San Francisco State University
Computer Science Department
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Group 4
Milestone 1
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GatorRoomer

Version	**Date submitted**	**Action**
1.0	9/21/2021	Submitted
2.0	10/05/2021	Submitted

1) Executive Summary

79 million adults, or 31.9% of the adult population in 2018 lived in a household which was shared, which contains 18-24 year old students and people who are not married to the head of the household and are not the head of the household (1).

Out of 7,095 graduate and undergraduate students, 80% of students live off of campus (2). Students are willing to pay $215.77(on average in a month) more to live off of campus (2). Of this category, 17% of students are willing to pay $1,000 a month or more to rent a room off of campus (2).

Our motivation for creating GatorRoomer is to make it easy and intuitive for students and professionals alike to find the perfect roommate or living space. This is an app for students and professionals, made by students. In addition, according to the statistics listed above, this is a large market which contains prospective customers who are willing to pay for the product.

Finding a room can be a stressful time--whether you are a freshman student going off to college, or a professional who has just been relocated to a different city, you are stepping into the unknown. We hope to mitigate that unknown with GatorRoomer as much as possible and make finding a roommate or place to stay quick and easy. To achieve our goal of an easy and intuitive experience, we shall implement an array of different filters and tags to make finding the perfect roommate easier. We shall also implement a rating feature to make sure our users are making the best decision when it comes to choosing a roommate and living spaces. Through our rating system, we hope to filter out the greatest roommates and places to live, which makes decision making better and faster. Our superior messaging system will give the user the option to ask a line of questions with the potential roommate, renter, or landlord. These are just a few services GatorRoomer will offer to make finding a roommate the easiest it has ever been.

Our team is composed of a diverse array of university students across many different college years, with different backgrounds and experience. We want to channel our unique skill sets to work together and produce a useful and intuitive app . We are hungry to compete with the big players in the roommate finding industry. As university students, we know what is important when it comes to finding a roommate. Thus, we want to make the process simple and easy--because we know students and professionals have more important things to worry about.

Citations:
(1)
https://www.pewresearch.org/fact-tank/2018/01/31/more-adults-now-share-their-living-space-driven-in-part-by-parents-living-with-their-adult-children/
(2)
https://www.multifamilyexecutive.com/property-management/apartment-trends/exclusive-research-7-000-students-reveal-their-housing-wants-and-needs_o

2) Personas and Use Cases

Students by Gender:

These students may wish to choose roommates based on their own gender, or select multiple genders. These include male, female, and other gender students. The other gender students can specify their gender with a field. They may wish to select genders for a variety of reasons: comfort, seeking friends, going to social events together, safety and security, et cetera. People who select multiple genders will be shown co-ed rooms. These people may not be interested in viewing the listings by people who do not fall into their preferences.

Use Cases:

Gender Preferences:
A student who's interested in searching for a roommate based on their gender preferences can update their profile and choose their preferred genders.

Search Filtering:

When a student is searching for roommates, they can choose from the available gender filters to filter - ‘male’, ‘female’ and ‘other’. The listing will then be filtered according to their selected filters. For example, a student who chooses the ‘female’ and ‘other’ filters will be able to see all listings except the ones posted by ‘male’ students.

Gender Restriction:
A student who is posting a listing might not want their listing to be visible to specific genders. They can then restrict the listing to certain genders so that only the specified genders will be shown their listing. For example, a female student can restrict their listing to females so that only other females can view their listing.

Color-coded Map Pins:
A student who is searching for listings from the map can differentiate between listings by different genders by looking at the color coded pins. For example, a listing by a ‘male’ student would be shown as a ‘blue house’, a listing by a female student would be shown as a ‘red/pink house’ and a listing by a student of another gender would be shown as a ‘rainbow house’.

Transfer students

Transfer students, who transferred into SFSU, need a place to stay. They would likely choose roommates who are also transfer students. It is even better if the roommate comes from the same community college with similar majors to study at the University. The application should provide the feature of finding transfer students who come from the same community college with a particular major. Therefore it could be easier to communicate with each other as roommates. Students need to create a profile to state which community college they came from if they categorized themselves as transfer students.

Use Cases:

rent a room
Just like other students, transfer students are able to look for a room with any preference. If they would like to look for an open room with other transfer students, they are able to do so. Every room should provide full detail that fits the need from a transfer student.

list room for rent
Transfer students should be able to list rooms for rent and be able to specify if the room is only for another transfer student or not. Besides that, students need to list the basic features of the room that they want to list. Students also need to upload the image of the interior and exterior of the room.

checking local prices/doing research
The application should be able to give the calculated average price based on the area within the certain range. The application should include room promotion if available when the landlord provides the opportunity. Students are also able to compare prices from other websites.

look for a room for someone else

This feature is helping students to help each other. Transfer students can help out another transfer student who is urgently looking for a place to stay due to moving to the new location near the university. They may look for a room for another student who has a family to take care of.

Go on website to rate past roommate/room
Students can give comments about the experience in the room environment and opinion about past roommates. The rating will determine if the roommate or room still qualifies for listing.

(messaging system)
Students are free to send messages to the landlord or whoever listed the room on the website. Inquiry for more detail about the room and the price of the rent. Also they are free to message to other students who are also looking for a room.

Students with disabilities

Students with disabilities are students who need supportive roommates. They need a place to live in with the appropriate utilities to help them succeed. They may want to make new friends, have the support they need from the people they live with, have a study group, be safe, and have a great time! These students will be roommates and may be seeking a place which will accommodate and allow guide animals, a place which has physical utilities for disabled people, and suitable safety and accessibility features which will ensure they are safe and comfortable. These students will also be renters--they may be seeking other roommates to share a space with caretakers, students who are willing to help, and other disabled students.

Use Cases:

Filter by physical need in rooms, houses, apartments
A student with a disability may need a specific utility or feature to be able to live comfortably and safely. For instance, a disabled student has a wheelchair, so they would want to filter living options by wheelchair ramps and having adequate space for wheelchair access within the common areas, bathroom, and bedroom. A disabled student may need a room on ground level, have access to an elevator, have bathrooms where there are grabbable bars in bathrooms (or where they have the ability to install them), access to light switches, electrical switches, thermostats; and usable doors, bathrooms, and kitchens. A disabled student may need to have their own bedroom. Students with disabilities can filter results by these categories.

Filter by closeness to type of location
A student with a disability may need to be physically close to a hospital, care center, physical therapy or therapy center, hospital, stores which sell food, and restaurants. These are search features which can be selected by the student with a disability, with minimum and maximum mile range fields to limit searches. Health facilities which are selected (hospitals, care centers, physical therapy or therapy centers, hospitals) will appear on the map API with a green pin.

Filter roommates by caretakers
A student with a disability may be seeking a caretaker as a roommate. They may seek caretakers using a search option (checkbox). Caretakers can list their qualifications and experience on our

website on their roommate profile with a badge with signifies they are a caretaker. Caretakers can be reported if they are abusive or are not doing their job, so students with disabilities can avoid having a bad caretaker. Our website will link to the appropriate government documents to ensure the caretaker is compensated, as well as feedback for caretakers given by students with disabilities.

Filter living spaces by caretaker animal
Some students with disabilities may require a caretaker animal, such as a guide dog. A search feature will be included which will filter rooms and roommates by guide animal or caretaker animal ability. On our map API, a green pin with a paw print can signify “guide animals are accepted.” These pins can be activated when selecting this search feature.

Professors

Tenured Professors and Lecturers

Many professors and lecturers have professional knowledge, so they may want to improve their knowledge or do more research. They may like to talk with other professors or lecture about their classes and professional expertise. Some of them may like to help students. Thus, They might want to live near the School. Some of them might have a house, but it isn't close to the School. Some of them might be transferred to another post here. Some might live in SF, but they do not want to buy a house here because it is so expensive in San Francisco. Even though they have a good salary, they still can not afford a house in San Francisco. Many professors and lecturers may want to live nearby the School because of the convenience. Living close to School helps them save money from transportation, save time to do their research and school work, and help students. Time is essential for professors and lecturers to improve their skills. They may want a room temporarily or want to have a space for taking a nap after classes. If there is an app that can help them find a room close to School, they may like to find a space and good roommates. Thus, they may want to use our app to find the room.

Use Cases:

Filter by Location and prices

When professors and lecturers look at the rental room from our site, they filter to reduce the unsuitable rooms through price and location. Professors and Lecturers may have different salaries. Some of the room prices are expensive for them. They can find the room listings which cost in the set price range. Some of them might like to live at the specified address, so they set the Find By Zipcode to filter unsuitable rooms on our site. Using the filter won't meet the unacceptable room, so they can save time finding a suitable space.

Messages

When professors have some rooms they like, they can send the messages to the post owners on our site. Finding a place to live is not easy. They may have many problems, such as living

conditions, utilities, and room equipment. They need to connect with the post owners to make an appointment to visit or ask questions about the rooms and community. The post owners also received their questions by email and responded to their messages on our site.

Roommate preferences

Most post professors and lecturers like the quiet space because they may need to do some Zoom classes. A quiet place is essential to them. If they meet some roommates who are novices, it will influence their work. On our site, professors and lecturers can find rooms that require a quiet renter. Some of them may want to live with the same gender. They can set up the roommate preference on our site, such as male-only, female-only. If the professors are the post owner, they also set up requirements on roommate preference. Suppose the roommate references match between the one looking for a room and who shares a roommate. It will make a comfortable living space.

Pet Requirement
If the professors and lecturers have pets, they can filter out posts that don't match their preferences. However, some post owners may allow some specific animals to live together. For example, post owners may love a dog but don't like cats. If professors and lecturers only have dogs, they will match up on our site. They will find more people to love their pets.

Landlords

The Landlord would list their rooms for students and professionals. They would post on our app the many different rooms they have available to rent. Adding filters to their rooms, the landlord will help students and professionals find the perfect place to stay. Landlords can also see the prices in their area, so that they can list their rooms at the right prices. In this circumstance, rather than connecting with a roommate you are connecting with the owner so those who are interested are going in blind. Through the app the landlord will be able to connect with tenants through a messaging system and be able to answer questions and concerns as well as possibly negotiate. A landlord will potentially deal with many tenants and thus have the ability to rate them all on our app and give his or her opinion. Didn’t pay on time? Bad score. Too loud? Bad score. By scoring these bad tenants negatively, he can help others from making the same bad decision and potentially stop some headaches in the future.

Use Cases:

Listing rooms:
The landlords shall list their rooms for rent on our website. They can filter out their rooms, so that it can fit into other students' and professionals’ interests. They can check out the prices of the rooms in the area, so they can list their room at the right price. They can search by zip code or the city they are in. For example, the landlord can list a room in San Francisco that costs $2000 a month that is pet friendly, with parking available.

Find a roommate:

The landlord shall be able to find a roommate to share a living space with on our website. They can filter out their preferable roommate and filter out the room they have. They shall put in their hobbies and interests, so that they will be able to find a perfect roommate. For example, a landlord is looking for a roommate that is in the same Computer Science major, and who would love to live in a 2 bed and 2 bathroom apartment with him.

Messaging:
Landlords shall be able to message with potential tenants or tenants on our website. When tenants have questions for the landlords they shall be able to contact the landlords through the embedded system in our website. The landlords will get notified and will be able to talk to the tenants without giving private information.

Rating:
Landlords can rate their tenants, so that other landlords can see the user ratings. This will allow the tenants to behave more and allow the landlords to be prepared on who their tenants will be. For example, if a tenant keeps on damaging the property, the landlords can rate the tenants and describe the behavior of that particular tenant. A tenant can be reported with our website.

3) List of main data items and entities

RoomListing

Field name	Data type
Room ID	Integer
Lister ID	Integer
Location	VarChar
Zip Code	Integer
Size of room	Integer
Type	VarChar (example: (Room, House, share room, et cetera)
Description	VarChar
Price	Decimal

ListTime	Date
Size	Decimal
Number of bathrooms	Integer
Number of bedrooms	Integer
Tags	Varchar
Available	Int

Base User

UserID	Integer
Email	Varchar
Password	Varchar
Name	Varchar
Age	Integer
Social Security (Integer)	Integer
User Score	Integer
Gender	Varchar
Type	Varchar
Hidden	Int

Student

SchoolID	Integer
Major	Varchar
Grad_level	Varchar
StudentID	Integer

Professional_User

Prof_ID	Integer
JobLocation	Varchar

Zipcode	Integer

Messages

Message ID	Integer
Sender	Integer
Sendee	Integer
Contents	LongText

ProfilePictures

UserID	Integer
UserPic	varchar

Tags (This table can be used for our reference so that we can know what are the search tags)

TagID	Integer
TagDes	varchar

ProfilePictures

UserID	Integer
UserPic	varchar

RoomMedia

RoomID	Integer
RoomPic	varchar

Bookmarks

userID	Integer
toomId	Integer

4) Initial list of functional requirements

1) User shall be able to filter through room listings using price, location, tags.
- Be able to filter out room listings that don't meet the users price or location requirements. Also tags from the lister can be used to filter.

2) User shall be able to use bookmark/ “like” room listings.
- Have the ability to save room listings for later.
- (with the option of making this available to landlords--who may offer a discount); or make it private

3) AFK landlord listing

If a landlord does not respond to users, have a way users can notify the website the landlord is away, so it will not be listed with the other rooms (make it spam-free)

4) User shall be able to provide reviews and upvote locations

How good is this location, roommate, landlord? Leave a rating and an optional review.

5) room listing durability
- Each room can be only listed during a certain period. Listing extension or renewal may be required.

6)User shall be able to personalize account (person description, and social media links)
- Have a description so users can get to know you. An alternative could be to link your social media.

7) User shall be able to have separate session for each user.

Have separate sessions for each user. Need to make sure each user has their own info and not other user’s info

8)User shall have new post notifications -
- Send a notification to users when a new listing is added by any user.

9) User shall be able to ask questions to landlord or roommate (webmail) -
- Send messages to the OP about any questions or doubts using the in-built messaging feature.

10) User shall be able to see landlord rent guarantee

make it mandatory for landlords to stick to their rental agreement right after paying for renting, so it cannot be “sold” to another user.

11) Users shall be able to check distance to restaurants, stores, and gas stations nearby SFState.

How close is the nearest restaurant (cuisine type, has a drive-through); a drugstore, pharmacy, grocery store, department store; park; gas station; hospital; trail; the beach?

12) User shall be able to set up their roommate preference (male only or female only, undergrad, grad, professor) -
- A user can set their roommate preference during the profile creation process and modify their preferences later.

13) User shall receive email verification -

- Send an email to the user's email ID with a link that they can click to verify their emails.

14) User shall be able to rate other users
- Like uber, be able to rate your roommate based on how satisfied you were with the experience. Put less emphasis on listings from users with bad scores.

15) User shall be able to report the spam
- Add option to report a post as spam which then gets highlighted on the admin panel so that the admin can remove/take down the post.

16) User shall be able to see Parking availability -
- Include an option to specify the parking availability when adding a new post.

17) User shall be able to filter for pets allowed, smoking -
- The user can filter out posts that don't match their preferences by selecting from a list of available filters (like amazon)

18)User shall be able to have a "saved post" draft system for landlords who want to save listings before publishing them

If you are a landlord and are working on a room-to-rent post, but it's WIP… a location landlords can save and access drafts.

19) User shall be able to check the roommate's quietness level

How quiet is your roommate? Do they use headphones or use speakers? Potential field on roommate's profile and search function feature when seeking out roommates.

20) landlord ability/ how to contact a landlord/ landlord ratings/ landlord profile

If there is a problem with the sink, how easy is it to contact the landlord? (rating) Contact information for landlord, and a personal profile similar to roommates (name, description, social media, et cetera).

21) an "if I brought a guest to the room, what would I do" section on potential roommate's profiles

If a roommate brought a guest, what would they do? Where will the guest park? A little optional field roommates can put on their profiles.

22) a "make an offer" option when renting out rooms.

Avoid the $1 listing price with a "make an offer" description. Avoid having such post listed with a price--instead have the post put in a section where the user must contact the landlord for the price.

23) A calculator to do the math on how much it'll cost for a certain amount of time
- Calculate the total cost of a room for a certain amount of time (Months) so you know what you are getting into.

24)User shall be able to find roommates by interest
- When users are looking for a roommate, they can easily find the person who has the same interests and easily find a topic to talk together.
- Creating the interest tags to let user searching

25) roommate chore-ability(?)

Optional. A roommate's ability to do chores, like wash their own dishes, et cetera.

26) Disability access
- Allow users with disabilities filter out rentals that are convenient to them.

27) User shall able to upload a picture(s) of the room
- No one wants to rent a room they can't see. Give the lister the ability to add 1 or many pictures of the room.

28) Landlord or roommate "vacation" or "away for a certain period of time" banner

Have a banner on the user's profile (with notifications, so said user won't forget they enabled such banner) which notifies other users that this user is away, and provides an optional rough estimate on when they will get back

29) App shall be able to display a map with pins showing the available apartments (Similar to PadMapper)

5) Non-Functional Requirements

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0 (some may be provided in the class, some may be chosen by the student team but all tools and servers have to be approved by class CTO).

2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers

3. Selected application functions must render well on mobile devices

4. Data shall be stored in the team's chosen database technology on the team's deployment server.

5. No more than 100 concurrent users shall be accessing the application at any time

6. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.

7. The language used shall be English.

8. Application shall be very easy to use and intuitive.

9. Google maps and analytics shall be added

10. No email clients shall be allowed. You shall use webmail.

11. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.

12. Site security: basic best practices shall be applied (as covered in the class)

13. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development

14. The website shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Fall 2021. For Demonstration Only" at the top of the WWW page. (Important so not to confuse this with a real application).
These non-functional specs are in real life usually provided by clients, CEO, business and legal

departments and are NOT subject to change by engineering team on their own. Hence copy them in your milestone documents (and optionally add details as necessary). You are not allowed to remove any of these requirements by yourself and must abide by them exactly as they are written.

6) Competitive analysis

Feature	RoomGo	SpareRoom	PadMapper	craigslist	Us
text search	Location(sign up needed)	City / Zip code	For cities/ zip code	put any words to search, Save search	Use any words like city / zip code to search
boolean search	For gender and location range	Has boolean search for price range	Yes, range search feature	Miles from location, price # of bedrooms/ Space size	Yes, various filters for different categories such as pets, parking availability, smoking, etc.
search preference customization (defaults)	Preferenc e can be selected after sign up	Has advanced search to filter out the room that fits your interest	Filters	Bunch of preference checkboxes	Yes, preferences can be selected and saved after sign up
Map based search	Search radius base on the location is entered	No maps just place zip code	Map with pins for available apartment	No Map based search	Yes, Maps with pins showing the available apartments
User Interface	UI is user friendly, easy to follow	UI is simple with a blue theme	Relatively fresh UI, only the homepage seems outdated	UI seems outdated	Modern UI with support for mobile devices.

7) High-level system Architecture and Technologies used:

Server Host: AWS EC2 t2.small 1vCPU 2GB Ram
Operating System: Ubuntu 18.04 Server
Database: MYSQL V8.0
Web Server: NGINX 1.19
Server-Side Language: Python

Web Framework: Flask
Web Framework: React

IDE: PyCHarm IntelliJ
IDE: VS Code

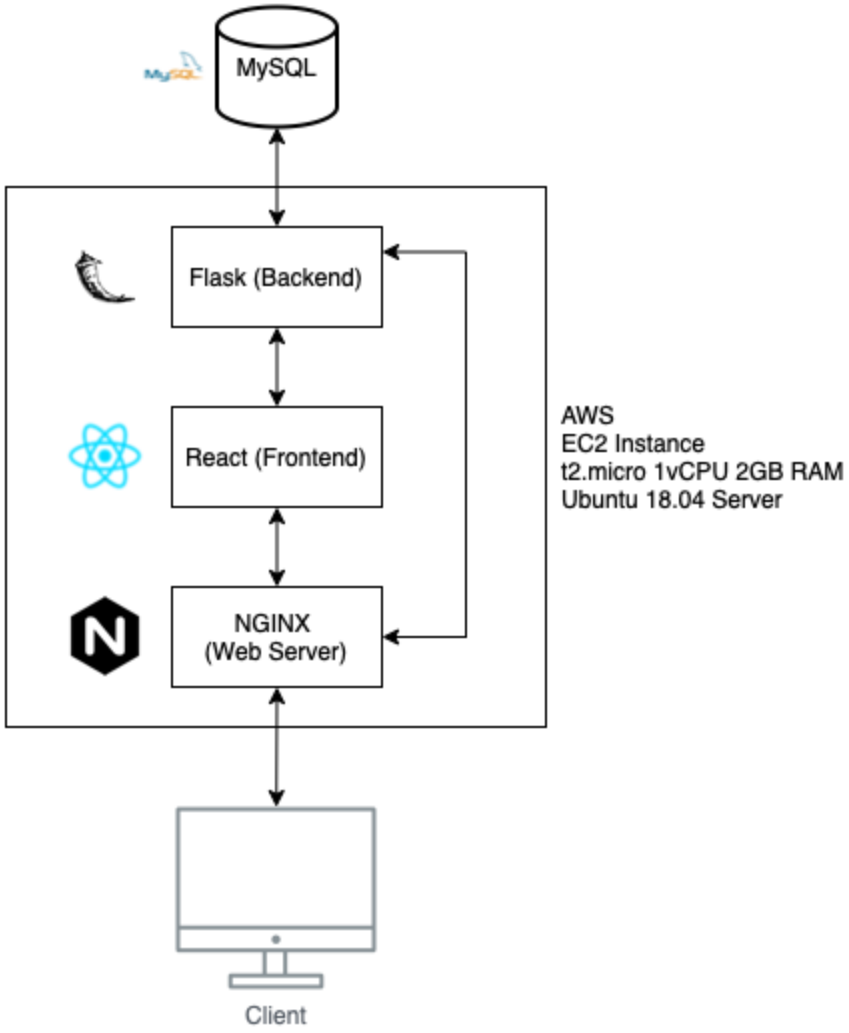
Web Analytics: Google analytics
SSL Cert: Let's Encrypt (Cert Bot)

SASS: 3.5.5

Front-end development tool (testing prototypes): AWS Amplify

Maps API (to be considered) - MapBox (Generous Free tier) & Google Maps API (paid)

Amazon S3 - cloud storage for images and videos


MySQL
Flask (Backend)
React (Frontend)
NGINX
(Web Server)
AWS
EC2 Instance
t2.micro 1vCPU 2GB RAM
Ubuntu 18.04 Server
Client

8) Team and roles

Georgina Shirazi: Leader, GitHub lead/master, Document lead

Sanket Naik: Frontend lead
William Zhong: Frontend

Swetha C: Backend lead
Zhiling Huang: Backend

Eanguy Eng: Database
Gabriel Pena: Database lead

9) Checklist

• Team found a time slot to meet outside of the class
DONE

• Github master chosen
DONE

• Team decided and agreed together on using the listed SW tools and deployment server
DONE

• Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing
DONE

• Team lead ensured that all team members read the final M1 and agree/understand it before submission
DONE

• Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)
DONE