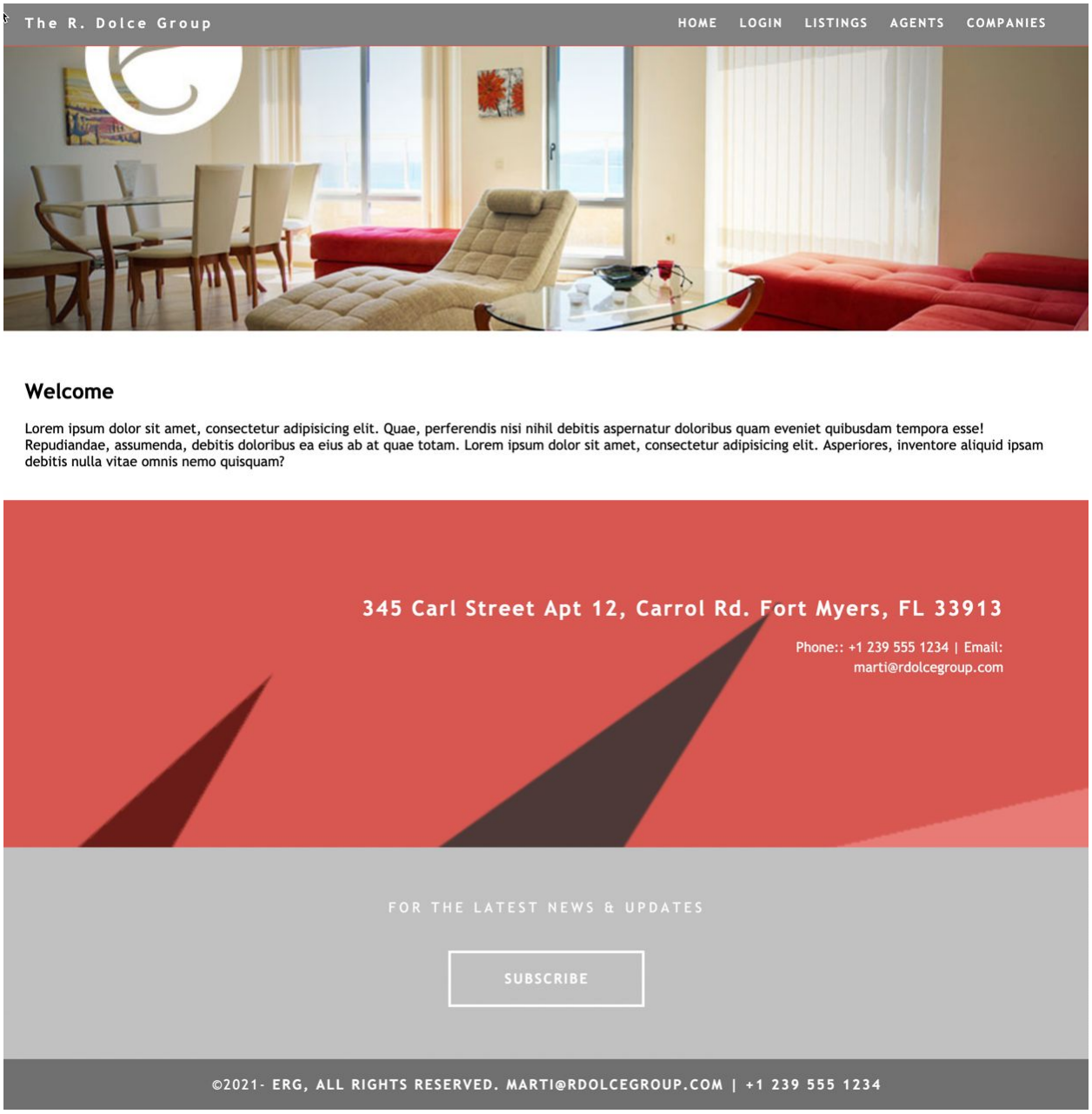


Building A Sinatra App With MySQL

Phase 2 Project Development for Flatiron School Software Engineering

DRAFT Version: 20210124:813AM

Getting Started
- Now the SPEC's As Defined by the Project
- DEVELOPMENT + GITHub
- HTML + CSS
- DEVELOPMENT + GitHub
  - SETTING UP THE FILE STRUCTURE
  - INSTALL MYSQL
  - | - CONFIG/DATABASE.YML PREP - LOCAL ENVIRONMENT
  - Adding the database.yml
- AGENT CONTACT INFO TABLE
- (OFFICE/FINANCIAL) PORTFOLIO TABLE
- LISTINGS DATA TABLE

OBJECT.RELATIONAL.MAPPING

Resources:

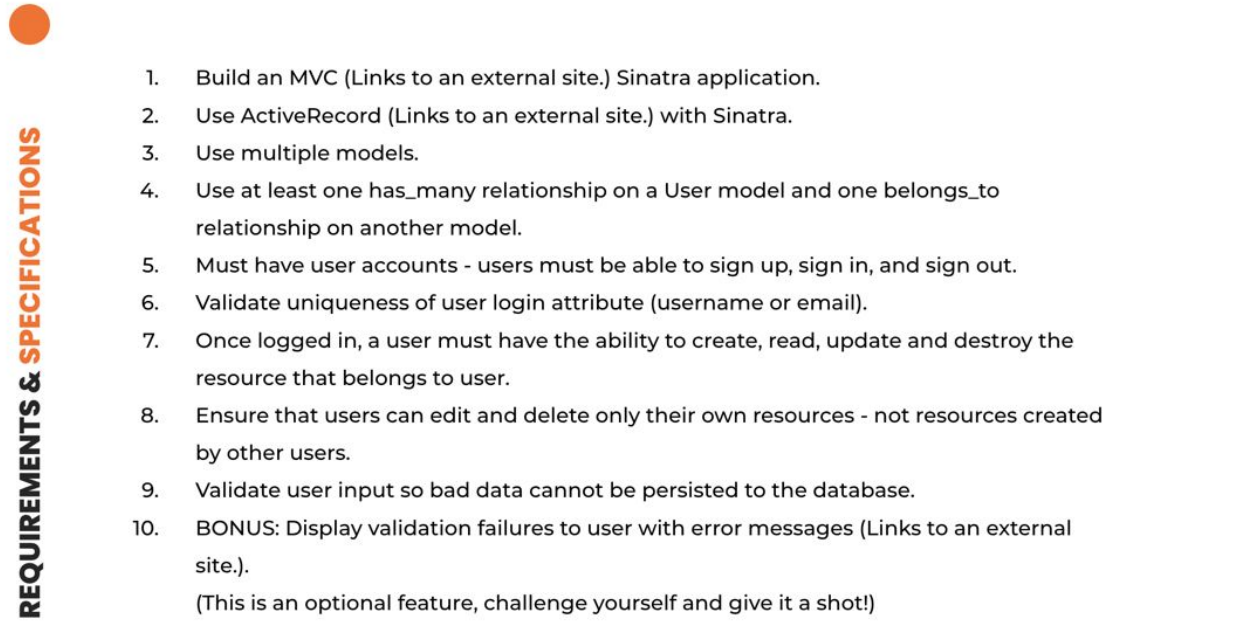
Getting Started

As I am a new Ruby developer, I've learned the importance of understanding how the process works for getting a project started from scratch.

You have to start with a plan. Typically the work begins when the stakeholders and the business team have decided on a new technology 'business' requirement which then evolves into a list of specifications outlining the functionality and features of this new business initiative.

This application uses Sinatra with Active Record with a MySQL database. My 'client' is a project I need to complete to graduate from Flatiron School.

With this idea in mind, my Phase 2 Requirements from Flatiron School are represented in the chart below.

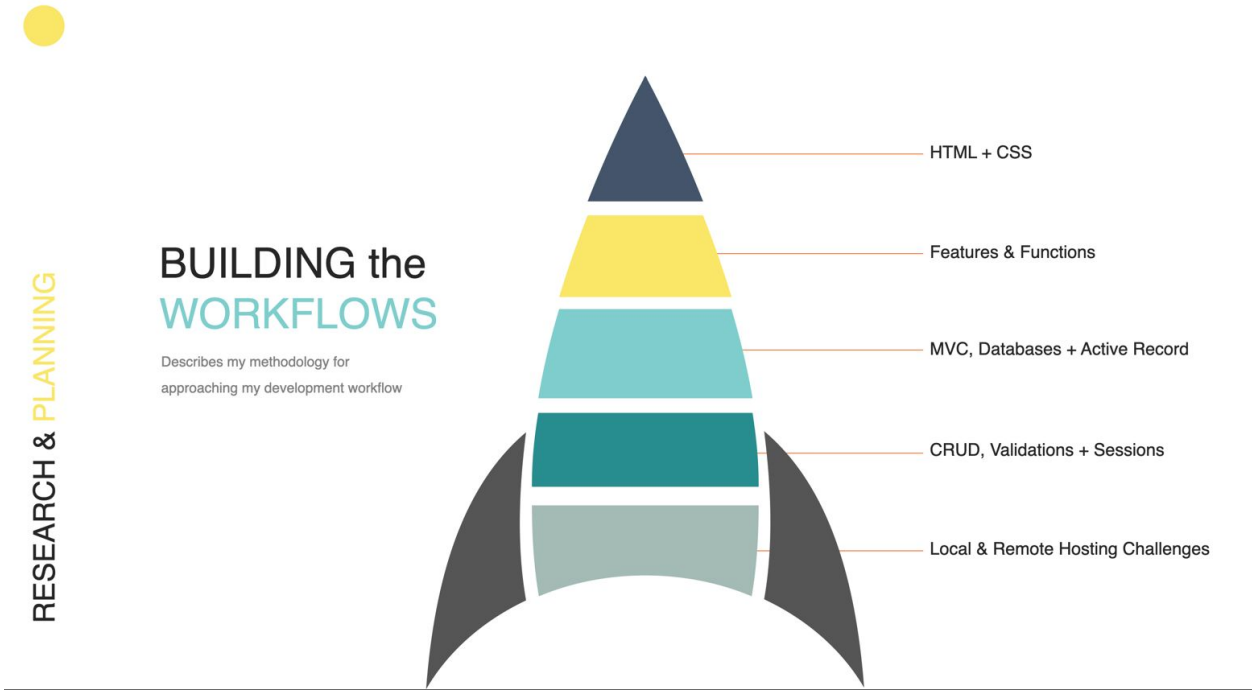


Now the SPEC's As Defined by the Project

Technical specifications define functional and feature goals for the project. These can be further defined as user stories to ensure you have met each requirement as a developer.

[ ] Use Sinatra to build the app
[ ] Use ActiveRecord for storing information in a database
[ ] Include more than one model class (e.g. User, Post, Category)
[ ] Include at least one has_many relationship on your User model (e.g. User has_many Posts)
[ ] Include at least one belongs_to relationship on another model (e.g. Post belongs_to User)
[ ] Include user accounts with unique login attribute (username or email)
[ ] Ensure that the belongs_to resource has routes for Creating, Reading, Updating and Destroying
[ ] Ensure that users can't modify content created by other users
[ ] Include user input validations
[ ] BONUS - not required - Display validation failures to user with error message (example form URL e.g. /posts/new)
[ ] Your README.md includes a short description, install instructions, a contributors guide and a link to the license for your code

Confirm
[ ] You have a large number of small Git commits
[ ] Your commit messages are meaningful
[ ] You made the changes in a commit that relate to the commit message
[ ] You don't include changes in a commit that aren't related to the commit message



Getting started on a project of this size as a newby can be overwhelming for some. I've elected to break the overall specifications into modular topics. That way I can plan my approach.

DEVELOPMENT + GITHub

Discusses how I use RubyMine to speed up the development of Github projects and how I manage to merge different branches for each iteration of my project.

HTML + CSS

The User Experience or the Front - End defines the structure of the application and how an end-user interacts with the features and functionality of the application. I'll use a layout.erb to define my overall theme and build my pages using CSS.

Features & Functions

My project tracks the status of our guest rentals and payments received. First I'll build the application in Sinatra using basic concepts in Ruby.

MVC, Databases + Active Record

Choosing a database framework is the way to achieve MVC using Sinatra. Based on the requirements for this project we will use Active Record. However I'll use MySQL as the backend for my application.

CRUD, REST, USERS, Validations + Sessions

I'll need to determine how to use routes to get and post data from the back-end. In addition, I'll also need to add in features for making changes and/or deleting that data. Using a combination of HTML/ERB pages will achieve this. Thinking of it as a series of actions: list all, creating, saving, editing, searching, filtering and deleting data.

Users Roles & Logins
Understanding roles or user permission should validate the current users permissions and update the database should those permissions change.

Sessions works with permissions to validate if the current user is logged in or not, establishes that current user's permissions and tracks the users activities while visiting the site.

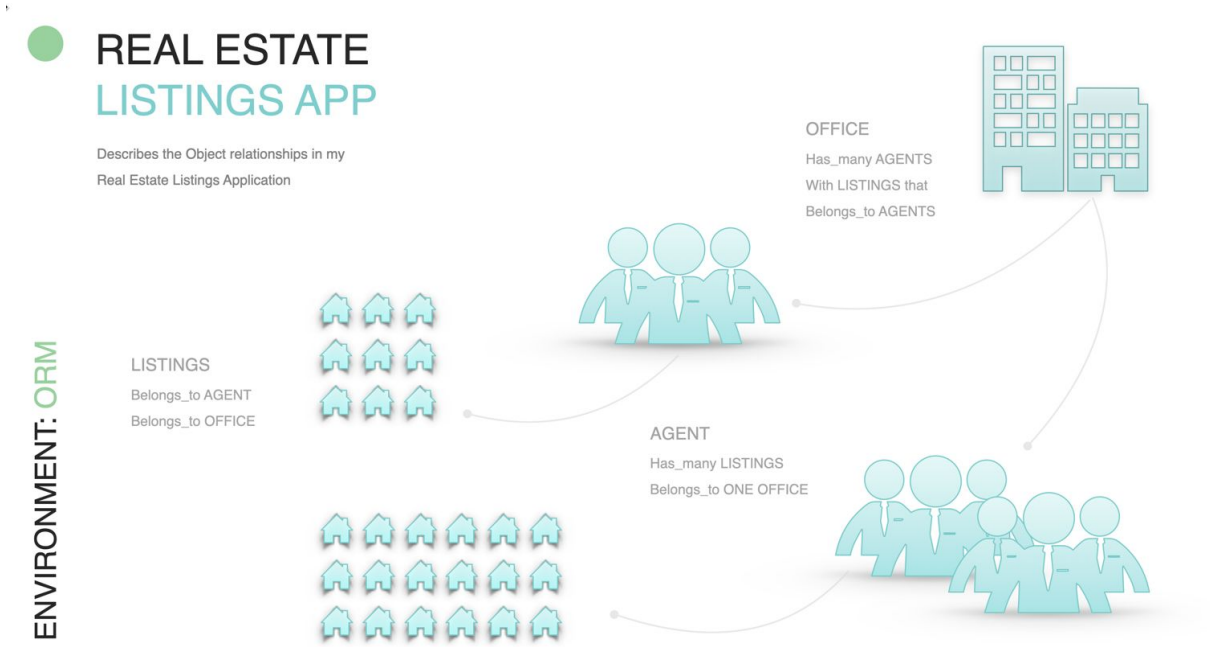
Users should be able to register or sign-up. This will require: sign-up, login, and redirects to handle the user login/logout.

Local & Remote Hosting Challenges

After the project is completed and before I submit it for review, I'll need to plan on hosting it on a remote server. For the purpose of this session it was suggested we use Heroku.

With that in mind, I've set my development environment to support MySQL2 and my testing and production environments to PostgresQL.

Now that I have all that figured out, I can actually start planning my code.



DEVELOPMENT + GitHub

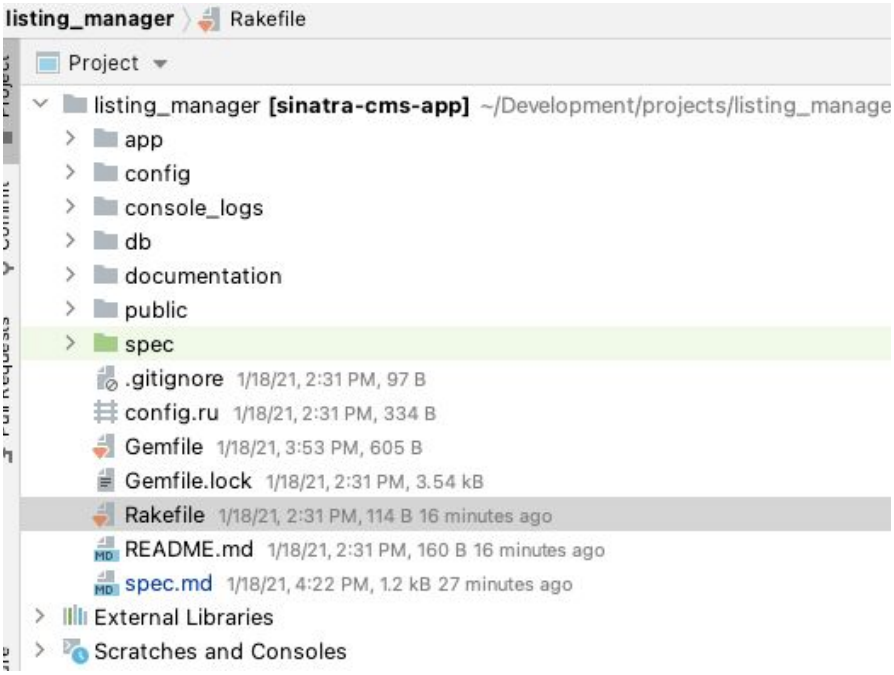
I like to work on both Mac and PC platforms because my work as a contractor gives me far more options if I'm familiar with both. My ORMS, in this case, is MySQL 5.7.32 with ActiveRecord and Sinatra.

	WINDOWS[1]	MAC BIG SUR
MySQL DB	Windows (x86, 32-bit), MSI Installer	brew install mysql@5.7.32
Ruby	GEMFILE	GEMFILE
IDE	Rubymine 2020.3	Rubymine 2020.3

[1] See Windows Eventmachine error: https://github.com/eventmachine/eventmachine/issues/820

SETTING UP THE FILE STRUCTURE

- app
- | - controllers
    - | - application_controller.rb
- | - models
- | - views
- | - config
- | - db
- | - documentation
    - Sinatra With MySQL - Google Docs.pdf
- | - public
    - | - images
    - | - javascript
    - | - stylesheets
    - favicon.ico
- | - spec
- .gitignore
- config.ru
- Gemfile
- Gemfile.lock
- Rakefile
- README.md
- spec.md



INSTALL MYSQL

First, install MySQL for your OS and ensure the gem mysql2 is installed or added to your Gemfile prior to using bundle install.

| - CONFIG/DATABASE.YML PREP - LOCAL ENVIRONMENT

I install MySQL using Homebrew[2]

`brew install mysql@5.7`

After installing, I'll need to add the $PATH to my zsh shell path using:

`echo 'export PATH="/usr/local/opt/mysql@5.7/bin:$PATH"' >> ~/.zshrc` and then restart the terminal.

Next, I'll reopen the terminal to see if services are running:

`brew services list`

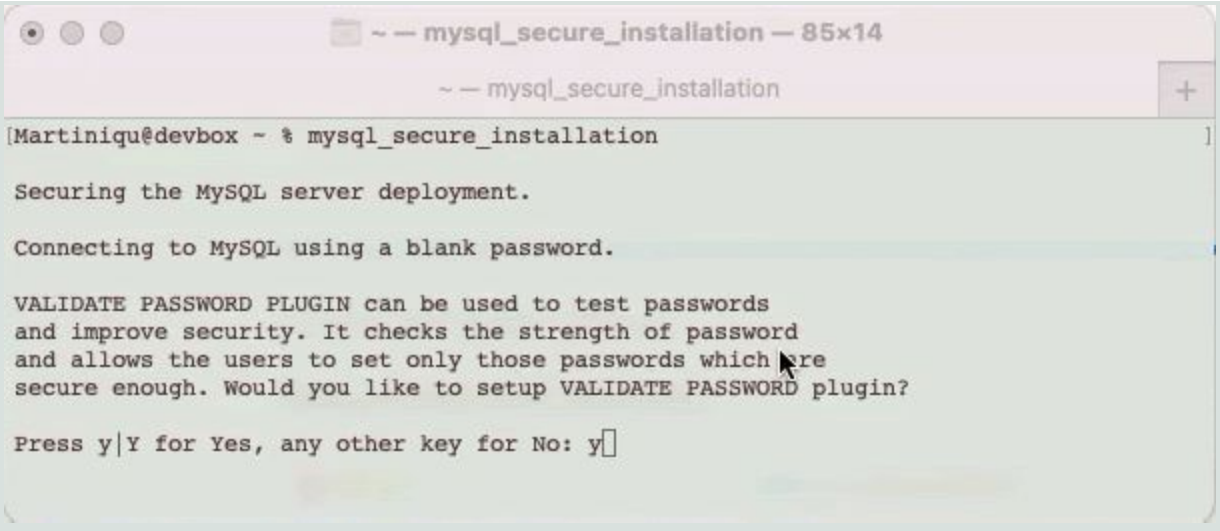
[2] Install MySQL on Mac OS with homebrew:
https://medium.com/macoclock/installing-mysql-5-7-using-homebrew-974cc2d42509

Starting the MySQL Service:

```
brew services start mysql@5.7
```

Securing the MySQL Installation

```
mysql_secure_installation
```



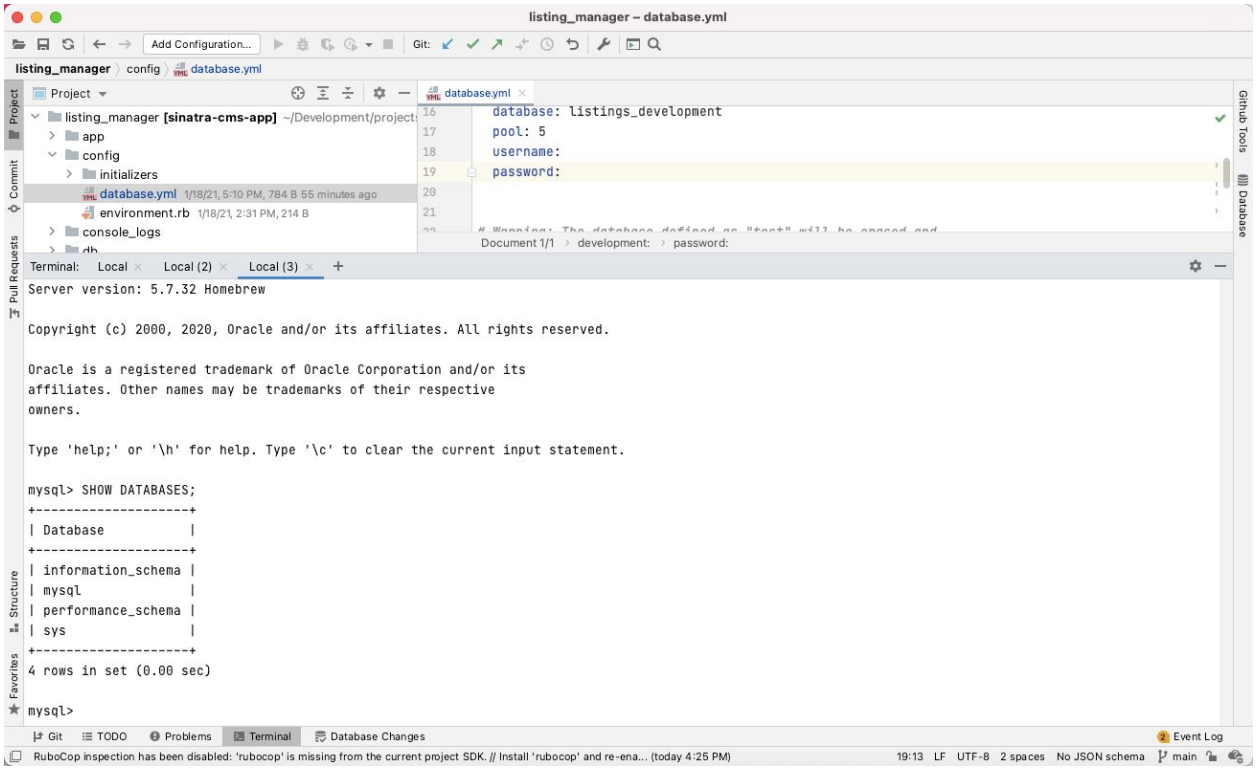
View clip online [here]

Finally, brew install mysql-connecter-c

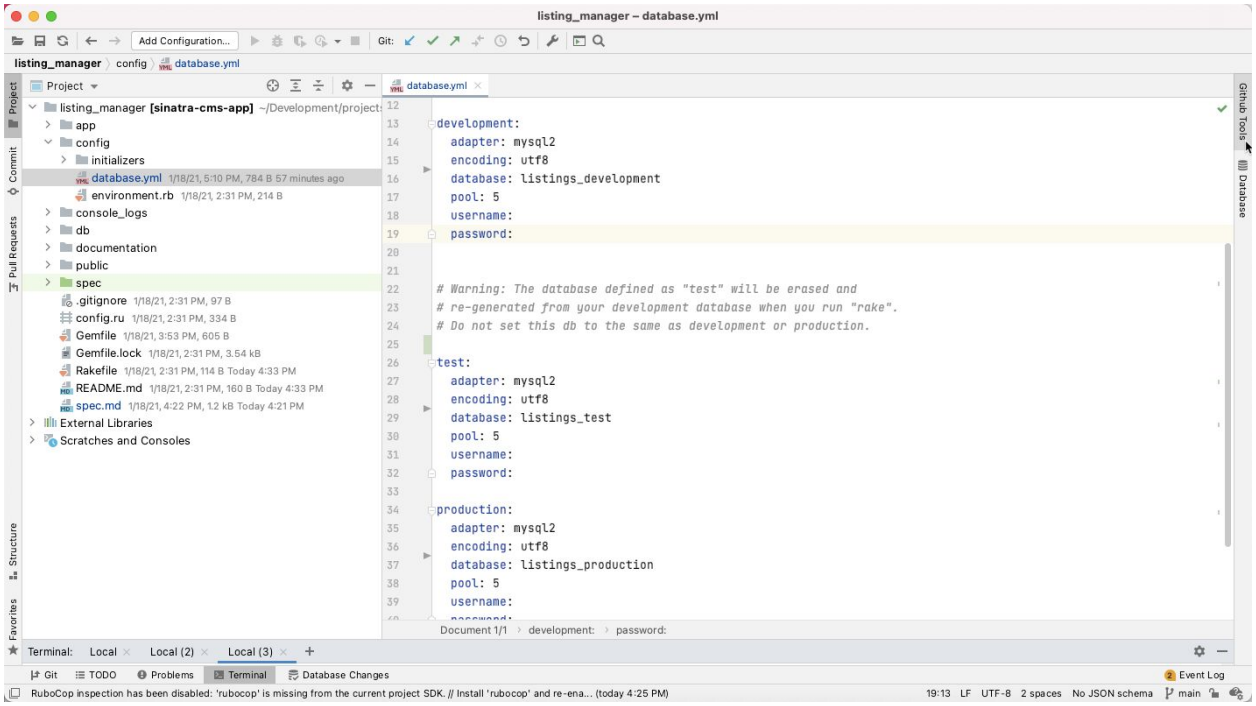
https://medium.com/@nazrulworld/mysql-connector-c-api-libmysqlclient-install-and-configure-in-macos-ddd3ece8c3d3

Adding the database.yml

You will need a database.yml to establish your database connection and login, but it's a good idea to make sure you can connect via the terminal to make sure everything is set up correctly.



The database.yml connects to the database environments for development, test, and production environments[3] because I'll need to sync this to a GitHub account for review.



[3] I'll need to research how to securely add a secret password for the logon.

ACTIVERECORD PATTERNS & CONVENTIONS

* Table name: lowercase plural name of model - agents

* Model filename: singular lowercase (underscored) - agent.rb

* Class name: singular camelcase - Agent

I've added this as a note from the Rails class we were given this week as it filled in some gaps for me.

USE RAKE -T

To create my database using the database.yml, I'll need to run rake db:create, afterwards I'll plan my ORM and begin my migrations.

CREATING THE DATABASE

% rake db:create

Created database 'listings_development'

Created database 'listings_test'

DESIGNING ROLES/PERMISSION TABLE

I'd like to start with the Roles table. In essence it will look something like this:

FIELDS	DATATYPE	NULL	KEY	EXTRA
Role_ID	INTEGER	No	PRI	Auto_Inc
Role_name	INTEGER	No		

ROLES TABLE: CREATING THE MIGRATION, MODEL & SEEDS

% rake db:create_migration create_roles_table role_name:string

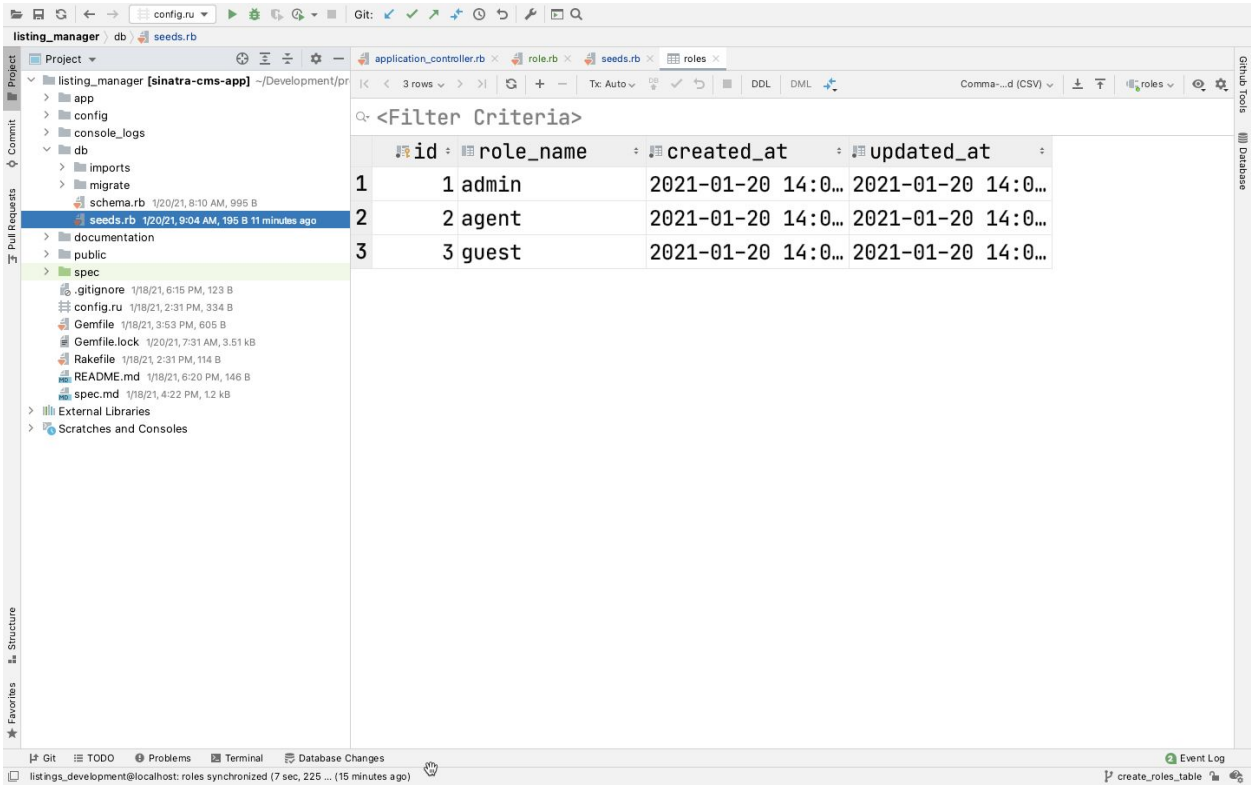
Role.rb

```
class Role < ActiveRecord::Base

 # Validate if table exists == true, if not…

end
```

seeds.rb

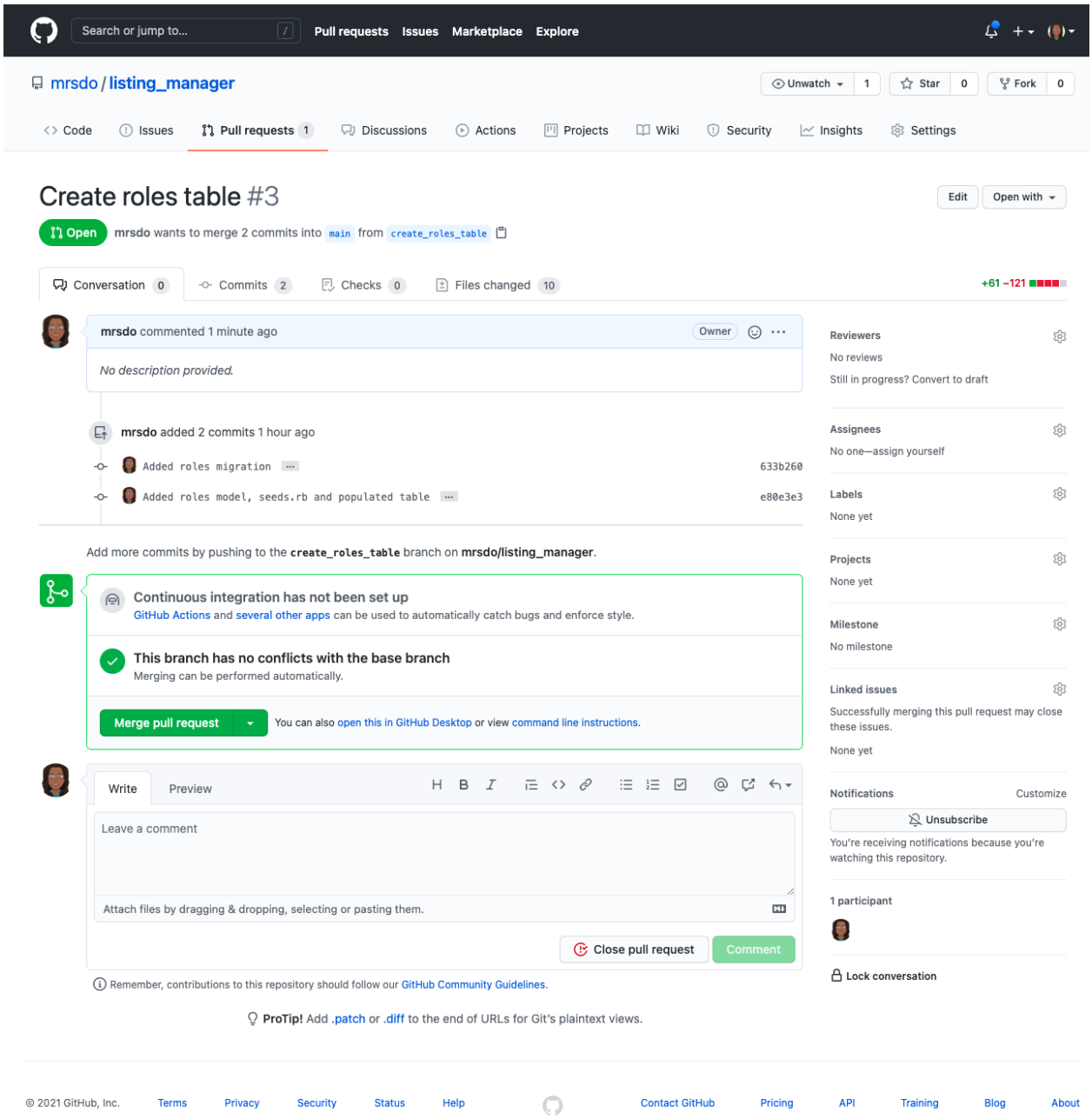
```
# db/seeds.rb

require_relative '../app/models/role'

Role.create({role_name: "admin"},{role_name: "agent"},{role_name: "guest"}])
```

% rake db:seed



FLATIRON SCHOOL PHASE 2: Github PUSH, PULL & MERGE

This project is at https://github.com/mrsdo/listing_manager. If I have a new feature, I like to add it to Github as a branch. Once I've done the development in that branch, it's merged back into the main branch.



ROLES TABLE: ADDING A CONTROLLER AND VIEWS

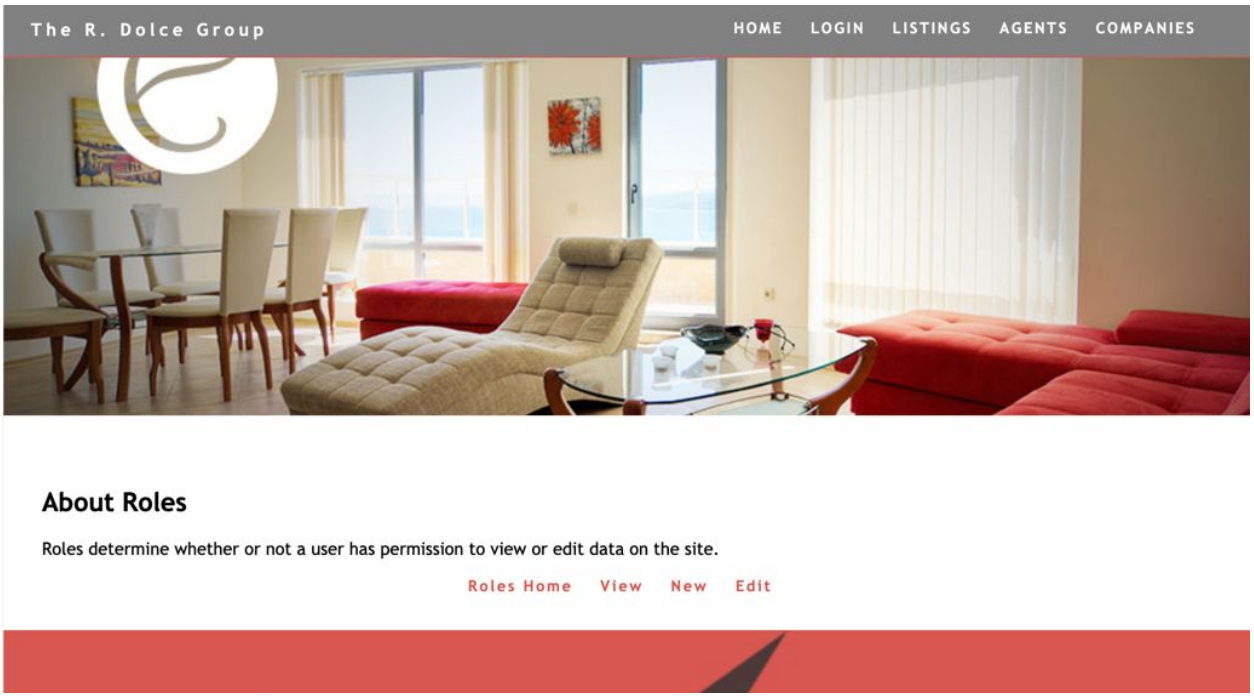
Now that my role table is set up, I'll need to add a controller and views to manage the data in this table.

The controller and views introduce concepts related to CRUD and REST. These include patterns for ROUTES and their associated actions.

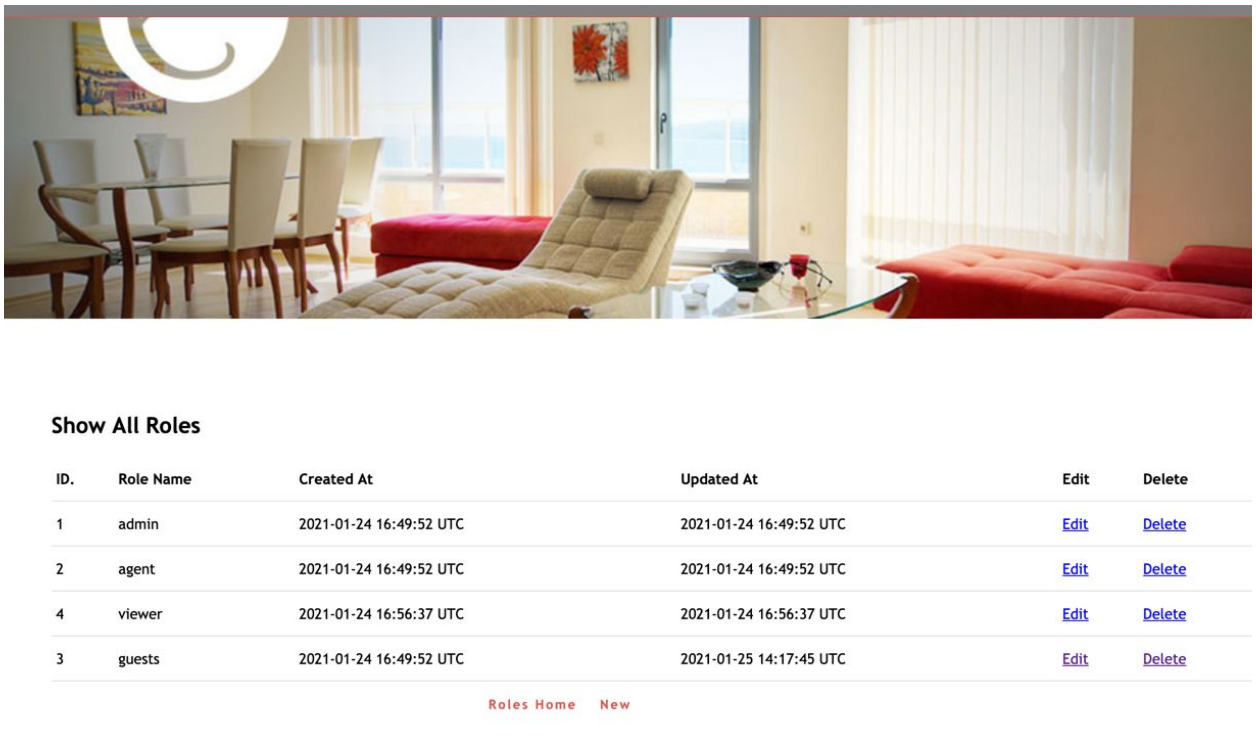
VERB	ROUTE	ACTION	DESCRIPTION
GET	'/roles'	@role = Role.All	Display All
GET	'/roles/new'	@role = Role.new	Add new with Form
POST	'/roles'	@role = Role.save(role_params) + redirect	Add new Form Action
GET / ID	'/roles/:id'	@role = Role.find(params[:id])	Show/Find by ID
GET /EDIT ID	'/roles/:id/edit'	@role = Role.update(params[:id]) + flash	Edit by ID
PATCH	'/roles/:id'	@role.update(role_params) + flash	Update by ID
PUT	'/roles/:id'	@role.update(role_params) + flash	Replace by ID
DELETE	'/roles/:id'	@role.destroy(params[:id])	Delete by ID

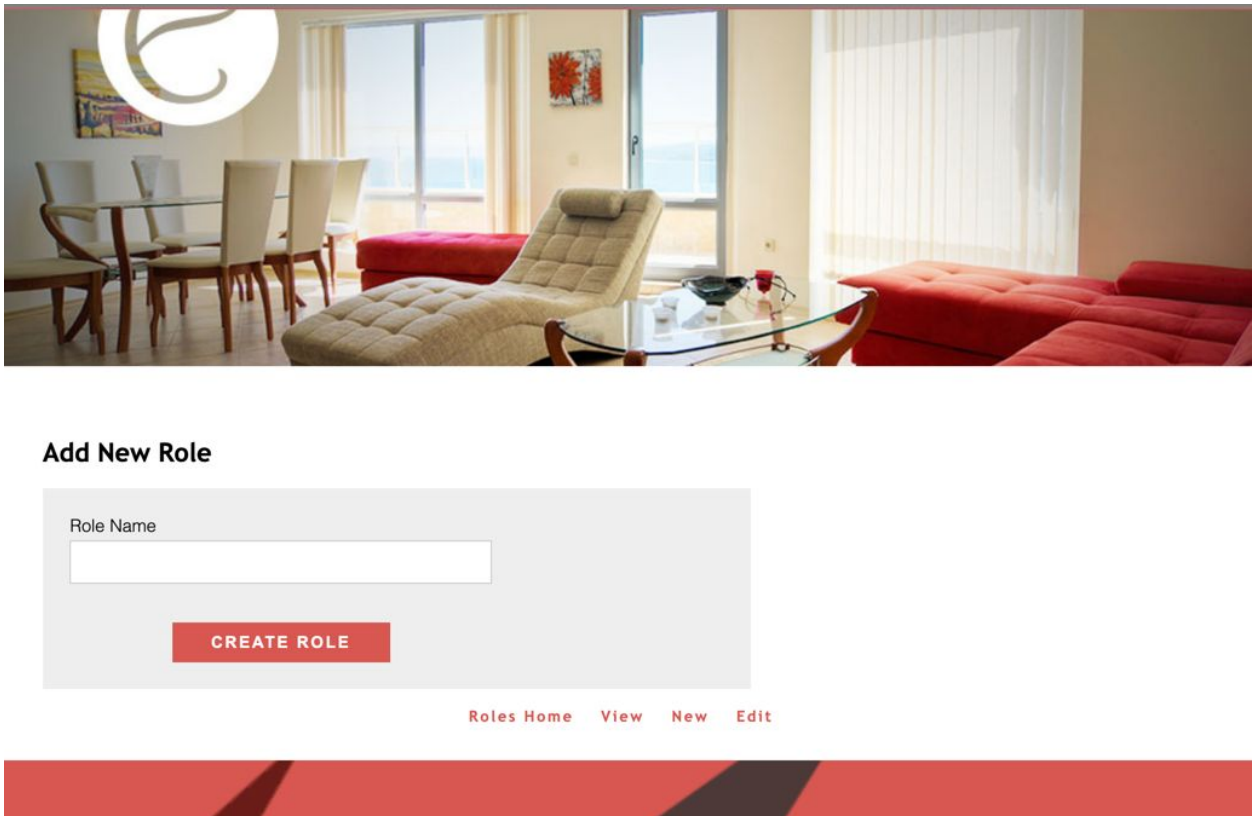
ROLES PAGES: INDEX, SHOW, NEW, EDIT

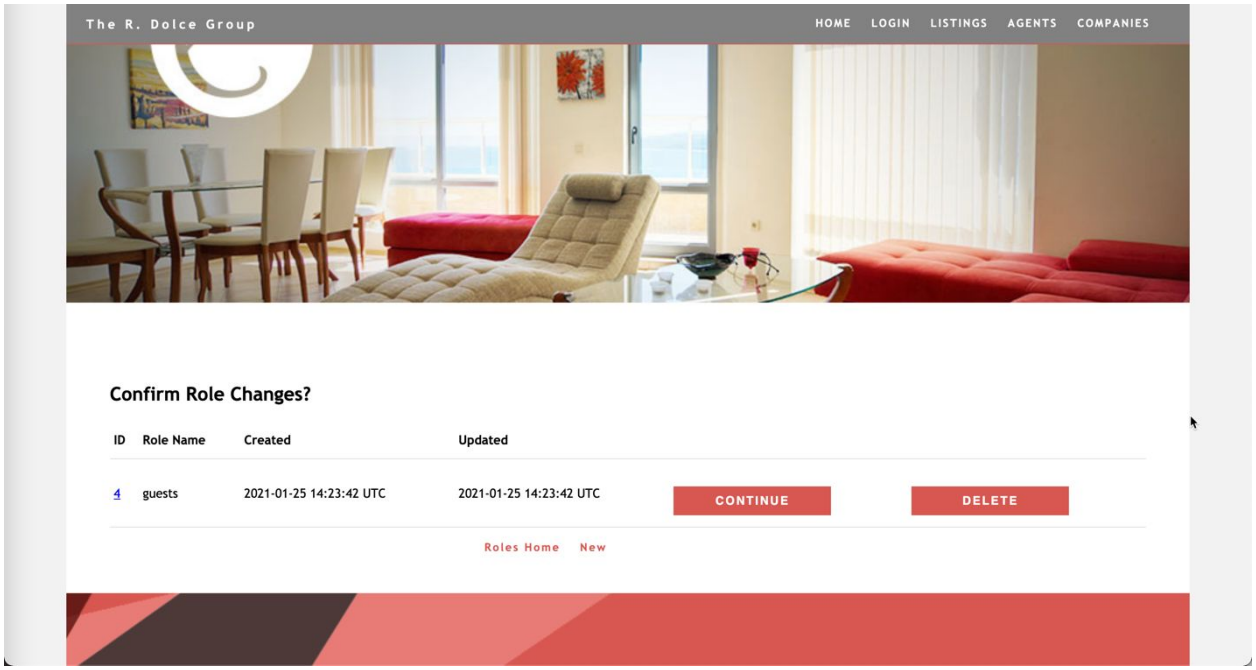
I've added RoleController routes for index, show and new edit erb's. Next, I'll start working on CRUD allowing for new, editing, patching, and putting entries. Because the RoleController will serve as my permissions admin, I will not include a delete option.



Show's all the roles currently in the system. This feature would only be accessible to admin users.




Add New Role
Role Name
CREATE ROLE
Roles Home
View
New
Edit


The R. Dolce Group
HOME
LOGIN
LISTINGS
AGENTS
COMPANIES
Confirm Role Changes?
ID
Role Name
Created
Updated
4
guests
2021-01-25 14:23:42 UTC
2021-01-25 14:23:42 UTC
CONTINUE
DELETE
Roles Home
New

ROLES PAGES: ADDING THE CRUD

The forms & Pages:

```
<h1>Add New Role Form</h1>

<section id="page">

<form class="form" action="/roles" method="post">

 <label for="role_name" class="label-name">Role Name</label>

 <input type="text" id="role_name" name="name" maxlength="40" class="field
field-name" />

<input type="submit" value="Create Role" class="button" />

</form>

<nav>

 <ol>

   <li><a href="roles/">Roles Home</a></li>

   <li><a href="roles/show">View</a></li>

   <li><a href="roles/new">New</a></li>

   <li><a href="roles/edit">Edit</a></li>

 </ol>

</nav>

</section>


<h1>Show Roles Page</h1>

<section id="page">

 <table class="table-striped">

   <thead>

   <tr>
```

```
    <th>ID</th>
    <th>Role Name</th>
    <th>Created</th>
    <th>Updated</th>
    <th></th>
  </tr>
  </thead>
  <tbody>
    <tr>
      <td><a href='/roles/<%= @role.id %>/edit'><%= @role.id %></a></td>
      <td><%= @role.role_name %></td>
      <td><%= @role.created_at.to_s %></td>
      <td><%= @role.updated_at.to_s %></td>
      <td>  <form method="post" action="/roles/<%= @role.id %>">
        <input type="hidden" name="_method" value="delete" />
        <input type="submit" value="Delete" class="button" />
      </form></td>
    </tr>
  </tbody>
</table>
<nav>
  <ol>
    <li><a href="/roles">Roles Home</a></li>
    <li><a href="/roles/new">New</a></li>
  </ol>
</nav>
```

```
</section>

<h1>Edit Role</h1>

<section id="page">

 <form class="form" action="/roles/<%= @role.id %>" method="post">

   <input type="hidden" name="_method" value="patch">

   <label for="role_name" class="label-name">Role Name</label>

   <input type="text" id="role_name" name="role[role_name]" value="<%=
@role.role_name %>" />


   <input type="submit" value="Update Role" class="button" />

 </form>


 <nav>

   <ol>

     <li><a href="/roles/new">Roles Home</a></li>

     <li><a href="/roles/new">New</a></li>


   </ol>

 </nav>

</section>


# ROLES CONTROLLER

# frozen_string_literal: true


# Roles

class RoleController < ApplicationController
```

```
get "/roles" do
  @role = Role.all
  erb :"/roles/index.html"
end

# new
get '/roles/new' do
  @role = Role.new
  erb :"/roles/new.html"
end

# create
post '/roles' do
  @role = Role.create(params)
  redirect to "/roles/#{@role.id}"
end

# show
get '/roles/:id' do
  @role = Role.find(params[:id])
  erb :"/roles/show.html"
end

# edit
get '/roles/:id/edit' do
```

```
    @role = Role.find(params[:id])
    erb :"/roles/edit.html"
  end

  # update
  patch '/roles/:id' do
    @role = Role.find(params[:id])
    @role.update(params[:role])
    redirect to "/roles/#{@role.id}"
  end

  # destroy
  delete '/roles/:id' do
    Role.destroy(params[:id])
    redirect to '/roles'
  end

  def destroy
    Role.destroy(params[:id])
    redirect to '/roles'
  end
end
```

Rack::MethodOverride - config.ru

Working on my EDIT/PATCH in the project has been challenging. Sinatra conforms for GET/POST but to EDIT/UPDATE/PATCH, there needs to be a middle tier using the Rack::MethodOverride in addition to making sure routes are set up properly.

```
# config.ru
#
require './config/environment'
begin
 fi_check_migration
 use Rack::MethodOverride
 run ApplicationController
 use RoleController
 use ArticleController
rescue ActiveRecord::PendingMigrationError => e
 warn e
 exit 1
end
```

AGENT CONTACT INFO TABLE

Agents can update/edit personal information and their listings. Mapping out the models helps me understand how they will work with Routes.

This table has information on each agent and is linked to the Listings table and the Portfolio table by way of a foreign key. For privacy reasons, I've not linked this table to any sessions or permissions.

In hindsight, I should have created a separate table to track logins. Maybe that will be a project for Phase 3 development at Flatiron.

In addition, I'll need to assign an association to the Roles table. The idea is ***to associate*** table foreign keys during the rake db:create_migrations.

Flatiron School Reference: https://learn.co/lessons/sinatra-activerecord-associations

Agents Table

FIELDS	DATATYPE	NULL	KEY	EXTRA
Agent_ID	INTEGER	No	PRI	Auto_Inc
Listings_ID	INTEGER	No	FK	Listings Data
Role_ID	INTEGER	No	FK	Roles, Listings Data
Username	VARCHAR	Yes		
Password	VARCHAR	Yes		
Office	VARCHAR	Yes		
Email	VARCHAR	Yes		
Company	VARCHAR	Yes		
Contact	VARCHAR	Yes		
Photo	BLOB	Yes		
Created_At	TIMESTAMP	Yes		
Updated_At	TIMESTAMP	Yes		

MODELS/URLS & ROUTES

While creating my roles activity, I've been able to establish a baseline CRUD/ROUTES, etc. However in this section, I'll need to do the following:

- Create a method to upload images
- Associate foreign keys in my table builds
- Define my user authentication methods
- Define session methods

After creating /models/agent.rb, I'll update my config.ru with: use AgentsController.

Next, I'll use rake db:create_migration create_agents_tables

Create Agent Tables schema here

Seed Agent Tables here

(OFFICE/FINANCIAL) PORTFOLIO TABLE

Functioning as a financial and visual portfolio for potential investors, prospective clients and other agents or offices, agents manage their portfolios and have control over who has access to the portfolio. The data also functions as a newsletter.

FIELDS	DATATYPE	NULL	KEY	EXTRA
Portfolio_ID	INTEGER	No	PRI	Auto_Inc
Agent_ID	INTEGER	No	FK	Agent
Listing_ID	VARCHAR	No	FK	Listings
Address	INTEGER	Yes		Address, City, State, Zip
Keywords	VARCHAR	Yes		Marketing SEO
Status	VARCHAR	Yes		Sold, New, Rent, Purchase, Lease
Shared_with	ENUM	Yes		(private, shared, public)
Date_Listed	DATE	Yes		4/11/2018
Bedrooms	VARCHAR	Yes		4BR
#Bathrooms	VARCHAR	Yes		5BA
Summary	BLOB	Yes		Description
Square_Footage	VARCHAR	Yes		2500 SQFT
Asking_Price	INTEGER	Yes		$325,000.00
Photo 1	BLOB	Yes		Featured Image
Photo 2	BLOB	Yes		
Photo 3	BLOB	Yes		
Photo 4	BLOB	Yes		
Created_At	TIMESTAMP	Yes		
Updated_At	TIMESTAMP	Yes		

LISTINGS DATA TABLE

All new listings are added to this table, which functions as a tracker for managing portfolio data and views for each listing.

Listings - Permission - Logs Table

FIELDS	DATATYPE	NULL	KEY	EXTRA
Listings_ID	INTEGER	No	PRI	Auto_Inc
Portfolio_ID	INTEGER	Yes	FK	
Agent_ID	INTEGER	Yes	FK	
Listing_ID	INTEGER	Yes	FK	
Sessions	STRING	Yes	Hash	
Roles	ENUM	Yes		read_only, read_write
Created_At	TIMESTAMP	Yes		
Updated_At	TIMESTAMP	Yes		

OBJECT.RELATIONAL.MAPPING

Because Ruby objects don't map to the way databases store data, we use ORM to do this mapping. If you think of an application as having a front-end, middle-tier and back-end, then this concept falls within the logic of separating out the UI, logic and data in the application.

ACTIVE RECORD - DRY

MODEL.VIEW.CONTROLLER

Resources:

Development + Github

Windows Ruby Eventmachine error
https://github.com/eventmachine/eventmachine/issues/820. Run from terminal > gem install eventmachine --platform ruby -- --use-system-libraries --with-ssl-dir=c:/msys64/mingw64

MySQL Installation Mac OS

https://coderwall.com/p/os6woq/uninstall-all-those-broken-versions-of-mysql-and-re-install-it-with-brew-on-mac-mavericks

https://www.positronx.io/how-to-install-mysql-on-mac-configure-mysql-in-terminal/

https://medium.com/macoclock/installing-mysql-5-7-using-homebrew-974cc2d42509

Heroku

Simple Deployment
https://devcenter.heroku.com/articles/rack

MySQL

https://devcenter.heroku.com/articles/cleardb
https://devcenter.heroku.com/articles/cleardb#the-cleardb-shared-mysql-complete-tutorial

Ruby

https://devcenter.heroku.com/articles/ruby-support#ruby-versions