SW Engineering CSC648/848 Spring 2019

SFSURent

Team 11

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Milestone 1

3/12/19

History Table:

3/5/19

3/1/19

1. Executive Summary

Are you a student looking for affordable housing near San Francisco State University? Do you own property in the bay area looking for a tenant? This website is the application for you!

As a student, the last thing you want to worry about is finding a place to live. Especially in a city where two thirds of the housing market are renter owned. It becomes a struggle to dig yourself out of the avalanche of adverts and postings promising the "perfect place to live," let alone finding the one that's right for you. The same can be said for the landlord looking to rent their house when their ad becomes just another snowflake on top of the avalanche. SFSURent is an alternative solution geared for San Francisco State University students to find the apartment or house that's perfect for them.

SFSURent prioritizes a top-notch user experience geared for students attending San Francisco State University. In addition to the critical features provided by the other competitive systems such as filtering and searching, SFSURent will provide additional unique features for SFSU students. For example, SFSURent will calculate the distance (walking, biking, and driving) from the listing location to the San Francisco State University campus and will present it to the user. Another key feature that will enhance the user experience is our rating system which displays ratings calculated by an algorithm created specifically for San Francisco State University students. For example, this algorithm can consider combination of price, distance, travel cost using public transportation, number of housemates and other key features to calculate a rating specially for SFSU students that enables the student to compare different listings. There are many websites that offer housing options, but they are too expensive, far from school, and don't cater to students specifically. Craigslist, Roomster, and Zillow are all common sources for housing but offer minimal opportunity for finding the right place for a typical SFSU student. Our platform does not charge to contact landlords and we have an administration system in place that removes postings that might contain inappropriate content or does not meet our website guidelines.

SFSURent is a startup founded by SFSU students to better our community and offer a more streamlined source of housing opportunity.
This platform is new and is constantly being optimized and maintained by our team to fit the needs of the students!

2. Personae and main Use Cases

2.1 Key Personas

2.1.1 Tenant:

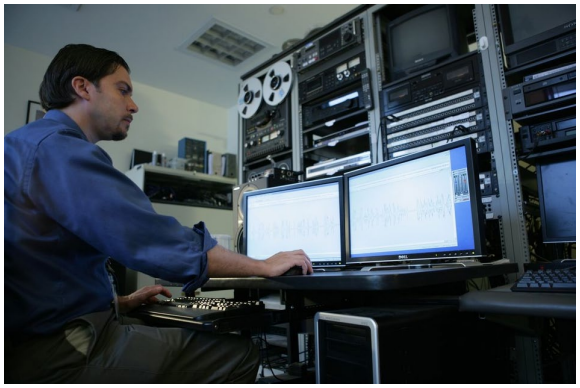
Most tenants are SFSU students who have intermediate to advanced web browsing skills due to early exposure to technology. As college students, we don’t have too much income. Many students must work and study during the semester. After students receive their paychecks, they spend most of the money on housing, but at the same time, they also need to purchase textbooks and food. They don’t have much money left in their pocket after they pay the house. Some of the students decide to live far away from school because they can’t find cheaper house near school. They must wake up earlier every morning and try to catch the bus, and sometimes they are still late for classes because of the traffic. The main goal for students is to find inexpensive houses that are close to SFSU. If students live close to school, they don’t have to wake up at 7 a.m. in the morning, and they have more time to rest. Especially when the exams come, we don’t want to be late because of the traffic. Students can manage their time better and save money if they use our application.

2.1.2 Landlord:

As landlords, they want to list their houses quickly and effortlessly. Landlords generally have a diverse range of technical experience, but we assume little experience for the non-technical users, and after conducting a survey we found out that the median age of San Francisco landlords are fifty-nine years old. Before the current tenant's contract ends, they need to find a new tenant to take the position. If they can't find any new tenants, they earn no money from their property. They want to make sure the tenants are responsible and pay their dues on time. The platform will require tenants to enter their credit score, and other necessary information which will be reported to the landlord. The landlord is ultimately responsible for validating their tenants before rental agreement.

2.1.3 Admin:

As an administrator, the key responsibilities are to manage, modify, insert, delete data from the database so that users can have access to safe and useful information that is relevant to them. Our administrators are trained in data management and have strong technical ability to handle complex UI issues or database maintenance. An administrator also helps in troubleshooting issues that users on the platform such as landlords and tenants face. He/she performs managerial tasks that help maintain the usefulness of the information on the platform and prevents any malpractice or misbehavior.



2.2 Use Cases

2.2.1 Commuting student

John is a SFSU student who commutes from Hayward Monday through Friday to attend his classes. Unfortunately, John must wake up at 7am to account for traffic so he can make it to his 9am class, but often over sleeps because he works for a local pizza shop at night and stays up late studying. John decides to start looking for houses closer to San Francisco State University so he can save time and money from not having to commute every morning. He goes to SFSURent and filters his search to be within walking distance from campus and within his price range and is quickly displayed a couple apartments that are perfect for him.

2.2.2 Renting out properties

Adam is a retired commercial airplane pilot with multiple properties nearby the San Francisco State University campus. He's posted his properties for rent on multiple websites but hasn't received much interest. He suffers from age related diseases so he cannot spend much time searching for people who want to rent his properties. After he visits SFSURent and creates an account, he posts advertisements for some of his properties. Within a week, Adam receives multiple messages from interested parties.

2.2.3 Renting out properties (part 2)

Mary is a 40-year-old woman with very limited knowledge of technology. She wants to post her house for rent. She has tried to post a list of her house on several websites, but those websites are complex to use, so she must ask her son for some help. Her son is a SFSU student, he suggests her to try SFSURent website, which is easy to use. SFSURent is friendly to users with low technology skills. She can post her list by some simple steps. After she goes to SFSURent and registers an account, she posts a listing for her house.

2.2.4 Managing the information and preventing restricted content

Shane is an administrator who has access to the database and has rights to manage that data. A potential landlord is having an issue trying to sign up as he/she is not proficient in his/her computing abilities. Shane helps this potential landlord and walks them through the sign-up process. A user on the website comes across restricted content and contacts Shane. Shane immediately follows up and takes down this unsafe content. Shane helps another user that has forgotten their password to reset their password so that they can regain their access to their account.

3. List of main data items and entities

3.1. *User*

- 3.1.1. *Unregistered User* (can browse the website but won't be able to contact the Landlord and post listings)
- 3.1.2. *Registered User* (can perform all actions of an Unregistered User and contact the Landlord and post listings)
  - 3.1.2.1. *Tenant* (can view the public images but need to register to see private images and to communicate with landlord)
  - 3.1.2.2. *Landlord* (can post the images and details of the house; login/register required)
  - 3.1.2.3. *Admin* (can access, modify, edit and delete all the necessary data; can block the fraud user; login required)
  - 3.1.2.4. *Blocked user* (details of user's blocked by the admin)

3.2. Listing

- 3.2.1. *Subject/Title* (main part of the renting information)
- 3.2.2. *A*ddress and rent details of the house
- 3.2.3. Landlord ID (to track the ownership of the listing)
- 3.2.4. *Listing Images* (posted by Landlord and approved by Admin)
- 3.2.5. *Listing Features* (features like furnished/not furnished, has pool, has air conditioner, pet allowed, carpeted or not, number of bathrooms, other roommate's information and many more)
- 3.2.6. *Type of Listing and size* (type like 2BHK/3BHK, apartment/ bungalow, floor)
- 3.2.7. *Distance from university* (for each commuting mode).
- 3.2.8. *Time from the university* (for each commuting mode).
- 3.2.9. *Listing status (approved / disapproved / expired / rented)*
- *3.2.10.* Posted Timestamp

3.3. Message

- 3.3.1. Sender ID (to determine who has sent the message)
- 3.3.2. Listing ID (to track the related listing)
- 3.3.3. Message Body
- 3.3.4. Timestamp

3.4. *Tenant Search History* (history of the search by the tenant to be able to find the previous results)

3.5. *Favorite listings* (tenant's favorite listings which will help the tenant to find the same listing again)

4. Initial list of functional requirements

4.1. Unregistered User

- 4.1.1. Shall browse listings by simply visiting the website.
- 4.1.2. Shall be able to sort the listings.
- 4.1.3. Shall be able to view the listings on a map.
- 4.1.4. Shall sort/filter listing by location, distance to SFSU, cost, utilities included.
- 4.1.5. Shall be able to read the description of postings.
- 4.1.6. Shall check commute time of posting to SFSU via Google Maps (walk time, bike time, bus time, bart time, driving time)
- 4.1.7. Shall view images of the listing to give the user an idea of the living circumstances.
- 4.1.8. Shall be able to search postings by keywords.
- 4.1.9. Shall register for an account by completing an online form.

4.2. Registered User (Can perform all tasks of Unregistered User)

- 4.2.1. Shall contact landlord through the platform.
- 4.2.2. Shall favorite postings so they can easily be found in the future.
- 4.2.3. Shall logout of session by clicking logout.
- 4.2.4. Shall be able to edit their profile.
- 4.2.5. Shall change password for login by viewing profile and clicking “change password”.
- 4.2.6. Shall use forgot password to recover login.
- 4.2.7. Shall share the SFSURent website with friends via Social Media through referral links (not the actual listings).
  - 4.2.7.1. If a user A shares the website through their referral link and a new user B registers through their referral, user A shall be given priority status which enables them to view the listings 24 hours earlier than regular users.

4.3. Landlord (Shall perform all tasks of Registered User)

- 4.3.1. Shall create listings.
- 4.3.2. Shall view postings.
- 4.3.3. Shall be able to view messages from potential tenants.
- 4.3.4. Shall delete own postings.
- 4.3.5. Shall edit own postings.
- 4.3.6. Shall read through registered users’ profiles.

4.4. Administrator (Shall perform all tasks of Landlord)

- 4.4.1. Shall delete any posting.
- 4.4.2. Shall block accounts.
- 4.4.3. Shall approve pending postings of Landlords
- 4.4.4. Shall disapprove postings of Landlords

5. List of non-functional requirements

5.1. 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 must be approved by class CTO).

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

5.3. Selected application functions must render well on mobile devices

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

5.5. No more than 50 concurrent users shall be accessing the application at any time

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

5.7. The language used shall be English.

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

5.9. Google analytics shall be added

5.10. No email clients shall be allowed

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

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

5.13. Before posted live, all content (e.g. apartment listings and images) must be approved by site administrator

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

5.15. The website shall <u>prominently</u> display the following <u>exact</u> text on all pages *"SFSU Software Engineering Project CSC 648-848, Spring 2019. For Demonstration Only"* at the top of the WWW page. (Important to not confuse this with a real application).

6. Competitive analysis

	Zillow	FB Market	Craigslist	Hotpods	campuscribz	SFSU RENT
Search	B	D	B	A	A	A
Map UI	B	D	B	A	A	B
Ease of use (UI)	B	A	C	A	A	B
Ease of contacting landlords	D	A	B	B	A	B
Ease of listing	D	A	C	B	A	B
Tailored for students	F	F	F	F	A	A
Marketed to SFSU students	F	F	F	F	B	A+

Ratings: A=Outstanding, B=Good, C=Acceptable, D=Poor, F=Not a feature

To assess the current available student housing websites in the market, five different housing websites were studied. Majority of the competitive systems do not offer any tailored features for the students. CampusCribz is one example that is specifically targeting the students. For example, it shows walking, biking and driving distances to the user's selected campus. Some of the competitive systems offer easy navigation and filtering tools for the search results which improve the user experience. SFSURent priority is to create great user experience for the SFSU students. Moreover, it will combine most crucial features in the other competitive systems such as filtering, search and ease of listing for the landlords.

7. High level system architecture and technologies used

- 7.1. **Server Host**: Amazon Web Services, 1 vCPU, 1gb RAM, 15gb SSD
- 7.2. **Operating System**: Ubuntu Server (v18.04.1 LTS)
- 7.3. **Database**: MySQL (v8.0.13)
- 7.4. **Web Server**: AWS EC2
- 7.5. **Server-Side Language**: JavaScript (v1.8.5)
- 7.6. **Web Framework**: Node.js (v10.15.1 LTS)
- 7.7. **Additional Technologies**:
  - 7.7.1. **IDE's**: Visual Studio 2017, Visual Studio Code (v1.31.1)
  - 7.7.2. Bootstrap (v4.3.1)
  - 7.7.3. jQuery (v3.3.1)
  - 7.7.4. Popper.js (v1.14.7)
  - 7.7.5. Express.js (v4.16.4)
  - 7.7.6. Lint (v5.14.1)
- 7.8. **Supported Browsers**:
  - 7.8.1. Google Chrome 73.0.3683.75
  - 7.8.2. Firefox 65.0

8. Team Members

Team Lead	Cory Lewis
Front End Lead	David
Back End Lead	Soheil Ansari
GitHub Master	Xinyu Zou
Front End	Chintan
Back End	Poorva Rathi
Back End	Junwei Liang

9. Checklist

9.1. Team found a time slot to meet outside of the class - **Done**

9.2. GitHub master chosen - **Done**

9.3. Team decided and agreed together on using the listed SW tools and deployment server - **Done**

9.4. 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 - **On Track**

9.5. Team lead ensured that all team members read the final M1 and agree/understand it before submission - **Done**

9.6. GitHub organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.) - **Done**