the server log:



```
Started GET "/articles/1/edit" for 127.0.0.1 at 2013-11-06 20:13:41 -0800
Processing by ArticlesController#edit as HTML
  Parameters: {"id"=>"1"}
  Rendered articles/edit.html.erb within layouts/application (1.4ms)
Completed 500 Internal Server Error in 4ms
```

Figure 63: Edit Article Server Log

You can see that the primary key of the selected article id and it's value.



```
Started GET "/articles/1/edit" for 127.0.0.1 at 2013-11-06 20:13:41 -0800
Processing by ArticlesController#edit as HTML
  Parameters: {"id"=>"1"}
  Rendered articles/edit.html.erb within layouts/application (1.4ms)
Completed 500 Internal Server Error in 4ms
```

Figure 64: Params Hash Populated by Rails

Rails automatically populates params hash and makes it available to the controllers.

Step 12

In the edit action we need to load the selected record from the database so that we can display it with the existing values for its columns. You already know that Rails populates params hash with the values submitted in the GET request for resource '/articles/1/edit'. We can now define the edit method as follows:

```
def edit
  @article = Article.find(params[:id])
end
```

Here we find the record for the given primary key and save it in the instance variable @article. Since this variable is available in the view, we can now display the record with its existing values.

Step 13

Click on the 'Edit' link.

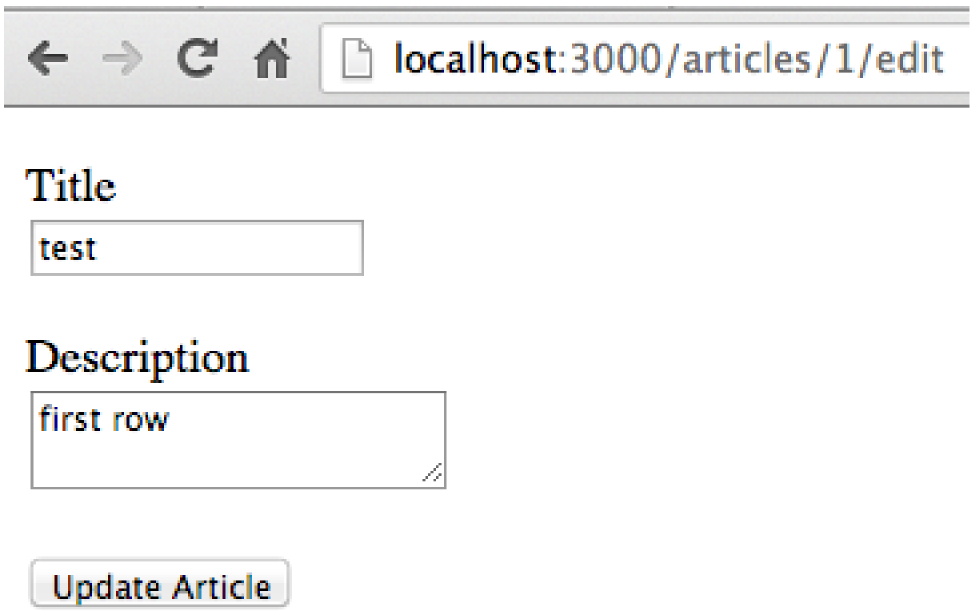
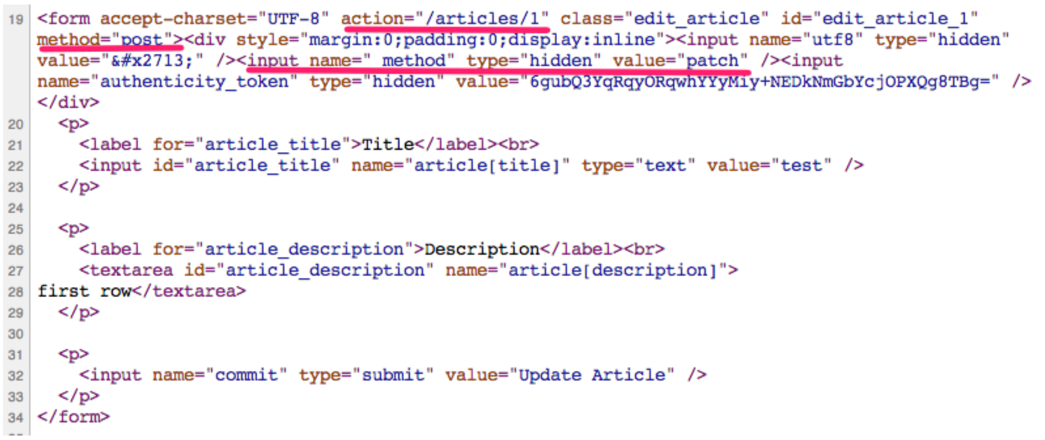


Figure 65: Edit Article Form

You will now see the form with values populated.

Step 14

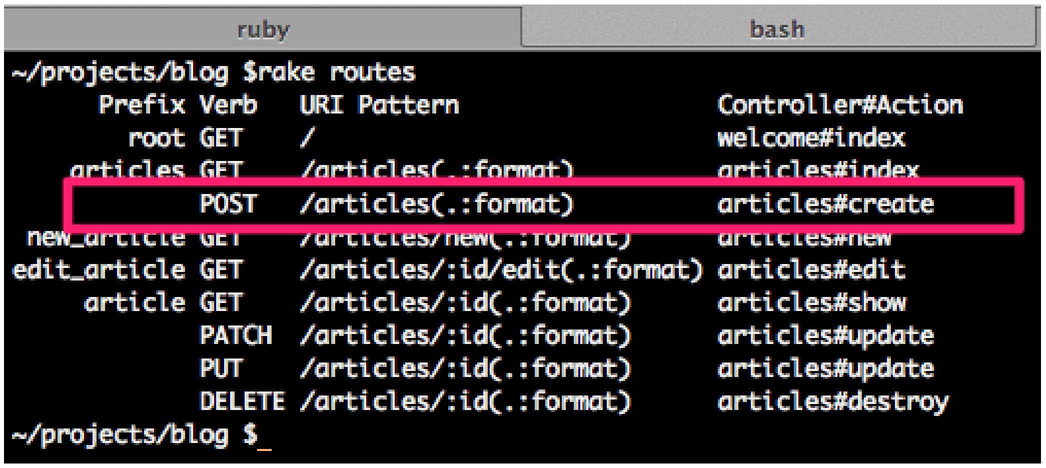
Right click on the browser and click ‘View Page Source’.



```
<form accept-charset="UTF-8" action="/articles/1" class="edit_article" id="edit_article_1"
method="post"><div style="margin:0;padding:0;display:inline"><input name="utf8" type="hidden"
value="&#x2713;" /><input name="_method" type="hidden" value="patch" /><input
name="authenticity_token" type="hidden" value="6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=" />
</div>
  <p>
    <label for="article_title">Title</label><br>
    <input id="article_title" name="article[title]" type="text" value="test" />
  </p>

  <p>
    <label for="article_description">Description</label><br>
    <textarea id="article_description" name="article[description]">
first row</textarea>
  </p>

  <p>
    <input name="commit" type="submit" value="Update Article" />
  </p>
</form>
```

Figure 66: Edit Article Source

We see that the URI pattern is ‘/articles/1’ and the http verb is POST. If you look at the output of rake routes you will see that POST is used only once for create. The browser knows only GET and POST, it does not know how to use any other http verbs.

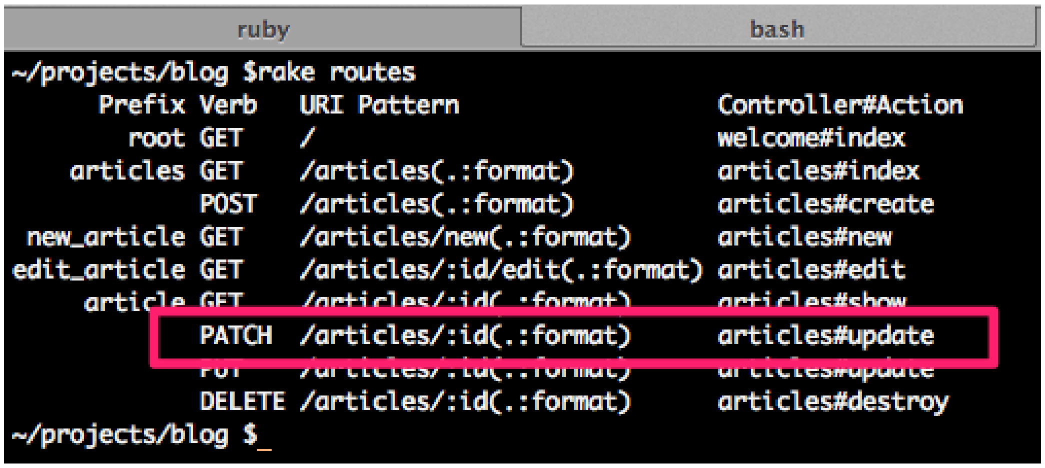


```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 67: HTTP Verb POST

The question is how to overcome the inability of browsers to speak the entire RESTful vocabulary of using the appropriate http verb for a given operation?

The answer lies in the hidden field called method that has the value PATCH. Rails piggybacks on the POST http verb to actually sneak in a hidden variable that tells the server it is actually a PATCH http verb. If you look at the output of rake routes, for the combination of PATCH and '/articles/1' you will see that it maps to update action in the articles controller.



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 68: HTTP Verb PATCH

The output of rake routes is your friend.

Step 15

Let's implement the update method that will take the new values provided by user for the existing record and update it in the database.

```ruby
def update
  @article = Article.find(params[:id])
  @article.update_attributes(params[:article])
end
```

Before we update the record we need to load the existing record from the database. Why? Because the instance variable in the controller will only exist for one request-response cycle. Since http is stateless we need to retrieve it again before we can update it.

Step 16

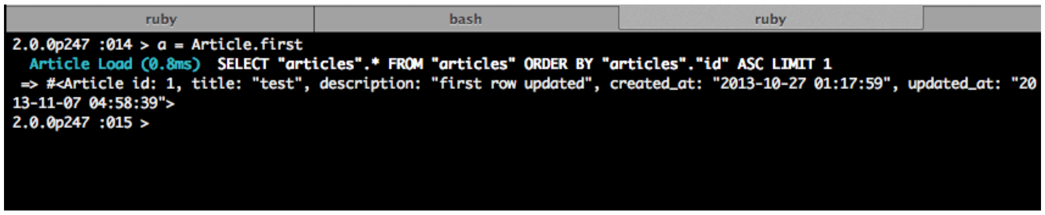
Go to articles index page. Click on the 'Edit' link. In the edit form, you can change the value of either the title or description and click 'Update Article'.

Step 17

To fix the forbidden attributes error, we can do the same thing we did for create action. Change the update method as follows:

```ruby
def update
  @article = Article.find(params[:id])
  permitted_columns = params.require(:article).permit(:title, :description)
  @article.update_attributes(permitted_columns)
end
```

Change the title and click 'Update Article'. We see the template is missing but the record has been successfully updated.



```
2.0.0p247 :014 > a = Article.first
  Article Load (0.8ms)  SELECT "articles".* FROM "articles" ORDER BY "articles"."id" ASC LIMIT 1
 => #<Article id: 1, title: "test", description: "first row updated", created_at: "2013-10-27 01:17:59", updated_at: "20
13-11-07 04:58:39">
2.0.0p247 :015 >
```

Figure 69: First Article

The ActiveRecord class method first retrieves the first record in the table. In this case we got the first row in the articles table.

Step 18

Let's address the template is missing error. We don't need update.html.erb, we can redirect the user to the index page where all the records are displayed. Change the update method as follows:

```ruby
def update
  @article = Article.find(params[:id])
  permitted_columns = params.require(:article).permit(:title, :description)
  @article.update_attributes(permitted_columns)

  redirect_to articles_path
end
```

Step 19

Edit the article and click 'Update Article'. You should see that it now updates the article.

Step 20

An annoying thing about Rails 4 is that when you run the rails generator to create a controller with a given action it also creates an entry in the routes.rb which is not required for a RESTful route. Let's delete the following line:

```ruby
get "articles/index"
```

in the config/routes.rb file. Update the create method to use the articles_path as follows:

```ruby
def create
  Article.create(params.require(:article).permit(:title, :description))

  redirect_to articles_path
end
```

Summary

In this lesson you learned how to update an existing record. In the next lesson we will see how to display a given article.

7. Show Article

Objective

- Learn how to display a selected article in the article show page.

Steps

Step 1

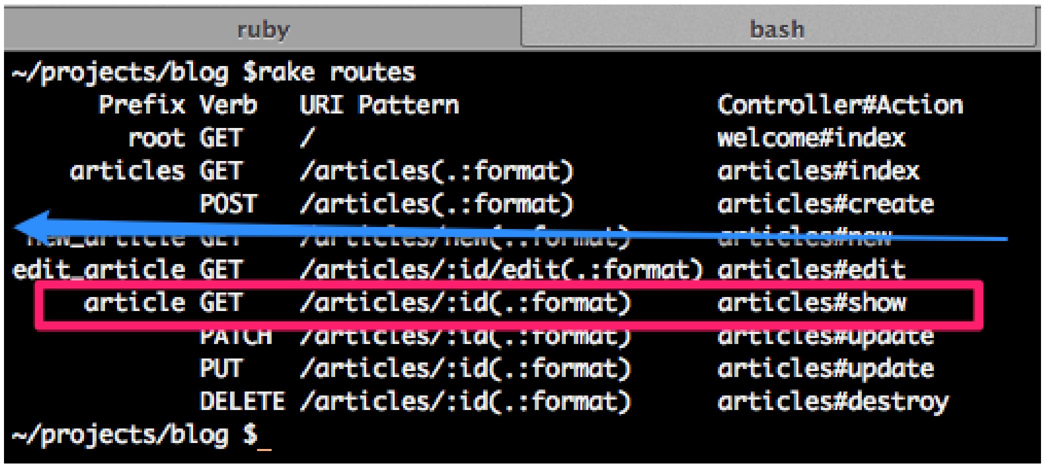
Add the 'Show' link to each article in the index page. The hyperlink text will be 'Show'.

```
<%= link_to 'Show', ? %>
```

When the user clicks the 'Show' link we need to go the articles controller show action. We will retrieve the record from the database and display it in the view.

What should be the url helper?

You can view the output of rake routes to find the url helper to use in the view. In this case we know the resource end point. We go from the right most column to the left most column and find the url helper under the Prefix column.



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 70: URL Helper For Show

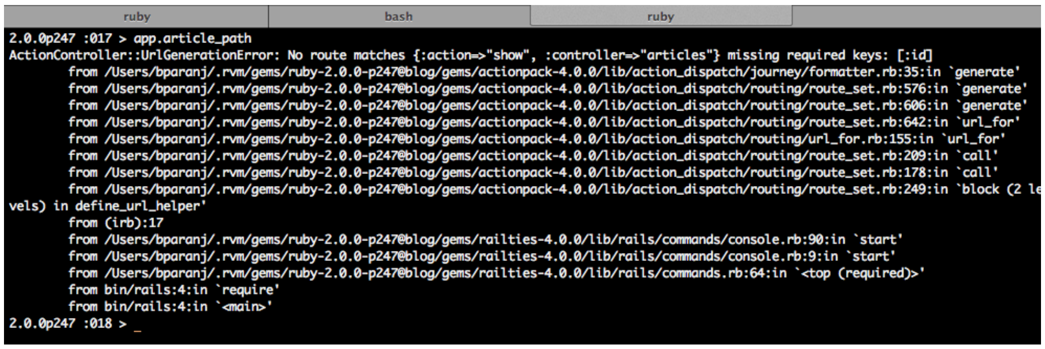
So, we now have :

```
<%= link_to 'Show', article_path %>
```

Step 2

Go to Rails console and type:

```
app.article_path
```



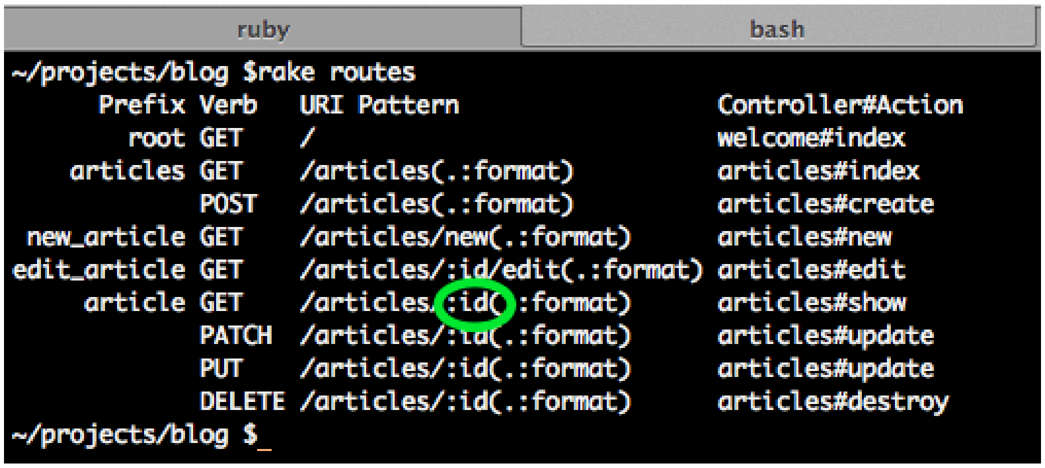
```
2.0.0p247 :017 > app.article_path
ActionController::UrlGenerationError: No route matches {:action=>"show", :controller=>"articles"} missing required keys: [:id]
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/journey/formatter.rb:35:in `generate'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:576:in `generate'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:606:in `generate'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:642:in `url_for'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/url_for.rb:155:in `url_for'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:209:in `call'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:178:in `call'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/action_dispatch/routing/route_set.rb:249:in `block (2 le
vels) in define_url_helper'
	from (irb):17
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails/commands/console.rb:90:in `start'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails/commands/console.rb:9:in `start'
	from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails/commands.rb:64:in `<top (required)>'
	from bin/rails:4:in `require'
	from bin/rails:4:in `<main>'
2.0.0p247 :018 > _
```

Figure 71: Article Path Error

Rails does not recognize the article_path.

Step 3

Look at the output of rake routes command. You can see in the URI pattern column the :id variable for primary key.

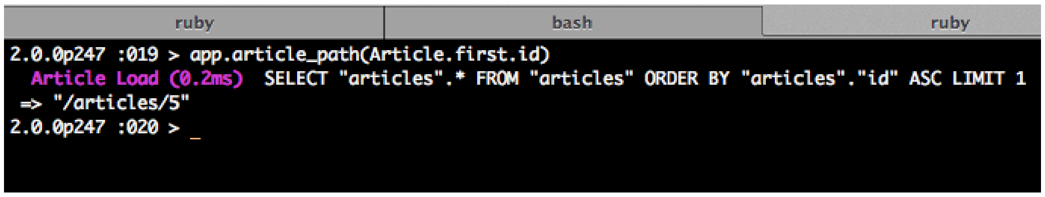


```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 72: Show Article Path Primary Key

So we need to pass the id as the parameter as shown below:

```
<%= link_to 'Show', article_path(article.id) %>
```



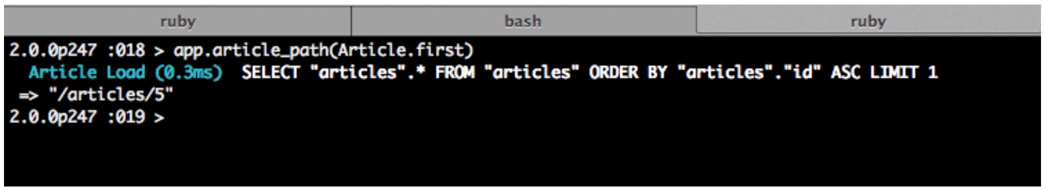
```
2.0.0p247 :019 > app.article_path(Article.first.id)
  Article Load (0.2ms)  SELECT "articles".* FROM "articles" ORDER BY "articles"."id" ASC LIMIT 1
 => "/articles/5"
2.0.0p247 :020 > _
```

Figure 73: Show Article Path

Rails recognizes article path when an id is passed in as the parameter to the url helper method.

You can see the generated string is the same as the URI pattern in the output of the rake routes command.

We can simplify it even further by letting Rails call the id method for us by just passing the article object.



```
2.0.0p247 :018 > app.article_path(Article.first)
  Article Load (0.3ms)  SELECT "articles".* FROM "articles" ORDER BY "articles"."id" ASC LIMIT 1
 => "/articles/5"
2.0.0p247 :019 >
```

Figure 74: Show Article Path

Step 4

Since Rails automatically calls the id method of the ActiveRecord we can simplify it as follows:

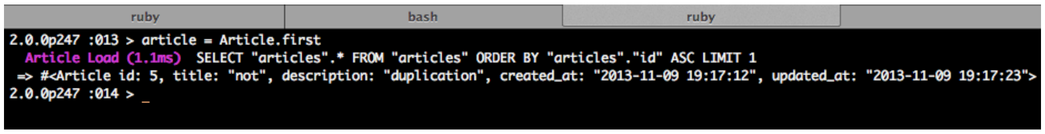
```
<%= link_to 'Show', article_path(article) %>
```

Step 5

Rails has optimized this even further so you can do :

```
<%= link_to 'Show', article %>
```

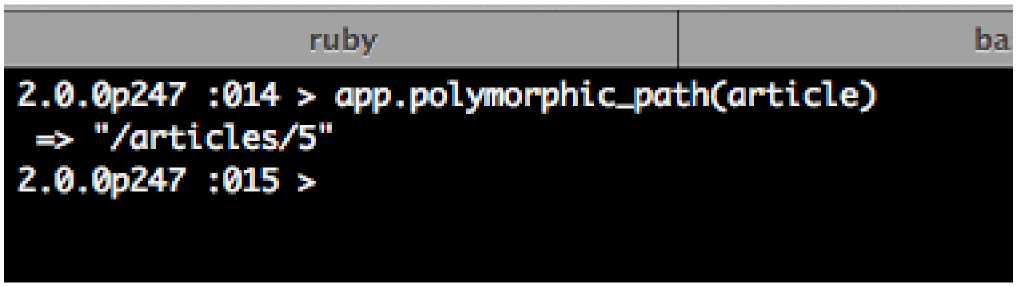
Let's now see how Rails makes this magic happen.



```
2.0.0p247 :013 > article = Article.first
  Article Load (1.1ms)  SELECT "articles".* FROM "articles" ORDER BY "articles"."id" ASC LIMIT 1
 => #<Article id: 5, title: "not", description: "duplication", created_at: "2013-11-09 19:17:12", updated_at: "2013-11-09 19:17:23">
2.0.0p247 :014 > _
```

Figure 75: Loading First Article from Database

Retrieving first article from database in Rails console.



```
2.0.0p247 :014 > app.polymorphic_path(article)
 => "/articles/5"
2.0.0p247 :015 >
```

Figure 76: Show Article Path

Experimenting in Rails console to check the generated URI for a given article resource.

Rails internally uses the polymorphic_path method that takes an argument to generate the url.

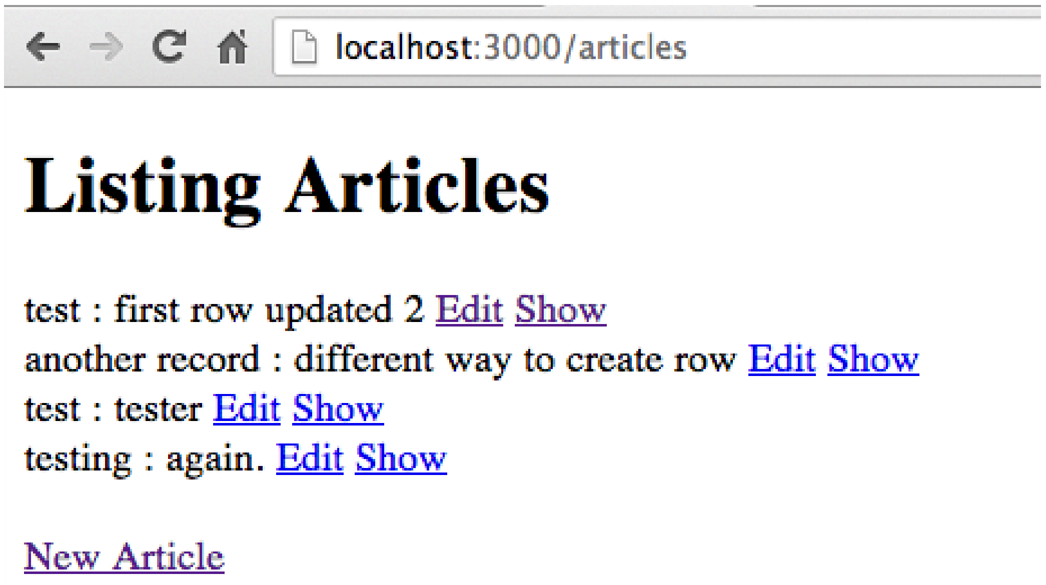
Step 6

The app/views/articles/index.html.erb looks as shown below:

```
<h1>Listing Articles</h1>

<% @articles.each do |article| %>

    <%= article.title %> :

    <%= article.description %>

    <%= link_to 'Edit', edit_article_path(article) %>
    <%= link_to 'Show', article_path(article) %>

    <br/>

<% end %>
<br/>
<%= link_to 'New Article', new_article_path %>
```

Step 7

Reload the articles index page http://localhost:3000/articles


localhost:3000/articles

Listing Articles

test : first row updated 2 Edit Show
another record : different way to create row Edit Show
test : tester Edit Show
testing : again. Edit Show

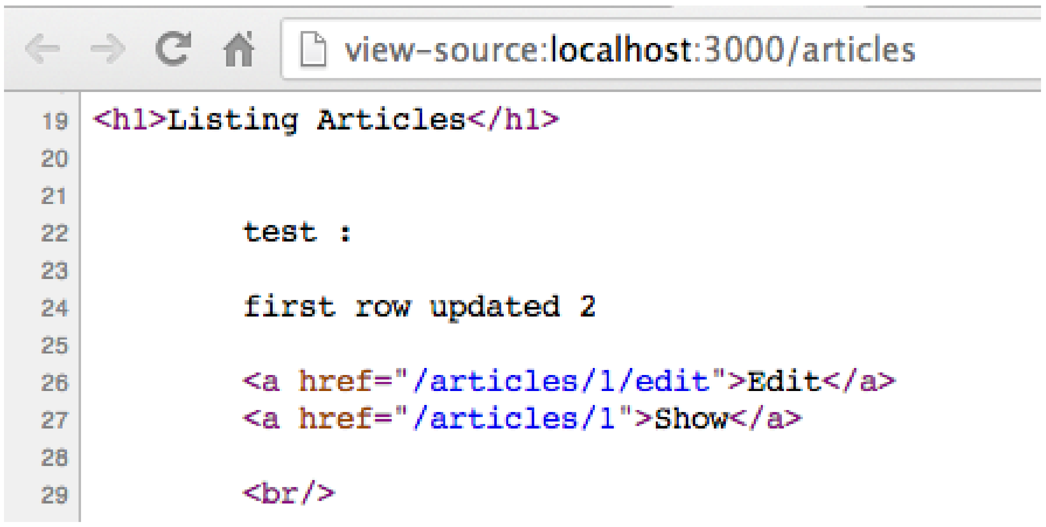
New Article

Figure 77: Show Link

You will see the show link.

Step 8

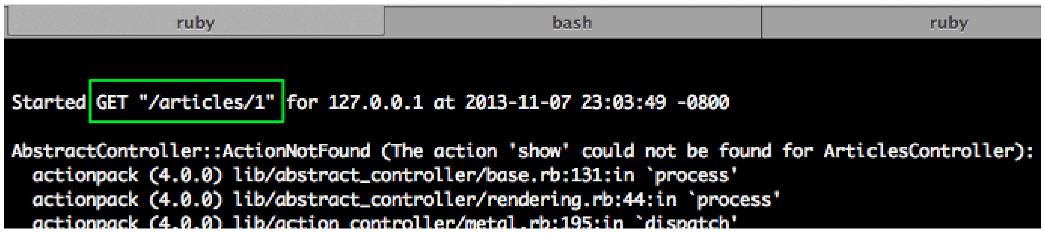
If you view the page source for articles index page, you will see the hyperlink for ‘Show’ with the URI pattern ‘/articles/1’. Since this is a hyperlink the browser will use the http verb GET when the user clicks on show.



```
<h1>Listing Articles</h1>


        test :

        first row updated 2

        <a href="/articles/1/edit">Edit</a>
        <a href="/articles/1">Show</a>

        <br/>
```

Figure 78: Show Link Source

In the rails server log you will see the GET request for the resource '/articles/1'. In this case the value of :id is 1. Rails will automatically populate the params hash with :id as the key and the value as the primary key of the record which in this case is 1. We can retrieve the value of the primary key from the params hash and load the record from the database.



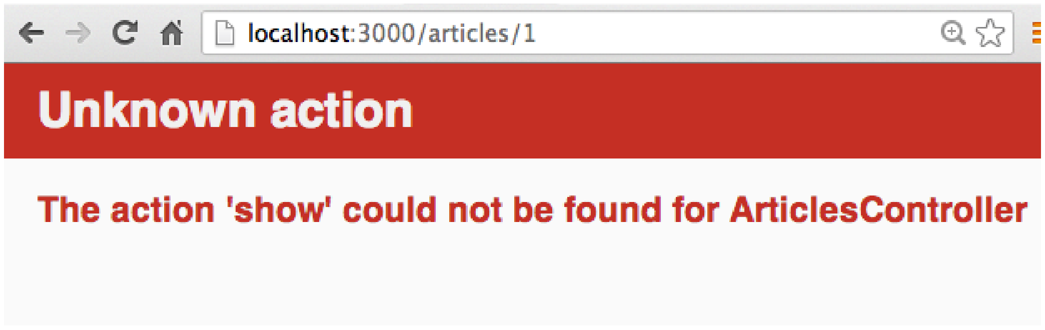
```
Started GET "/articles/1" for 127.0.0.1 at 2013-11-07 23:03:49 -0800

AbstractController::ActionNotFound (The action 'show' could not be found for ArticlesController):
  actionpack (4.0.0) lib/abstract_controller/base.rb:131:in `process'
  actionpack (4.0.0) lib/abstract_controller/rendering.rb:44:in `process'
  actionpack (4.0.0) lib/action_controller/metal.rb:195:in `dispatch'
```

Figure 79: Http GET Request

Server log is another friend.

Step 9

If you click on the 'Show' link you will get the 'Unknown action' error.



Unknown action

The action 'show' could not be found for ArticlesController

Figure 80: Unknown Action Show

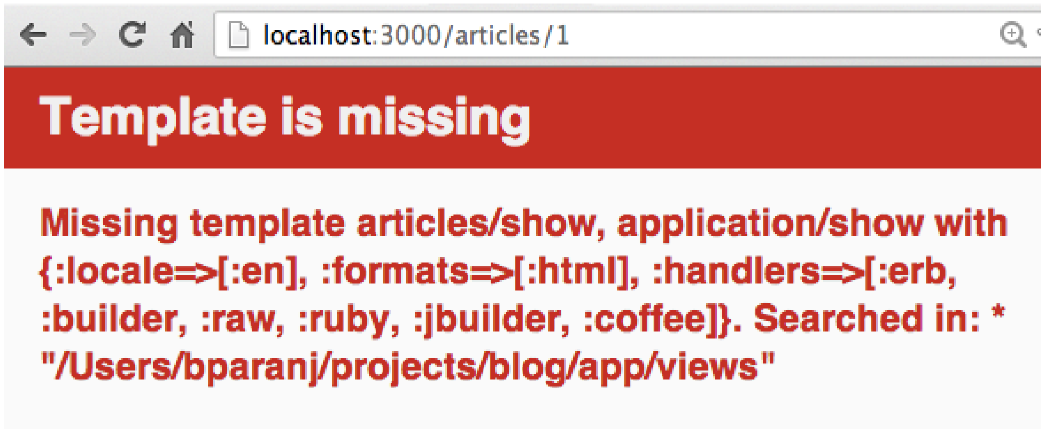
As we saw in the previous step, we can get the primary key from the params hash. So, define the show action in the articles controller as follows:

```
def show
  @article = Article.find(params[:id])
end
```

We already know the instance variable @article will be made available in the view.

Step 10

If you click the 'Show' link, you will get the 'Template is missing' error.



```
localhost:3000/articles/1
```

Template is missing

Missing template articles/show, application/show with {:locale=>[:en], :formats=>[:html], :handlers=>[:erb, :builder, :raw, :ruby, :jbuilder, :coffee]}. Searched in: * "/Users/bparanj/projects/blog/app/views"

Figure 81: Template Missing Error

We need a view to display the selected article. Let's define app/views/show.html.erb with the following content:

```
<p>
  <%= @article.title %><br>
</p>

<p>
  <%= @article.description %><br>
</p>
```

Since the @article variable was initialized in the show action, we can retrieve the values of the columns for this particular record and display it in the view. Now the 'Show' link will work.

Summary

In this lesson we saw how to display a selected article in the show page. In the next lesson we will see how to delete a given record from the database.

8. Delete Article

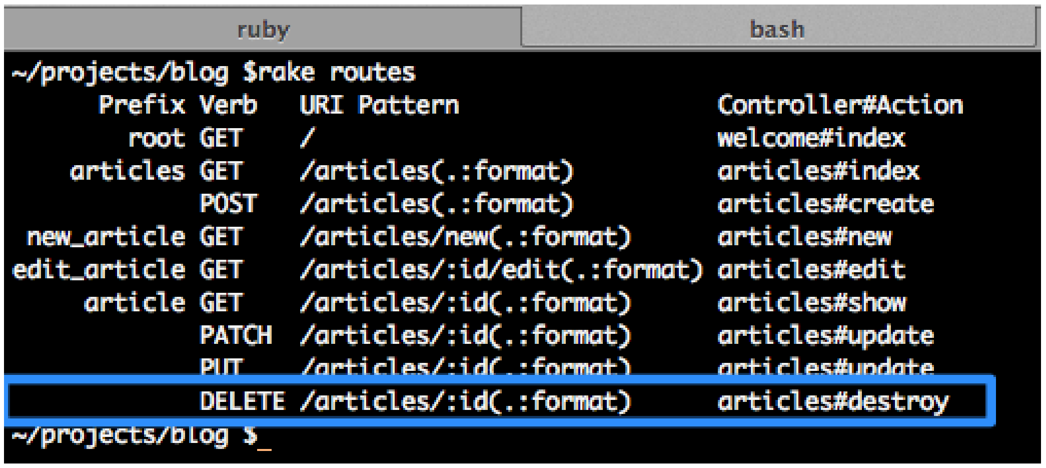
Objectives

- Learn how to delete a given article.
- Learn how to use flash messages.

Steps

Step 1

Let's add 'Delete' link to each record displayed in the articles index page. Look at the output of rake routes.



```
~/projects/blog $rake routes
      Prefix Verb   URI Pattern                  Controller#Action
        root GET    /                            welcome#index
    articles GET    /articles(.:format)          articles#index
             POST   /articles(.:format)          articles#create
 new_article GET    /articles/new(.:format)      articles#new
edit_article GET    /articles/:id/edit(.:format) articles#edit
     article GET    /articles/:id(.:format)      articles#show
             PATCH  /articles/:id(.:format)      articles#update
             PUT    /articles/:id(.:format)      articles#update
             DELETE /articles/:id(.:format)      articles#destroy
~/projects/blog $_
```

Figure 82: URL Helper For Delete

The last row is the route for destroy. The Prefix column is empty in this case. It means whatever is above that column that is not empty carries over to that row. So we can create our hyperlink as:

```
<%= link_to 'Delete', article_path(article) %>
```

This will create an hyperlink, when a user clicks on the link the browser will make a http GET request, which means it will end up in show action instead of destroy. Look the Verb column, you see we need to use DELETE http verb to hit the destroy action in the articles controller. So now we have:

```
<%= link_to 'Delete', article_path(article), method: :delete %>
```

The third parameter specifies that the http verb to be used is DELETE. Since this is an destructive action we want to avoid accidental deletion of records, so let's popup a javascript confirmation for delete like this:

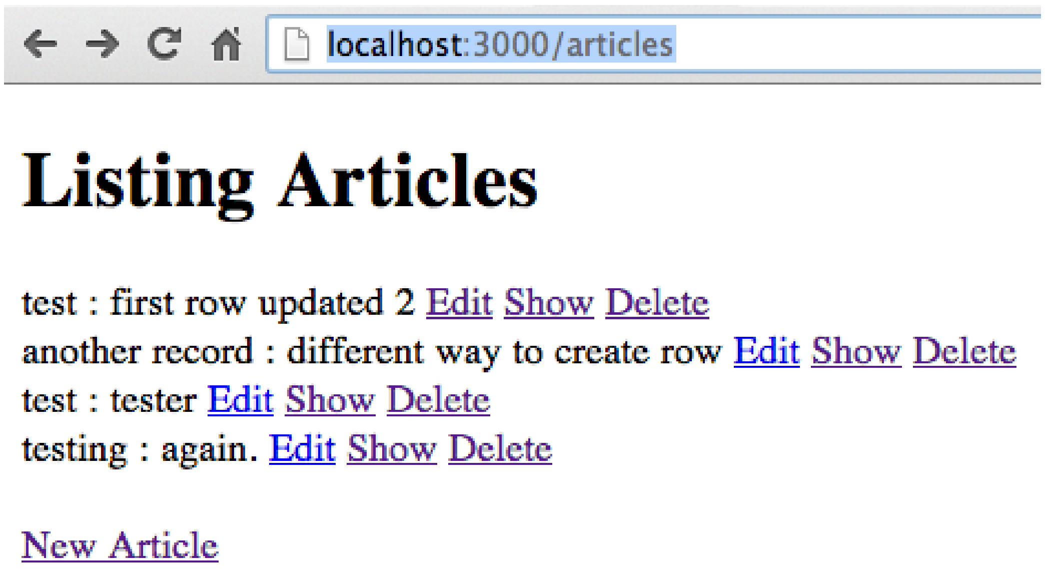
```
<%= link_to 'Delete',
            article_path(article),
                        method: :delete,
                        data: { confirm: 'Are you sure?' } %>
```

The fourth parameter will popup a window that confirms the delete action. The app/views/articles/index.html.erb now looks like this:

```
<h1>Listing Articles</h1>

<% @articles.each do |article| %>

    <%= article.title %> :

    <%= article.description %>

    <%= link_to 'Edit', edit_article_path(article) %>
    <%= link_to 'Show', article %>
    <%= link_to 'Delete',
                article_path(article),
                            method: :delete,
                            data: { confirm: 'Are you sure?' } %>

    <br/>

<% end %>
<br/>
<%= link_to 'New Article', new_article_path %>
```

Step 2

Reload the articles index page http://localhost:3000/articles


localhost:3000/articles

Listing Articles

test : first row updated 2 Edit Show Delete
another record : different way to create row Edit Show Delete
test : tester Edit Show Delete
testing : again. Edit Show Delete

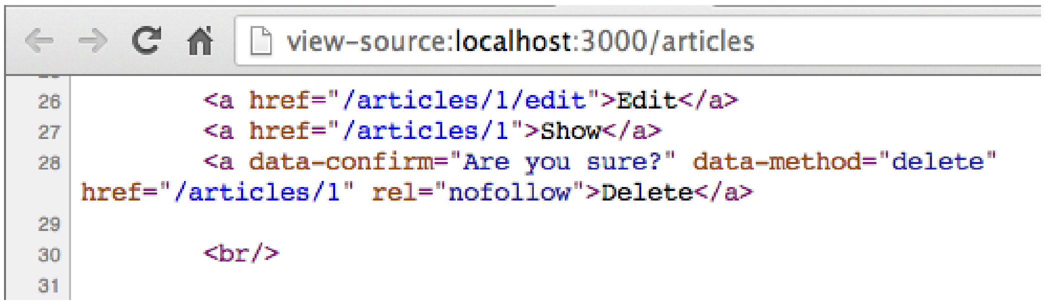
New Article

Figure 83: Delete Link

The delete link in the browser.

Step 3

In the articles index page, do a 'View Page Source'.



```
        <a href="/articles/1/edit">Edit</a>
        <a href="/articles/1">Show</a>
        <a data-confirm="Are you sure?" data-method="delete"
href="/articles/1" rel="nofollow">Delete</a>

        <br/>

```

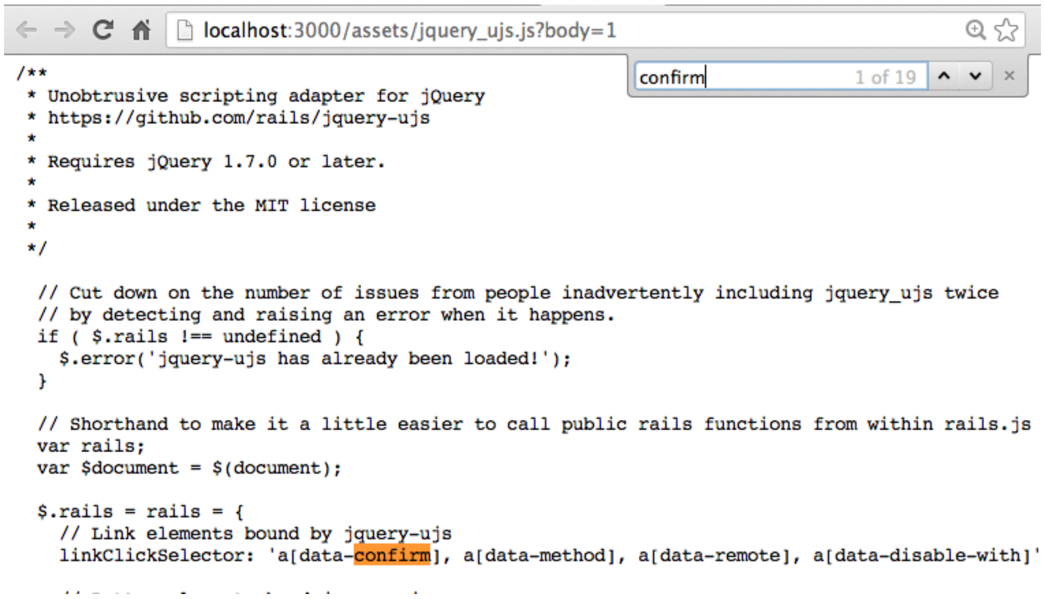
Figure 84: Delete Link Page Source

You see the html 5 data attribute data-confirm with the value 'Are you sure?'. This is the text displayed in the confirmation popup window. The data-method attribute value is delete. This is the http verb to be used for this link. The rel=nofollow tells spiders not to crawl these links because it will delete records in the database.

The combination of the URI pattern and the http verb DELETE uniquely identifies a resource endpoint on the server.

Step 4

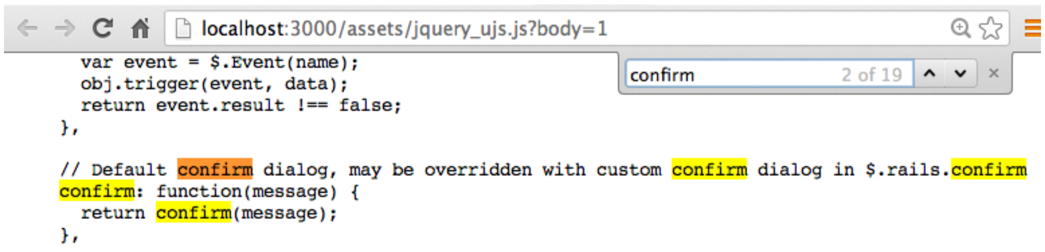
Right click on the http://localhost:3000/articles page. Click on the jquery_ujs.js link.



```
/**
 * Unobtrusive scripting adapter for jQuery
 * https://github.com/rails/jquery-ujs
 *
 * Requires jQuery 1.7.0 or later.
 *
 * Released under the MIT license
 *
 */

  // Cut down on the number of issues from people inadvertently including jquery_ujs twice
  // by detecting and raising an error when it happens.
  if ( $.rails !== undefined ) {
    $.error('jquery-ujs has already been loaded!');
  }

  // Shorthand to make it a little easier to call public rails functions from within rails.js
  var rails;
  var $document = $(document);

  $.rails = rails = {
    // Link elements bound by jquery-ujs
    linkClickSelector: 'a[data-confirm], a[data-method], a[data-remote], a[data-disable-with]'
```

Figure 85: Data Confirm Link Element

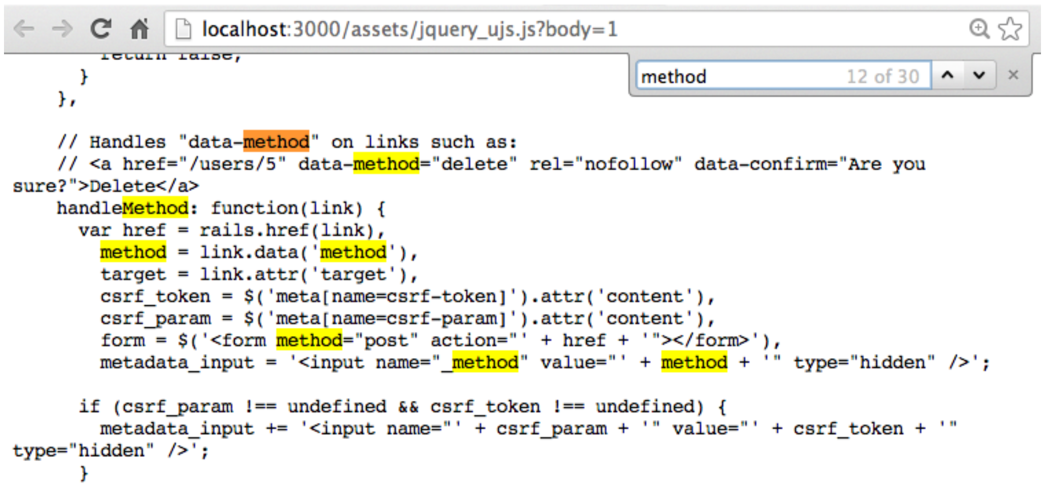
Search for ‘confirm’. The first occurrence shows you the link element bound by jquery-ujs. UJS stands for Unobtrusive Javascript. It is unobtrusive because you don’t see any javascript code in the html page.



```
      var event = $.Event(name);
      obj.trigger(event, data);
      return event.result !== false;
    },

    // Default confirm dialog, may be overridden with custom confirm dialog in $.rails.confirm
    confirm: function(message) {
      return confirm(message);
    },
```

Figure 86: Data Confirm Popup

The second occurrence of the ‘confirm’ shows you the default confirm dialog.



```
        }
      },

      // Handles "data-method" on links such as:
      // <a href="/users/5" data-method="delete" rel="nofollow" data-confirm="Are you
sure?">Delete</a>
      handleMethod: function(link) {
        var href = rails.href(link),
          method = link.data('method'),
          target = link.attr('target'),
          csrf_token = $('meta[name=csrf-token]').attr('content'),
          csrf_param = $('meta[name=csrf-param]').attr('content'),
          form = $('<form method="post" action="' + href + '"></form>'),
          metadata_input = '<input name="_method" value="' + method + '" type="hidden" />';

        if (csrf_param !== undefined && csrf_token !== undefined) {
          metadata_input += '<input name="' + csrf_param + '" value="' + csrf_token + '"
type="hidden" />';
        }
```

Figure 87: Data Method Delete

You can search for ‘method’. You can see handler method that handles ‘data-method’ on links.

Step 5

In the articles index page, click on the 'Delete' link.

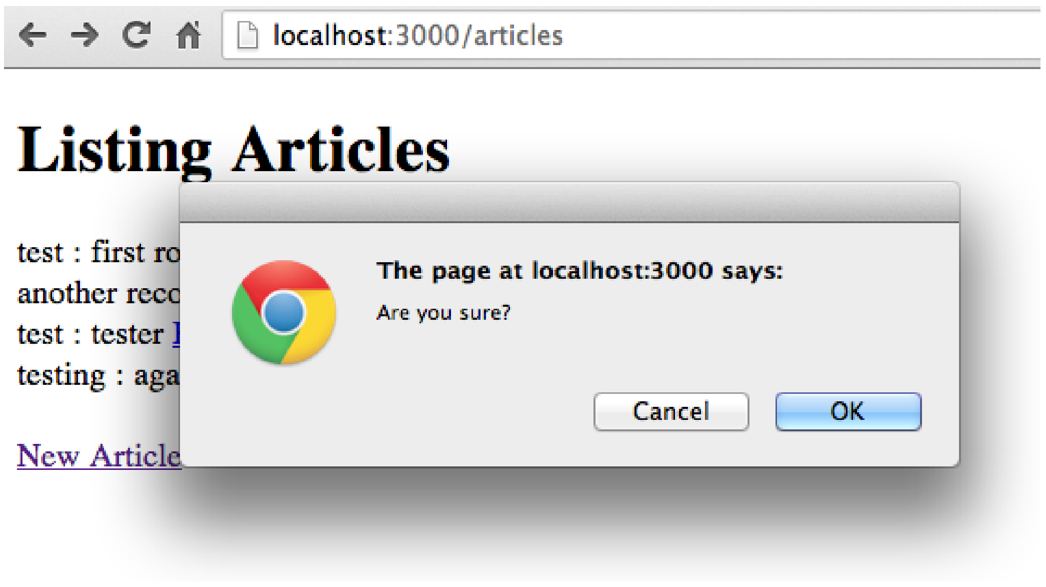


Figure 88: Confirmation Popup

Click 'Cancel'.

Step 6

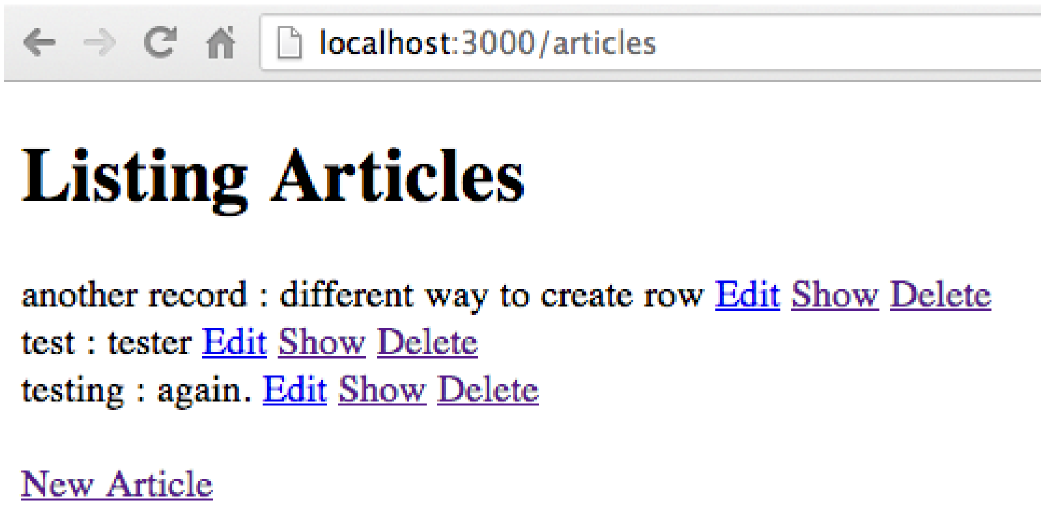
Define the destroy method in articles controller as follows:

```
def destroy
  @article = Article.find(params[:id])
  @article.destroy

  redirect_to articles_path
end
```

This method is very similar to update method. Instead of updating the record we are deleting it. You already know by this time how to look at the values sent by the browser to the server by looking at the server log output. You also know that params hash will contain the data sent to the server and Rails automatically populates the params hash.

Step 7

In the articles index page, click on the 'Delete' link. Click 'Ok' in the confirmation popup. The record will now be deleted from the database and you will be redirected back to the articles index page.



localhost:3000/articles

Listing Articles

another record : different way to create row Edit Show Delete
test : tester Edit Show Delete
testing : again. Edit Show Delete

New Article

Figure 89: First Record Deleted

Did we really delete the record?

Step 8

The record was deleted but there is no feedback to the user. Let's modify the destroy action as follows:

```ruby
def destroy
  @article = Article.find(params[:id])
  @article.destroy

  redirect_to articles_path, notice: "Delete success"
end
```

Add the following code after the body tag in the application layout file, app/views/layouts/application.html.erb

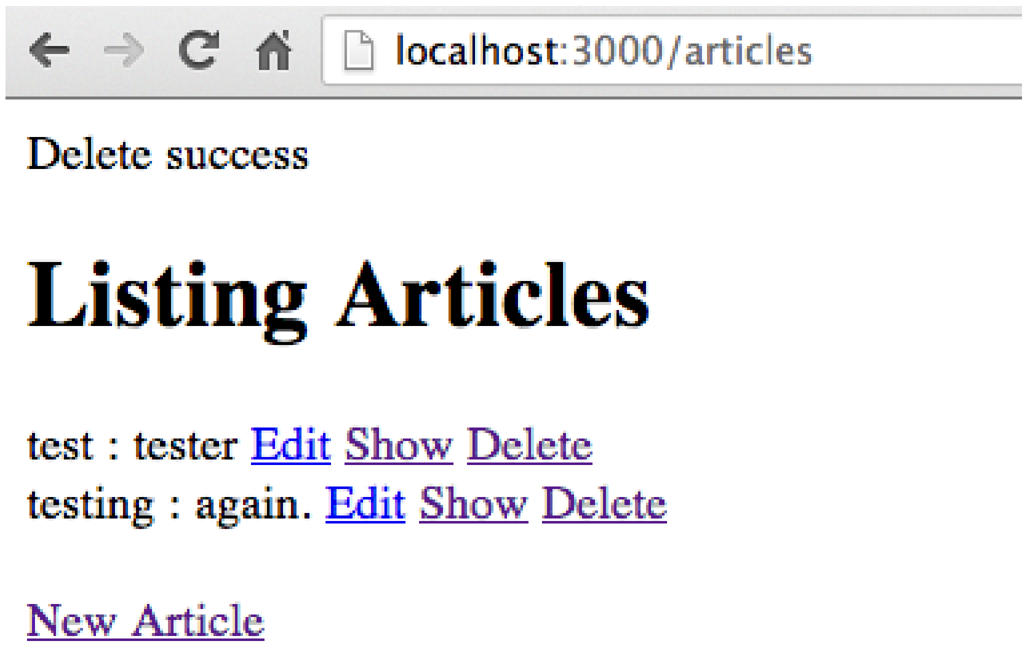
```
<% flash.each do |name, msg| -%>
      <%= content_tag :div, msg, class: name %>
<% end -%>
```

Your updated layout file will now look like this:

```
<!DOCTYPE html>
<html>
<head>
<title>Blog</title>
<%= stylesheet_link_tag "application",
media: "all",
"data-turbolinks-track" => true %>
<%= javascript_include_tag "application",
"data-turbolinks-track" => true %>
<%= csrf_meta_tags %>
</head>
<body>

    <% flash.each do |name, msg| -%>
          <%= content_tag :div, msg, class: name %>
    <% end -%>

<%= yield %>

</body>
</html>
```

Step 9

In the articles index page, click on the 'Delete' link.


localhost:3000/articles

Delete success

Listing Articles

test : tester Edit Show Delete
testing : again. Edit Show Delete

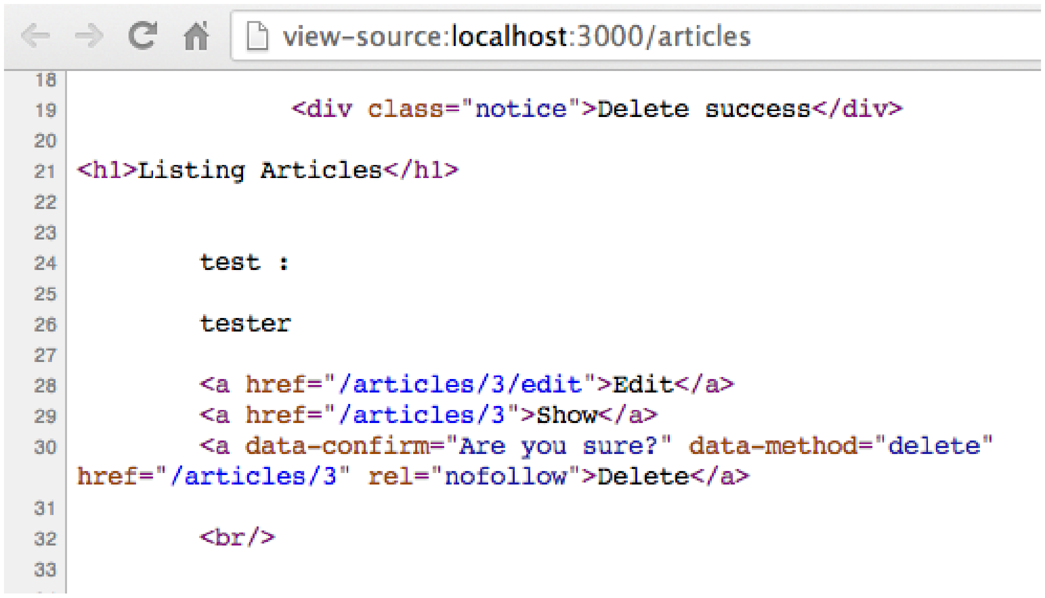
New Article

Figure 90: Delete Success

Now you see the feedback that is displayed to the user after delete operation.

Step 10

In the articles index page, do a 'View Page Source'.



```
view-source:localhost:3000/articles
```

```
                <div class="notice">Delete success</div>

<h1>Listing Articles</h1>


        test :

        tester

        <a href="/articles/3/edit">Edit</a>
        <a href="/articles/3">Show</a>
        <a data-confirm="Are you sure?" data-method="delete"
href="/articles/3" rel="nofollow">Delete</a>

        <br/>

```

Figure 91: Delete Success Page Source

You can see the content_tag helper generated html for the notice section.

Exercise

Define a class notice that will display the text in green. You can add the css to app/assets/stylesheets/application.css file.

Summary

In this lesson we learned how to delete a given article. We also learned about flash notice to provide user feedback. In the next lesson we will learn about eliminating duplication in views.

9. View Duplication

Objective

- Learn how to eliminate duplication in views by using partials

Steps

Step 1

Look at the app/views/new.html.erb and app/views/edit.html.erb. There is duplication.

Step 2

Create a file called _form.html.erb under app/views/articles directory with the following contents:

```
<%= form_for @article do |f| %>
  <p>
    <%= f.label :title %><br>
    <%= f.text_field :title %>
  </p>

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

  <p>
    <%= f.submit %>
  </p>
<% end %>
```

Step 3

Edit the app/views/articles/new.html.erb and change the content as follows:

```
<h1>New Article</h1>

<%= render 'form' %>
```

Step 4

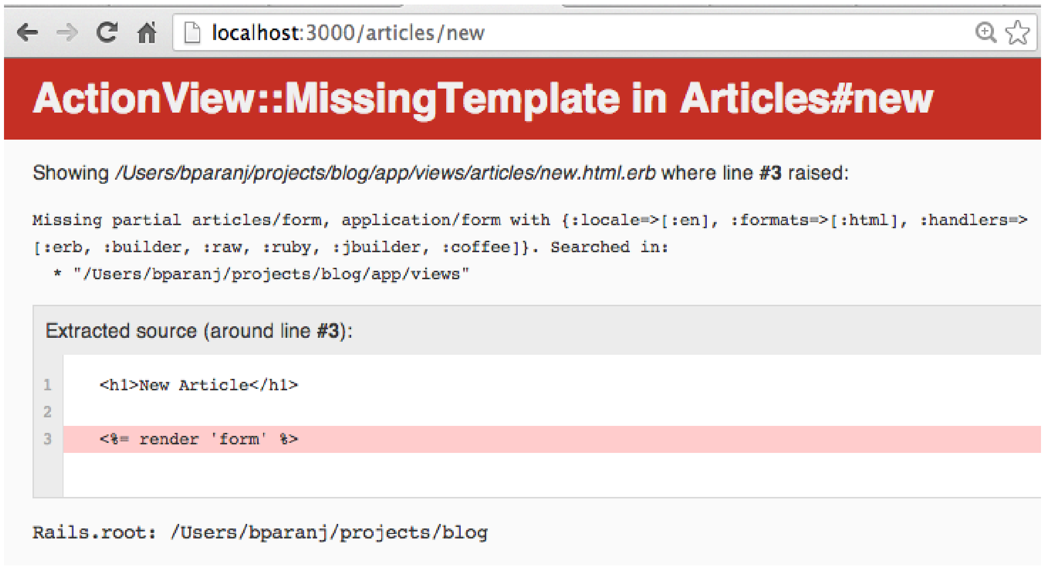
Edit the app/views/articles/edit.html.erb and change the content as follows:

```
<h1>Edit Article</h1>

<%= render 'form' %>
```

Step 5

Go to http://localhost:3000/articles and create new article and edit existing article. The name of the partial begins with an underscore, when you include the partial by using the render helper you don't include the underscore. This is the Rails convention for using partials.

If you get the following error:



localhost:3000/articles/new

ActionView::MissingTemplate in Articles#new

Showing */Users/bparanj/projects/blog/app/views/articles/new.html.erb* where line **#3** raised:

```
Missing partial articles/form, application/form with {:locale=>[:en], :formats=>[:html], :handlers=>
[:erb, :builder, :raw, :ruby, :jbuilder, :coffee]}. Searched in:
  * "/Users/bparanj/projects/blog/app/views"
```

Extracted source (around line **#3**):

```
<h1>New Article</h1>

<%= render 'form' %>
```

```
Rails.root: /Users/bparanj/projects/blog
```

Figure 92: Missing Partial Error

It means you did not create the app/views/articles/_form.html.erb file. Make sure you followed the instruction in step 2.

Summary

In this lesson we saw how to eliminate duplication in views by using partials. In the next lesson we will learn about relationships between models.

10. Relationships

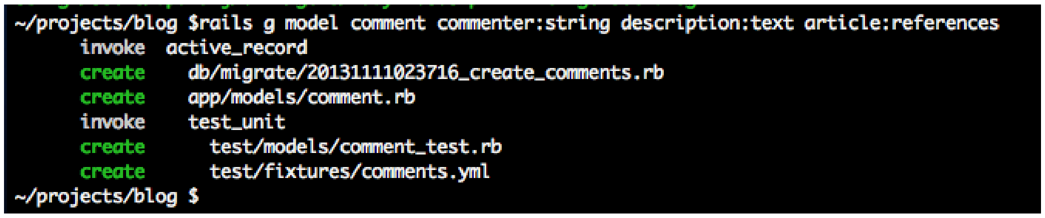
Objective

- To learn relationships between models.

Steps

Step 1

Let's create a comment model by using the Rails generator command:



```
~/projects/blog $rails g model comment commenter:string description:text article:references
      invoke  active_record
      create    db/migrate/20131111023716_create_comments.rb
      create    app/models/comment.rb
      invoke    test_unit
      create      test/models/comment_test.rb
      create      test/fixtures/comments.yml
~/projects/blog $
```

Figure 93: Generate Comment Model

$ rails g model comment commenter:string description:text article:references

Step 2

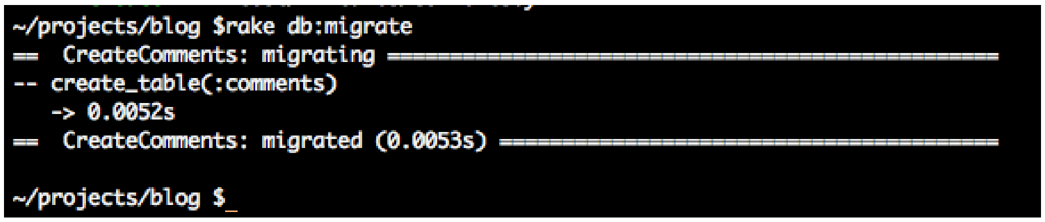
Open the db/migrate/xyz_create_comments.rb file in your IDE. You will see the create_table() method that takes comments symbol :comments as the argument and the description of the columns for the comments table.

What does references do? It creates the foreign key article_id in the comments table. We also create an index for this foreign key in order to make the SQL joins faster.

Step 3

Run :

```
$ rake db:migrate
```



```
~/projects/blog $rake db:migrate
==  CreateComments: migrating ================================================
-- create_table(:comments)
   -> 0.0052s
==  CreateComments: migrated (0.0053s) =======================================

~/projects/blog $_
```

Figure 94: Create Comments Table

Let's install SQLiteManager Firefox plugin that we can use to open the SQLite database, query, view table structure etc.

Step 4

Install SqliteManager Firefox plugin SqliteManager Firefox plugin

Step 5

Let's now see the structure of the comments table. In Firefox go to : Tools –> SQLiteManager

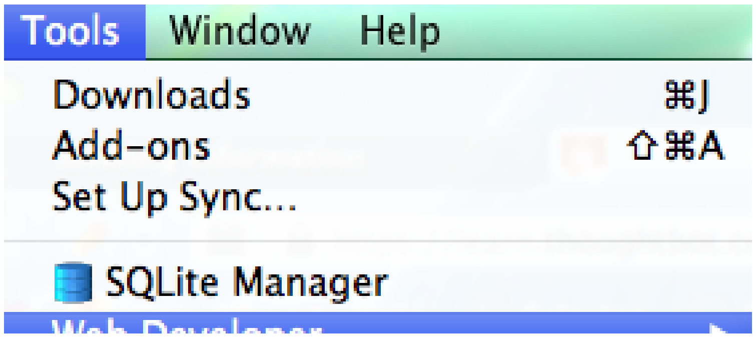


Figure 95: SQLite Manager Firefox Plugin

Step 6

Click on 'Database' in the navigation and select 'Connect Database', browse to blog/db folder.

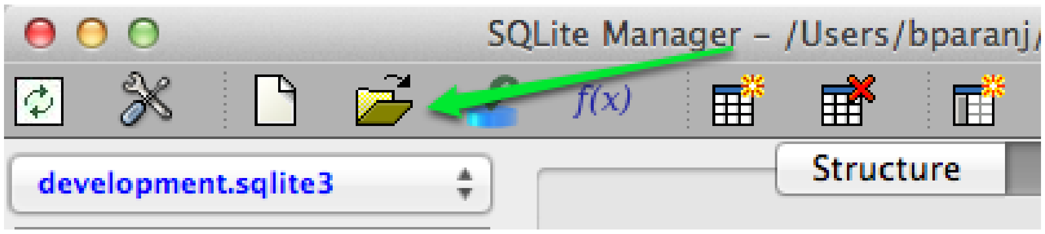


Figure 96: Folder Icon

You can also click on the folder icon as shown in the screenshot.

Step 7

Change the file extensions to all files.

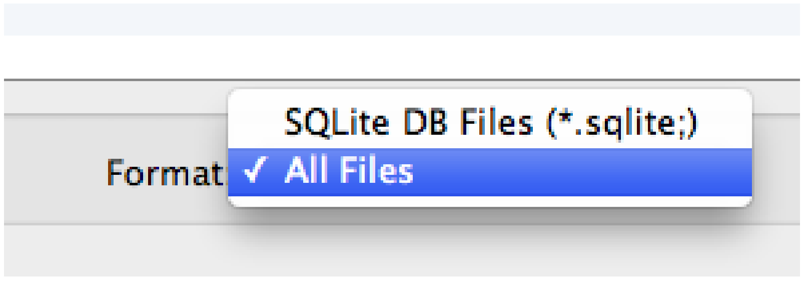


Figure 97: SQLite Manager All Files

Step 8

Open the development.sqlite3 file. Select the comments table.

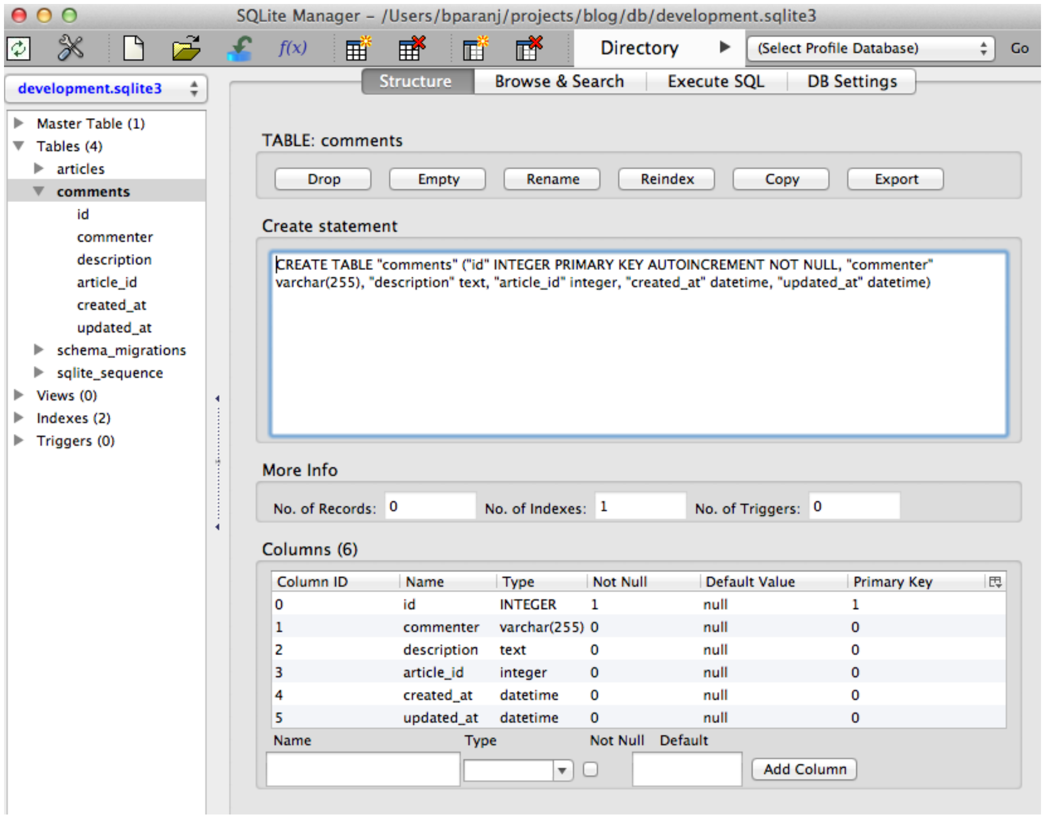


TABLE: comments

Create statement

```
CREATE TABLE "comments" ("id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL, "commenter"
varchar(255), "description" text, "article_id" integer, "created_at" datetime, "updated_at" datetime)
```

More Info

No. of Records: 0   No. of Indexes: 1   No. of Triggers: 0

Columns (6)

Column ID	Name	Type	Not Null	Default Value	Primary Key
0	id	INTEGER	1	null	1
1	commenter	varchar(255)	0	null	0
2	description	text	0	null	0
3	article_id	integer	0	null	0
4	created_at	datetime	0	null	0
5	updated_at	datetime	0	null	0

Name   Type   Not Null   Default

Figure 98: Comments Table Structure

You can see the foreign key article_id in the comments table.

Step 9

Open the app/models/comment.rb file. You will see the

```
belongs_to :article
```

declaration. This means you have a foreign key article_id in the comments table.

The belongs_to declaration in the model will not create or manipulate database tables. The belongs_to or references in the migration will manipulate the database tables. Since your models are not aware of the database relationships, you need to declare them.

Step 10

Open the app/models/article.rb file. Add the following declaration:

```
has_many :comments
```

This means each article can have many comments. Each comment points to it's corresponding article.

Step 11

Open the config/routes.rb and define the route for comments:

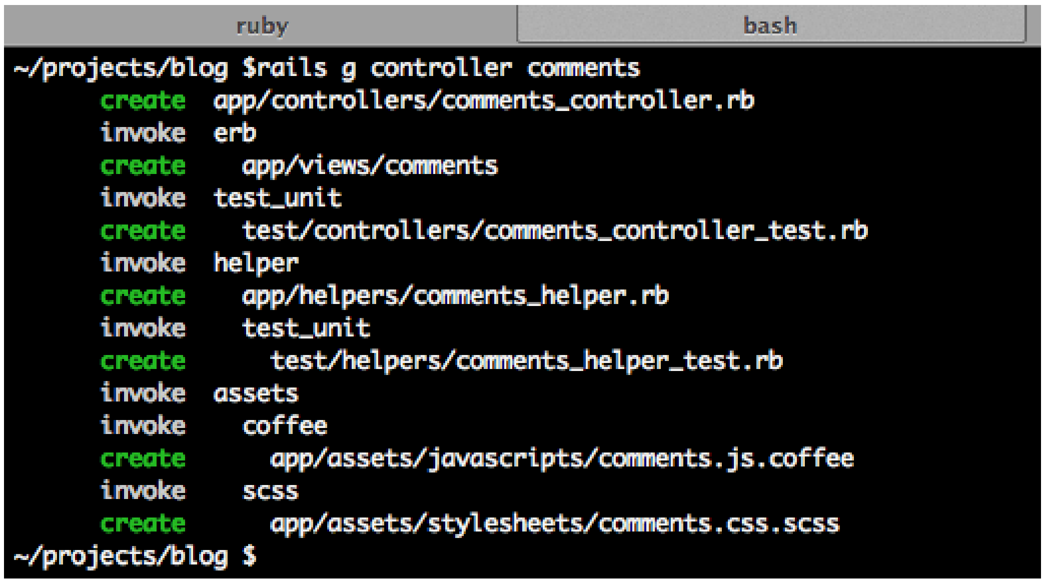
```
resources :articles do
  resources :comments
end
```

Since we have parent-children relationship between articles and comments we have nested routes for comments.

Step 12

Let's create the controller for comments.

```
$ rails g controller comments
```



```
~/projects/blog $rails g controller comments
      create  app/controllers/comments_controller.rb
      invoke  erb
      create    app/views/comments
      invoke  test_unit
      create    test/controllers/comments_controller_test.rb
      invoke  helper
      create    app/helpers/comments_helper.rb
      invoke    test_unit
      create      test/helpers/comments_helper_test.rb
      invoke  assets
      invoke    coffee
      create      app/assets/javascripts/comments.js.coffee
      invoke    scss
      create      app/assets/stylesheets/comments.css.scss
~/projects/blog $
```

Figure 99: Generate Comments Controller

Readers can comment on any article. When someone comments we will display the comments for that article on the article's show page.

Step 13

Let's modify the app/views/articles/show.html.erb to let us make a new comment:

```
<h2>Add a comment:</h2>
<%= form_for([@article, @article.comments.build]) do |f| %>
  <p>
    <%= f.label :commenter %><br />
    <%= f.text_field :commenter %>
  </p>
  <p>
    <%= f.label :description %><br />
    <%= f.text_area :description %>
  </p>
  <p>
    <%= f.submit %>
  </p>
<% end %>
```

The app/views/show.html.erb file will now look like this:

```
<p>
  <%= @article.title %><br>
</p>

<p>
  <%= @article.description %><br>
</p>


<h2>Add a comment:</h2>
<%= form_for([@article, @article.comments.build]) do |f| %>
  <p>
    <%= f.label :commenter %><br />
    <%= f.text_field :commenter %>
  </p>
  <p>
    <%= f.label :description %><br />
    <%= f.text_area :description %>
  </p>
  <p>
    <%= f.submit %>
  </p>
<% end %>
```

Step 14

Go to http://localhost:3000/articles page and click on 'Show' for one of the article.

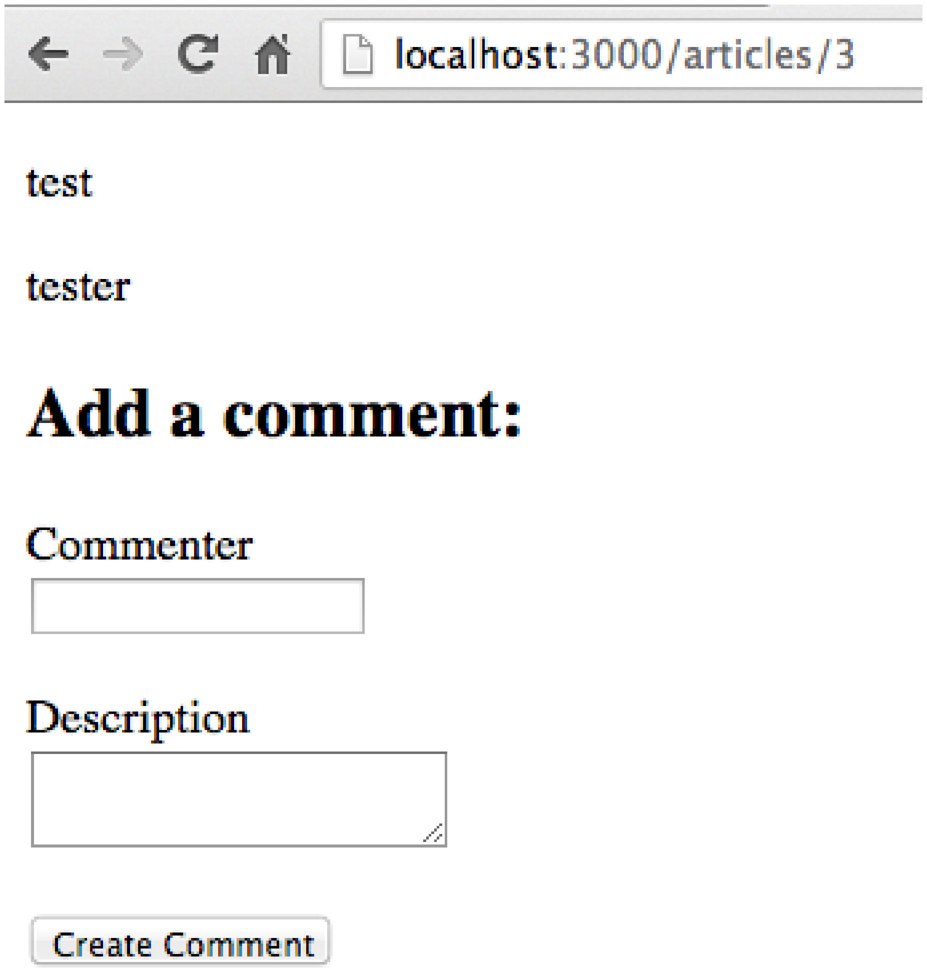
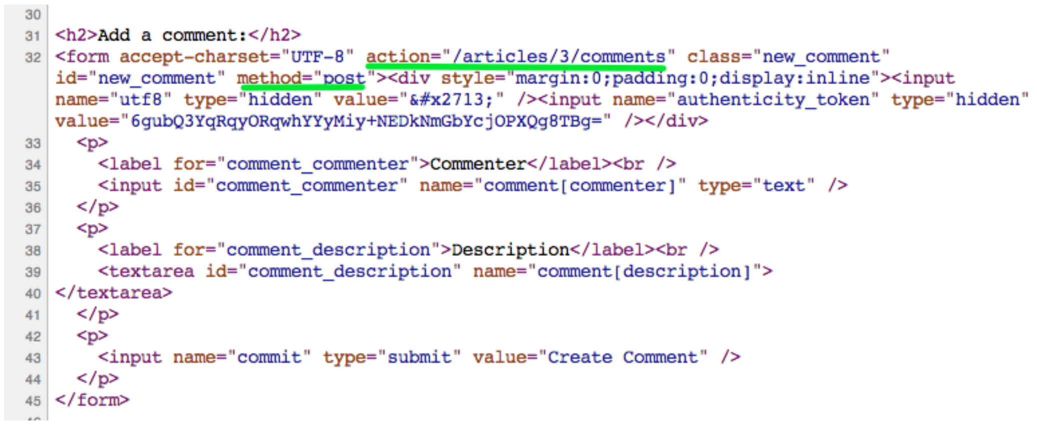


Figure 100: Add Comment Form

You will now see the form for filling out the comment for this specific article.

Step 15

View the page source for the article show page by clicking any of the ‘Show’ link in the articles index page.



```
<h2>Add a comment:</h2>
<form accept-charset="UTF-8" action="/articles/3/comments" class="new_comment"
id="new_comment" method="post"><div style="margin:0;padding:0;display:inline"><input
name="utf8" type="hidden" value="&#x2713;" /><input name="authenticity_token" type="hidden"
value="6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=" /></div>
  <p>
    <label for="comment_commenter">Commenter</label><br />
    <input id="comment_commenter" name="comment[commenter]" type="text" />
  </p>
  <p>
    <label for="comment_description">Description</label><br />
    <textarea id="comment_description" name="comment[description]">
</textarea>
  </p>
  <p>
    <input name="commit" type="submit" value="Create Comment" />
  </p>
</form>
```

Figure 101: Add Comment Page Source

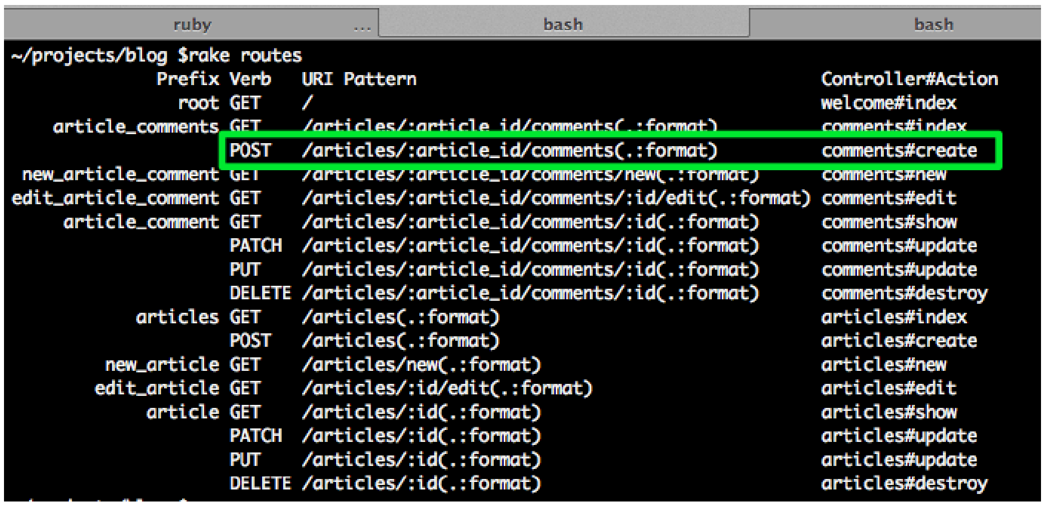
You can see the URI pattern and the http method used when someone submits a comment by clicking the ‘Create Comment’ button.

Exercise 1

Take a look at the output of rake routes and find out the resource endpoint for the URI pattern and http method combination found in step 12.

Step 16

Run rake routes in the blog directory.



```
~/projects/blog $rake routes
                Prefix Verb   URI Pattern                                      Controller#Action
                  root GET    /                                                welcome#index
      article_comments GET    /articles/:article_id/comments(.:format)         comments#index
                       POST   /articles/:article_id/comments(.:format)         comments#create
   new_article_comment GET    /articles/:article_id/comments/new(.:format)     comments#new
  edit_article_comment GET    /articles/:article_id/comments/:id/edit(.:format) comments#edit
       article_comment GET    /articles/:article_id/comments/:id(.:format)     comments#show
                       PATCH  /articles/:article_id/comments/:id(.:format)     comments#update
                       PUT    /articles/:article_id/comments/:id(.:format)     comments#update
                       DELETE /articles/:article_id/comments/:id(.:format)     comments#destroy
              articles GET    /articles(.:format)                              articles#index
                       POST   /articles(.:format)                              articles#create
           new_article GET    /articles/new(.:format)                          articles#new
          edit_article GET    /articles/:id/edit(.:format)                     articles#edit
               article GET    /articles/:id(.:format)                          articles#show
                       PATCH  /articles/:id(.:format)                          articles#update
                       PUT    /articles/:id(.:format)                          articles#update
                       DELETE /articles/:id(.:format)                          articles#destroy
```

Figure 102: Comments Resource Endpoint

You can see how the rails router takes the comment submit form to the comments controller create action.

Step 17

Fill out the comment form and click on ‘Create Comment’. You will get a unknown action create error page.

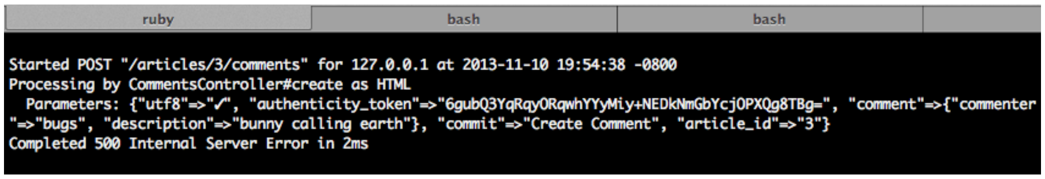
Step 18

Define the create method in comments controller as follows:

```ruby
def create

end
```

Step 19

Fill out the comment form and submit it again.



```
Started POST "/articles/3/comments" for 127.0.0.1 at 2013-11-10 19:54:38 -0800
Processing by CommentsController#create as HTML
  Parameters: {"utf8"=>"✓", "authenticity_token"=>"6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=", "comment"=>{"commenter
"=>"bugs", "description"=>"bunny calling earth"}, "commit"=>"Create Comment", "article_id"=>"3"}
Completed 500 Internal Server Error in 2ms
```

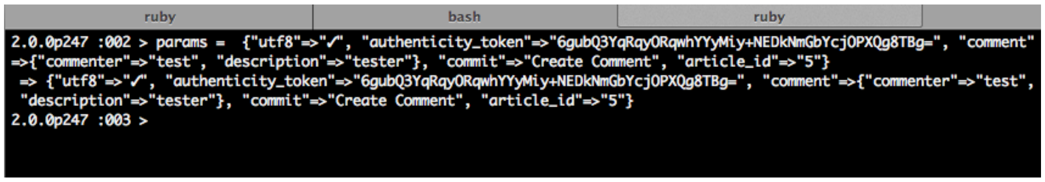
Figure 103: Comment Values in Server Log

You can see the comment values in the server log.

Step 20

Copy the entire Parameters hash you see from the server log. Go to Rails console and type:

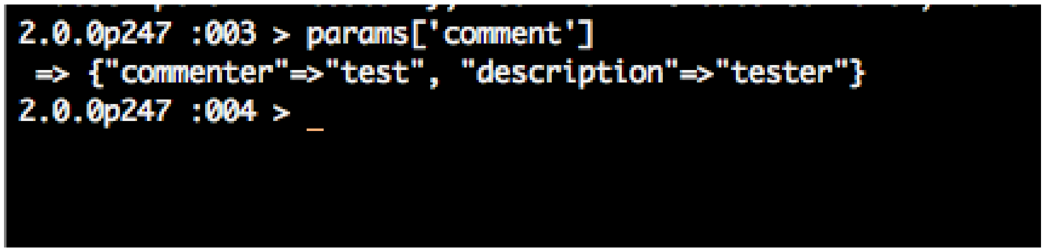
```
params =  {"comment"=>{"commenter"=>"test", "description"=>"tester"},
"commit"=>"Create Comment", "article_id"=>"5"}
```



```
2.0.0p247 :002 > params =  {"utf8"=>"✓", "authenticity_token"=>"6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=", "comment"
=>{"commenter"=>"test", "description"=>"tester"}, "commit"=>"Create Comment", "article_id"=>"5"}
 => {"utf8"=>"✓", "authenticity_token"=>"6gubQ3YqRqyORqwhYYyMiy+NEDkNmGbYcjOPXQg8TBg=", "comment"=>{"commenter"=>"test",
 "description"=>"tester"}, "commit"=>"Create Comment", "article_id"=>"5"}
2.0.0p247 :003 >
```

Figure 104: Parameters for Comment

Here you initialize the params variable with the hash you copied in the rails server log.



```
2.0.0p247 :003 > params['comment']
 => {"commenter"=>"test", "description"=>"tester"}
2.0.0p247 :004 > _
```

Figure 105: Retrieving Comment

You can find the value for comment model by doing: params['comment'] in the Rails console

Step 21

Let's create a comment for a given article by changine the create action as follows:

```
def create
  @article = Article.find(params[:article_id])
  permitted_columns = params[:comment].permit(:commenter, :description)
  @comment = @article.comments.create(permitted_columns)

  redirect_to article_path(@article)
end
```

The only new thing in the above code is the

```
@article.comments.create.
```

Since we have the declaration

```
has_many :comments
```

in the article model. We can navigate from an instance of article to a collection of comments:

```
@article.comments
```

We call the method create on the comments collection like this:

```
@article.comments.create
```

This will automatically populate the foreign key article_id in the comments table for us.

The params[:comment] will retreive the comment column values.

Step 22

Fill out the comment form and submit it.

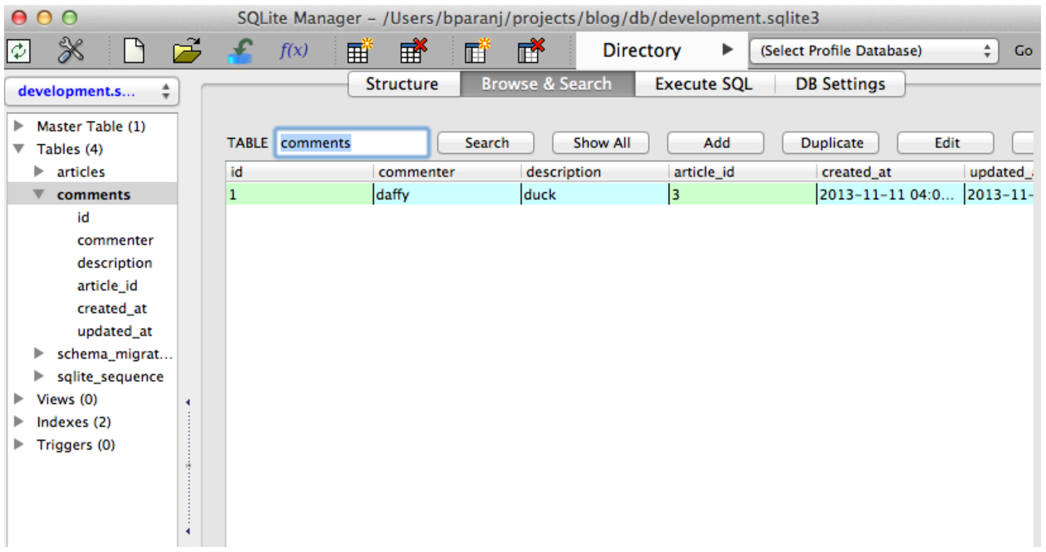


TABLE comments

id	commenter	description	article_id	created_at	updated_
1	daffy	duck	3	2013-11-11 04:0...	2013-11-

Figure 106: Comment Record in Database

You can now view the record in the MySQLite Manager or Rails dbconsole. Let's now display the comments made for a article in the articles show page.

Step 23

Add the following code to the app/views/articles/show.html.erb

```
<h2>Comments</h2>
<% @article.comments.each do |comment| %>
  <p>
    <strong>Commenter:</strong>
    <%= comment.commenter %>
  </p>

  <p>
    <strong>Comment:</strong>
    <%= comment.description %>
  </p>
<% end %>
```

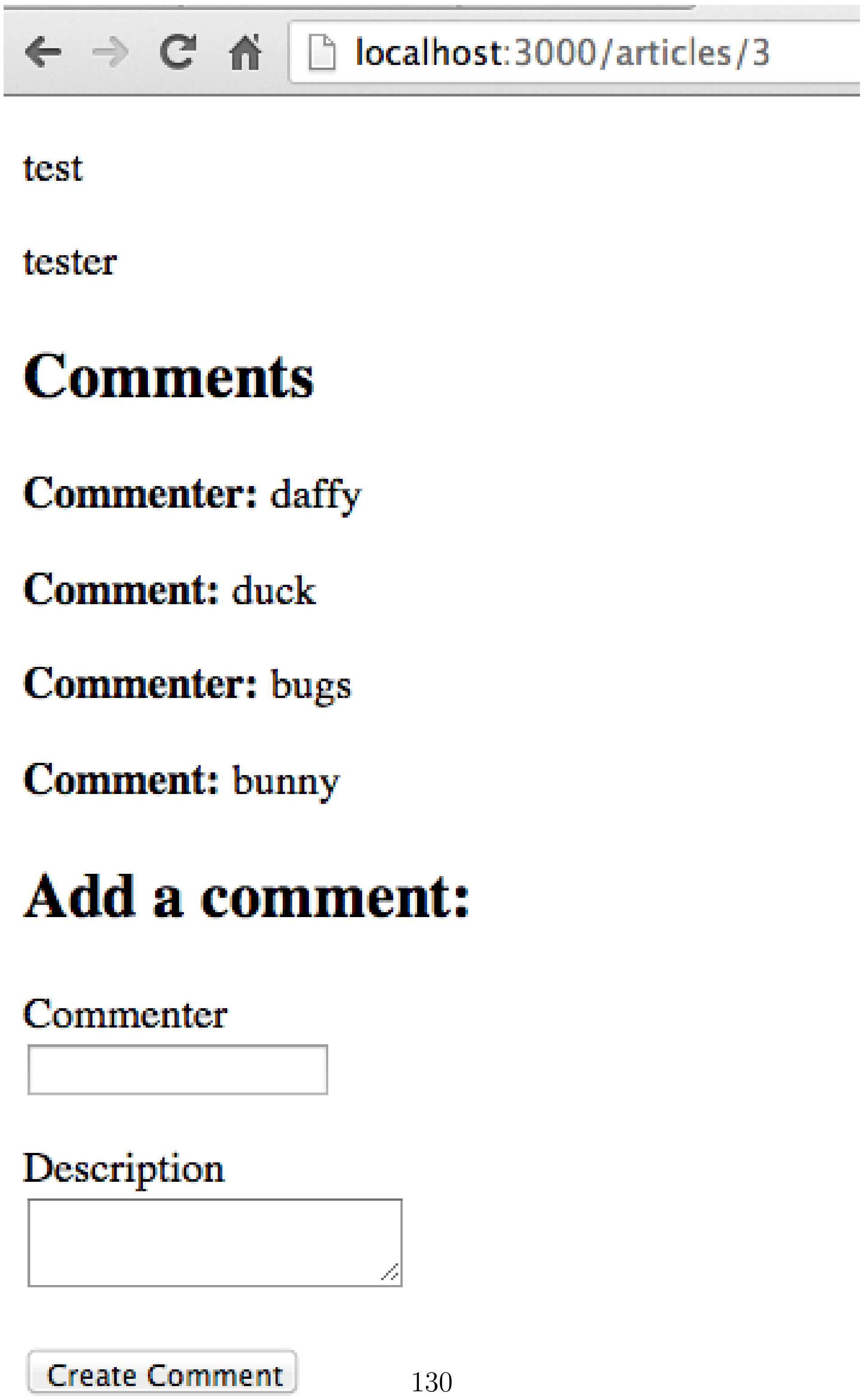
Your app/views/articles/show.html.erb will now look like this:

```
<p>
  <%= @article.title %><br>
</p>

<p>
  <%= @article.description %><br>
</p>

<h2>Comments</h2>
<% @article.comments.each do |comment| %>
  <p>
    <strong>Commenter:</strong>
    <%= comment.commenter %>
  </p>

  <p>
    <strong>Comment:</strong>
    <%= comment.description %>
  </p>
<% end %>

<h2>Add a comment:</h2>
<%= form_for([@article, @article.comments.build]) do |f| %>
  <p>
    <%= f.label :commenter %><br />
    <%= f.text_field :commenter %>
  </p>
  <p>
    <%= f.label :description %><br />
    <%= f.text_area :description %>
  </p>
  <p>
    <%= f.submit %>
  </p>
<% end %>
```

Step 24

Reload the article show page or click on the ‘Show’ link for the article with comments by going to the articles index page.

You will now see the existing comments for an article.


localhost:3000/articles/3

test

tester

Comments

Commenter: daffy

Comment: duck

Commenter: bugs

Comment: bunny

Add a comment:

Commenter

Description

Figure 107: Comments For an Article

Summary

We saw how to create parent-child relationship in the database and how to use ActiveRecord declarations in models to handle 1 to many relationship. We learned about nested routes and how to make forms work in the parent-child relationship. In the next lesson we will implement the feature to delete comments to keep our blog clean from spam.

11. Delete Comment

Objective

- Learn how to work with nested resources

Steps

Step 1

Let's add 'Delete' link for the comment in app/views/articles/show.html.erb. We know the hyperlink text will be 'Delete Comment', so:

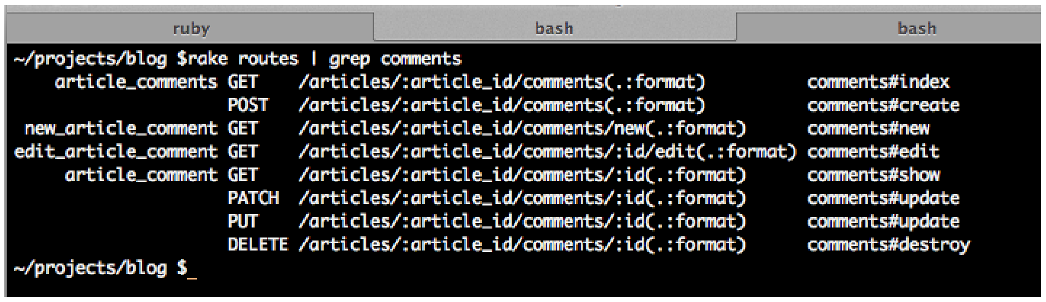
```
<%= link_to 'Delete Comment', ? %>
```

What should be URL helper to use in the second parameter?

Step 2

From the blog directory run:

```
$ rake routes | grep comments
```



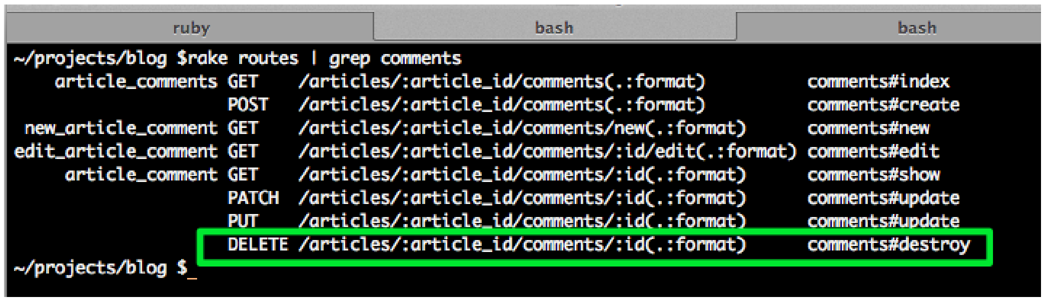
```
~/projects/blog $rake routes | grep comments
    article_comments GET    /articles/:article_id/comments(.:format)          comments#index
                     POST   /articles/:article_id/comments(.:format)          comments#create
 new_article_comment GET    /articles/:article_id/comments/new(.:format)      comments#new
edit_article_comment GET    /articles/:article_id/comments/:id/edit(.:format) comments#edit
     article_comment GET    /articles/:article_id/comments/:id(.:format)      comments#show
                     PATCH  /articles/:article_id/comments/:id(.:format)      comments#update
                     PUT    /articles/:article_id/comments/:id(.:format)      comments#update
                     DELETE /articles/:article_id/comments/:id(.:format)      comments#destroy
~/projects/blog $_
```

Figure 108: Filtered Routes

We are filtering the routes only to the nested routes so that it is easier to read the output in the terminal.

Step 3

The Prefix column here is blank for the comments controller destroy action. So we go up and look for the very first non blank value in the Prefix column and find the URL helper for delete comment feature.

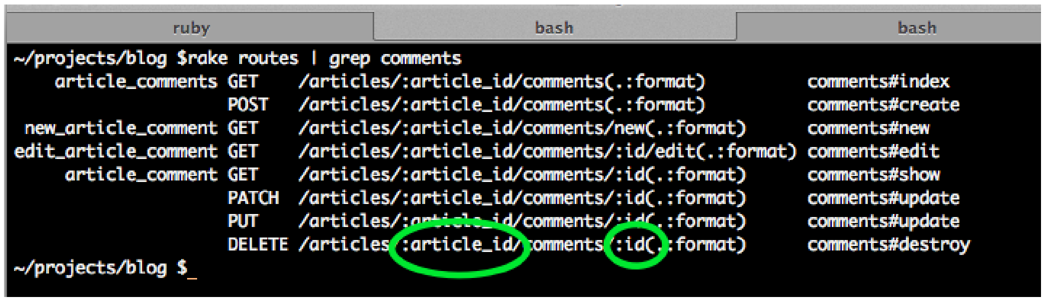


```
~/projects/blog $rake routes | grep comments
    article_comments GET    /articles/:article_id/comments(.:format)          comments#index
                     POST   /articles/:article_id/comments(.:format)          comments#create
 new_article_comment GET    /articles/:article_id/comments/new(.:format)      comments#new
edit_article_comment GET    /articles/:article_id/comments/:id/edit(.:format) comments#edit
     article_comment GET    /articles/:article_id/comments/:id(.:format)      comments#show
                     PATCH  /articles/:article_id/comments/:id(.:format)      comments#update
                     PUT    /articles/:article_id/comments/:id(.:format)      comments#update
                     DELETE /articles/:article_id/comments/:id(.:format)      comments#destroy
~/projects/blog $_
```

Figure 109: Delete URL Helper for Nested Routes

So, we now have:

```
<%= link_to 'Delete Comment', article_comment(article, comment) %>
```



```
~/projects/blog $rake routes | grep comments
    article_comments GET    /articles/:article_id/comments(.:format)          comments#index
                     POST   /articles/:article_id/comments(.:format)          comments#create
 new_article_comment GET    /articles/:article_id/comments/new(.:format)      comments#new
edit_article_comment GET    /articles/:article_id/comments/:id/edit(.:format) comments#edit
     article_comment GET    /articles/:article_id/comments/:id(.:format)      comments#show
                     PATCH  /articles/:article_id/comments/:id(.:format)      comments#update
                     PUT    /articles/:article_id/comments/:id(.:format)      comments#update
                     DELETE /articles/:article_id/comments/:id(.:format)      comments#destroy
~/projects/blog $_
```

Figure 110: Nested Routes Foreign and Primary Keys

We need to pass two parameters to the URL helper because in the URI pattern column you can see the :article_id as well as the primary key for comment :id. You already know that Rails is intelligent enough to call the id method on the passed in objects. The order in which you pass the objects is the same order in which it appears in the URI pattern.

Step 4

There are other URI patterns which are similar to the comments controller destroy action. So we need to do the same thing we did for articles resource. So the link_to now becomes:

```
<%= link_to 'Delete Comment',
                        article_comment(article, comment),
                        method: :delete %>
```

Step 5

The 'Delete Comment' is a destructive operation so let's add the confirmation popup to the link_to helper.

```
<%= link_to 'Delete Comment',
                         article_comment(article, comment),
                         method: :delete,
                         data: { confirm: 'Are you sure?' } %>
```

The app/views/articles/show.html.erb now looks as follows:

```
<p>
  <%= @article.title %><br>
</p>

<p>
  <%= @article.description %><br>
</p>

<h2>Comments</h2>
<% @article.comments.each do |comment| %>
  <p>
    <strong>Commenter:</strong>
    <%= comment.commenter %>
  </p>
  <p>
    <strong>Comment:</strong>
    <%= comment.description %>
  </p>

    <%= link_to 'Delete Comment',
                                article_comment_path(article, comment),
                                method: :delete,
                                data: { confirm: 'Are you sure?' } %>

<% end %>

<h2>Add a comment:</h2>
<%= form_for([@article, @article.comments.build]) do |f| %>
  <p>
    <%= f.label :commenter %><br />
    <%= f.text_field :commenter %>
  </p>
  <p>
    <%= f.label :description %><br />
    <%= f.text_area :description %>
  </p>
  <p>
    <%= f.submit %>
  </p>
<% end %>
```

Step 6

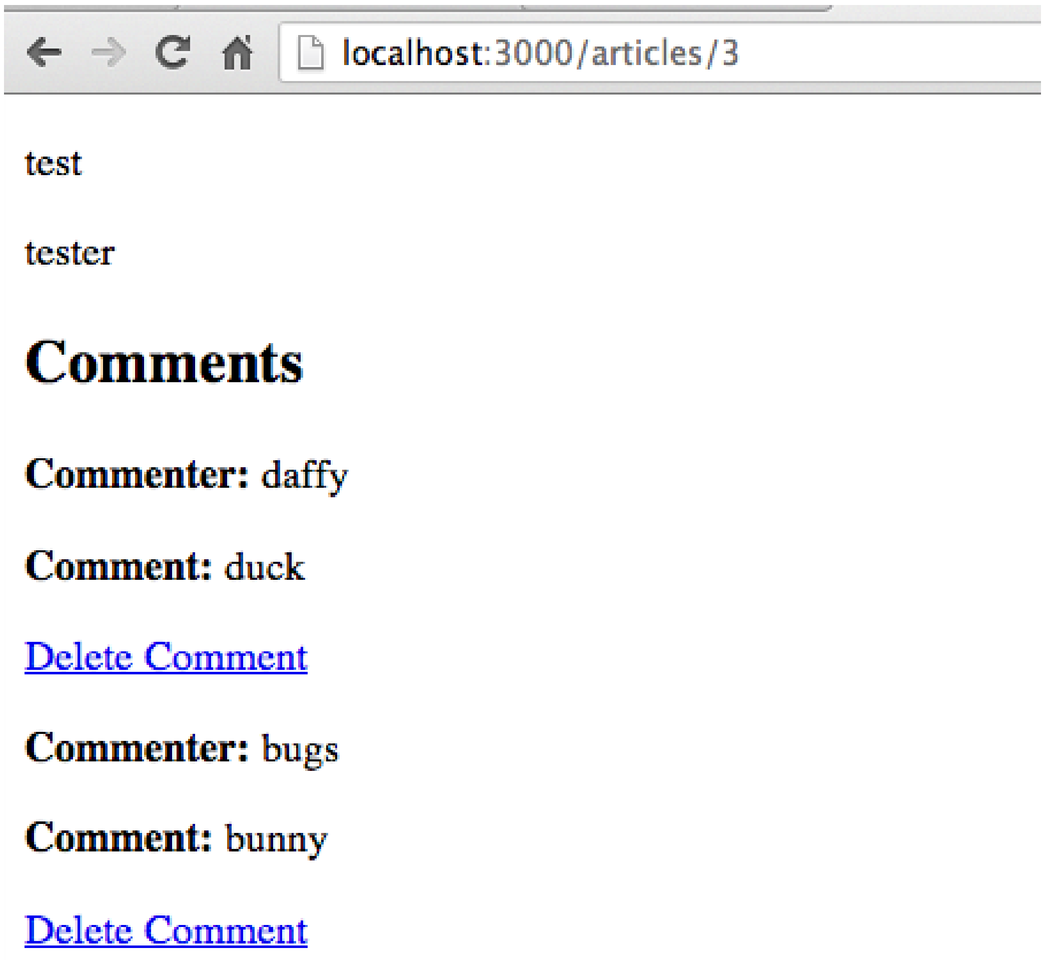
Lets implement the destroy action in the comments controller as follows:

```ruby
def destroy
  @article = Article.find(params[:article_id])
  @comment = @article.comments.find(params[:id])
  @comment.destroy

  redirect_to article_path(@article)
end
```

We first find the parent record which in this case is the article. The next step scopes the find for that particular article record due to security. Then we delete the comment by calling the destroy method. Finally we redirect the user to the articles index page similar to the create action.

Step 7

Go to the articles index page by reloading the http://localhost:3000/articles Click on the 'Show' link for any article that has comments.



localhost:3000/articles/3

test

tester

Comments

Commenter: daffy

Comment: duck

Delete Comment

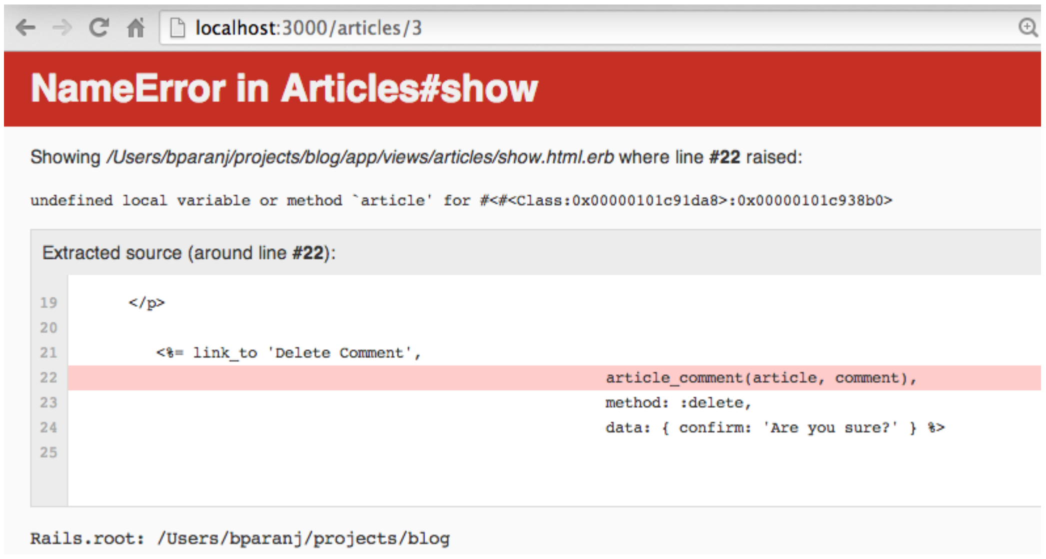
Commenter: bugs

Comment: bunny

Delete Comment

Figure 111: Delete Comment Links

You will see the 'Delete Comment' link for every comment of the article.


localhost:3000/articles/3

NameError in Articles#show

Showing /Users/bparanj/projects/blog/app/views/articles/show.html.erb where line #22 raised:

```
undefined local variable or method `article' for #<#<Class:0x00000101c91da8>:0x00000101c938b0>
```

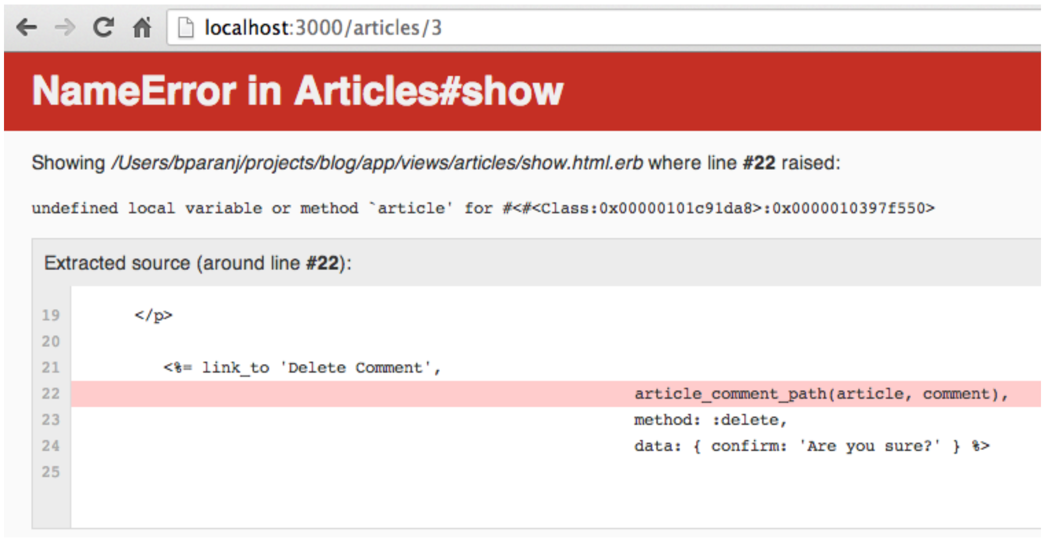
Extracted source (around line #22):

```
      </p>

        <%= link_to 'Delete Comment',
                                                            article_comment(article, comment),
                                                            method: :delete,
                                                            data: { confirm: 'Are you sure?' } %>

```

```
Rails.root: /Users/bparanj/projects/blog
```

Figure 112: URL Error

You will get the url error page if you forget to append the _path or _url to the article_comment Prefix.



localhost:3000/articles/3

NameError in Articles#show

Showing */Users/bparanj/projects/blog/app/views/articles/show.html.erb* where line **#22** raised:

```
undefined local variable or method `article' for #<#<Class:0x00000101c91da8>:0x0000010397f550>
```

Extracted source (around line **#22**):

```
      </p>

        <%= link_to 'Delete Comment',
                                                            article_comment_path(article, comment),
                                                            method: :delete,
                                                            data: { confirm: 'Are you sure?' } %>
```

Figure 113: Article Instance Variable Error

If you forget to use the instance variable @article, then you will get the above error message.

Step 8

Click the 'Delete Comment' link in the articles show page. The confirmation popup will appear and if you click 'Ok' the record will be deleted from the database and you will be redirected back to the articles show page.

Exercise 1

Change the destroy action redirect_to method to use notice that says 'Comment deleted'. If you are using MySQLite Manager you can click on the 'Refresh' icon which is the first icon in the top navigation bar to see the comments gets deleted.

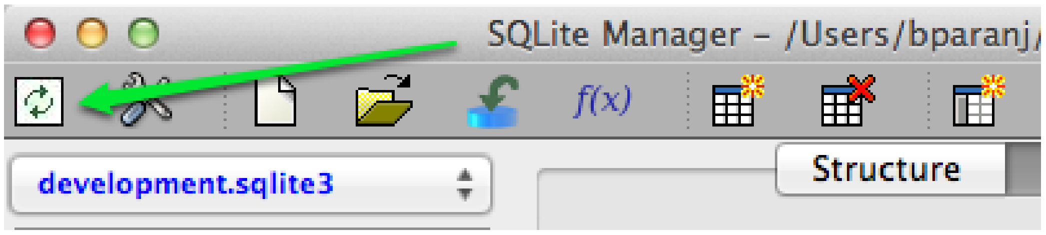


Figure 114: Refresh Icon

Refresh icon of Firefox Plugin MySQLite Manager.

Exercise 2

Go to articles index page and delete an article that has comments. Now go to either rails dbconsole or use MySQLite Manager to see if the comments associated with that articles is still in the database.

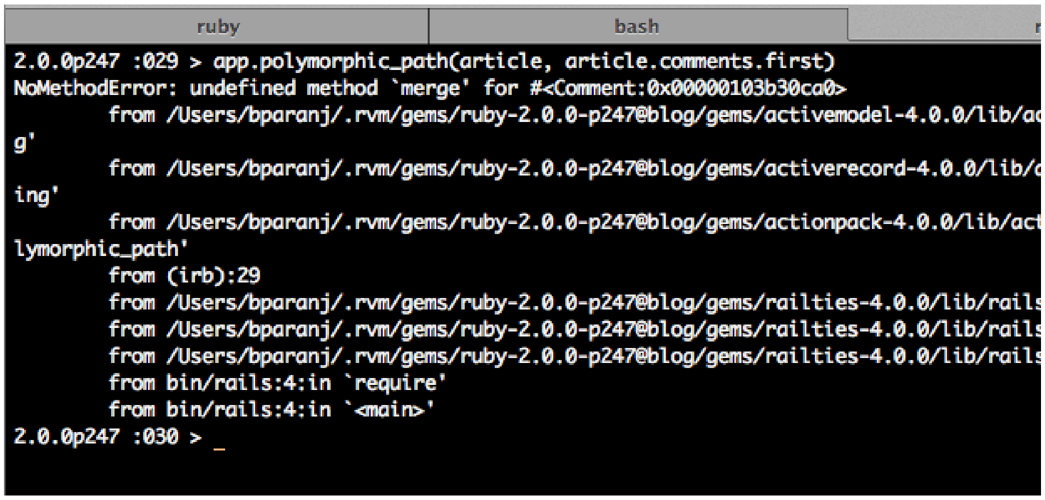
Step 9

When you delete the parent the children do not get deleted automatically. The comment records in our application become useless because they are specific to a given article. In order to delete them when the parent gets deleted we need to change the Article ActiveRecord like this :

```ruby
class Article < ActiveRecord::Base
  has_many :comments, dependent: :destroy
end
```

Now if you delete the parent that has comments, all the comments associated with it will also be deleted. So you will not waste space in the database by retaining records that are no longer needed.

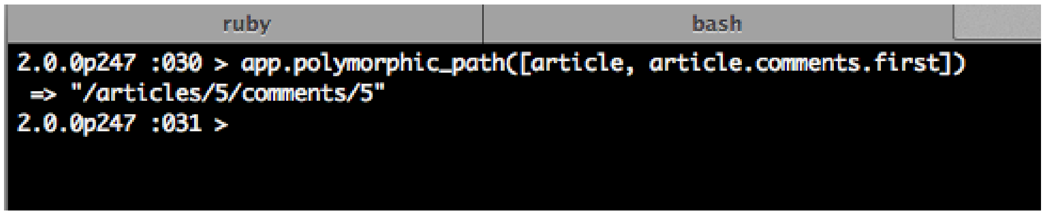
Step 10



```
2.0.0p247 :029 > app.polymorphic_path(article, article.comments.first)
NoMethodError: undefined method `merge' for #<Comment:0x00000103b30ca0>
        from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/activemodel-4.0.0/lib/ac
g'
        from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/activerecord-4.0.0/lib/a
ing'
        from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/actionpack-4.0.0/lib/act
lymorphic_path'
        from (irb):29
        from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails
        from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails
        from /Users/bparanj/.rvm/gems/ruby-2.0.0-p247@blog/gems/railties-4.0.0/lib/rails
        from bin/rails:4:in `require'
        from bin/rails:4:in `<main>'
2.0.0p247 :030 > _
```

Figure 115: Polymorphic Path Method Error

The polymorphic_path method will throw an error when two arguments are passed.



```
2.0.0p247 :030 > app.polymorphic_path([article, article.comments.first])
 => "/articles/5/comments/5"
2.0.0p247 :031 >
```

Figure 116: Polymorphic Path Method

Rails internally uses polymorphic_path method with an array containing the parent and child objects to generate the url helper.

Change the second parameter, url helper to :

```
[@article, comment]
```

The link_to will now look like this:

```
<%= link_to 'Delete Comment',
                         [@article, comment],
                         method: :delete,
                         data: { confirm: 'Are you sure?' } %>
```

The delete functionality will still work. Since Rails allows passing the parent and child instances in an array instead of using the Prefix.

Summary

In this lesson we learned about nested routes and how to deal with deleting records which has children. Right now anyone is able to delete records, in the next lesson we will restrict the delete functionality only to blog owner.

12. Restricting Operations

Objective

- To learn how to use simple HTTP authentication to restrict access to actions

Steps

Step 1

Add the following code to the top of the articles_controller.rb:

```
class ArticlesController < ApplicationController

  http_basic_authenticate_with name: 'welcome',
  password: 'secret',
  except: [:index, :show]

  <!-- actions such as index, new etc omitted here -->
end
```

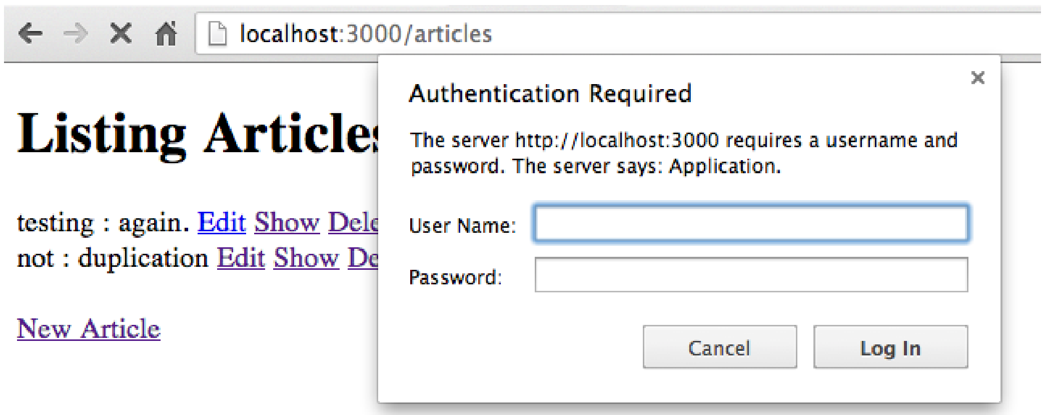
This declaration protects the creating, editing and deleting functionality. Read only operations such as show and index are not protected.

Step 2

Reload the articles index page : http://localhost:3000/articles

Step 3

Click 'Delete' for any of the article.


localhost:3000/articles

Listing Article

testing : again. Edit Show Dele

not : duplication Edit Show De

New Article

Authentication Required

The server http://localhost:3000 requires a username and password. The server says: Application.

User Name:

Password:

Figure 117: URL Error

You will see popup for authentication.

Step 4

For user name, enter welcome and for password enter secret. Click 'Login'. Now the record will be deleted.

Exercise 1

Use http basic authentication to protect deleting comments in the articles show page.

Summary

This completes our quick tour of Rails 4. If you have developed the blog application following the 12 lessons you will now have a strong foundation to build upon by reading other Rails books to continue your journey to master the Rails framework. Good luck.

Bonus Chapters

1. Multiple Representations of a Resource

Objective

- To learn how to represent a resource in different formats such as XML and JSON.

Steps

Step 1

Add the line:

```
respond_to :xml
```

to articles_controller.rb file like this:

```
class ArticlesController < ApplicationController
  respond_to :xml

  # Rest of the code remains the same as before
end
```

Step 2

Add the line:

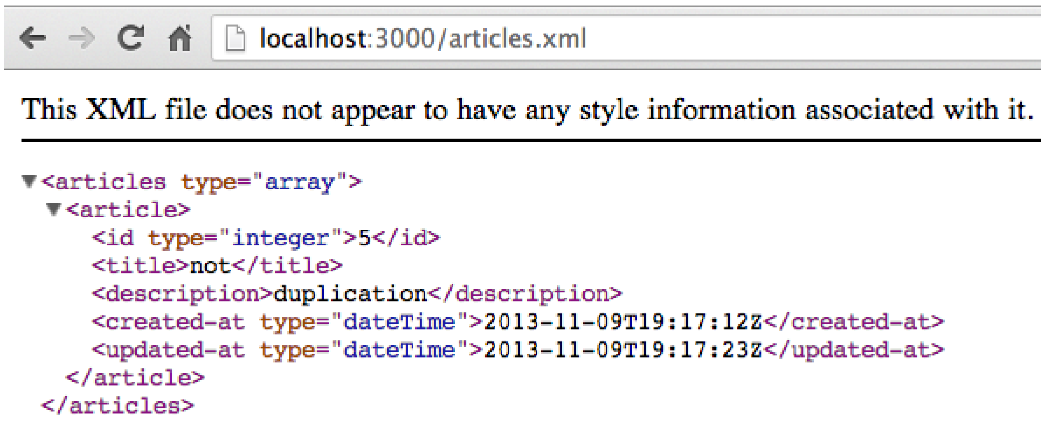
```
respond_with(@articles)
```

to index action in the articles_controller like this:

```
def index
  @articles = Article.all

  respond_with(@articles)
end
```

Step 3

Open http://localhost:3000/articles.xml in the browser.


localhost:3000/articles.xml

This XML file does not appear to have any style information associated with it.

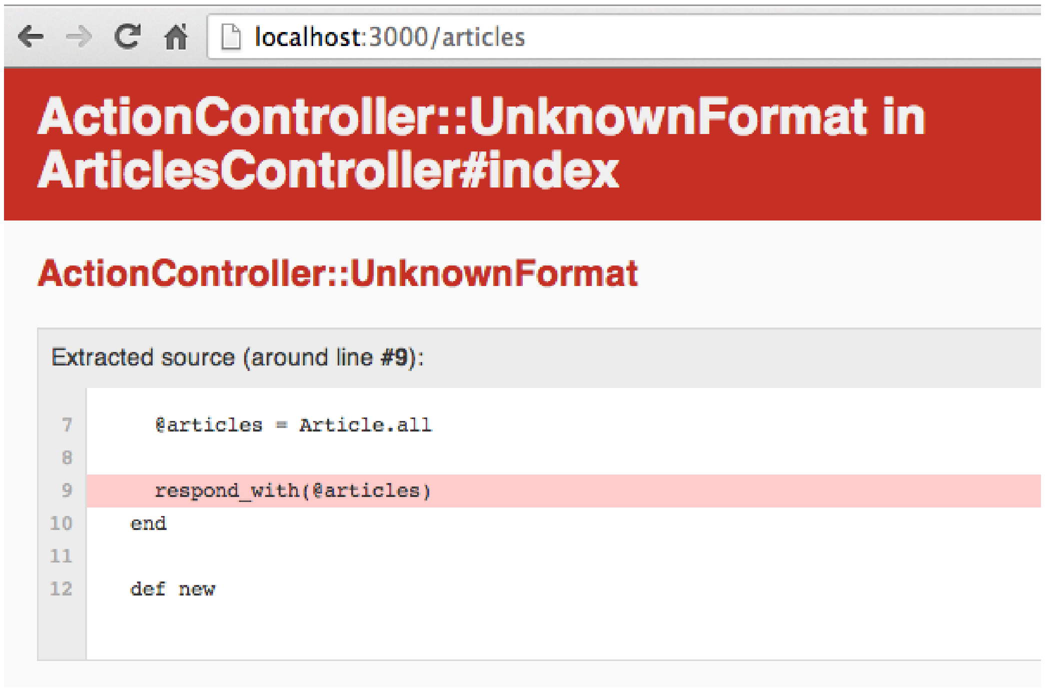
```
▼<articles type="array">
  ▼<article>
     <id type="integer">5</id>
     <title>not</title>
     <description>duplication</description>
     <created-at type="dateTime">2013-11-09T19:17:12Z</created-at>
     <updated-at type="dateTime">2013-11-09T19:17:23Z</updated-at>
   </article>
 </articles>
```

Figure 118: XML Representation of Resource

Rails automatically converts ActiveRecord objects to XML representation.

Step 4

Open http://localhost:3000/articles in the browser.



ActionController::UnknownFormat in ArticlesController#index

ActionController::UnknownFormat

Extracted source (around line #9):

```
    @articles = Article.all

    respond_with(@articles)
  end

  def new
```

Figure 119: Broken HTML Representation

Rails does not recognize this request and throws UnknownFormat error.

Step 5

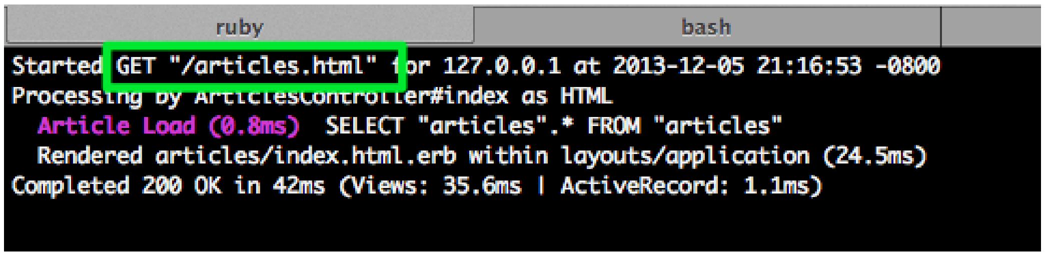
Change the line :

```
respond_to :xml
```

to :

```
respond_to :xml, :html
```

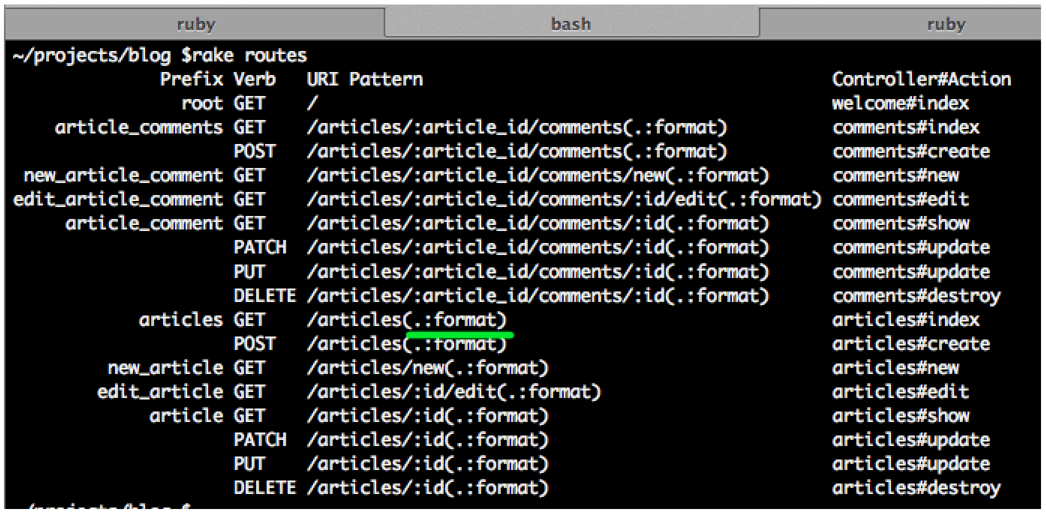
Reload http://localhost:3000/articles.html in the browser. You will now see that list of articles displayed in the browser in html format.



```
Started GET "/articles.html" for 127.0.0.1 at 2013-12-05 21:16:53 -0800
Processing by ArticlesController#index as HTML
  Article Load (0.8ms)  SELECT "articles".* FROM "articles"
  Rendered articles/index.html.erb within layouts/application (24.5ms)
Completed 200 OK in 42ms (Views: 35.6ms | ActiveRecord: 1.1ms)
```

Figure 120: Format Value in Brower Request

The value of format in the URI can be html, xml, json etc.



```
~/projects/blog $rake routes
               Prefix Verb   URI Pattern                                          Controller#Action
                 root GET    /                                                    welcome#index
     article_comments GET    /articles/:article_id/comments(.:format)             comments#index
                      POST   /articles/:article_id/comments(.:format)             comments#create
  new_article_comment GET    /articles/:article_id/comments/new(.:format)         comments#new
 edit_article_comment GET    /articles/:article_id/comments/:id/edit(.:format)    comments#edit
      article_comment GET    /articles/:article_id/comments/:id(.:format)         comments#show
                      PATCH  /articles/:article_id/comments/:id(.:format)         comments#update
                      PUT    /articles/:article_id/comments/:id(.:format)         comments#update
                      DELETE /articles/:article_id/comments/:id(.:format)         comments#destroy
             articles GET    /articles(.:format)                                  articles#index
                      POST   /articles(.:format)                                  articles#create
          new_article GET    /articles/new(.:format)                              articles#new
         edit_article GET    /articles/:id/edit(.:format)                         articles#edit
              article GET    /articles/:id(.:format)                              articles#show
                      PATCH  /articles/:id(.:format)                              articles#update
                      PUT    /articles/:id(.:format)                              articles#update
                      DELETE /articles/:id(.:format)                              articles#destroy
```

Figure 121: Format in URI

Format variable in the URI as seen in the output of 'rake routes' command.

Exercise

Modify the respond_to to handle JSON format. Use the symbol :json and view the JSON representation in the browser.

Summary

In this lesson you learned how to represent a resource in different formats. You learned about the format variable in the output of rake routes and how it plays a role in representing a resource in different formats. You can customize the fields that you want to display to the user by reading the Rails documentation.

2. Filters

Objective

- To learn how to use before_action filter

Steps

Step 1

Add find_article method to articles_controller.rb:

```ruby
def find_article
  Article.find(params[:id])
end
```

Step 2

Add the before_action filter to articles_controller.rb:

```ruby
before_action :find_article, except: [:new, :create, :index]
```

We are excluding the new, create and index actions because we don't need to find an article for a given id for those methods.

Step 3

Remove the duplication in edit, updated, show and destroy by using the find_article method. The articles_controller.rb now looks like this:

```ruby
class ArticlesController < ApplicationController
  before_action :find_article, except: [:new, :create, :index]

  respond_to :xml, :html
```

```
http_basic_authenticate_with name: 'welcome',
password: 'secret',
except: [:index, :show]

def index
  @articles = Article.all

  respond_with(@articles)
end

def new
  @article = Article.new
end

def create
  Article.create(params.require(:article).permit(:title, :description))

  redirect_to articles_path
end

def edit
  @article = find_article
end

def update
  @article = find_article
  allowed_params = params.require(:article).permit(:title, :description)
  @article.update_attributes(allowed_params)

  redirect_to articles_path
end

def show
  @article = find_article
end

def destroy
  @article = find_article
```

```
    @article.destroy

    redirect_to articles_path, notice: "Delete success"
  end

  def find_article
    Article.find(params[:id])
  end
end
```

Step 4

We don't want the find_article method to be exposed as an action that can be called. So let's make it private like this:

```
private

def find_article
  Article.find(params[:id])
end
```

Now this method can only be used within the articles controller class. Edit, delete and show features will work.

Summary

In this lesson we learned how to use before_action filter. It takes the name of the method as a symbol and calls that method before an action is executed. We customized the filter by excluding some of the actions that does not require loading the article from the database. To learn more about filters check out the http://guides.rubyonrails.org/ site.

3. Validations

Objectives

- To learn about validating user input
- To learn about render and redirect

Steps

Step 1

Go to http://localhost:3000/articles page in the browser. Click on 'New Article' link and click submit without filling out the form. You will see that the title and description of the article is blank in the database. Let's fix this problem.

Step 2

Add the validation declarations to article.rb as follows:

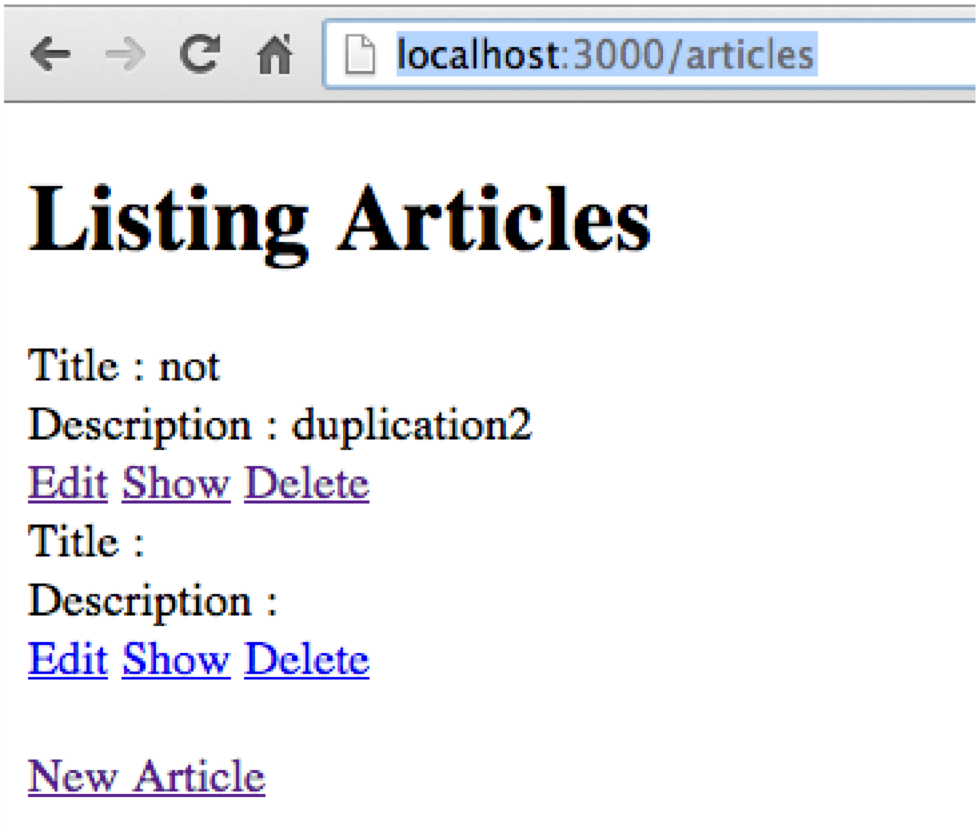
```
validates :title, presence: true
validates :description, presence: true
```

The article.rb file now looks like this:

```
class Article < ActiveRecord::Base
  has_many :comments, dependent: :destroy

  validates :title, presence: true
  validates :description, presence: true
end
```

Step 3

Submit the new article form without values for title and description. No new record is created but there is no feedback to the user explaining why new record was not created.



localhost:3000/articles

Listing Articles

Title : not
Description : duplication2
Edit Show Delete
Title :
Description :
Edit Show Delete

New Article

Figure 122: Blank Values Inserted in the Database

Let's provide user feedback.

Step 4

Add the code to display validation error messsages to the app/views/articles/_form.html.erb file:

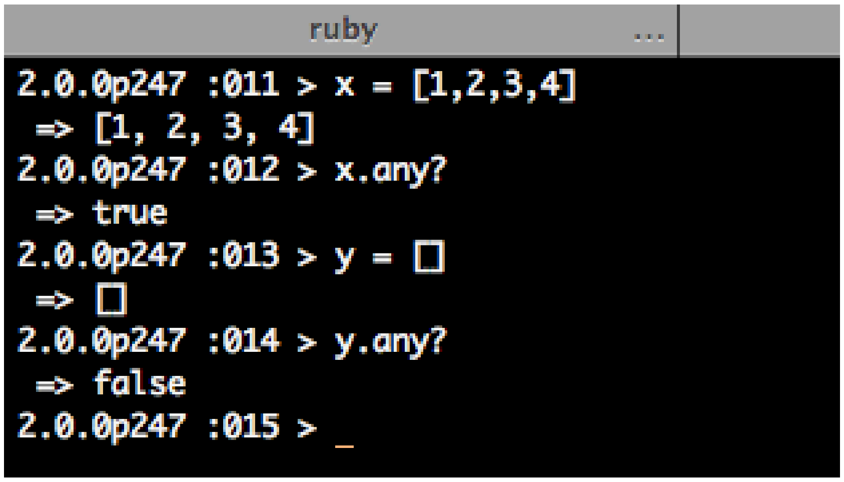
```
<% if @article.errors.any? %>
  <h2><%= pluralize(@article.errors.count, "error") %> prohibited
    this article from being saved:</h2>

  <ul>
  <% @article.errors.full_messages.each do |m| %>
    <li><%= m %></li>
  <% end %>
  </ul>
<% end %>
```

Now the form partial looks like this:

```
<%= form_for @article do |f| %>

  <% if @article.errors.any? %>
    <h2>
          <%= pluralize(@article.errors.count, "error") %>
          prohibited this article from being saved:
        </h2>

    <ul>
    <% @article.errors.full_messages.each do |m| %>
      <li><%= m %></li>
    <% end %>
    </ul>
  <% end %>

  <p>
    <%= f.label :title %><br>
    <%= f.text_field :title %>
  </p>
  <p>
    <%= f.label :description %><br>
    <%= f.text_area :description %>
  </p>

  <p>
    <%= f.submit %>
  </p>
<% end %>
```

The pluralize view helper method pluralizes the string argument depending on the number of the first parameter. In our case if there are more than one error than the output of pluralize will be 'errors' otherwise it will be 'error'.

The any? method returns true if there are any elements in a given array, otherwise it returns false.

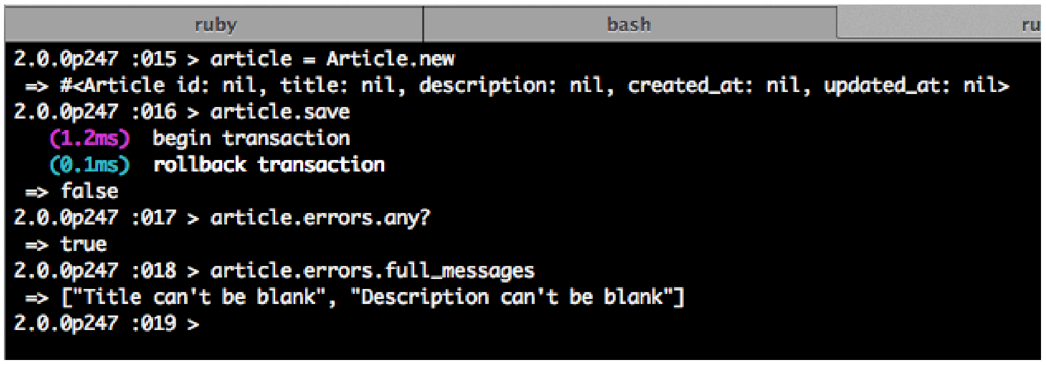


```
2.0.0p247 :011 > x = [1,2,3,4]
 => [1, 2, 3, 4]
2.0.0p247 :012 > x.any?
 => true
2.0.0p247 :013 > y = []
 => []
2.0.0p247 :014 > y.any?
 => false
2.0.0p247 :015 > _
```

Figure 123: The Array any? Method in Action

Experimenting in the Rails console to learn about any? method.

We iterate through all the error messages for the article object and display it in a list.



```
2.0.0p247 :015 > article = Article.new
 => #<Article id: nil, title: nil, description: nil, created_at: nil, updated_at: nil>
2.0.0p247 :016 > article.save
   (1.2ms)  begin transaction
   (0.1ms)  rollback transaction
 => false
2.0.0p247 :017 > article.errors.any?
 => true
2.0.0p247 :018 > article.errors.full_messages
 => ["Title can't be blank", "Description can't be blank"]
2.0.0p247 :019 >
```

Figure 124: Experimenting in the Rails Console

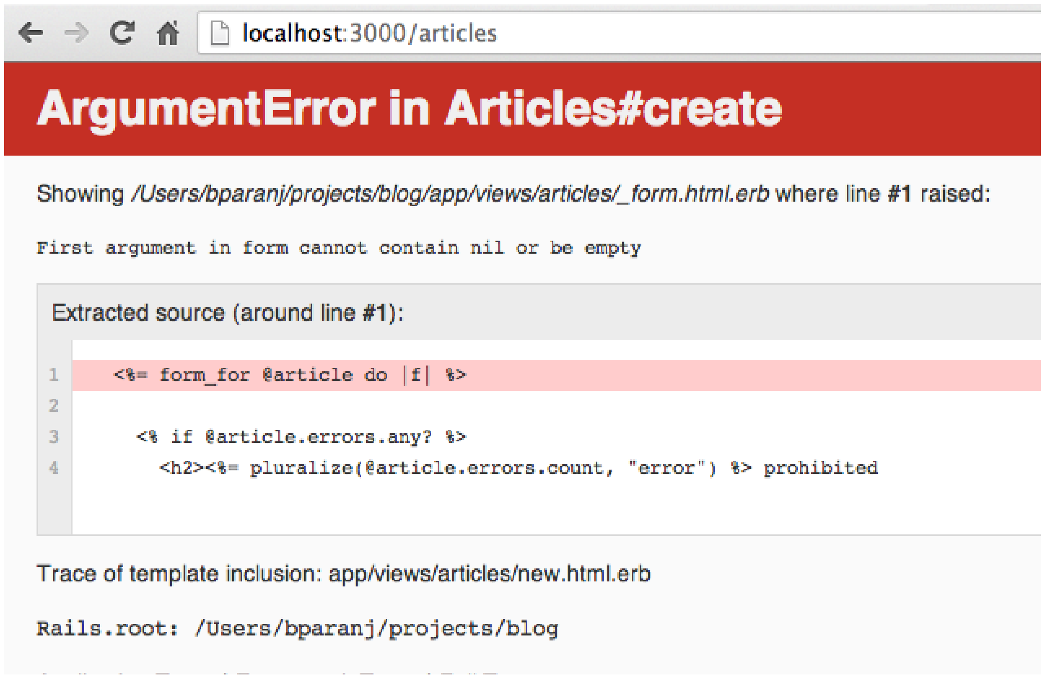
Step 5

Change the create action in the articles controller as follows:

```ruby
def create
  allowed_params = params.require(:article).permit(:title, :description)
  article = Article.create(allowed_params)

  if article.errors.any?
    render :new
  else
    redirect_to articles_path
  end
end
```

Step 6

Submit an empty new article form.



localhost:3000/articles

ArgumentError in Articles#create

Showing */Users/bparanj/projects/blog/app/views/articles/_form.html.erb* where line **#1** raised:

```
First argument in form cannot contain nil or be empty
```

Extracted source (around line **#1**):

```
<%= form_for @article do |f| %>

  <% if @article.errors.any? %>
    <h2><%= pluralize(@article.errors.count, "error") %> prohibited
```

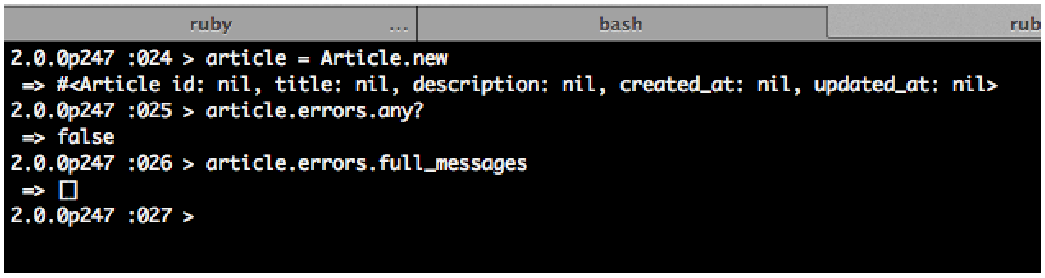
Trace of template inclusion: app/views/articles/new.html.erb

```
Rails.root: /Users/bparanj/projects/blog
```

Figure 125: Article Instance Variable is Nil

We get an error because when the render call renders the app/views/new.html.erb but does not execute the new action in the articles controller.

Since we need the instance variable that has errors we cannot use the article instance variable in the new action.



```
2.0.0p247 :024 > article = Article.new
 => #<Article id: nil, title: nil, description: nil, created_at: nil, updated_at: nil>
2.0.0p247 :025 > article.errors.any?
 => false
2.0.0p247 :026 > article.errors.full_messages
 => []
2.0.0p247 :027 >
```

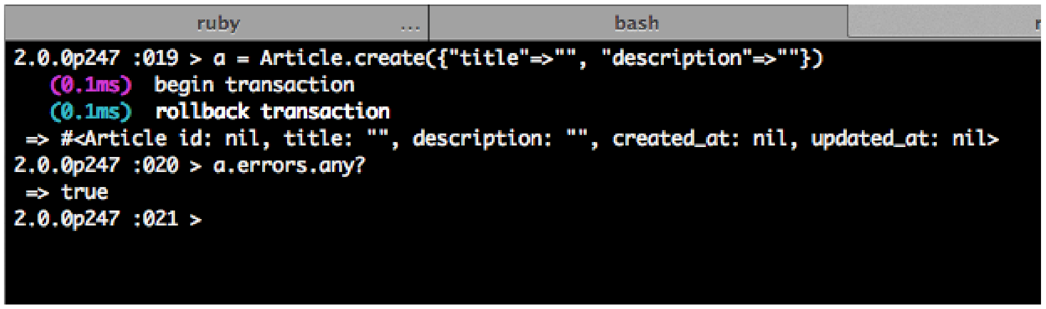
Figure 126: Article Instance in Memory

Let's change the local variable to an instance variable.

Step 7

Change the article to @article in the create action of the articles_controller.rb.

```
def create
  allowed_params = params.require(:article).permit(:title, :description)
  @article = Article.create(allowed_params)

  if @article.errors.any?
    render :new
  else
    redirect_to articles_path
  end
end
```



```
2.0.0p247 :019 > a = Article.create({"title"=>"", "description"=>""})
   (0.1ms)  begin transaction
   (0.1ms)  rollback transaction
 => #<Article id: nil, title: "", description: "", created_at: nil, updated_at: nil>
2.0.0p247 :020 > a.errors.any?
 => true
2.0.0p247 :021 >
```

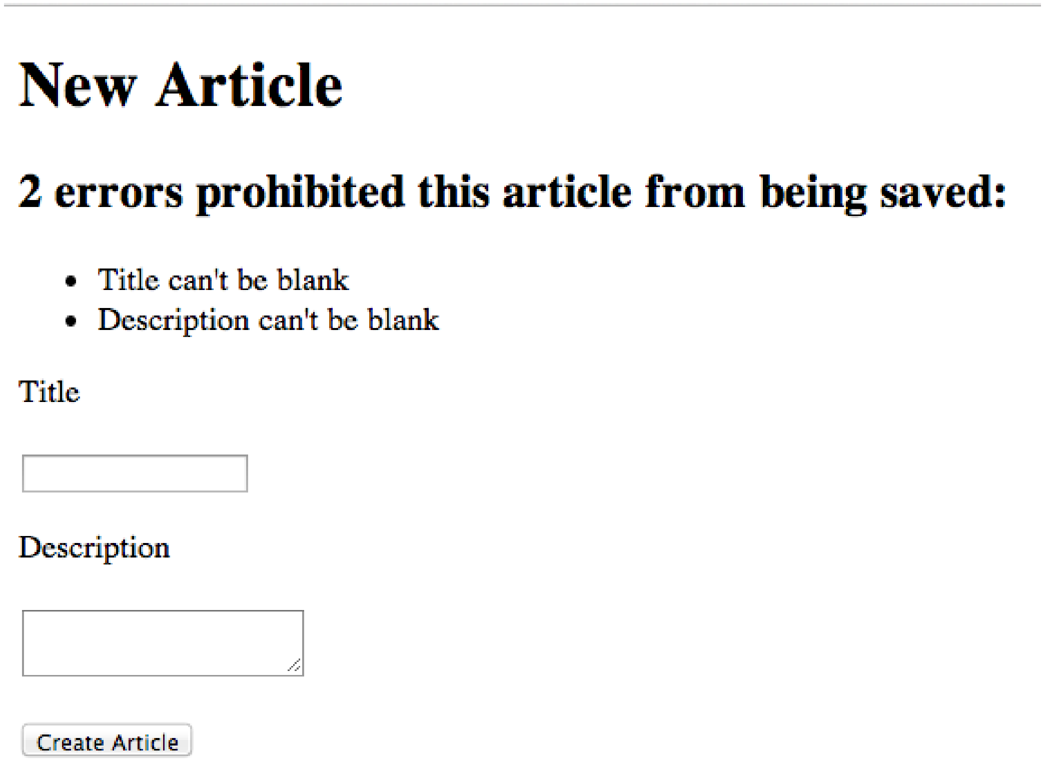
Figure 127: Experimenting in the Rails Console

Learning the Rails API by experimenting in the Rails console.

Here we have changed the local variable article to an instance variable @article. This change allows the app/views/new.html.erb to render the form partial which uses @article variable. The render call will directly render the app/views/new.html.erb and will not execute any code in the new action in articles controller. This is different from redirect, which sends a 302 status code to the browser and it will execute the action before the view is rendered.

Step 8

Submit an empty form for creating a new article.



New Article

2 errors prohibited this article from being saved:

- Title can't be blank
- Description can't be blank

Figure 128: Validation Error Messages

You will now see error messages displayed to the user.

Exercises

1. Read the Rails documentation and add the validation check for the title so that the minimum length of title is 2.
2. Why does Article.new with no values for title and description have no errors whereas Article.create with no values for title and description have errors?

Summary

In this lesson we learned how to display validation error messages to the user when the user does not provide required fields. We also learned the difference between the render and redirect calls.

A. Self Learning

Solving Programming Problems

1. Write down your question. This makes you think and clarify your thoughts.
2. Design an experiment to answer that question. Keep the variables to a minimum so that you can solve the problem easily.
3. Run the experiment to learn.

Use the IRB and Rails console to run your experiments.

Learning from Rails Documentation

1. Go to http://apidock.com/rails
2. Type the method on the search box at the top.
3. Select the matching result
4. View the documentation, look for an example similar to what you want to accomplish
5. Experiment in the Rails console to learn how it works.
6. Copy it to your project and customize it for your project

Getting Help from Forums

If you have followed the above two suggestions and you still have difficulties, post to forums that clearly explains the problem and what you have done to solve the problem on your own. During this process sometimes you will solve your own problem since explaining the problem to someone will clarify your thinking.

Form Study Group

You can accelerate your learning by forming a study group that meets regularly. If you teach one concept that takes 10 minutes then having a group of 6 people, you can easily cover 6 concepts in one hour.

Practice Makes Perfect

When learning anything new, you will make mistakes. You will go very slow. As you practice you will learn from your mistakes. Learning is a process. Setup 30 mins to an hour everyday for learning. You will get better and faster over time. Repetition is key to gaining development speed.

Resources

1. Rails Installer for Windows and Mac OS
2. Sublime Text 2 IDE
3. RubyMine IDE 30-day free trial.
4. Learning Git
5. Install SQLite3 Manager Firefox Addon or Standalone tool for Mac
6. Visual representation of relationships in ActiveRecord
7. Live HTTP Headers Chrome Plugin

Survey

Please take the time to answer the three questions below and email them to support@zepho.com . I will review your suggestions and make changes as necessary. Thank you for taking the time to contribute improvements.

1. What did you like about this book?
2. What would you like to see added?
3. What changes should be made and why?