

California State University, Northridge

Senior Design Project

COMP 490 – 490L – 491L

Class Section 17104 – 17098 – 7538



Roommate Finder

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Written by:

Osher Boudara

Alexis Diaz

Cyrus Tabatabai

Vidas Sileikis

Professor:

Afshin Amini

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1 Introduction and Scope

Roommate Finder is a native mobile application built in order to help young adults find roommates that they can move in with and share a place together. This application is heavily beneficial towards almost every student at CSUN who is looking for a place to stay.

1.1 About Roommate Finder

Currently, Roommate Finder is a mobile based application that was created to open doors for young adults looking for somewhere to stay. College students particularly benefit from this, as they are able to properly find people they believe they have specific commonalities with. Certain factors would boil down to budget and other logistical questions, personality type, or even personal interests.

1.2 The Scope of Roommate Finder

Since the majority of the applications that are catered towards finding roommates are based on a broader scale of demographics, our application is more in-scope towards younger adults attending university or young working professionals.

2 The Problem

Compatibility is key when it comes to having a healthy home setting. In order to enhance your productivity as a student or a young working professional, you also need to be surrounded with those who can motivate you and have the same productive lifestyle as you. This is a primary concern for those who attend university and there are many factors that each student has to consider prior to moving in with another peer. Many students are in a rush to find a place to stay without even taking into account whether or not they will enjoy the presence of their tenants.

2.1 Finding Trustworthy Roommates

The idea of having to find someone or a group of people that you have never met before can be quite intimidating. The last thing you would want to worry about is to move in with someone who you have trouble putting your full trust in, especially since you will potentially be spending the rest of your semester with them in the same household. We've all heard the horror stories of people having to move out of their place because of their roommates having cruel and unreliable intentions.

2.2 Personality Differences Amongst Users

Let's say you moved in with your roommate(s) and you have no common ground with them. Most roommates end up being acquaintances amongst each other due to having different personality traits and different viewpoints on how certain issues should be handled. Not everybody will be your friend, and that's just a fact of life. However, there's a difference between being forcefully trusting someone since you're inevitably going to be moving in with them, and trusting someone since you want to eventually get closer to the point where you can potentially see yourself becoming their friend. Ideally, the fact of the matter is that ideally it would be a lot easier if you had things in common with the other people that you are living with.

2.3 Budget and Lifestyle Concern

Budget and lifestyle go hand in hand. If one student comes from a privileged background, then they are most likely going to be looking for a more upscale environment. Obviously, this will be vice versa for a student living in underprivileged conditions. Their lifestyle, depending on their background, is also going to be a byproduct of this because of the difference of opinion of their needs and wants. Realistically, what a lot of money might mean to one student, may mean very little to another. Ultimately, it entirely depends on what the user is looking for.

3 The Solution

Roommate Finder was the solution to our problems as it would rationalize the burden of trying to find people to live without being blindsided by a certain factor. Whether that factor would be

lack of reliability, personality differences, or the divergence of lifestyle and income. We will tackle these problems by providing a set of different features for every user that signs up. Our app will contain a simple to use registration system, a questionnaire to match users with roommates that have similar apartment specifications and financial situation, and an optional personality test to find the perfect roommate based on common traits. There will also be a listings page where users who already have a place can create and display listings for other roommates to move in. Users will also have a profile with a profile picture and will display various attributes about the user based on their results for the questionnaire as well as their personality type (if personality test was taken). To further progress with the process, the users will also have access to other users' contact information to individually message one another if they believe that person is their ideal match.

3.1 Plan of Action

Roommate Finder has four components that were vital to development. The first step was to have a general questionnaire as well as an optional personality test to fully optimize user experience in order to provide accuracy towards their preference of roommates. The second step was a user profile/background display after the user signs up. This would give users the ability to view the other profiles of the registered users in order to properly identify who they're moving in with. The third step was to have communication amongst users if they're interested in connecting with each other. The fourth and final step is to provide a listings page for users that are interested in moving to a new place and not only finding a roommate.

3.1.1 General Questionnaire and Personality Tests

The first step to Roommate Finder was to have a series of general questions created for a brand new user in which asks for basic information and background of the user. The questions are specified towards the user's location, cleanliness, pet-friendliness, etc. All of these questions are to be inputted on the user's profile once they submit the form for other users to view. There is also a personality test option button displayed on the profile of the user in order to give greater detail about themselves. This form is meant to be more personal in order to give greater insight towards each individual user and their true intentions as far as what they're seeking and what their true interests are. If a user completes the personality test, they have a far greater advantage to actually move in with someone they are interested in since it will give them an idea of what

common interests they have amongst each other by assigning a personality type to the user which other users can view. The personality type is assigned via an algorithm.

3.1.2 User/Roommate Background

The second step to Roommate Finder was to have a user background display that is totally dependent on the general questionnaire as well as the personality test. The user background goes more in depth if the personality test is filled out due to having more information being displayed for that user for answering more questions. This is meant to be extremely useful for users who are curious to check for more information if they have some initial interest for the person that they are thinking about moving in with. They are also able to enter a profile picture in for themselves perhaps to prove that they are indeed a real active user. Adding a profile picture is usually preferred.

3.1.3 Communication Amongst Users

The third step was to have some sort of communication between the users once their profile has been created and they are active in the database. Communication between users is very crucial because it's the only method they have as far as digging deep into what mutual interests they have when they want to move in together. Once a certain user has created their roommate-seeking profile, they are able to view the contact information of other registered users in order to discover what areas they are interested in moving forward in with the process. Once a particular user comes across someone they are interested in moving in with, they can contact the user via phone number or email which will be displayed on the users profile.

3.1.4 Listings

The fourth step was to have the user create their own listings/look for a listing depending on what exactly they signed up for. When they go to the setting option at the bottom right of the application once they're signed in, they can either view a listing or create their own. If they decide to create their own listing, they have a set of questions that are similar in format to the questionnaire/personality tests. The questions ask about square footage, cost of rent, number of rooms, occupancy total, etc. They are also able to insert photos of their listing in order to provide an aesthetically-appealing view of their place for those who are interested. If they wish to view listings from other users that have already been created, then they can refer to the view listings

page which displays information regarding square footage, total rent, etc. Furthermore, when a user views a property, they can toggle how far they are from that desired property to determine if that property is worth their while. This distance algorithm will check and display the distance between the user and the specific listing in mileage.

4 Tools, Software, and Languages

4.1 Visual Studio Code

We decided to use Visual Studio Code as our open-source integrated development environment where all of our programming files were modified. Due to our familiarity with it in the past and all of us having some experience with it, we decided that it was the best choice to use as our source-code editor. This helped us instantly with productivity due to the syntax highlighting, auto-indentation, bracket-matching, box-selection, etc. As far as user-friendliness, it had also helped us in various ways, especially when it came to shortcut mappings when it came to letting us navigate our source code with ease.



4.2 phpMyAdmin & XAMPP Framework

For the administration tool for our database, we decided to use phpMyAdmin due to it being open-source and having the ability to host our MySQL databases whenever we would intend to run and test complex queries in which were all eventually integrated and inherited into the front-end aspect of our application. phpMyAdmin is ran on a server. To launch our phpMyAdmin server, we used the XAMPP framework.



4.3 Expo

In our case we used Expo, which is known as a framework to build React Native applications. The set of tools and services that Expo distributed would be built around React Native itself as well as other native platforms, which inevitably helped us develop, build, and deploy on our mobile device from our JavaScript codebase. It also helped give us an overview of what our application would look like from a mobile device perspective. When we would try to observe it on our phones, it gave us more of an idea of how a customer would interact with our software and it gave us better insight. Expo allowed us to install external packages needed for our development process.



4.4 Jira & Github

The main resource that we used for our application for issue tracking and project management was Jira. This tool came in handy when we would plan out sprints throughout the past two

semesters and provide individual tasks towards each of the members in our group. Each task was created as an issue that needed to be addressed and this provided a roadmap for each time we created a sprint. This also helped with the organization and structure of the progress that we were making and whether or not we needed to pay more attention towards a specific task more than the other. Further, we used Github as our source code management tool. This tool came in handy when we all could not work together at the same time. One person was easily able to work on the code and then, using version control, can push our code to the Github repository which another user can then access using version control. It helped incredibly with efficiency of our work and allowed us to view individual changes/commits that each member handled.



4.5 Languages

There were a variety of languages that we decided to use but the primary one that ran the middle-ware of our application was Python Flask. The backend was created with MySQL queries embedded into our Python code to manage relational database system. For the front end of our application we decided to use React Native, which provided the React framework along with native platform capabilities.



4.5.1 Front End

For the front end of the application, as stated above, we used React Native. React Native allows us to incorporate some elements of JavaScript which helped us with error handling and writing more complex functions. Further, with React Native's View element, we were able to style our application to the specifications we required. React Native requires a lot of various packages to render some more complex icons, components, etc. so we used npm package manager to handle our installations.

4.5.1 Back End and Database

For the back end of our application, we used Python and specifically Python Flask. Python Flask assisted us in interacting with our front end. In order to send information back and forth between the front end and back end, we were able to use GET and POST requests. For our database, we used MySQL and the XAMPP framework. With the mysqlconnector library in Python, we were able to directly execute MySQL queries in Python which assisted us in communicating with the database. For our database IDE, we used phpMyAdmin which comes with the XAMPP framework package, which enabled us to view the design of our database and easily interact with it outside of our Python code if needed.

5 Team Roles

In this section, we will give a breakdown of the roles and responsibilities of each member of our team throughout the development of this application.

5.1 Osher

Was in charge of the back-end development. Oversaw the development of the database and was in charge of constructing queries.

5.1.1 Key Contributions

- Designed database schema for storing data regarding user, listings, questionnaire etc.
- Wrote and tested all MySQL queries to ensure correct information was being loaded in/stored in the database.
- Used Python Flask to help communicate with database from within the application and pass relevant information to React Native.
- Constructed code to interact with API for the distance algorithm.

5.2 Alexis

Was in charge of the front-end development. Handled layout of individual pages and relevant error handling required for each page.

5.2.1 Key Contributions

- Contributed to the design and blueprint of individual pages in our application.
- Created and beautified questionnaire layout.
- Wrote questions for the personality test and created a beautified personality test layout.
- Handled all error checking algorithms in the application to ensure correct information was being sent from the front end to the back end.

5.3 Cyrus

Assisted in front end development and design. In charge of debugging and documentation.

5.3.1 Key Contributions

- Worked together with Alexis in beautifying our application and making the front end more user friendly.
- Extensively debugged and tested application to suggest where improvements could be made.
- Constructed the create listing form.
- Was in charge of documentation and handled gathering all information relevant to the document.

5.4 Vidas

Was the project manager and in charge of hooking up the back end and front end.

5.4.1 Key Contributions

- Facilitated our JIRA sprints and made sure every member was on track in completing their tasks.
- Used POST and GET requests to send information from front end to Python Flask back end.
- Was in charge of all application navigation and ensured each page in application was linked to the correct page.
- Wrote the personality test algorithm which decides the personality type a user is assigned.

6 Roommate Finder

The development of the Roommate Finder application has been finally completed. It was a long task that took the entire Fall 2021 and Spring 2022 semesters. Below are the tasks we have completed during each semester.

6.1 Key Tasks Completed

6.1.1 Fall 2021

- Account Registration system - Login and SignUp
- Splash Screen
- Error handling for Questionnaire
- Database Schema for User, Questionnaire etc.
- Home Screen
- Error handling for Signup & Login
- Roommate & Listings
- Detailed view of Roommates & Listings
- Database Functionality for Registration
- Database Functionality for Questionnaire

6.1.2 Spring 2022

- Personality Test Form
- Added Listings to Database Schema
- Personality Type Algorithm
- Profile Information Screen
- Error handling for Personality Test
- Create Listings Form
- View Own Listing Screen
- Delete Listings
- Add image photo functionality to profile & listings
- Database Functionality for Listings and Pictures
- Distance algorithm for listings

6.2 Features

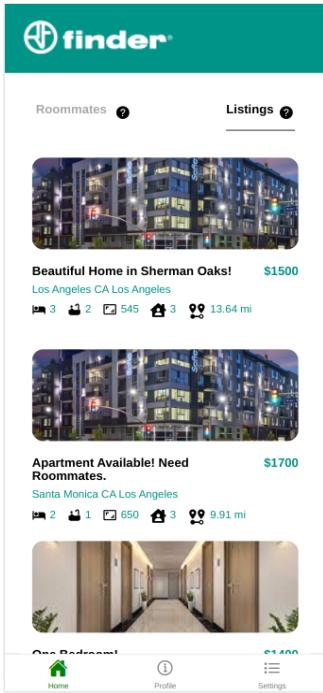
With the finalized product of the Roommate Finder, here are some of the key features that were developed during the duration of the two semesters.



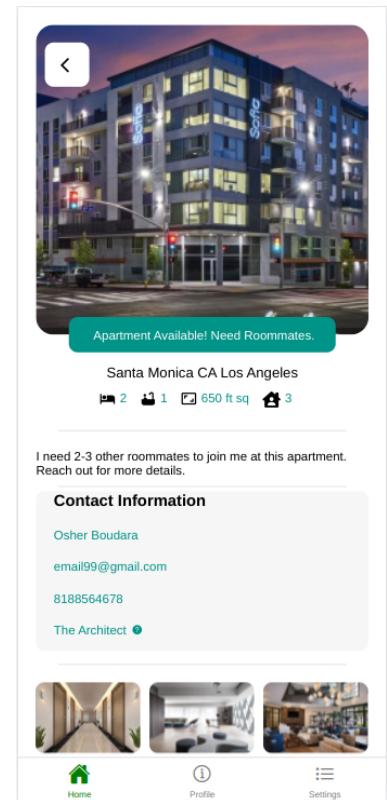
Find your perfect roommate

Take our questionnaire and personality test in
just a few clicks!
Live comfortably with your new friends.

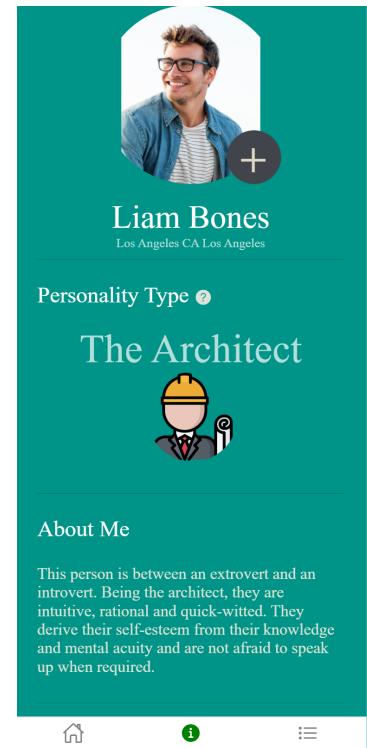
[Get Started](#)



- Users can find other listings and see the distance they are away from the user.



- Profile screen where the user can take a personality test to find out your personality type.



About Me

This person is between an extrovert and an introvert. Being the architect, they are intuitive, rational and quick-witted. They derive their self-esteem from their knowledge and mental acuity and are not afraid to speak up when required.

Questionnaire

➡ Zipcode: **90028**
 💰 Budget: **\$5**
 🏫 Student? **Yes**
 🏢 Working Professional? **No**
 🧑 Guests Often? **No**
 🧑 Roommate Status: **Joining a place with roommates**
 🚬 Smoking Status: **Non-Smoker**
 🌊 Cleanliness: **5/10**
 📺 Zoom preference: **Not Zoom-Friendly**
 🐶 Pet preference: **Pet-Friendly**

Home **Profile** **Settings**

- View different information about the user such as location, budget amount, cleanliness, etc...

- Users can find roommates based on their preferences with easy to see information such as if they are pet friendly, or if they are a student or a working professional, etc...



Roommates ? Listings ?



Johnny Cash \$5
Santa Monica CA Los Angeles

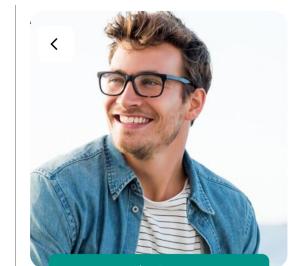


Jones Porter \$5
Los Angeles CA Los Angeles

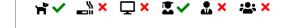


Home Profile Settings

- Find out more detailed information about roommates so you can find your perfect roommate.



Liam Bones
Los Angeles CA Los Angeles



Contact Information

liam@bones.com

1512512233

The Architect



This person is between an extrovert and an introvert. Being the architect, they are intuitive, rational and quick-witted. They derive their self-esteem from their knowledge and mental acuity and are not afraid to speak up when required.

Home Profile Settings



Contact Information

liam@bones.com

1512512233

The Architect



This person is between an extrovert and an introvert. Being the architect, they are intuitive, rational and quick-witted. They derive their self-esteem from their knowledge and mental acuity and are not afraid to speak up when required.

- Student? Yes
- Working Professional? No
- Guests Often? Not Often
- Roommate Status: Joining
- Smoking Status: No
- Cleanliness: 5/10
- Zoom Friendly: No
- Pet Friendly: Yes

- View this roommate's personality type and questionnaire answers to see if they are a fit.

\$2500
Total Budget

Home Profile Settings

- SignUp Questionnaire lets you tell others exactly what you are looking for.

Question 4/11

Are you a working professional?

Yes
 No

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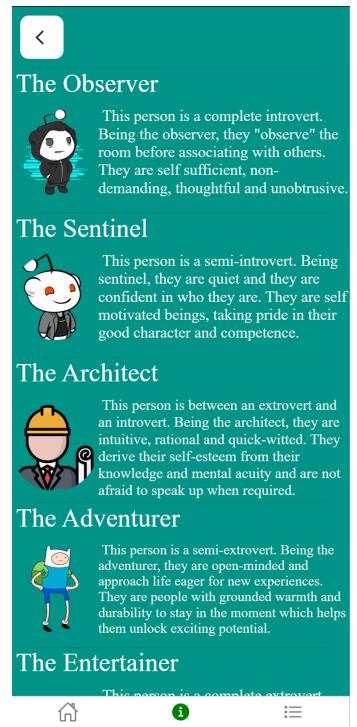
Question 9/11

Would you consider yourself pet-friendly or not pet-friendly?

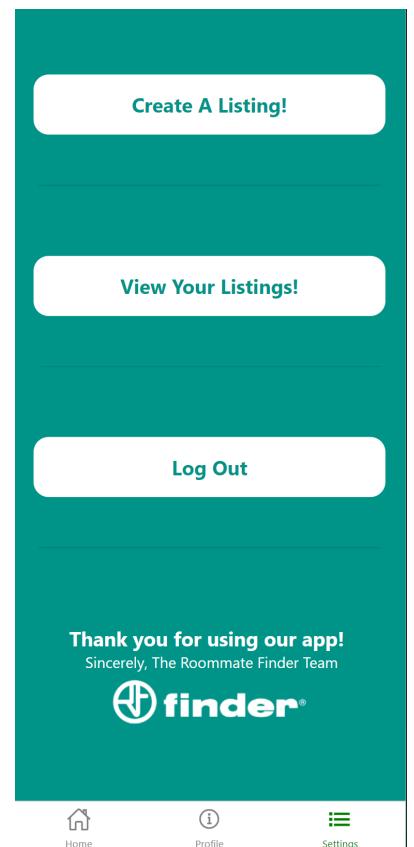
Pet-friendly
 Not Pet-friendly

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- Helpful information screens that tell the user about the different icon meanings and the idea behind the personality types.



- The user can create their own listings or view their own listings.



7 Potential Work

Roommate Finder was a wonderful experience for all members in our group and we are extremely satisfied with the product. With additional time, the application would ideally encapsulate many more features to ensure user's find their perfect roommate. Additionally, with a bigger production team and funding, we may have been able to accomplish many large scale tasks and deploy this application for use. Below are our ideas for the future regarding this application.

7.1 Messaging System (Groups)

Our application emphasizes the importance of user communication. Currently, we have given users the ability to access another user's contact information in order to facilitate communication between users. A potential idea for the future would be integrating a messaging system into our application. This messaging system would allow users to directly communicate with each other via the application in order to make communication easier and to protect user's personal contact information. Further, because some people need multiple roommates, we would like to add a group chat feature where multiple users can communicate.

7.2 Chatbot

In the modern day, where technology is integrated into every aspect of our lives, many people have difficulties working with some technologies. Ease of use for a user is very important for our application and integrating a chatbot would definitely assist us in improving that. With a chatbot, users can ask questions about how to navigate the application or any other general questions regarding the application. Further, users can submit feedback to us directly on how we can improve the application to make it more efficient, user friendly, etc.

7.3 Increase Efficiency of Personality Type Algorithm (Percentage)

Due to limited time, we had to implement a more basic personality typing algorithm with only five different personality types. Although these personality types encapsulate a vast majority of the population, we would like our algorithm to be more specific and cater more to individual users. In the future, we would like to introduce a percentage of compatibility with other users. This way, for each user another user views, they can see how compatible they are based on their percentage. For example, if one user viewed another user and saw that they are 85% compatible, they would know that they are very similar in personality. This would further drive our goal of helping users meet their ideal roommates.

7.4 Adding Real Time User/Roommate Status

Some users of our application may find roommates within hours of creating a profile. Because of this, these users would then be off market and other users can no longer message them. In order to see if a user is worth messaging, we would like to add a real time detector of whether a user is still available for finding roommates. Additionally, it would also let users know if this specific user is already in talks with another roommate or if they need more roommates in their group. This would make it easier for a user to find users that are in the same stage of the process as they are and further help users find their ideal roommates. Additionally, this feature will also display whether users are online or not.