

SW ENGINEERING CSC 648/848 FALL 2022

CyberDesign

Team 4

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Milestone 1

09/22/2022

History Table:

| Version | Latest revision |
|---------|-----------------|
| M1V1 | 09/21/2022 |
| M1V2 | 11/15/2022 |

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Executive Summary

In the world of rapid increases in rental spaces, the need for respectful and proper landlords continues to grow with concern. With larger metropolitan cities gravitating towards renting rather than home ownership it is vital to familiarize oneself with the protocols of renting. The overall experience of renting though can be greatly affected altogether by the actions of a landlord. While landlords are able to use various protocols in order to ensure proper renting relations for potential tenants, the same can't be said nor applied with aspiring renters. This is especially true for college students or new renters, those who are unaware of the market thus leading them in a state of confusion and panic when looking for rental spaces.

The mission of EzRent is to dismantle the wall between renters and landlords in order to create and promote better relations with both parties. We want to primarily cultivate a space in order for previous renters to share their experiences with their landlords as well as renting spaces. This would now mean that renters would be able to leave reviews alongside renting ratings for certain properties including said owners. Certain issues such as maintenance, home upkeep and the relationships with communication with landlords will now be apparent. We want to give access to previous and aspiring renters the chance to properly research the prior history and behaviors of property owners. With that being said, our mission isn't just bound to that of residential areas. EzRent strives to create a shared space of open communication in order to ensure that the confusion of choosing properties lessens with the overall transparency of the landlords. We believe our services would prove most favorable seeing as now people will

have access to certain characteristics of property owners. Within their decision making, renters are now able to further understand the mannerisms of such owners which further ensures their certainty of either moving forward or avoiding such properties that fall under the ownership of those landlords.

With that being said, property owners are also able to benefit from our services as well. Obviously with the exposure of landlord leasing history comes the favorable impact from positive reviews. Property owners who have amassed a continuous record of positive ratings and reviews from current or previous owners will then be able to market themselves with the characteristics of portraying proper landlord renter relationships. This can cause the influencing of emotions towards renters thus gaining favor within rental communities. Landlords would also be able to boost viewership within the site as well as the advertisement of their own properties which in turn can cause proper gain in renter interest, without exclusion of the potential increases in rental applications. EzRent wants to promote the concept of landlord reviews and rating. We strive for the establishment of relationships between lessees and property managers. With this site we hope to accomplish this by giving the power to aspiring renters as well as holding owners accountable for certain characteristics and actions within the duration of leasing agreements. We aim for proper leasing terms as well as an overall improvement in experience for future renters.

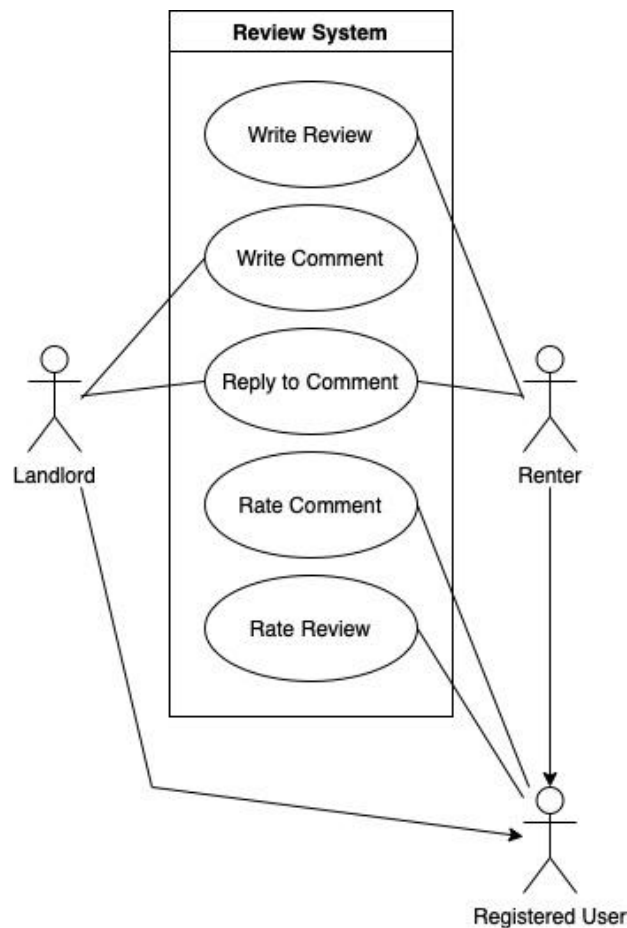
Main Use Cases

1. Use Case: Unfair Review

Actors: Stan (Landlord), Renter, Review, Comment

Description: Stan manages several small properties in an expensive neighborhood. He is upset because he received a review on the website that claimed that he provides poor service. Most of his other reviews are positive. He believes that the reviewer was being unfair, so he is looking for a solution that would help keep reviewers accountable.

Solution: The comments allow the landlord to publicly respond to reviews and tell their side of the story. Replying to comments means the landlord and renter get to have an open dialogue that everyone gets to see. Other users will get to decide for themselves whether the original reviewer was being unfair or if their complaints were valid.

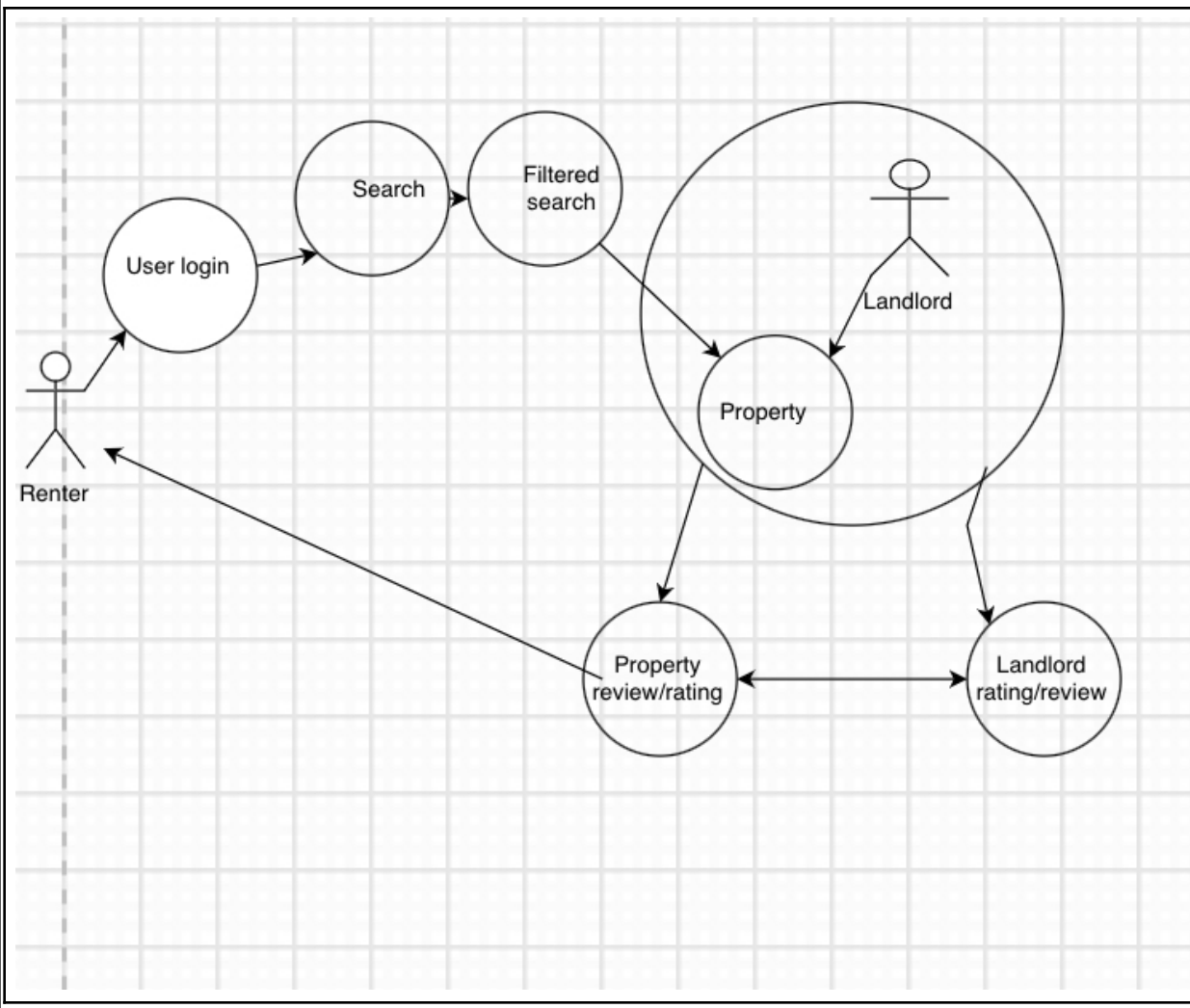


2. Use Case: Room hunting

Actors: Connor (Renter), Landlord, Previous tenant

Description: Connor is scared because he didn't receive housing from his desired university. He is now panicking in search for local available off campus housing before the beginning of his school year. He wants to review landlords that match his criteria as well as see properties within his desired location.

Solution: The site allows for easy room search based on personal requirements. Various properties are available for access within the user's specified location. The site offers opportunities for aspiring registered renters to meet and discuss on-housing accommodations. He would be able to look at the reviews of certain properties as well, and in doing so he can match any criteria he has.

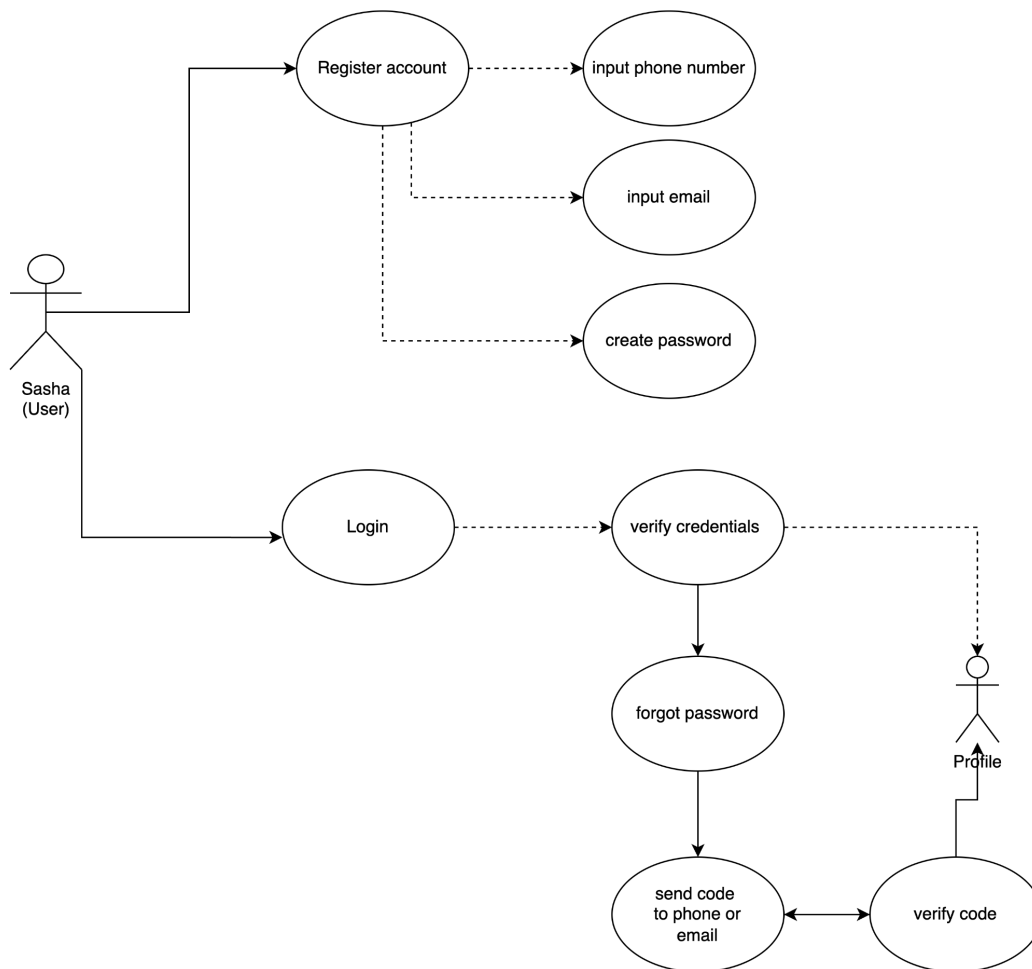


3. Use Case: Login

Actors: Sasha (User), Profile, Account

Description: Sasha wanted to see a rating about a landlord because she was curious. She wanted to login and she unfortunately forgot her password. There was no way for her to log into her account, so she left our website to another one. She got frustrated and felt lazy to create another account because she had important information on our site

Solution: We can add a two factor authentication or have options to login to the account. For example, when the user is registering an account we can have them input multiple information about themselves including phone number, email, etc.. Just in case they forget the password the system can send a code to their phone/email and if the code that was sent matches what they input the user should have the option to create a new password. This will result in keeping our clients and they would not have a hard time using our product.

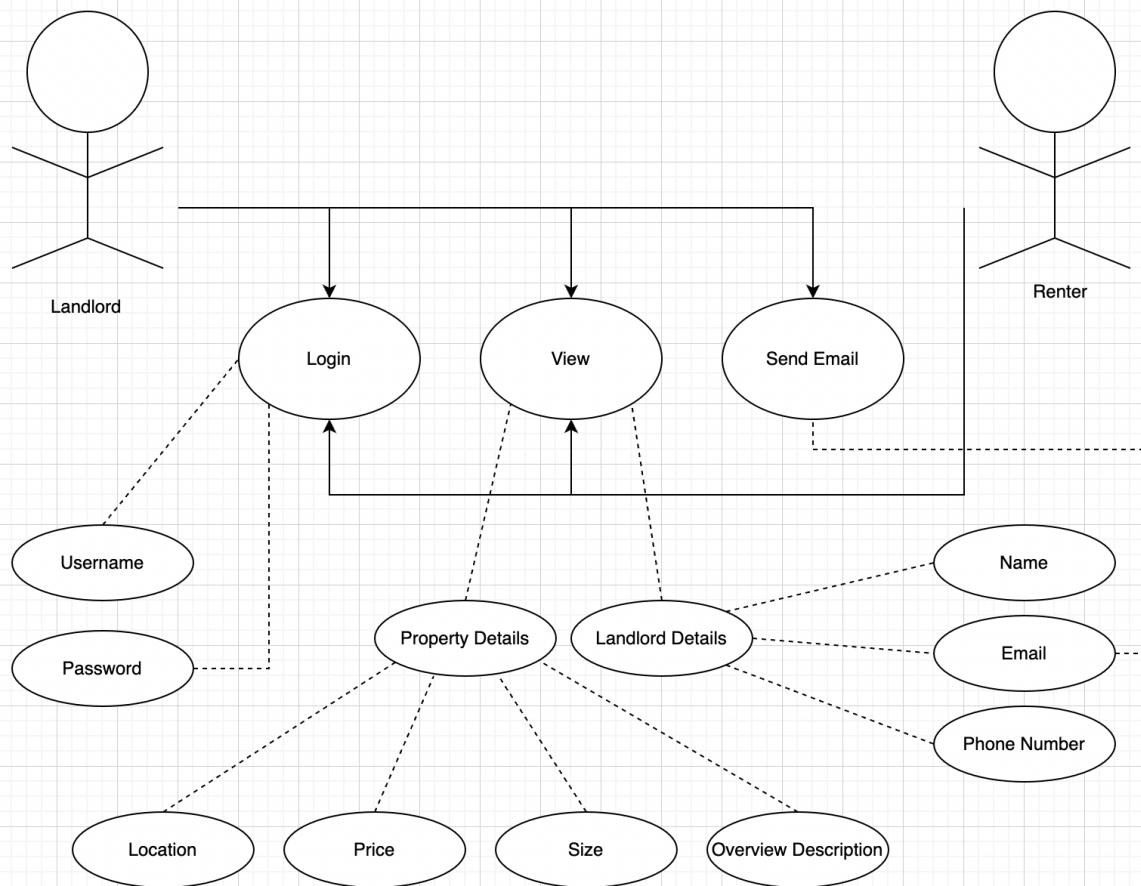


4. Use Case: Contacting Landlord

Actors: John (Landlord), Bob (Renter), Direct Message, Email

Description: Bob just moved to San Francisco to attend SFSU. He is living with his friend temporarily until he finds a place to rent for himself. As he searches for homes in the area, he finds an apartment that he really likes and would love to move into. Bob wants to contact the apartment landlord, John, to ask for the rental application process.

Solution: EzRent will make the communication process between Bob and John simple, private, and straightforward. For simplicity, the property landlord will have a contact email in their profile. This will make Bob very happy as he could access John's email instantly and communicate with him. There may also be an option to directly message a landlord.



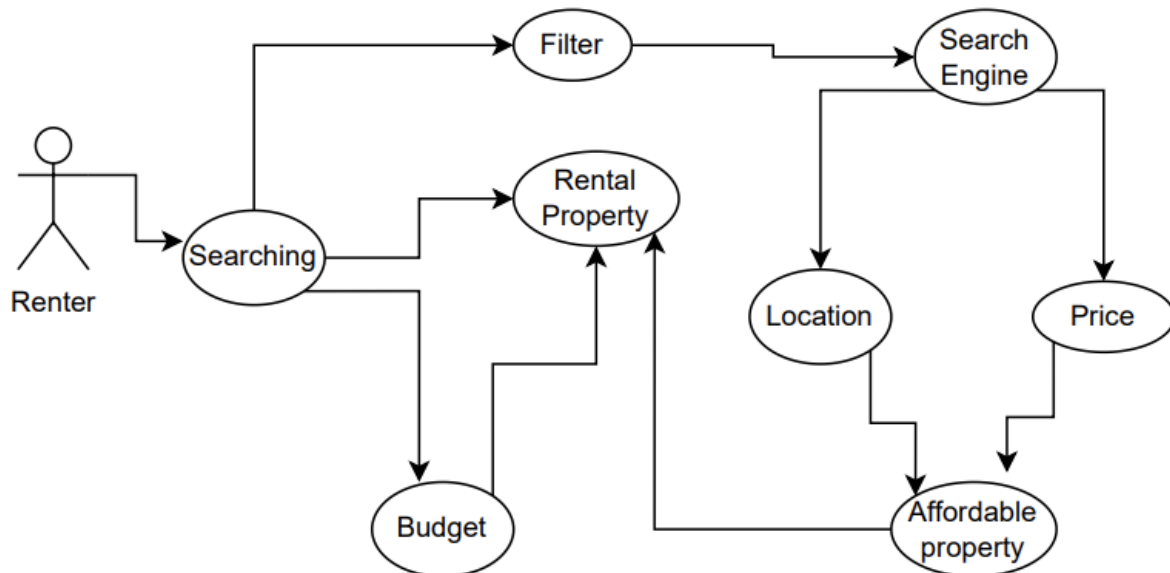
5. Use Case: Browsing locations with a certain budget

Actors: Michael (Renter), Search Engine

Description: Michael is looking for a new rental property that fits his needs. He seems to have trouble finding a place that suits his desires for the right price. He noticed how difficult it can be to find an affordable place in certain locations. He would like to be able to search for a place that can fit his budget including a desired location. Michael finds it really aggravating having to go through so many properties, when it would make it so much easier to just search for properties that are affordable.

Solution: EzRent can definitely help Michael with his rental property search issue. Whenever anyone would like to search for a rental property with a certain budget they will be able to filter their search to their liking. It will benefit people from having trouble finding rental properties within their budget. There will be a way to filter the rental price when searching for rental properties.

Diagram



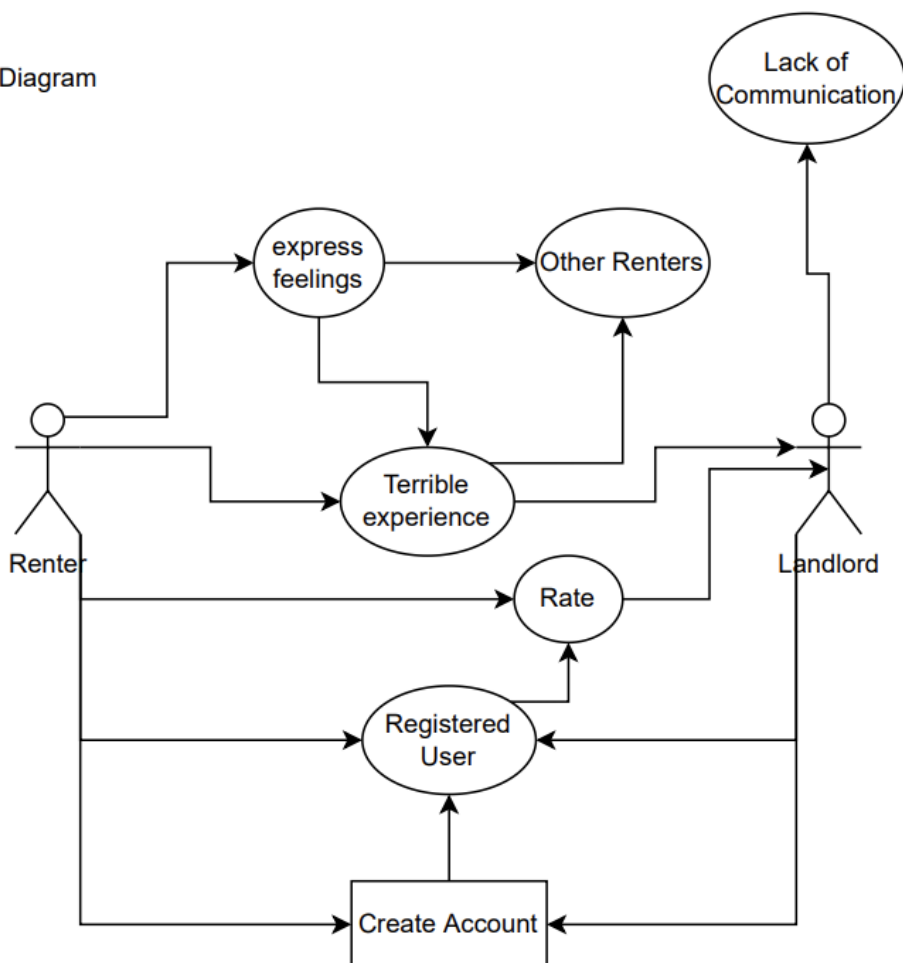
6. Use Case: Rating Landlords

Actors: Jasmine (Renter), John (Landlord), Experience and Ratings

Description: Jasmine had a terrible experience with an ex-Landlord named John. She disliked the lack of communication that John had. Every time something needed fixing, Jasmine would be unaware of the time and place it would occur. It is very frustrating for Jasmine to continue with daily activities when something is getting fixed without her consent. She would like to express her feelings to others who are interested in renting John's property. Her goal is to make sure it is known to everyone what kind of a landlord John is.

Solution: EzRent will help Jasmine share her feelings about her old landlord. Whenever anyone with an account would like to share their experience, they would be able to type it out for others to see. There will be an option to give a rating from 1-5 (5 being the best), with the option to write comments. Once a rating is written and posted, everyone with or without an account will be able to read it. This way other people will be able to read about either great or terrible landlords.

Diagram

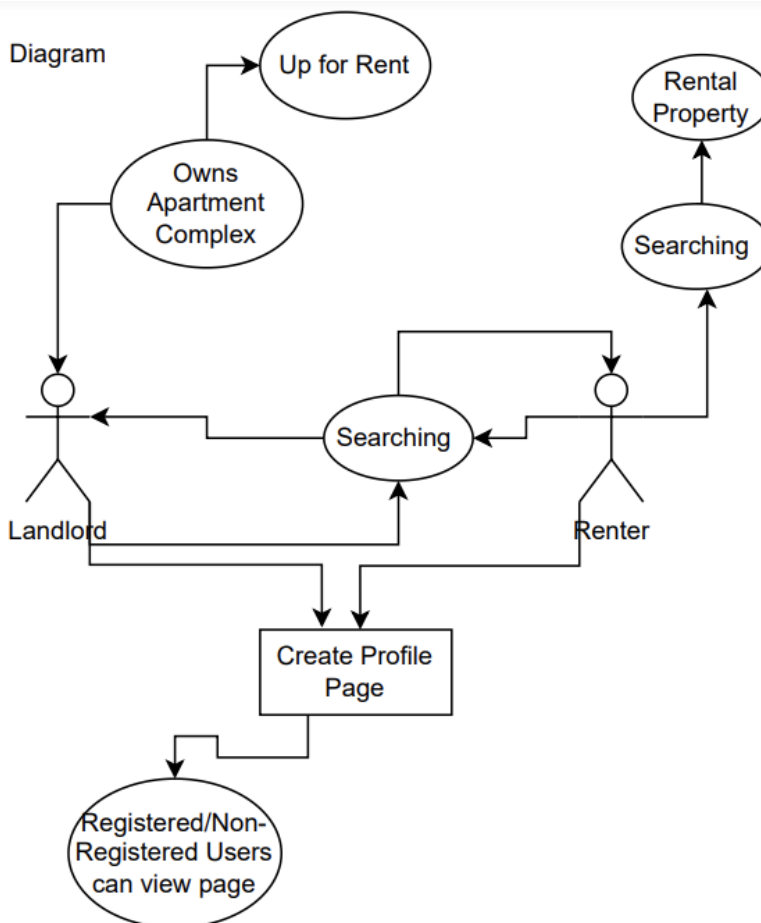


7. Use Case: Landlord/Renter creating Profile Page

Actors: Jason (Landlord), Nicole (Renter), Profile Page

Description: Jason owns an apartment complex with several apartments that he wants to list up for rent. He believes that if people knew more about him that it would help fill vacant apartments. It can help people who are looking for a rental property get to know his renters a little more before they live in his apartments. Nicole has a similar situation and was looking to find a landlord; but is scared of encountering a terrible landlord. She would like to be able to read about the landlords she is looking at.

Solution: All registered users will be able to create a profile where they will be able to write about themselves. Everyone including non-registered users will be able to view the profile. Anyone will be able to click on the profile of the registered user and view their profile. They will be able to read about their personal information. Users will be able to write as they please so that Landlords, Renters, and anyone on the website will be able to read about them.



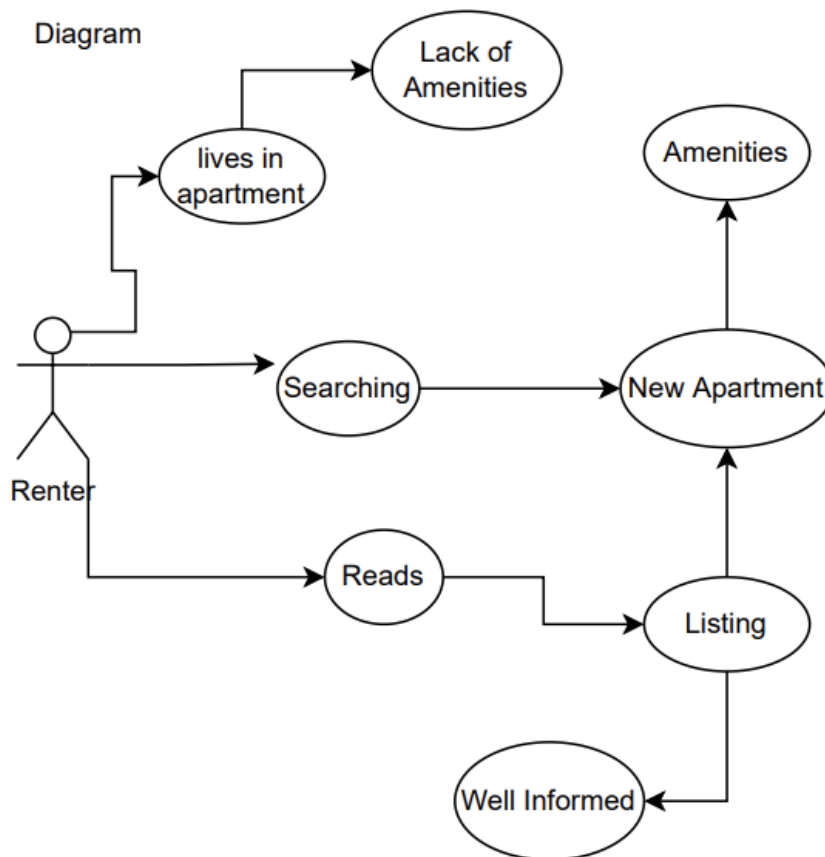
8. Use Case: Informed of Property Amenities

Actors: Kevin (Renter), Listing

Description: Kevin has been living in an apartment in San Francisco for over a year. He is currently looking for a new place to live because of the lack of parking. Not only that but the apartment also did not include a washer or dryer, which made daily activities more complicated. He would like to be able to find a place that includes parking and a washer/dryer. It is already hard to find parking around the neighborhood, so having to leave the apartment to do laundry is an extra trip that should not be needed. Kevin would like it to be easier to find a rental property with what he believes are his necessities.

Solution: EzRent will assure that Kevin is able to read all of the amenities included in a rental property. It is a quick and easy way to let the renter be informed of the amenities that are included. Each listing will show everything that comes with the rental property, so that everyone is aware of the certain utilities and resources. Certain people prefer to have certain services included in their apartment, and EzRent makes it easier for everyone to be well informed in all of the listings.

Diagram

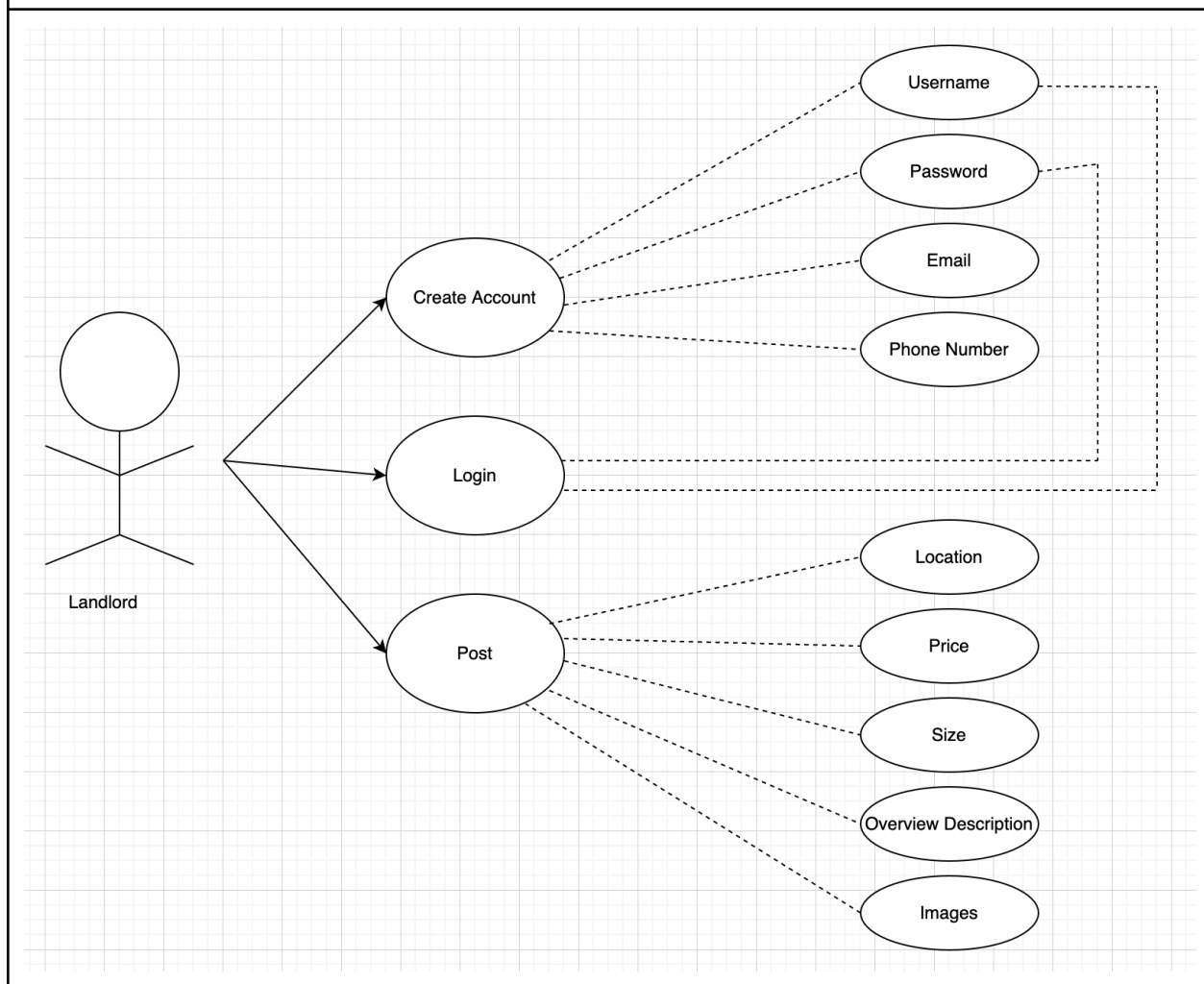


9. Use Case: Posting a Listing

Actors: Jerry (Landlord), Account, Listing

Description: Jerry decided that he wants to rent out his 4 bedroom house. He searches the web to look for a property listing website that is easy to navigate through and safe to use. He has all of the property information available, but he just needs to find a website where he could add the information and post his listing for renters to see it.

Solution: EzRent will help Jerry and make it very easy and safe to fill out a property information form and post his house for rent. Before doing so, Jerry just needs to create an account so people could look at his profile and see his information. Jerry creates an account very easily and quickly posts his house for rent. Now everyone who is looking for a 4 bedroom house could see his listing and contact him for rental information. Jerry is now very happy and glad that he found EzRent and can just relax and drink tea while he waits for EzRent to bring him renters.

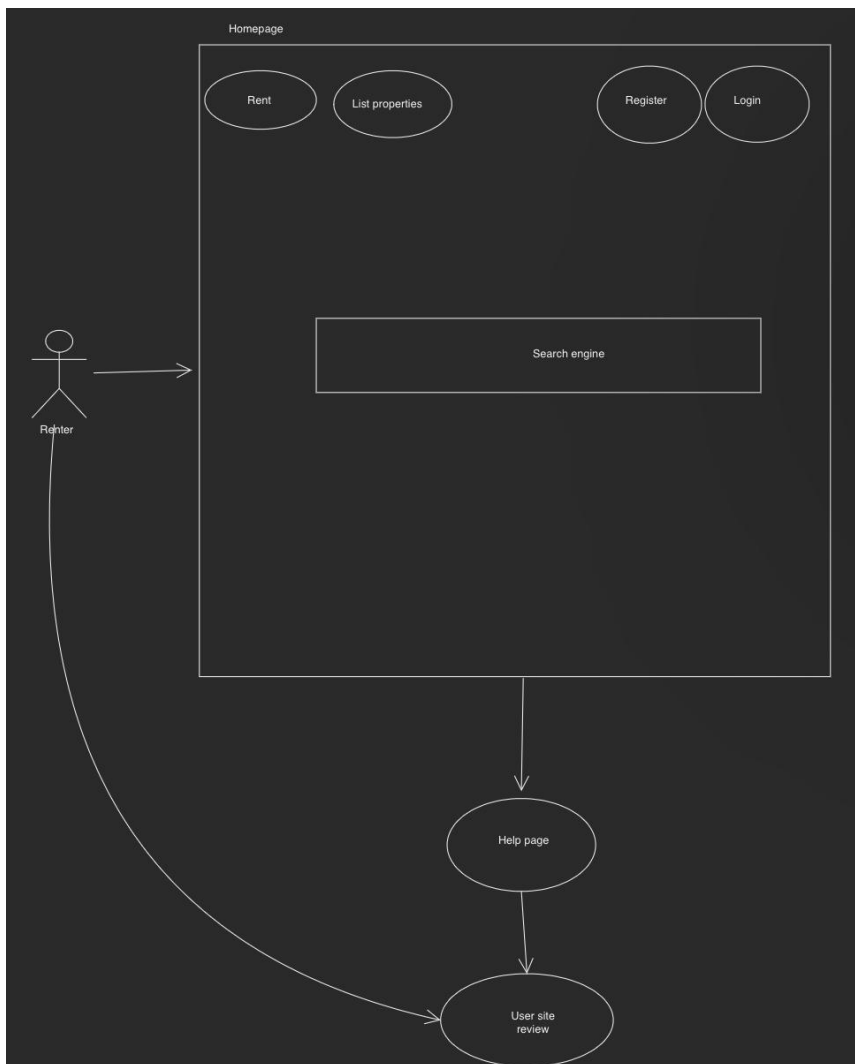


10. Use Case: Help center

Actors: Solanna (Renter), Help Center, Site Review

Description: Solanna is tired of using websites with subpar interfaces. She wants to be able to have an access center that can properly direct her in the event of confusion during her property search. She wants easy access to the features that the site is offering without hassle or conundrum.

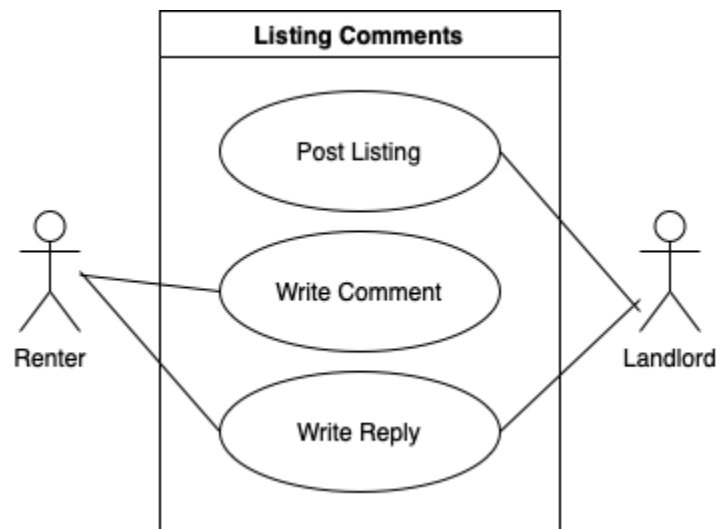
Solution: Ez rent designed its interface to be friendly for an easy user experience. EzRents descriptions are very easy to follow in order to direct users to their desired location. EzRent also offers a help center where suggestions are left in order to make complaints as well as to solve complications. Within our help center, users could be urged to leave a review on the site as well based on their own experience while interacting with the site. The support center has a comment box which will be sent to the support team for site altercations.



11. Use Case: Inquiring User**Actors:** Manny (Renter), Listing, Landlord

Description: Manny is a college student who is excited about finding a new house to rent. It looks beautiful, it's close to school, it's within his budget, and it has enough rooms for him and his two friends to share. Unfortunately, Manny has a dog that he would like to live with, but the listing doesn't have any information about its pet policy.

Solution: Every property listing will have a comment section that allows users to ask questions and reply to other users. This will allow Manny to ask about the pet policy and will let other Renters or Landlords answer the question that is available for the public to see.

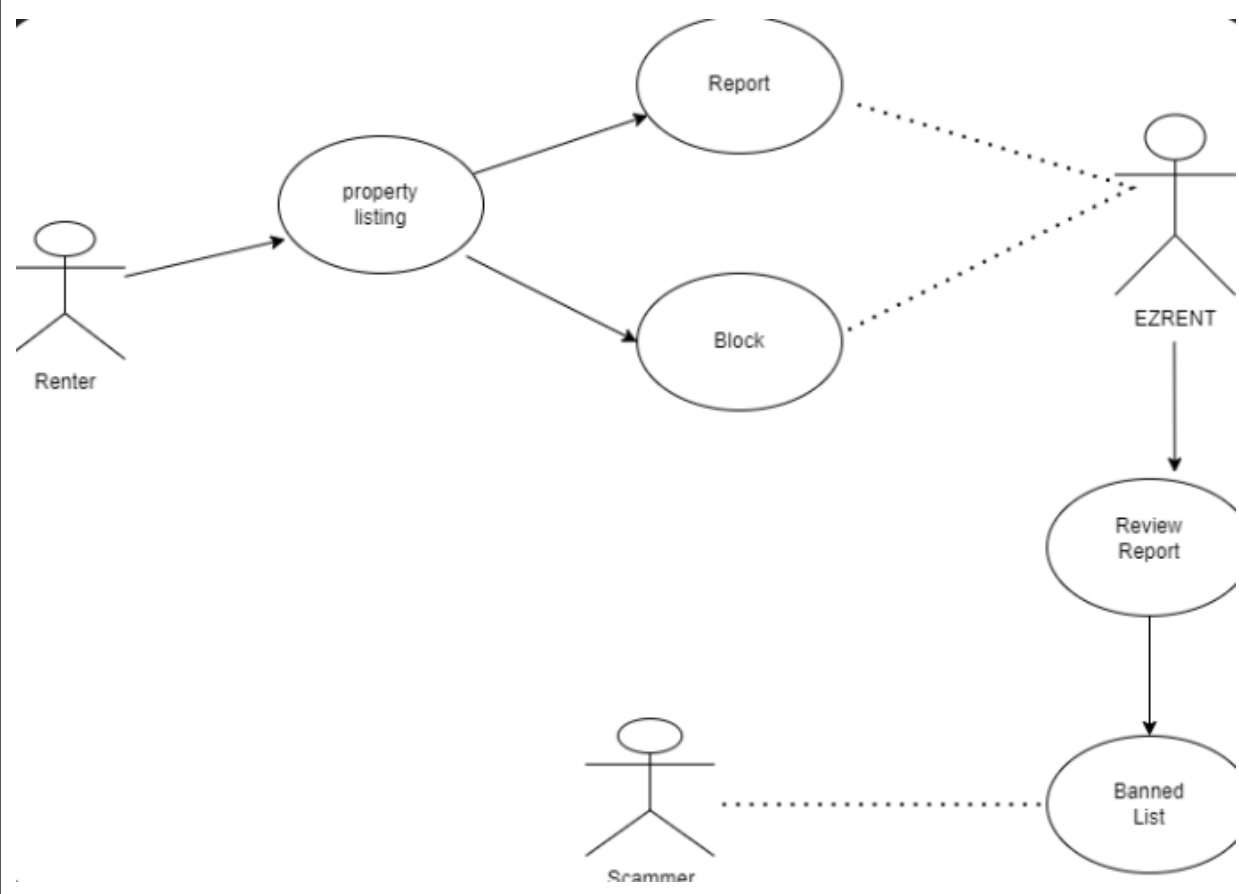


12. Use Case: Bots and Scammers

Actors: Kelly (Renter), Landlord, Block List, Banned List, Report

Description: Kelly is worried that a listing was posted by a bot or scammer. This has negatively impacted her housing accommodation search because she has become reluctant of internet viewings. She wants to have a better peace of mind when browsing the site. Knowing that a website is safe and secure is a priority for Kelly.

Solution: EzRent's services are meant for legitimate accounts to be connected with an actual user. Such accounts associated with scamming and fraudulent activities would not be tolerated at all. With that being said EzRent offers a report and block feature in order for users to report what may look like fraudulent activities from any account. Certain activities from accounts will be taken into consideration by the services of EzRent. Upon evaluation, our technical support would be able to stop said users from making their way on the site by verifying any property owner posters, in order to promote a positive legitimized experience for all users. In addition, Landlords must be verified in order to post listings to ensure not just anyone will be able to post.

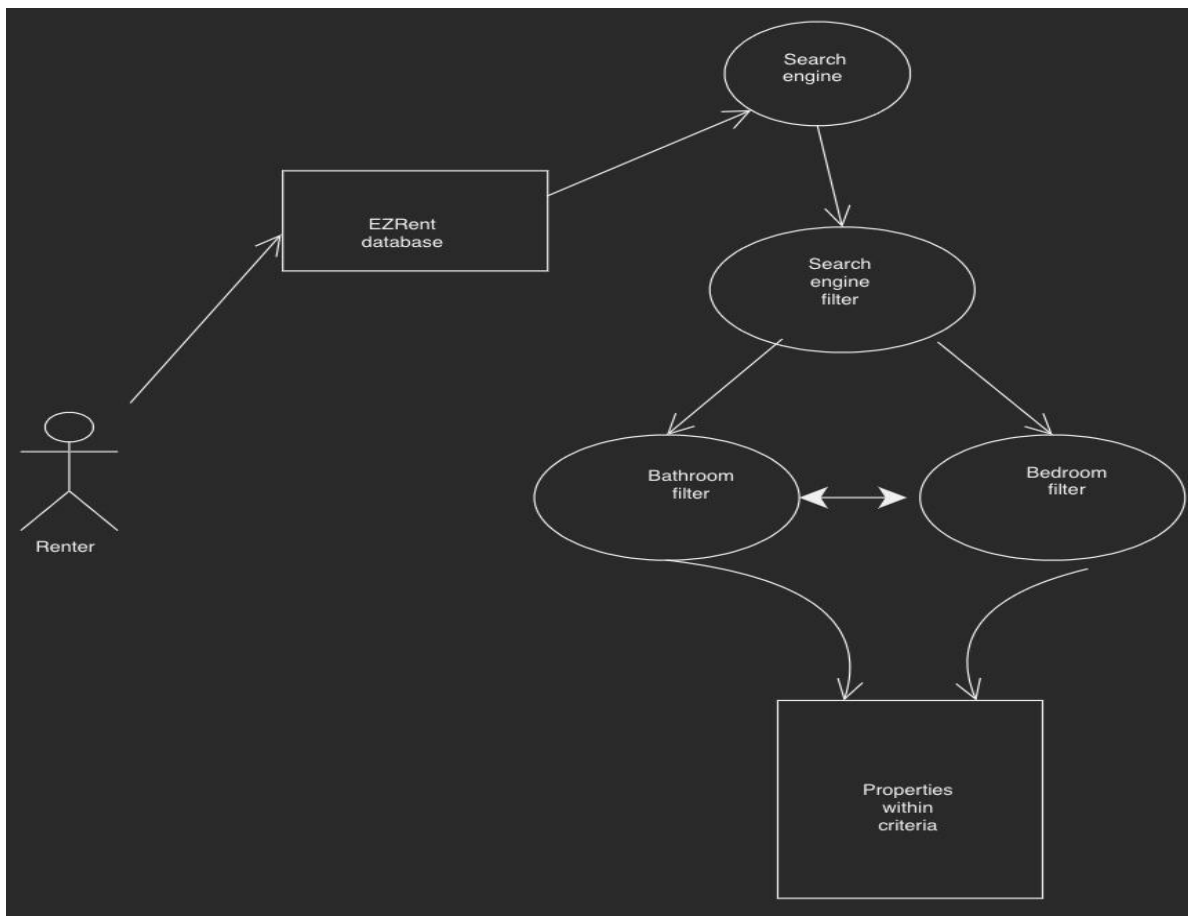


13. Use Case: House compare by attributes

Actors: Iman (Renter), Search Engine, Filter

Description: Iman is a renter who is looking to live in a housing space that has 3 bedrooms and 2 bathrooms. This is vital to her because she has a family and she wants her family to be in a comfortable situation and anything less would prove to be less desirable. She is hoping for a way to filter out options that don't match her criteria.

Solution: EzRent's services offer property comparison. The site offers a filter option where one would be prompted to leave their desired criteria when searching for properties. In turn, the options with those certain criteria met would show. This would be done by comparing the attributes of the other homes with the filters that the user has issued. For Iman, her option for choosing a 3 bedroom 2 bathroom house would result in only showing properties with 3+ bedroom as well as 2+ bathrooms within her certain price range as well.

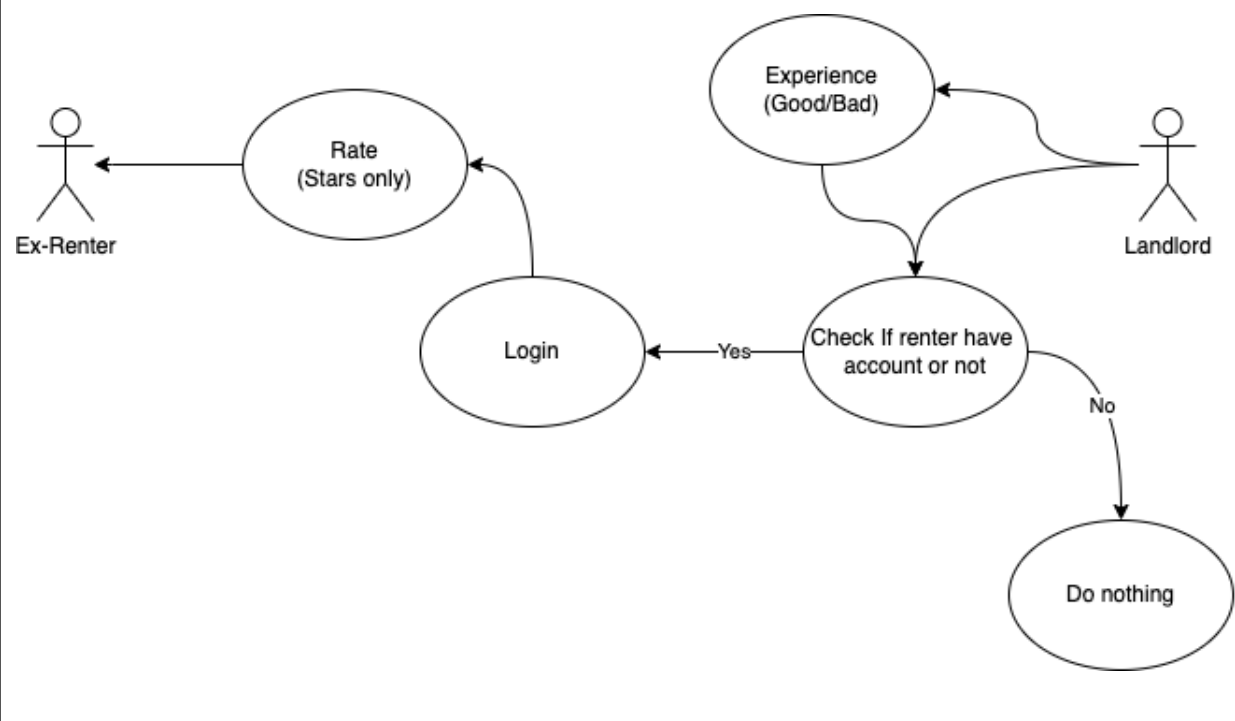


14. Use Case: Rating user

Actor: Anna (Renter), Jacob (Landlord), Review, Rating, Profile Page, Listing

Description: Anna is renting out a new place for the school year. Jacob is the manager of the property that she is renting. Anna chose the place because of the positive reviews that Jacob received on his Profile, but she is very annoyed by the extra rules that he places on the property. She wants to warn other users about some of the rules that Jacob excludes from his listings. Likewise, Jacob believes that Anna is a poor tenant who regularly breaks the rules and wants to warn other property managers about her.

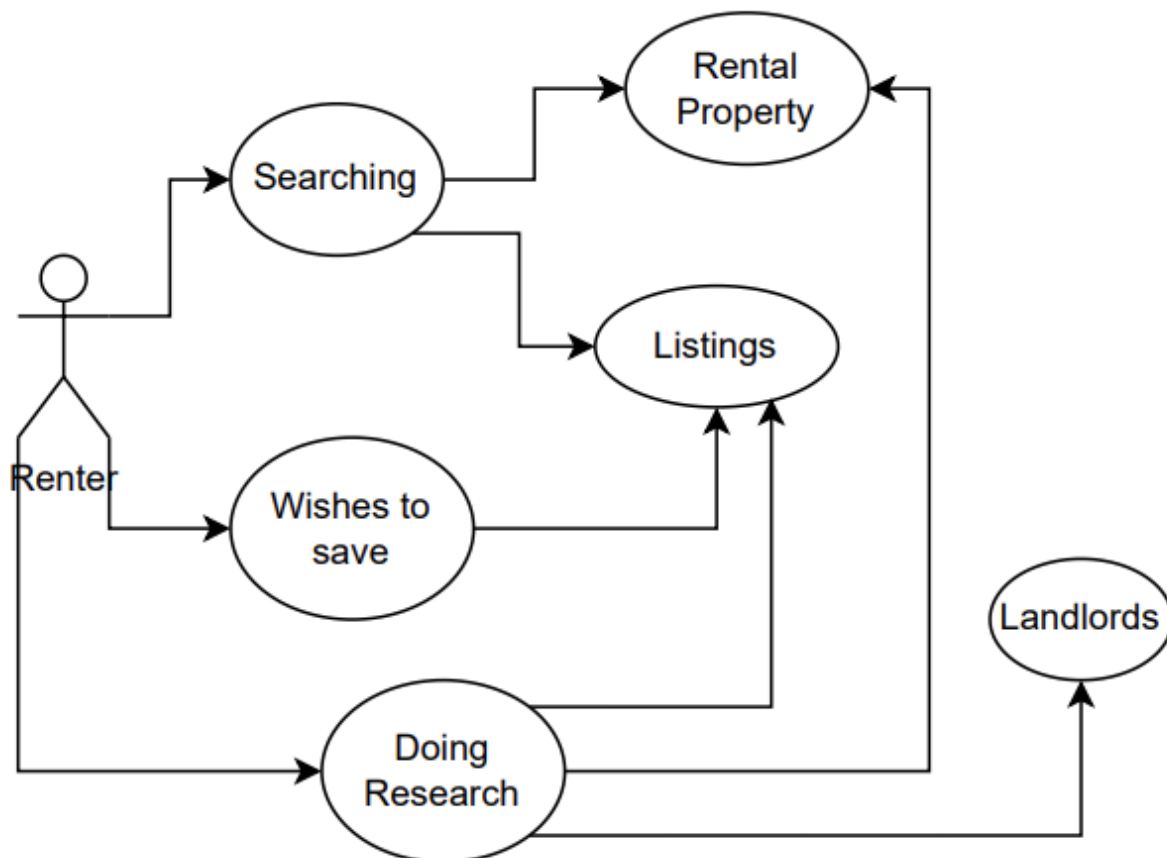
Solution: With EzRent, Anna and Jacob can write reviews about each other and give each other ratings on their respective Profile Pages. Anna can rate Jacob's customer service or how easy it is to work with him, and Jacob can rate Anna as a respectful tenant. Reviews will be seen by the public to ensure all parties are kept accountable.



15. Use Case: Saving Listings**Actor:** Mario (Renter)

Description: Mario is searching for a new rental property and was looking through the website. He found a couple of rental properties that really interested him, so he had tabs open on his computer. His computer unexpectedly shut off, so all of his pages were lost. Mario was really aggravated because he had to go back and look for all of the properties that he found. It was more complicated for Mario and he wishes there was a way to save the listings he is interested in.

Solution: Mario will be able to save listings for future references while using EzRent. Renting a new place can be a very difficult decision because a lot of research needs to get done before making a decision. It does not get done overnight, so saving listings is very useful for people to look at listings later or even compare properties/landlords.

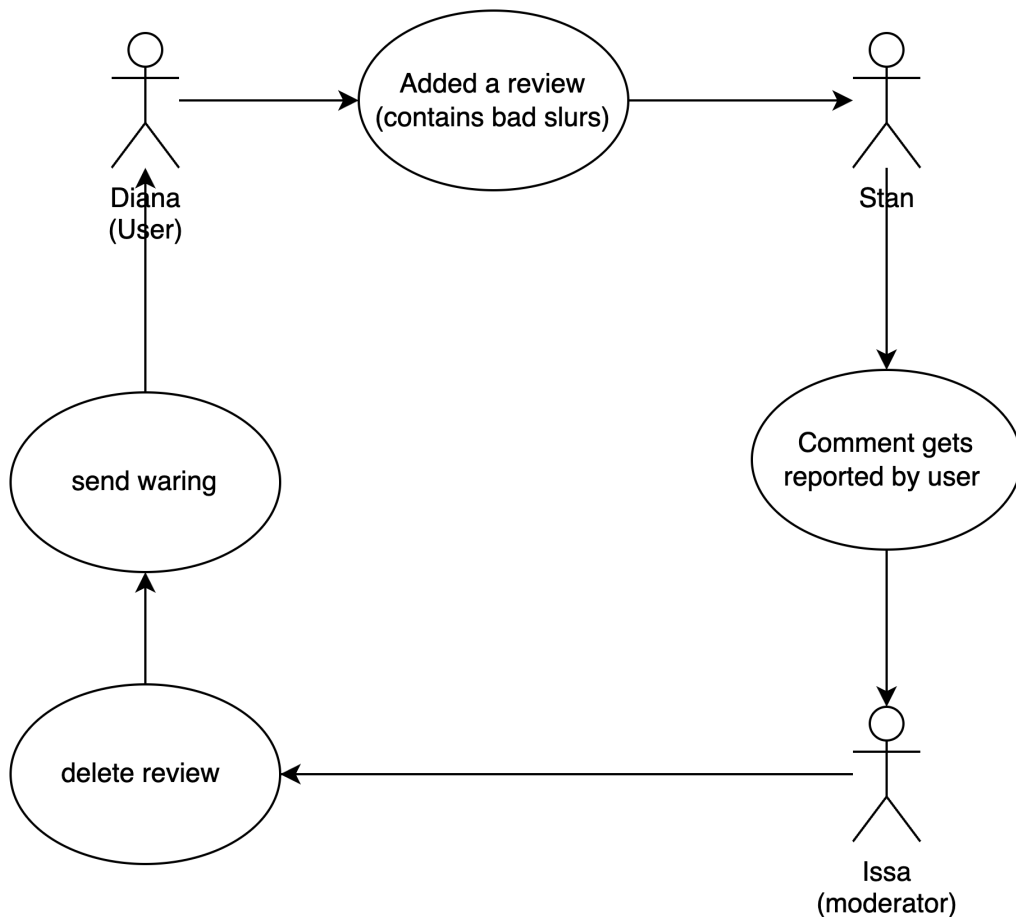
Diagram

16. Use Case: Moderator

Actor: Diana(User), Issa(moderator), Stan(Landlord)

Description: Diana was upset at her landlord; she logged into EzRent to write a review about her landlord Stan. Diana started cursing the landlord out and calling him bad words. Stan got offended so he reported the comment and wanted Diana's post removed from EzRent. It is one thing giving someone a bad review, but cursing at someone should not be allowed.

Solution: Stan can report Diana's comment and her comment will be flagged for review by a moderator from EzRent, when Issa logs in he should be able to investigate what is going on and should have the option to remove the comment. Then Issa will send a warning to Diana to respect the website's policies Although EzRent wants the site to be as honest as possible, vulgar language will not be tolerated.



List of Main Data Items and Entities

User

- Anyone who uses the site
- No data items

Registered User

- A user who has an account
- email, password, phone number, name

Landlord

- A Registered User who can post listings and be reviewed by other Registered Users
- landlord rating
- Post listings
- Edit listings

Renter

- A Registered User who can post reviews about Landlords or Property Listings
- renter rating

Prospective Renter

- A Renter who advertises themselves to Landlords
- list of listing attributes that they're looking for

Listing

- (Also referred to as Property Listing) a post containing a property's information
- listing rating, images (max 20), landlord, property

Comment

- A posted field of text posted to a Listing or another Comment
- author, message, number of likes, number of dislikes

Direct Message

- Messages between two Registered Users
- sender, time sent, whether it was read or not, message

Profile:

- A webpage containing information about a Registered User
- bio, profile picture, rating

Search Result

- A list of Listings or Profiles outputted by the search engine
- rating, associated attributes

Review

- A post to a Listing or Landlord
- description, rating

Rating:

- A way to analyze a person's experience with a Landlord by choosing 1 out of 5 stars (5 being the best)
- decimal average of all ratings posted about a particular profile or listing

Property

- Housing owned by a Landlord
- price, rating, rooms, description, location, size

Block List

- A list of Registered Users that a particular Registered User has blocked

Moderator

- Someone who handles reports and poor behavior
- Access to Registered Users comments/ratings

Banned List

- A list of Registered Users that are not allowed to use the site's services

Report

- A message sent to Moderators indicating that a Registered User doesn't comply to the site's community guidelines
- includes a reason, and a link to the violation

Help Page

- Teaches Users how to use the app's services and allows them to give feedback about the site

Site Review:

- User's feedback about the site
- comments, rating, experience

Filter:

- Search engine parameters
- price, location, rooms, rating

Login:

- An account's way of accessing a Profile
- email, password

Create account

- The ability to make a profile with a first name, last name, email and password.
- landlord, renter

Map

- The view and area of the listings on a visual diagram
- addresses, links to available properties

Save list

- A list of saved properties where a User can go back to view the same listings that were being viewed.
- property listings

Initial List of Functional Requirements

| Criterion | Requirements |
|-------------------------|---|
| 1. User Registration | 1.a. Users must be able to register an account to become a Registered User 1.b. The system must send an email to confirm when the user created the account. 1.c. The system must provide a way for Users to verify their Account 1.d. The system must allow Users to agree to a Privacy Policy 1.e. Users must be able to browse the website without an Account 1.f. The system must allow Users to provide their personal information 1.g. The system must allow Users to create a username for their account 1.h. The system must allow Users to change their personal information 1.i. The system must allow Registered Users to become a Landlord |
| 2. User login | 2.a. The system must allow Registered Users to log in their account. 2.b. The system must allow Registered Users to reset their password. 2.c. The system must provide a way for Registered Users to log in to their account if they forgot their password 2.d. The system must allow Registered Users to browse the website 2.e. System must allow Registered Users to log out |
| 3. Website Header | 3.a. The Website Header must include the search feature 3.b. The Website Header must be able to link to the Registration Page 3.c. The Website Header must be able to link to the Login Page 3.d. All Registered Users must be able to navigate to their Profile 3.e. All pages must include the Website Header (Probably non-functional) |
| 4. Home Page/Navigation | 4.a. The Home Page must be accessible to all Users 4.b. Users must be able to navigate to previously visited pages 4.c. Users must be able to navigate to the Home Page from any page |

| | |
|-------------------|--|
| 5. Website Footer | 5.a. The Website Footer must allow Users to see the publisher's information 5.b. All pages must include the Website Footer (Probably non-functional) |
| 6. Search | 6.a. The search engine must be connected to the app's database 6.b. Users must be able to search for Property Listings 6.c. Users must be able to search for Landlords 6.d. Landlords must be able to search for Prospective Renters |
| 7. Search Filters | 7.a. Users must be able to filter their searches 7.b. Users must be able to filter Property Listings by price 7.c. Users must be able to filter Property Listings by address 7.d. Users must be able to filter Property Listings by Amenities 7.e. Users must be able to filter Property Listings by Landlord 7.f. Users must be able to filter Property Listings by Landlord properties 7.g. Users must be able to filter Property Listings by number of rooms 7.h. Users must be able to filter Property Listings by number of bathrooms 7.i. Users must be able to filter Property Listings by size 7.j. Users must be able to filter Property Listings by rating 7.k. Users must be able to filter Landlords by rating 7.l. Users must be able to filter Landlords by name 7.m. Users must be able to filter Landlords by experience 7.n. Landlords must be able to filter Prospective Renters by rating 7.o. Landlords must be able to filter Prospective Renters by name 7.p. Landlords must be able to filter Prospective Renters by experience 7.q. Users must be able to save a collection of filters 7.r. Users must be able to control the amount of search results displayed to them 7.s. Users must be able to filter Property Listings within range of a City 7.t. Users must be able to filter Property Listings within range of a zip code. 7.u. Users must be able to filter Landlords by number of reviews |
| 8. Search Results | 8.a. Users must be able to compare Property Listing search results 8.b. Users must be able to share search results 8.c. Users must be able to visit Property Listing pages from the search results page 8.d. Users must be able to visit Landlord Profile pages from the |

| | |
|-------------------|--|
| | <p>search results page</p> <p>8.e. Landlords must be able to visit Prospective Renter Profile pages from the search results page</p> <p>8.f. Users must be able to sort their search results</p> <p>8.g. Users must be able to sort their Listing search results by price</p> <p>8.h. Users must be able to sort Listing search results by rooms</p> <p>8.i. Users must be able to sort Listing search results by distance</p> <p>8.j. Users must be able to sort Listing search results by rating</p> <p>8.k. Users must be able to sort Landlord search results by rating</p> <p>8.l. Registered Users must be able to sort Renter search results by rating</p> <p>8.m. Users must be able to sort Landlord search results by experience</p> <p>8.n. Registered Users must be able to sort Renter search results by experience</p> |
| 9. Saved Listings | <p>9.a. Registered Users must be able to view all saved Property Listings</p> <p>9.b. Registered Users must be able to save Property Listings to interact with later</p> <p>9.c. Registered Users must be able to remove saved Property Listings</p> <p>9.d. Registered Users must be able to visit Property Listing pages from the Saved Listings page</p> |
| 10. Ratings | <p>10.a. Renters must be able to rate Properties</p> <p>10.b. Renters must be able to rate Landlords</p> <p>10.c. Landlords must be able to rate Renters</p> <p>10.d. Users must be able to see Ratings</p> |
| 11. Reviews | <p>11.a. System must allow Renters to write Reviews</p> <p>11.b. System must allow Landlords to write Comments to Reviews</p> <p>11.c. System must allow Renters to reply to Comments</p> <p>11.d. System must allow Registered Users to rate Comments</p> <p>11.e. System must allow Registered Users to rate Reviews</p> <p>11.f. System must allow Landlords to reply to Comments</p> <p>11.g. System must allow Users to read Reviews</p> <p>11.h. System must allow Users to read Comments</p> <p>11.i. System must allow Users to view Ratings</p> <p>11.j. System must allow Renters to delete Reviews</p> <p>11.k. System must allow Renters to delete Comments</p> <p>11.l. System must allow Renters to edit Reviews</p> <p>11.m. System must allow Renters to edit Comments</p> <p>11.n. System must allow Landlords to delete Comments</p> |

| | |
|----------------------|---|
| | <p>11.o. System must allow Landlords to edit Comments</p> <p>11.p. System must allow Registered Users to change their ratings to Reviews</p> <p>11.q. System must allow Registered Users to change their ratings to Comments</p> <p>11.r. System must allow renters to review the area of listing</p> |
| 12. Property Listing | <p>12.a. Landlords must be able to post Listings</p> <p>12.b. Landlords must be able to delete Listings</p> <p>12.c. Landlords must be able to edit Listings</p> <p>12.d. Landlords must be able to mark Listings as currently rented</p> <p>12.e. Landlords must be able to unmark Listings as currently rented</p> <p>12.f. Landlords must be able to post images to Listings</p> <p>12.g. Landlords must be able to write descriptions to Listings</p> <p>12.h. Landlords must be able to set locations to Listings</p> <p>12.i. Landlords must be able to set a price to Listings</p> <p>12.j. Landlords must be able to set a size for Listings</p> <p>12.k. Landlords must be able to edit fields for Listings to be filtered through the search engine</p> <p>12.l. Users must be able to see Listings</p> <p>12.m. Users must be able to zoom in on images</p> <p>12.n. Users must be able to find the Landlord page of the one who posted the Listing</p> <p>12.o. Users must be able to post Reviews to Listings</p> <p>12.p. Registered Users must be able to post Reviews to Listings</p> <p>12.q. Renters must be able to save Listings to view later</p> <p>12.r. Renters must be able to compare multiple Listings</p> |
| 13. Landlord Profile | <p>13.a. System must provide a Profile for Landlords upon Account creation</p> <p>13.b. Landlords must be able to edit their Profile</p> <p>13.c. Landlords must be able to set a bio to their Profile</p> <p>13.d. Users must be able to see a Landlord Profile</p> <p>13.e. Users must be able to see Reviews about a Landlord on the Landlord Profile</p> <p>13.f. Users must be able to see a Landlord's rating on their Profile</p> <p>13.g. Users must be able to see a Landlord's contact information</p> <p>13.h. Users must be able to see a Landlord's name</p> <p>13.i. Users must be able to see a Landlord's email</p> <p>13.j. Users must be able to see a Landlord's phone number</p> <p>13.k. Registered Users must be able to Direct Message a Landlord from their Profile</p> |

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| | 13.l. Registered Users must be able to post Reviews to Landlord Profiles |
| 14. Renter Profile | 14.a. System must provide a Profile for Renters upon Account creation 14.b. Renters must be able to edit their Profile 14.c. Renters must be able to set their Account to Prospective Renter 14.d. Renters must be able to set a bio to their Profile 14.e. Renters must be able to set their Profile to private 14.f. Landlords must be able to see private Renter Profiles 14.g. Users must be able to see public Renter Profiles 14.h. Renter Profiles must show Renter ratings 14.i. Renter Profiles must show Renter history 14.j. Registered Users must be able to Direct Message a Renter from their Profile |
| 15. Prospective Renter | 15.a. Prospective Renters must be able to set requirements for Listings they are looking for 15.b. Prospective Renters must be able to set their Account back to a regular Renter 15.c. Landlords must be able to view Prospective Renter Profiles |
| 16. Storage | 16.a. System must store Registered User Account information 16.b. System must store Registered User Profile information 16.c. System must store Property Listing information 16.d. System must store Reviews 16.e. System must store Comments 16.f. System must store Direct Messages 16.g. System must store Saved Searches 16.h. System must store Saved Properties 16.i. System must store Banned Users 16.j. System must store Blocked Users |
| 17. Moderation | 17.a. Registered Users must be able to report Reviews 17.b. Registered Users must be able to report Comments 17.c. Registered Users must be able to block other Registered Users 17.d. Registered Users must be able to report Listings 17.e. Registered Users must be able to report other Registered Users 17.f. Moderators must be able to confirm a report 17.g. Moderators must be able to send warnings to users 17.h. Moderators must be able to delete Reviews 17.i. Moderators must be able to revoke a Rating 17.j. Moderators must be able to ban Registered Users |

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| | <p>16.k. System must prevent Blocked Users from commenting on Blocker's Listings</p> <p>16.l. System must prevent Blocked Users from commenting on Blocker's Profile</p> <p>16.m. System must prevent Blocked Users from seeing Blocker's Profile</p> <p>16.n. Registered Users must be able to unblock other Registered Users</p> <p>16.o. System must allow Admins to add new Moderators</p> <p>16.p. System must allow Admins to log in</p> <p>16.q. System must allow Moderators to log in</p> <p>16.r. System must allow Admins to log out</p> <p>16.s. System must allow Moderators to log out</p> |
| 18. Help page | <p>18.a. System must provide a Help Page to Users</p> <p>18.b. Help Page must include a description of the website</p> <p>18.c. Help Page must include a tutorial of how to use its services</p> <p>18.d. Help Page must include an FAQ</p> <p>18.e. Help Page must include a way to contact Customer Service</p> <p>18.f. Registered Users must be able to leave a review about EzRent</p> <p>18.g. Registered users must be able to rate experience while using the site</p> |
| 19. Direct Message | <p>19.a. Registered Users must be able to send Direct Messages to other Registered Users</p> <p>19.b. Registered Users must be able to edit Direct Messages</p> <p>19.c. Registered Users must be able to delete Direct Messages</p> <p>19.d. Registered Users must be able to forward Direct Messages</p> <p>19.e. Registered Users must be able to reply to a Message</p> <p>19.f. Registered Users must be able to react to a Message</p> <p>19.g. Registered Users must be able to pin a conversation</p> <p>19.h. Registered Users must be able to delete a conversation</p> <p>19.i. Registered Users must be able to search for a Direct Message</p> <p>19.j. Registered Users must be able to hide a conversation</p> <p>19.k. System must show that a Direct Message has been sent</p> <p>19.l. System must show that a Direct Message has been read</p> <p>19.m. System must allow Registered Users to turn off read receipts</p> |
| 20. Map view | <p>20.a. Users must be able to see a Map of Listings</p> <p>20.b. Users must be able to interact with a Map of Listings</p> <p>20.c. Users must be able to select an area of the Map</p> <p>20.d. System must show search results on a Map</p> <p>20.e. Users must be able to view listings near their area</p> |

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| | 20.d. Users must be able to view landlords within their area |
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List of Non Functional Requirements

| Criterion | Requirements |
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| 1. Capability | <p>2.f. When a User that is not Registered tries to use a feature that requires an account, the system shall prompt the user to register or login</p> <p>3.a. The website header must include a search input field as the search feature</p> <p>3.c. The website header must have a login button that navigates users to login to their registered account if not already logged in</p> <p>3.d. The website header must have a button to to navigate users to their profile if they are logged in</p> <p>7.b. Users shall filter Listing searches by address by typing an address or zip code in the search bar</p> <p>7.c. Users shall filter Listing searches by price by typing a lower bound and an upper bound</p> <p>7.d. Users shall filter Listing searches by rating by selecting a star value</p> <p>8.b. A “No Listings found” will pop up if a specific search is unavailable.</p> <p>8.c. The system will give suggested Listings if no listings were found</p> <p>7.a. Users must choose a specific search filter to be able to filter listings</p> <p>8.a. Search Results will not pop up if the User does not use the Search bar.</p> <p>10.a. User must be registered to be able to post rating</p> <p>10.b. Registered Users must be able to rate a property by selecting how many stars out of 5</p> <p>10.c. Users must have rented out a Listing to be able to post a rating.</p> <p>10.d. Landlords can reply to a comment once it is posted</p> <p>10.e. Rating will not be posted without choosing a star rating beforehand</p> <p>11.a User must write a minimum of one character to Post a Review.</p> <p>11.b. User will be able to post reviews by clicking on “Post Review”</p> <p>17.b. Registered Users shall be provided contact information to</p> |

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| | <p>the Customer Service</p> <p>17.c. Registered Users shall give feedback about the site by rating several aspects of the site out of 10</p> <p>17.d. Registered Users shall rate Customer Service</p> <p>17.e. Registered Users shall rate how easy the site is to navigate</p> <p>17.f. Registered Users shall be able to send messages describing their experience along with their rating</p> <p>12.h. The landlord should be able to upload pictures and description to EZrent by clicking on “upload listing”</p> <p>12.a. Users must fill out a property information form to post a listing</p> <p>12.b. User must insert images only from their computer</p> <p>12.c. User cannot submit form unless required input is filled</p> <p>12.d. User cannot submit form unless TOS is agreed</p> <p>12.e. User must agree to TOS by checking the TOS checkbox</p> <p>12.f. User must be a registered user to post a listing</p> <p>12.g. User must be logged in to post a listing</p> <p>13.b. System must show landlord info to user only if user clicks on the listing post</p> <p>13.f. The landlord should be able to edit whether a listing is currently available or not by clicking on “manage listings”</p> <p>13.g. Landlords shall be able to upload pictures from their file system as their Profile picture</p> <p>14.a. Renter Profiles must only be visible to regular Users if it’s public</p> <p>14.b. Prospective Renter Profiles must be visible to all Users</p> <p>14.c. Renters shall be able to upload pictures from their file system as their Profile picture</p> |
| 3. Storage | <p>3.a. Registered User Account information must be stored in the database</p> <p>3.b. Registered User Profile information must be stored in the database</p> <p>3.c. Property Listing information must be stored in the database</p> <p>3.d. Reviews must be stored in the database</p> <p>3.e. Comments must be stored in the database</p> <p>3.g. Saved Searches must be stored in cached memory</p> <p>3.h. Saved Properties must be stored in cached memory</p> <p>3.i. Banned Users must be stored in the database</p> <p>3.j. Blocked Users must be stored in the database</p> <p>3.k. Login sessions must be stored in cookies</p> |
| 6. Security | <p>6.a. Web server shall have a not easily guessed password</p> |

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| | <p>8.e. User needs to type a password to be able to Register</p> <p>8.f. System must notify User if password meets requirements once clicked out of the password field</p> <p>8.g. Passwords must be at least 8 characters long</p> <p>8.h. Passwords must contain at least 1 uppercase letter</p> <p>8.i. Passwords must contain at least 1 lowercase letter</p> <p>8.j. Passwords must contain at least 1 special character</p> <p>8.k. Passwords must contain at least 1 number</p> <p>8.l. Emails must be unique to one Registered User</p> <p>8.m. Users must confirm password by typing it again</p> <p>8.n. The password field must be hidden</p> <p>2.a. The system shall allow users to reset their password by clicking "forgot password?"</p> <p>2.b. The system shall allow users to request their username by clicking "forgot username?"</p> <p>2.c. User must type in their password to be able to login</p> <p>2.d. User must type in their email to login</p> <p>2.e. The password field must be hidden</p> <p>16.a. User must comply with regulations to be able to comment</p> <p>16.b. User will get banned if not following regulations</p> <p>16.c. Users can be blocked by Registered Users</p> |
| 7. Look and feel | <p>7.a. Website shall use sans serif fonts for headers</p> <p>7.b. Website shall use sans serif fonts for buttons</p> <p>7.c. Website shall use serif fonts for paragraphs</p> <p>7.d. Website shall have a green and white color scheme</p> <p>7.e. Website shall have a set of consistent button shapes</p> <p>7.f. Website shall have a set of consistent input fields and forms</p> <p>7.g. Website shall be able to present information clearly with any browser size</p> <p>3.e. The website header position must be fixed on the top of every page</p> <p>4.a. Home Page must feel inviting to new and returning users</p> <p>4.b. Home Page must allow Users to get started right away</p> <p>4.c. Users will be able to maneuver through the Home Page by clicking on different features.</p> <p>5.a. The website footer position must be fixed on the bottom of every page</p> <p>7. Users will click one of the 5 stars to select a rating value</p> <p>17.a. Registered Users shall be introduced to the Help Page with a description of the website and an FAQ section</p> <p>19.a. The map shall show up as a small box on the side of a list of search results</p> <p>13.a. System must show property details to user only if user clicks on the listing post</p> |

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| | 13.c. Property details must show property size only in square feet 13.d. Property details must show property price only in dollars |
| 8. Privacy | 8.a. User needs to type first name to be able to Register 8.b. User needs to type last name to be able to Register 8.c. User needs to type an email to be able to Register 8.d. System must notify User if email is not in email format once clicked out of the email field 13.e. Landlord info must show the landlord's email only as a link that directs user to the email composing page |
| 9. Network | 9. Connect the database to aws |
| 12. Testing | 12.a. Testing must be done on localhost |
| 13. Coding Standards | 13.a. Styling must be kept in separate styling sheets from the base HTML 13.b. Styling must be specified by element classes 13.c. There must be a script file for each page that submits information 13.d. Handlebars file names must match the express routes that their associated with 13.e. Controllers are there to manage how the user interacts with listings and how general guest becomes a user |

Competitive Analysis

Competitor Overview

| Name of Company | Facebook Groups | Craigslist |
|-----------------------|---|---|
| Strengths | 1. Blog posts to portray listings 2. Very User friendly, great organizations 3. Ability to directly contact other users without hassle 4. Ability to post listings without hassle 5. Always updating for friendly user experience 6. Specific Groups in order to organize relevant spaces based on interest 7. Easy base of communication 8. Messenger app very clearcut and concise 9. Organized messaging based on requests, general messaging as well as spam 10. great block and report feature | 1. Wide variety of housing and storage options/Many categories 2. Can save searches 3. Shows all relevant information 4. Allows renters to put themselves out for landlords to search or for roommates |
| Weakness | 1. No actual place designated for listings 2. Scammers and bots aren't regulated 3. No way to view saved listings 4. No indicated way to look for landlords 4. Renters and landlords aren't separated based on roles 5. Not a clear concise way to view properties of a landlord 6. Influx of bots and scammers on posts 7. No way to properly verify users 8. Help page is loosely helpful 9. Admins aren't regulating posts 10. Search isn't meant for property listings 11. No way to filter out searches based on property interests 12. Spam messaging is very inaccurate 13. Messages get lost within the messenger folder organization 14. Block and report feature doesn't solve the problems of false listing 15. Too many outside website advertisement within blog page 16. No way to see rating history of a landlord | 1. Not pretty 2. Pictures not uniform 3. Tags are not uniform 4. Home page is overwhelming |
| Pricing | Free | Free |
| Social Media | Is a social media app primarily | Nonexistent |
| Onboarding experience | Very poor | Very poor |

Competitive Overview (Continued)

| Name of Company | Trulia | Zillow | Airbnb |
|-----------------------|--|--|---|
| Strengths | 1.Map showing the property location 2.Have a good filter categories 3.Not only for rent, also listing for people looking for buying or showing property have been recently sold 4.Simple design | 1.Find agents 2.Check rates 3. Calculate payments 4.Educational articles about buying homes 5.Zillow Premier Agent 6.Great UX | 1.Worldwide 2. Relatively cheap 3. Suggests good deals 4. Offers rewards 5.Leadership in its service category |
| Weakness | 1.Usually contact manager 2.No direct message. Often through email | 1. Zestimate - estimate of price of home - is inaccurate | 1.Litigations 2.verifyng landlords 3. Usability (ads) |
| Pricing | Free | 1. Free to use 2. \$200+/month for agents | Free to use |
| Social Media | Facebook Twitter Instagram Pinterest | Facebook Instagram Tiktok Twitter | Facebook Instagram Snapchat Twitter Tiktok |
| Onboarding experience | Users can clearly navigate | Few steps to create an account with smooth instructions | 63% satisfaction |

Competitor Features

| Feature | Craigslist | Trulia | Facebook Groups | Zillow | Airbnb | Our company |
|-------------------------|------------|--------|-----------------|--------|--------|-------------|
| Search/Filters | ++ | ++ | + | ++ | ++ | ++ |
| Shopping cart/Favorites | + | + | - | + | + | + |
| Contacting | + | + | ++ | + | ++ | ++ |
| Listings | + | + | - | ++ | ++ | ++ |
| Reviews | - | - | - | - | - | + |
| Help page | + | + | + | ++ | + | + |
| Map | + | + | - | + | ++ | + |
| Landlord Profile | - | - | - | - | + | ++ |
| Flagging/Moderation | + | ++ | + | ++ | ++ | + |
| Housing wanted section | + | - | + | - | + | + |
| Save searches | + | + | + | + | + | + |

Competitive Analysis Summary

The research that we have conducted thus far is largely based on sites that offer real estate related services. Zillow, and Trulia currently dominate within the real estate listing domain, intensely updating their websites in order to offer the best positive user friendly experience possible. With that being said, there are many functions from these websites that we plan on implementing. For example their ability to search through their database in order to pull the listing and properties from their backend. This is a widely common feature that each site has so it is of course imperative that we also implement this. Other features would include the ability to post listings, the superb ux blog design in example of Facebook as well as its functions to post on said blog. We also want to explore the ability to save the most recent searches, as well as the ability to cache or favorite certain properties of interest. Within our search engine, we plan on implementing categories in order to filter out the general search. In doing so, this will only show relevant properties that adhere to the users specific interest. One of the main reasons for including craigslist is to showcase what we actually plan on avoiding. For example, the UI/UX design isn't very friendly for a positive user experience. It is very confusing navigating through the homepage alone, this is even without initially putting up listings. Also the contacting properties of the site is actually not up to standard as the other sites such as Zillow, Trulia, Airbnb and especially not Facebook. The main objective that we definitely want to focus on while working on EZrent is the idea that our site, unlike our competitors, would concentrate closely towards the experience of the renters. This is a service that the other sites haven't implemented at all, and we want to be able to provide this experience for renters. Renters would hold the ability to rate and review their experience with previous landlords, as a way to either celebrate or bring to light the characteristics of said landlord. With that being said, the renting history of a property can now be showcased to interested renters, which ultimately can sway the actions of property owners, in order to guarantee a positive review on this site.

High Level System Architecture and Technologies Used

Server Host: AWS 2vCPU 8 GB RAM

Operating System: Linux 5.15.0-1019-aws

Database: MySQL v8.0.28

Web Server: Node.js v18.9.0

Server Side Language: JavaScript

Additional Technologies:

- JavaScript Runtime Environment: Node.js v18.9.0

- IDE: Visual Studio Code v1.71.0

- Database Development: MySQL Workbench v8.0.28

- Backend Framework: Express.js v4.18.1

- Frontend Library: Bootstrap 5.2.0

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**

List of Team Contributions

| | |
|-----------------|---|
| Devon Dy-Liacco | Checkpoint #1: <ul style="list-style-type: none"> Delegated tasks and set deadlines Create agenda for each meeting Wrote use cases #1 and #11 Wrote list of main entities Wrote requirements relating to use cases #1 and #11 and more Dedicated research on Craigslist Proofread document |
| Score: 9/10 | Checkpoint #2: <ul style="list-style-type: none"> Delegated tasks and set deadlines Wrote Devon's About Page |
| Praise O Eubany | Checkpoint #1: <ul style="list-style-type: none"> Contributed to meetings Created document outline Wrote title page Wrote executive summary Wrote use cases #2, #10, and #13 Created table for functional requirements and non-functional requirements Wrote requirements relating to use cases #2, #10, and #13 Spearheaded competitive analysis research Wrote competitive analysis summary Dedicated research on Facebook Groups Proofread document |
| Score: 10/10 | Checkpoint #2 <ul style="list-style-type: none"> Solved GitHub issues Contributed ideas in the meeting Wrote Praise's About Page |
| Youssef Hammoud | Checkpoint #1: <ul style="list-style-type: none"> Contributed to meetings Wrote use cases #4 and #9 Wrote requirements relating to use cases #4 and #9 and more Dedicated research on Zillow Helped decide frontend tech stack Proofread document |
| Score: 10/10 | Checkpoint #2: <ul style="list-style-type: none"> Designed Team home page |

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| | <ul style="list-style-type: none"> ● Implemented handlebars ● Helped design file structure ● Fixed images issues ● Helped design individual about pages ● Styled each about page ● Created routing with Express ● Wrote Youssef's About Page |
| Issa Shihadeh | <p>Checkpoint #1:</p> <ul style="list-style-type: none"> ● Contributed to meetings ● Wrote use cases #3 and #16 ● Wrote requirements relating to use cases #3 and #16 ● Dedicated research on AirBnB ● Helped decide backend tech stack ● Proofread document |
| Score: 9/10 | <p>Checkpoint #2:</p> <ul style="list-style-type: none"> ● Helped install node ● Researched about web server services ● Helped with database ● Wrote Issa's About Page |
| Tung Nguyen | <p>Checkpoint #1:</p> <ul style="list-style-type: none"> ● Contributed to meetings ● Wrote use case #14 ● Wrote requirements relating to use case #14 ● Dedicated research on Trulia ● Helped decide backend tech stack |
| Score: 9/10 | <p>Checkpoint #2:</p> <ul style="list-style-type: none"> ● Connected database to project ● Connected website to web server ● Started framework for posting ● Designed database ● Wrote Tung's About Page ● Solved GitHub issues |
| Ricardo Lopez | <p>Checkpoint #1:</p> <ul style="list-style-type: none"> ● Contributed to meetings ● Wrote use cases #5, #6, #7, #8, and #15 ● Contributed to main entities page ● Organized non-functional requirement table ● Wrote requirements relating to those use cases and more ● Dedicated research on Facebook Groups ● Proofread document |

Score: 10/10

Checkpoint #2:

- Helped implement handlebars
- Wrote Ricardo's About Page