

## Welcome

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# Building A Sinatra App With MySQL

*Phase 2 Project Development for Flatiron School*

DRAFT 20200117-V022

## Getting Started

As a new developer you need to understand how the process works when thinking of moving into a new job or contract work opportunity. You have to start with a plan. Typically the work begins when the stakeholders and the business team has 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.

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



### REQUIREMENTS & SPECIFICATIONS

1. Build an MVC (Links to an external site.) Sinatra application.
2. Use ActiveRecord (Links to an external site.) with Sinatra.
3. Use multiple models.
4. Use at least one has\_many relationship on a User model and one belongs\_to relationship on another model.
5. Must have user accounts - users must be able to sign up, sign in, and sign out.
6. Validate uniqueness of user login attribute (username or email).
7. Once logged in, a user must have the ability to create, read, update and destroy the resource that belongs to user.
8. Ensure that users can edit and delete only their own resources - not resources created by other users.
9. Validate user input so bad data cannot be persisted to the database.
10. BONUS: Display validation failures to user with error messages (Links to an external site.).  
(This is an optional feature, challenge yourself and give it a shot!)

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## 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

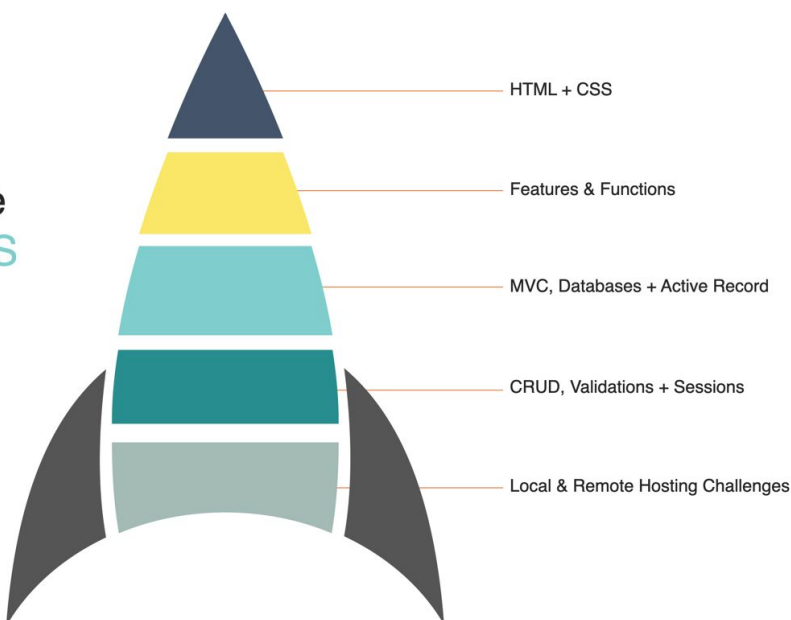
- [ ] You have a large number of small Git commits
  - [ ] Your commit messages are meaningful
  - [ ] You made the changes in a commit that relate to the commit message
  - [ ] You don't include changes in a commit that aren't related to the commit message
-



## RESEARCH & PLANNING

### BUILDING the WORKFLOWS

Describes my methodology for approaching my development workflow



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.

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## 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.

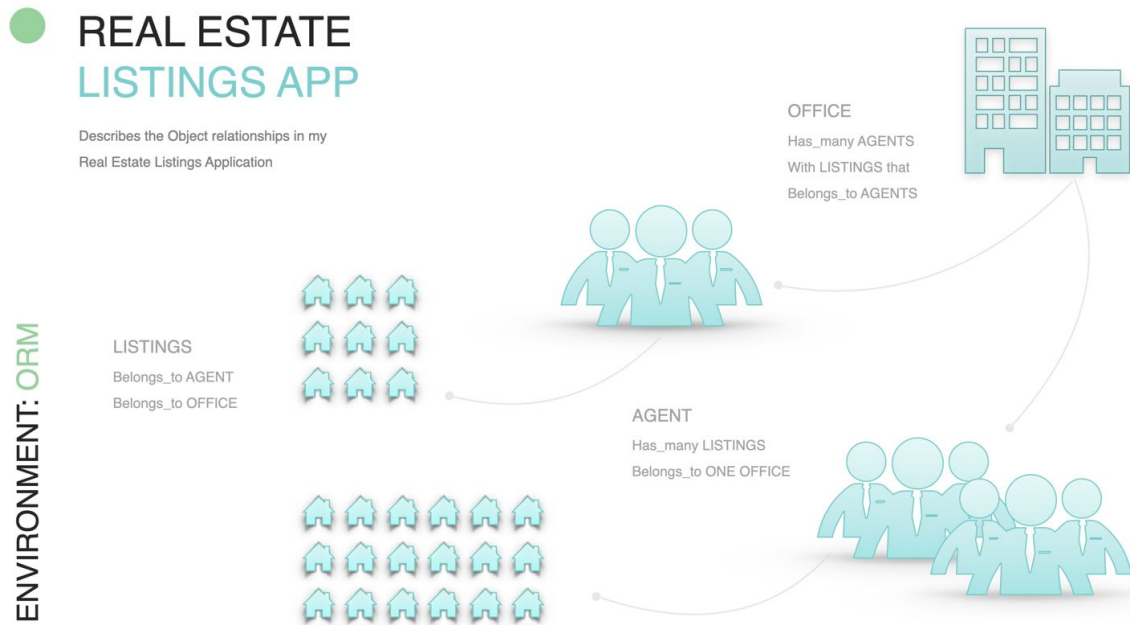
Sessions works with permissions to validate if the current user is logged in or not, establishes that current user's permissions and tracks the users activities while visiting the site.

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.

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



## DEVELOPMENT + GitHub

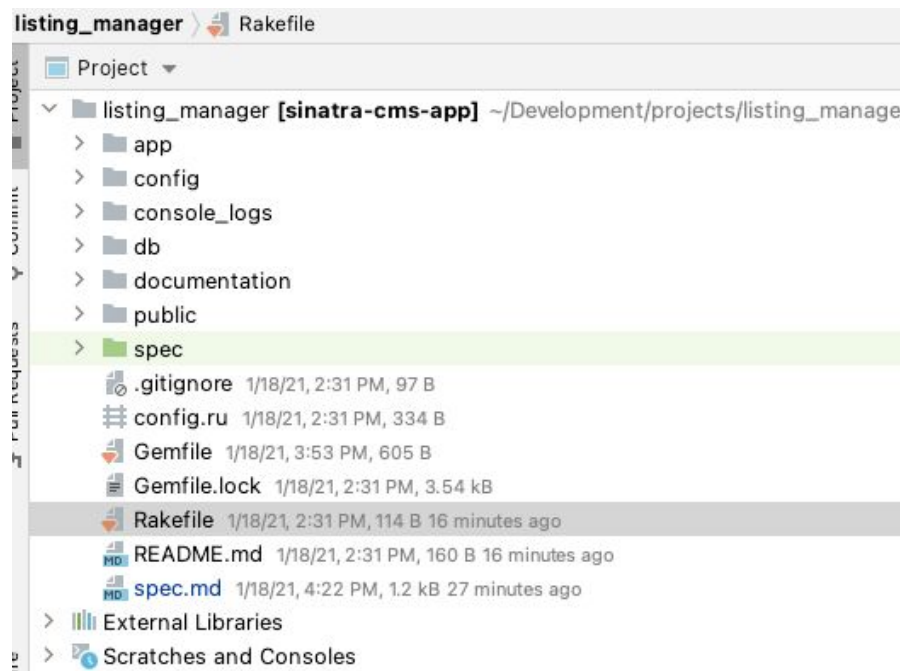
I like to work on both Mac and PC platforms because my work as a contractor gives me far more options if I'm familiar with both. My ORMS, in this case, is MySQL 5.7.32 with ActiveRecord and Sinatra.

	WINDOWS <sup>1</sup>	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

<sup>1</sup> 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<sup>2</sup>

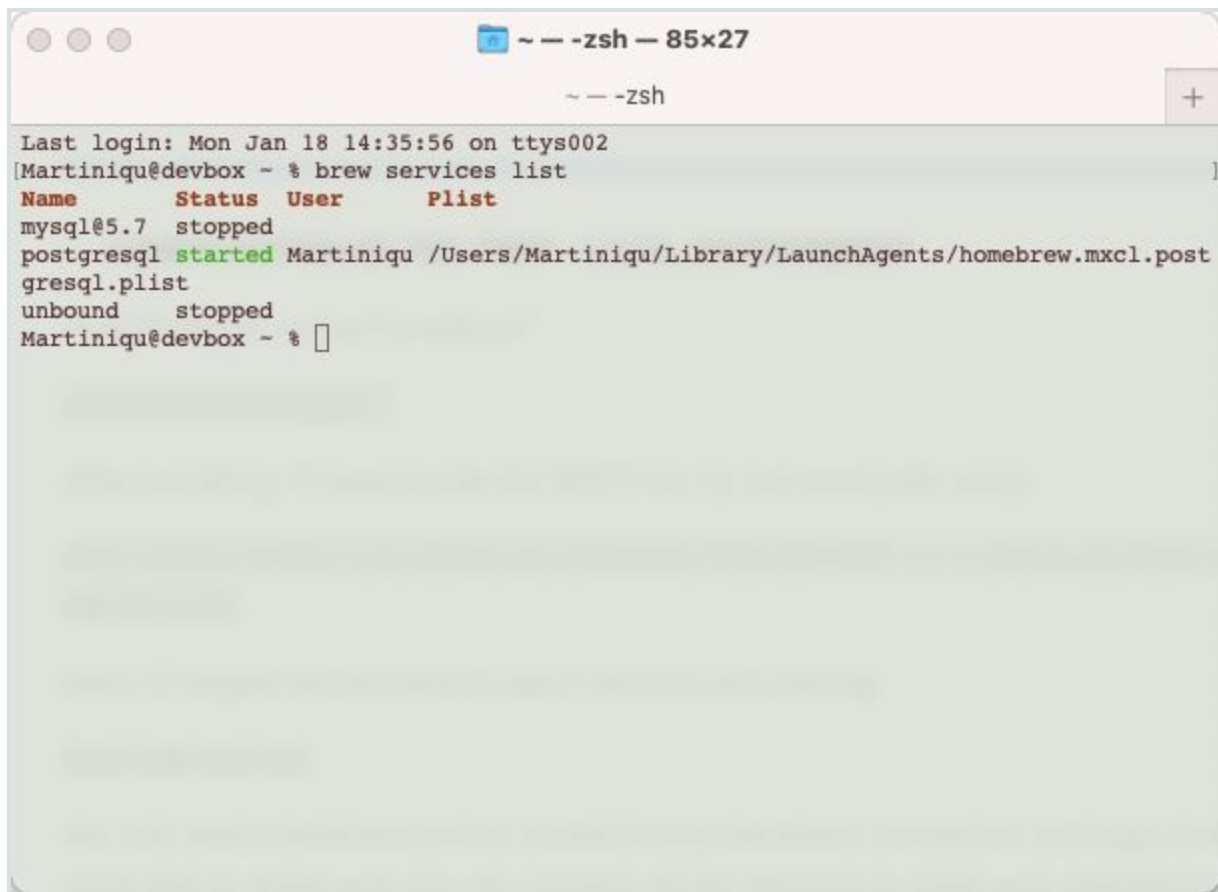
```
brew install mysql@5.7
```

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
```



A terminal window titled '~ - zsh - 85x27' showing the output of the command 'brew services list'. The output lists three services: 'mysql@5.7' (stopped), 'postgresql' (started), and 'unbound' (stopped). The 'postgresql' service is associated with the user 'Martiniqu' and the plist file '/Users/Martiniqu/Library/LaunchAgents/homebrew.mxcl.postgresql.plist'.

```
Last login: Mon Jan 18 14:35:56 on ttys002
[Martiniqu@devbox ~ % brew services list
Name      Status  User      Plist
mysql@5.7  stopped
postgresql started  Martiniqu /Users/Martiniqu/Library/LaunchAgents/homebrew.mxcl.postgresql.plist
unbound    stopped
Martiniqu@devbox ~ %
```


<sup>2</sup> Install MySQL on Mac OS with homebrew:

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



Starting the MySQL Service:

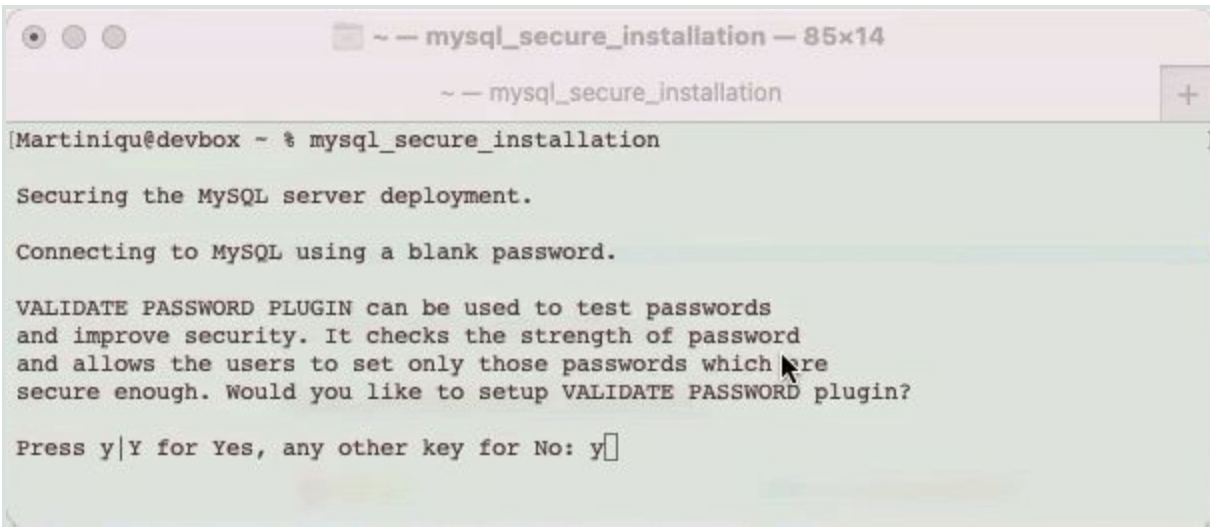
```
brew services start mysql@5.7
```

A terminal window titled '~ -- zsh -- 85x7' showing the command 'brew services start mysql@5.7' being executed. The output is 'Successfully started `mysql@5.7` (label: homebrew.mxcl.mysql@5.7)'.

```
[Martiniqu@devbox ~ % brew services start mysql@5.7  
=> Successfully started `mysql@5.7` (label: homebrew.mxcl.mysql@5.7)  
Martiniqu@devbox ~ %
```

Securing the MySQL Installation

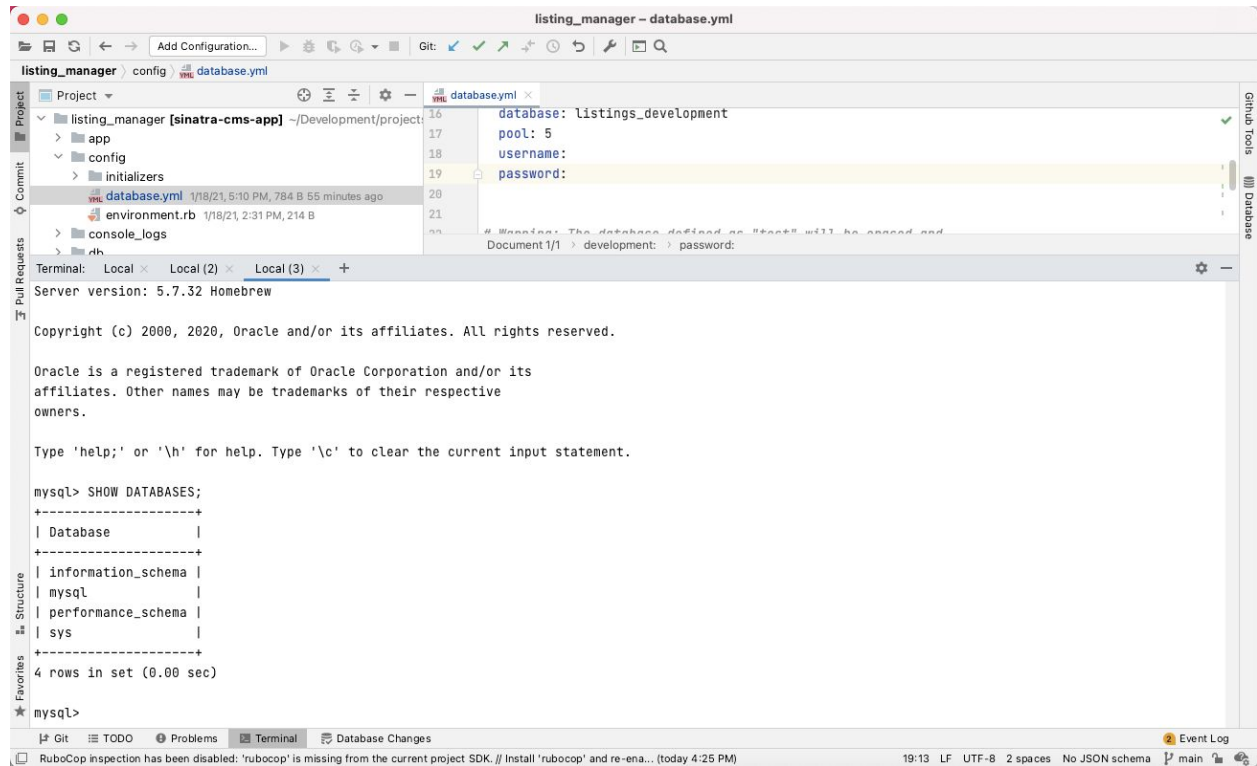
```
mysql_secure_installation
```

A terminal window titled '~ -- mysql\_secure\_installation -- 85x14' showing the 'mysql\_secure\_installation' script. It prompts for a blank password and asks if the user wants to set up the 'VALIDATE PASSWORD' plugin. The user has entered 'y' for yes.

```
[Martiniqu@devbox ~ % mysql_secure_installation  
  
Securing the MySQL server deployment.  
  
Connecting to MySQL using a blank password.  
  
VALIDATE PASSWORD PLUGIN can be used to test passwords  
and improve security. It checks the strength of password  
and allows the users to set only those passwords which are  
secure enough. Would you like to setup VALIDATE PASSWORD plugin?  
  
Press y|Y for Yes, any other key for No: y
```

## 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 screenshot shows an IDE window titled "listing\_manager - database.yml". The editor displays the contents of the `database.yml` file:

```

16 database: listings_development
17 pool: 5
18 username:
19 password:
20
21 # Warning: The database defined as "test" will be erased and
# Document 1/1 > development: > password:

```

The file explorer on the left shows the project structure, including `listing_manager [sinatra-cms-app]`, `app`, `config`, `initializers`, `database.yml`, `environment.rb`, `console_logs`, and `db`.

The terminal window at the bottom shows the MySQL prompt and the output of the `SHOW DATABASES;` command:

```

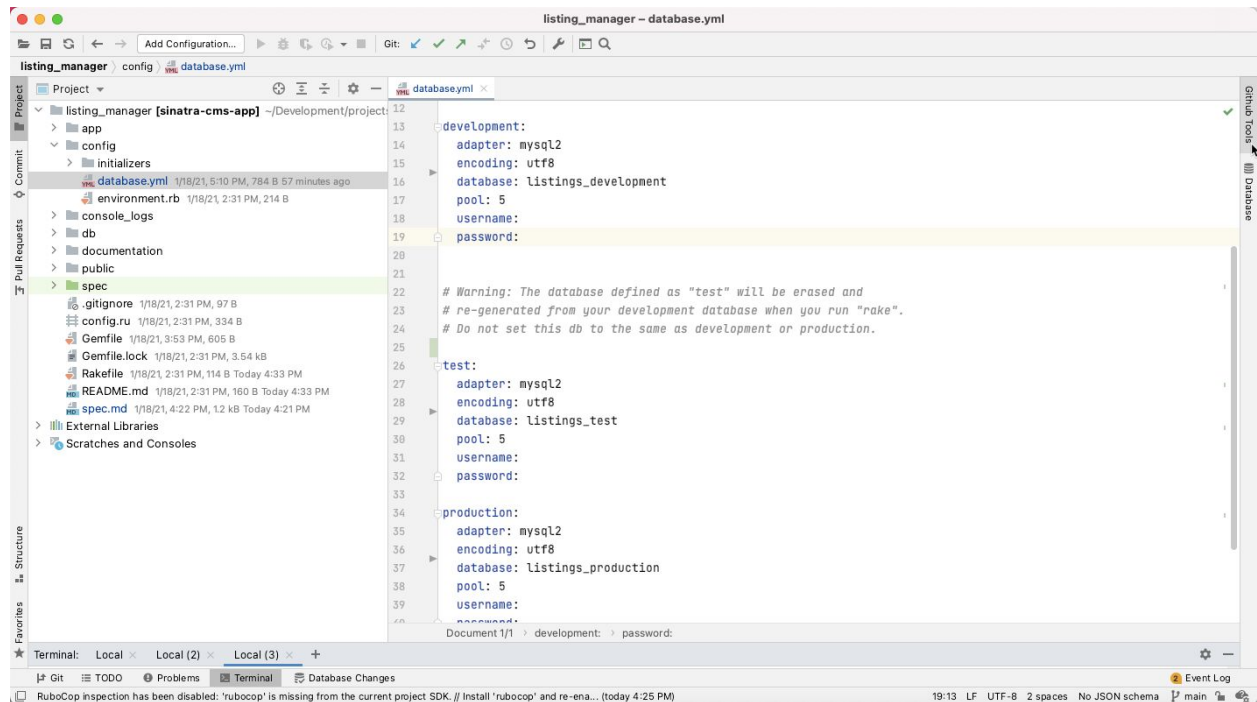
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

mysql>

```

The terminal also displays the MySQL version (5.7.32) and copyright information.

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



<sup>3</sup> I'll need to research how to securely add a secret password for the logon.

## AGENT CONTACT INFO TABLE

Agents have the ability to update/edit personal information and to track their listings. Mapping out the models for my tables provides a foundation for examining how these models and routes will interact.

This table provides detailed information on each agent and is linked to the Listings 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.

FIELDS	DATATYPE	NULL	KEY	EXTRA
Agent_ID	INTEGER	No	PRI	Auto_Inc
Listings_ID	INTEGER	No	FK	Listings
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		



## (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

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MODEL.VIEW.CONTROLLER



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## 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

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>