

Software Engineering CSC 648/848
Summer 2020
Team 4 Milestone 1
Initial Proposal

Hillow App

Developed by Team 4:

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1. Executive Summary

Our new app called Hillow is a solution to a constant request from countless SFSU students and faculties who often struggle to find a suitable house with their desired amenities, as there are too many places to search for rental units and too few services that cater directly to students' needs. Hillow is the solution these people have been looking for, allowing them to easily find housing with minimal time wasted searching. Hillow allows anybody who owns an apartment or house to advertise for rent. Our main goal is to put an end to all students' problems with the rental market. We strive to connect students with rare housing opportunities in the closest neighborhoods to SFSU, where people with the same interests can become roommates. Hillow is the best available market option for students to achieve healthy living and make progress towards their educational goals. Our website takes zero commission and students' satisfaction is always our paramount goal.

Hillow is an online platform exclusively for SFSU students and faculties to rent a house and apartments. Hillow helps students to find the best match to their needs. Hillow offers spacious, pet-friendly, and safe apartments or townhouses. Any SFSU student who is looking to rent an apartment can create an account and start using our variety of housing-related services. SFSU students can search for apartments and find out just in seconds about the availability and location of the apartments on hillow. While there are multiple online platforms in the market providing similar service, hillow is the only online rental platform where houses and apartments are available exclusively for SFSU students and faculties. For years, SFSU students have struggled to find a reliable app that makes their lives easier and promises to provide them with only the best housing choice available. Hillow has its special map that shows the location of all buildings and helps you find the route to SF State.

Hillow will keep users up-to-date if any new locations are available that start leasing. One of the best features that hillow provides is to connect students by their majors, allowing students to learn better if their roommates are also studying the same material as they are because it creates a good learning environment. We believe in user appreciation and all of our services will work accordingly; from searching through hillow to finalizing a lease we will be there to support and help you schedule a meeting with the owner and sign a lease to reduce unnecessary waste of time and make your life easier and get your work done more quickly. To avoid potential problems, hillow will only allow SFSU students as its users and it won't let any other users sign up and use it.

Hillow is a startup led by 6 SFSU students who work towards their common goal- housing for advancement of students. Being SFSU students, we know the struggle and preference of students and why it is important to find the best place that can help you concentrate on your studies. Our team always works for the betterment of SFSU students and we will have more and useful functionalities developed and added to hillow in future.

2. Personas and use cases

Lucas

Lucas is an SFSU student. He is looking for rent but he is tired of browsing on unorganized networks to find available places. Lucas wants to use a more organized app that will allow him to find rent easily. Lucas had been scammed many times and he lost a lot of money and energy looking for a new place. Lucas want an application that provides the following services:

- An organized application that allows the user to search easily for rent.
- An application that verify the user authentication and avoid scam.
- An application that verifies the location and the availability of the offer.
- An application that provides useful information about the place.



Sarah

Sarah is an SFSU faculty. Sarah spends more time on the campus but also likes to go back home once in every 5 hours to rest, eat or shower. Sarah wants a place very close to campus so she won't waste time in the commute. Sarah prefers to live with SFSU faculties only. She feels more comfortable living with other SFSU faculties. Sarah likes to eat in restaurants and she would like to find the closest grocery places to her place. Sarah wants an application that will allow her to:

- To find the closest available spots to the campus of SFSU.
- To find the closest restaurants and grocery markets to that place.
- To make sure that all tenants in the house are SFSU faculties.



Sam

Sam is an SFSU student. Sam is an independent person who goes to school and work at the same time to cover all her expenses. Sam does small jobs and she works only part time. Sam has some financial struggles and doesn't want to spend too much money in rent. Sam would like to find the cheapest available places for rent. Additionally, Sam likes to spend her free time at home and she also likes to do her homework at home. Sam would like a place that doesn't have a lot of tenants. Sarah wants and app that allows her to:

- To find the cheapest available place.
- To find a place with two or three tenants maximum.
- To find information about tenants living in the house.



Carmen

Carmen is an employee of Hillow who works as a web admin. Her job is to approve users' property postings before they are live on the Hillow website for users to view, making sure language and all other post components comply with Hillow's policy against inappropriate or irrelevant content. Carmen's admin access does not allow her to edit posts, only approve or deny them for listing on Hillow. To streamline Carmen's job, the Hillow web app must allow designated admin users the following functions:

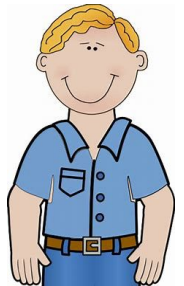
- A complete listing of all the new posts awaiting a decision on its approval status.
- Two buttons allowing the admin to approve or deny each listing.
- A method of deleting listing posts that no longer comply with the company policy or that are expired.



Jeff

Jeff is a house owner, Jeff is interested in renting his house to SFSU students or faculties only. Jeff has been scammed many times and would like a platform more secured and controlled where he can share pictures about his house and a mini description. Jeff would like an app with the following features:

- A secured application that controls the use of data and posts.
- An application allowing rent to SFSU students and faculties only.



Use case for case 5: With our app, the landlords and house owner will be more satisfied with the security measures that we are taking in order to secure their data. Our application has admins who control the use of the site and can identify any illegal use or scams. Our admins verify the identity of the clients before completing any operation and we require the SFSU email as a verification to that.

Use cases

Use case for case 1: Our application will help Lucas to avoid scam. Lucas will be able to see pictures of the place to check if it fits his needs or not before he can go check it in person. Lucas can make sure that the users of the app had been authenticated. Lucas does not need to create an account in order to be able to make a search and to choose a place. Lucas will be able to contact the house owner or the seller via his phone or email that we will provide. Lucas will be able to check all the information needed about the place he wants to rent. When the house owner is posting a new available place for rent, he will be asked to provide information such as: how many bedrooms are in the house, how many bathrooms, is the place pet friendly? How many tenants are there? Is the rent month-to-month or should the tenant sign the lease?

Use case for case 2: With our app, Sarah can be able to filter the choices for an available place based on the shortest distance to the campus. Sarah will be asked to enter a max distance between the campus and available places. Based on the distance she entered, the places will be filtered allowing her to choose from the available places with lowest distance to the campus. Sarah can make sure that all the tenants in the house are SFSU faculties. Sarah can check information about the closest restaurants and grocery stores to each place. The Landlord will be asked to provide this information while making a new posting.

Use case for case 3: With our app, Sam will be able to create an account and check for available rent. Sam will be able to choose from the cheapest available places. The app will ask the student to provide a maximum budget they will be able to pay for rent. Based on this selection, the app will filter the best results for the user and allow him to choose from the places with a price lower than the one selected. In our app, the place posted will also have a short description about the tenants who live in the house and it will be updated in case the tenant left the place.

Use case for case 4: With Hillow's special functionality for employee web admins, employees will have an easy way to quickly respond to post requests from users, as users quickly become frustrated while having to wait for approval. Because it is important not to misplace requests from users, all requests for posting (or edits) will be on one page with one-click approval (or denial). Admins will also need an option to delete an existing post on Hillow if it must be removed for some reason. Admins have no need to edit a posting, so there is no option integrated in Hillow's design to do so, keeping the admin's options minimal to reduce mistakes in the post approval system.

3. Main Data Items & Entities

List of Entities:

1. Unregistered User
 - a. Account (optional)
 - i. Username or Email
 - ii. Password
2. Registered User
 - a. Account
 - i. Username or Email
 - ii. Password
3. Admin
 - a. Username or Email

- b. Password
 - c. Permissions
- 4. Seller
 - a. Account
 - i. Username or Email
 - ii. Password
 - b. Property Listing

Active Entities:

1. Registered Users
 - a. Registered users are able to browse the listings within the site, as well as message sellers on each listing that is posted.
 - b. Without restrictions, they have access to the database of listings within the site.
 - c. Registered users are able to receive notifications on listings that they've saved, new listings posted within price range and location specified, as well as if a listing saved has been taken down.
 - i. Username: will serve as an identifier for the user, better interpretation than a primary key number, as usernames are easier to remember and self assigned.
 - ii. Password: to log into the system and access specific files, listings, private messages within their account--security and marketing .
2. Unregistered Users
 - a. Users are able to browse the listings within the site without an account. They are also able to message sellers on each listing that is posted.
 - b. Without restrictions, they have access to the database of listings within the site.
3. Seller
 - a. Sellers need an account to post in order for the site to efficiently manage all postings and for verification.
 - b. Sellers are able to post listings, talk to potential clients, update their listing, remove listings, and receive notifications that they've saved or updates on the site.
 - i. Username: will serve as an identifier for the user, better interpretation than a primary key number, as usernames are easier to remember and self assigned
 - ii. Password: to log into the system and access specific files, listings, private messages within their account--security and marketing
 - iii. Listing: for posting, deleting, updating property listing with images, descriptions, content, location, pricing and other necessary information needed to list property.
4. Admin
 - a. Admin takes care of the well being of the site and making sure that listings are accurate, correct and not fraudulent. They're responsible for making sure that

everything on the site is verified and kept tidy in terms of information. They must also approve each post before it goes online.

- i. Username: will serve as an identifier for the user, better interpretation than a primary key number, as usernames are easier to remember and self assigned, but will be assigned due to admin use only
- ii. Password: to log into the system and access specific files, listings, private messages within their account--security and marketing

Data Items:

1. Property Listing
 - a. Listing id: for mapping the listings across the site and making sure each one is accessible uniquely.
 - b. Description: provides the users a summary of the post, including only important details and a specific number of characters i.e. Apartment for rent 2 miles away from SFSU
 - c. Location: map of the property within a 10 mile radius all around
 - d. Pricing: provides pricing for property that are in USD, and in time frames of monthly, 3 months, 6 months, 8 months, yearly, to name a few.
 - e. Date Availability: provides the exact date that will enable the buyer to move in.
 - f. Dates for Showing: a range of dates that lists for open houses.
2. Map
 - a. Longitude and latitude components: provides a realistic range for users to be able to navigate the location within the area in proportion
 - b. GUI: to be able to depict clearly the proximity of the property among other establishments, neighborhoods, homes, schools.

Data Structures:

1. Property listing: list of properties within a specific neighborhood
2. Neighborhoods: list of neighborhoods available to search from within the site
3. For Sale: list of properties for sale within a specific neighborhood
4. Sellers: list of sellers within database
5. Successful Transactions: List of successful transactions and connections made within the site, for data purposes that can be used for marketing and advertising.
6. Blocked: List of users that affected the site experience negatively.

4. Functional Requirements

1. Unregistered users shall be able to register.
2. Unregistered users shall have viewing access to all listings.
3. Unregistered users shall be able to sort/search listings.
4. Registered users shall be able to do anything an unregistered user can do.
5. Registered users shall be able to create a listing on the site.
6. Registered users shall be able to filter data based on the distance and budget.
7. Registered users shall be able to filter data based on number of rooms.
8. Registered users shall be able to message sellers.
9. Registered users shall be able to message a seller about a specific listing.
10. Registered users shall be able to view their own historical activities.
11. Registered users shall be able to favorite a listing.
12. Registered users shall be notified of changes to favorited listings.
13. Registered users shall be able to change their information
14. Admin Shall be able to contact all customers using this site.
15. Admin Shall be able to inspect all posts.
16. Admin Shall be able to ban registered users.
17. Admin Shall be required to check and approve or remove registered users' listings before they upload on the site.
18. Admin Shall be able to view historical data such as searches, making payment, listings, etc. from all registered users.

5. Nonfunctional 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 50 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 (no localization needed)
8. Application shall be very easy to use and intuitive.
9. Google analytics shall be used
10. No email clients shall be allowed. Interested users can only message to sellers via in-site messaging. One round of messaging (from user to seller) is enough for this application
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) for main data items
13. Media formats shall be standard as used in the market today
14. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
15. The website shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Summer 2020. For Demonstration Only" at the top of the WWW page. (Important so as to not confuse this with a real application).

6. Competitive Analysis

Our website offers features specifically designed to aid SFSU students in their search for housing, while staying competitive in the market with well established rental companies. Our app offers features that allow students to search for rentals within their budget and desired distance from SFSU's campus, which matter most to students when choosing a rental property. We also aim to stay transparent by offering upfront pricing with no hidden fees and taxes to avoid surprising students. We are making the rental procedure easy by allowing the listing from property owners and also an option to sublease the property with another SFSU student. This is our unique feature that stands out with the rest of the competitors.

Competitors	Zillow	Trulia	Airbnb	Our App
Features				
Search by budget	Yes	Yes	No	Yes
Search within SFSU radius range	No	No	No	Yes
Sublease option	No	No	No	Yes
Additional fees and charges	Yes	Yes	Yes	No
Exclusive to SFSU students	No	No	No	Yes

7. Tools & Frameworks

Server Host: AWS EC2

Operating System: Ubuntu 20.04

Database: MySQL 8.0

Server-Side Language: NodeJS 12.14.0

Additional Technologies:

IDE: Microsoft Visual Studio

API: Google Maps

Front-end code languages: React, Bootstrap

Supported browsers: Chrome, Firefox

8. Team & Roles

Wiam Boumaazi: Team lead.

Karina Abad: Frontend/Backend developer.

Katie Kennedy: GitHub master/Backend lead.

Jaren Lynch: Frontend lead.

Utsav Bhatta: Backend developer.

Mohammedrehan Kanuga: Backend developer.

9. Checklist

Task	Status
All team members are engaged and attending ZOOM sessions when required.	DONE
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 is 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