

# Introduction

Tailwaggr's vision is to be a one-stop shop for all things pet, fostering a vibrant and a supportive online community for pet owners and enthusiasts.

Our objectives are to:

- Empower pet owners: Provide a platform that simplifies pet care and strengthens the bond between owners and their furry companions.
- Connect the pet care community: Facilitate connections between pet owners, veterinarians, pet sitters, and other animal lovers through forums and relevant services.
- Enhance pet well-being: Offer resources and tools that promote responsible pet ownership and contribute to the overall health and happiness of pets.

## Business Need

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The pet care industry is booming, with a growing number of people considering pets as valued members of their families. Tailwaggr addresses this need by:

- Centralizing pet care resources: Simplifying the process of finding qualified pet care professionals and relevant pet information.
- Enhancing convenience: Offering a mobile app allows pet owners to manage their pet's needs and access services on the go.
- Building a community: Providing a platform for pet owners to connect, share experiences, and offer support to each other.

## Project Scope

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The initial scope of Tailwaggr focuses on core functionalities:

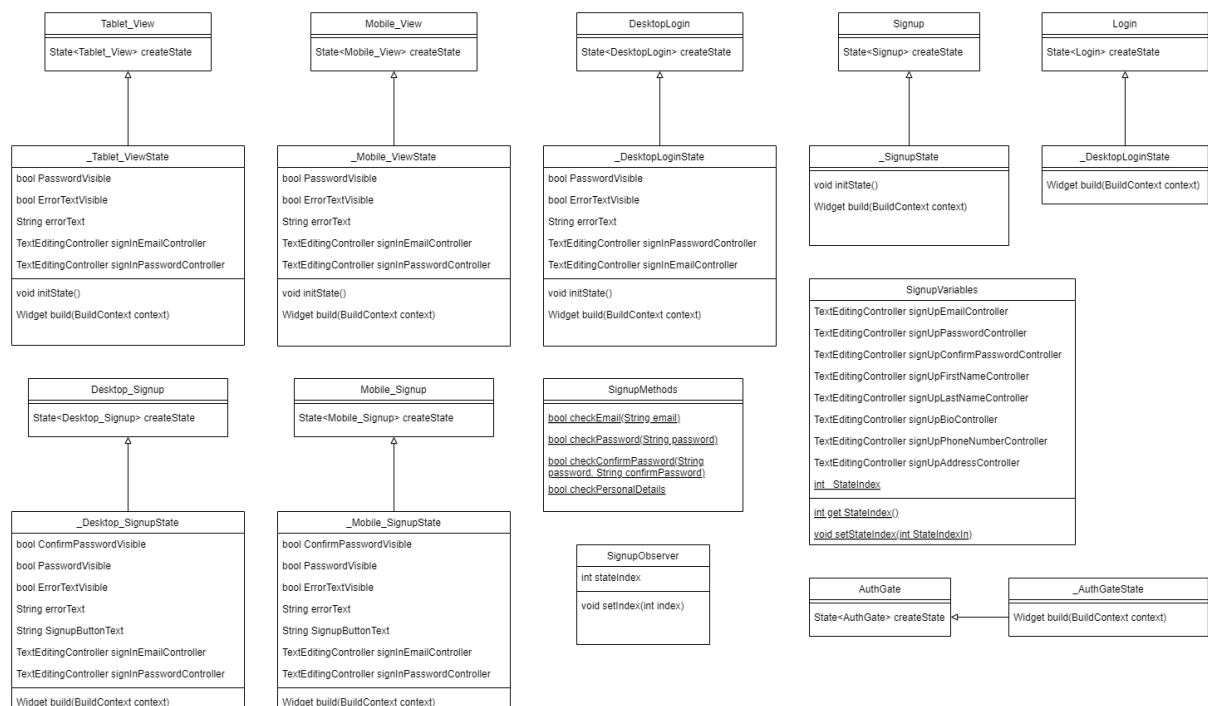
- Pet profiles and owner profiles: Create detailed profiles for pets and their owners, fostering a sense of community and personalization.
- Find a veterinarian: Allow pet owners to locate and connect with licensed veterinarians in their area.

- Find a pet sitter: Enable pet owners to discover reliable pet sitters and dog walkers for in-home or scheduled pet care.
- Pet forums: Establish a dedicated forum section where pet owners can ask questions, share experiences, and build relationships.
- Lost & Found Pets: Create a database to reunite lost pets with their worried owners and facilitate faster reunions.

Future iterations may consider expanding the scope to include features like:

- Appointment scheduling with veterinarians and pet sitters.
- Telehealth consultations with veterinarians.
- Online pet stores or marketplaces.
- Integration with wearable pet trackers.

# Class diagram



# User stories/user characteristics:

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User Characteristics:

Normal User:

- Loves their pet
- Looks after their pet
- Makes posts

Vet User:

- Has regular user characteristics
- Has contact details listed
- Has qualifications listed
- Has clinic location listed

Pet Caretaker User:

- Has regular user characteristics
- Has contact details listed
- Has pet specialities listed
- Has location listed

# User Stories for TailWagger

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## User Accounts Subsystem

1. As a new user, I want to sign up for an account so that I can access the application's features.
2. As a user, I want to enter my username during sign-up so that I can create a unique identity.
3. As a user, I want to enter my password during sign-up so that my account is secure.
4. As a user, I want to enter my email address during sign-up so that I can receive notifications and account-related information.
5. As a user, I want to fill in my personal details during sign-up so that my profile is complete.
6. As a returning user, I want to log in to my account so that I can access my profile and pets' information.
7. As a returning user, I want to reset my password if I forget it so that I can regain access to my account.
8. As a user, I want to log in with my email and password so that I can access my account securely.

## Profile Subsystem

1. As a user, I want to edit my profile photo so that I can personalise my account.
2. As a user, I want to edit my username so that I can update my display name.
3. As a user, I want to edit my personal details so that my profile information is up-to-date.
4. As a user, I want to add a pet profile so that I can keep track of my pets' information.
5. As a user, I want to add my pet's details so that the profile is complete.
6. As a user, I want to delete my profile so that I can remove my account from the system.
7. As a user, I want to be prompted to confirm profile deletion so that I don't accidentally delete my profile.
8. As a user, I want my profile to be deleted from the database so that my information is removed.

9. As a user, I want to delete a pet profile so that I can remove pets that I no longer own.
10. As a user, I want to be prompted to confirm pet profile deletion so that I don't accidentally delete it.
11. As a user, I want my pet profile to be deleted from the database so that the information is removed.
12. As a user, I want to edit my pet's details so that the profile information is up-to-date.
13. As a user, I want to edit my pet's profile photo so that it is personalised.
14. As a vet, I want to edit my profile to include my vet clinic's details
15. As a pet caretaker, I want to add my details so that pet owners can find and contact me
16. As a user, I want to be able to search for other users

## **Location Subsystem**

1. As a user, I want to search for found pets so that I can find my lost pet.
2. As a user, I want to enter a pet name during the search so that I can find specific pets.
3. As a user, I want to view search results so that I can see the found pets' information.
4. As a user, I want to find veterinarians around my area so that I can get medical care for my pet.
5. As a user, I want to see the location of the vet clinic so that I can visit it.
6. As a user, I want to see the vet's details so that I can contact them for an appointment.
7. As a user, I want to find pet caretaker details so that I can find someone to take care of my pet.

## **Forums Subsystem**

1. As a user, I want to create forums so that I can initiate discussions on relevant topics about pets.
2. As a user, I want to like a forum post so that I can show my appreciation for the content.
3. As a user, I want to share a forum post so that I can spread useful information.
4. As a user, I want to comment on a forum post so that I can participate in the discussion.
5. As a user, I want to create forum posts about lost pets.

6. As a vet, I want to post news and events about my clinic.
7. As a vet, I want to create forums about taking care of pets and my clinic.

## Notifications Subsystem

1. As a user, I want to receive notifications for new comments on my forum posts so that I can stay updated.
2. As a user, I want to receive notifications for new likes on my forum posts so that I know when others appreciate my content.
3. As a user, I want to receive notifications for new forum posts in categories I'm interested in so that I can stay informed.
4. As a pet caretaker , I want to receive notifications for upcoming appointments with pet owners so that I don't miss them.
5. As a user, I want to edit my notification settings so that I can control what notifications I receive.

## Functional requirements

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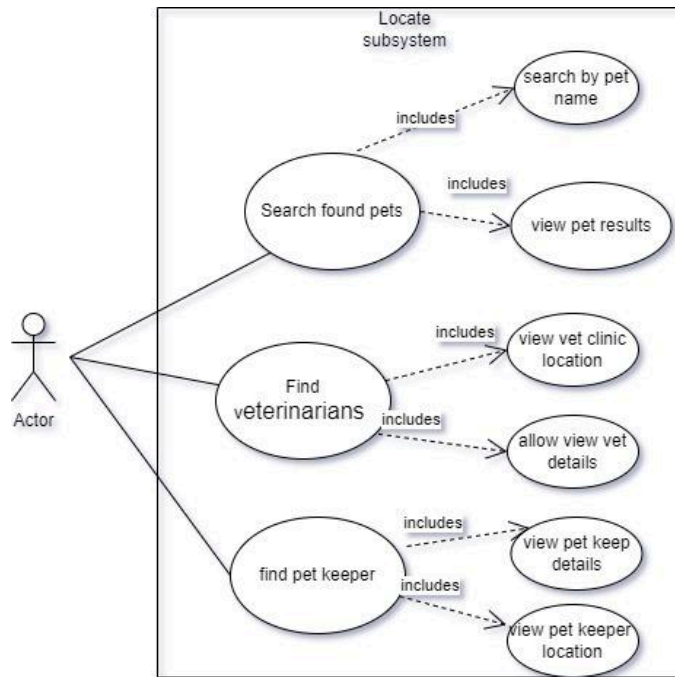
1. User Accounts subsystem:
  - i. User must be able to Sign up:
    - a. Enter their name
    - b. User must be able to enter their valid password
    - c. User must be able to enter their valid email address
  - ii. User must be able to login:
    - a. User must be able to reset their password
    - b. User must be able to login with email
    - c. User must be able to login with their password
2. Profile subsystem:
  - i. User must be able to edit their profile:
    - a. User must be able to edit their profile photo
    - b. User must be able to edit their personal details
  - ii. User must be able to add a pet profile:
    - a. User must be able to add pet details
    - b. User must be able to upload pet photos to gallery
  - iii. User must be able to delete their profile:
    - a. User must be prompted to confirm profile deletion
    - b. User should be deleted from the database
  - iv. User must be able to delete a pet profile
    - a. User must be prompted to confirm profile deletion

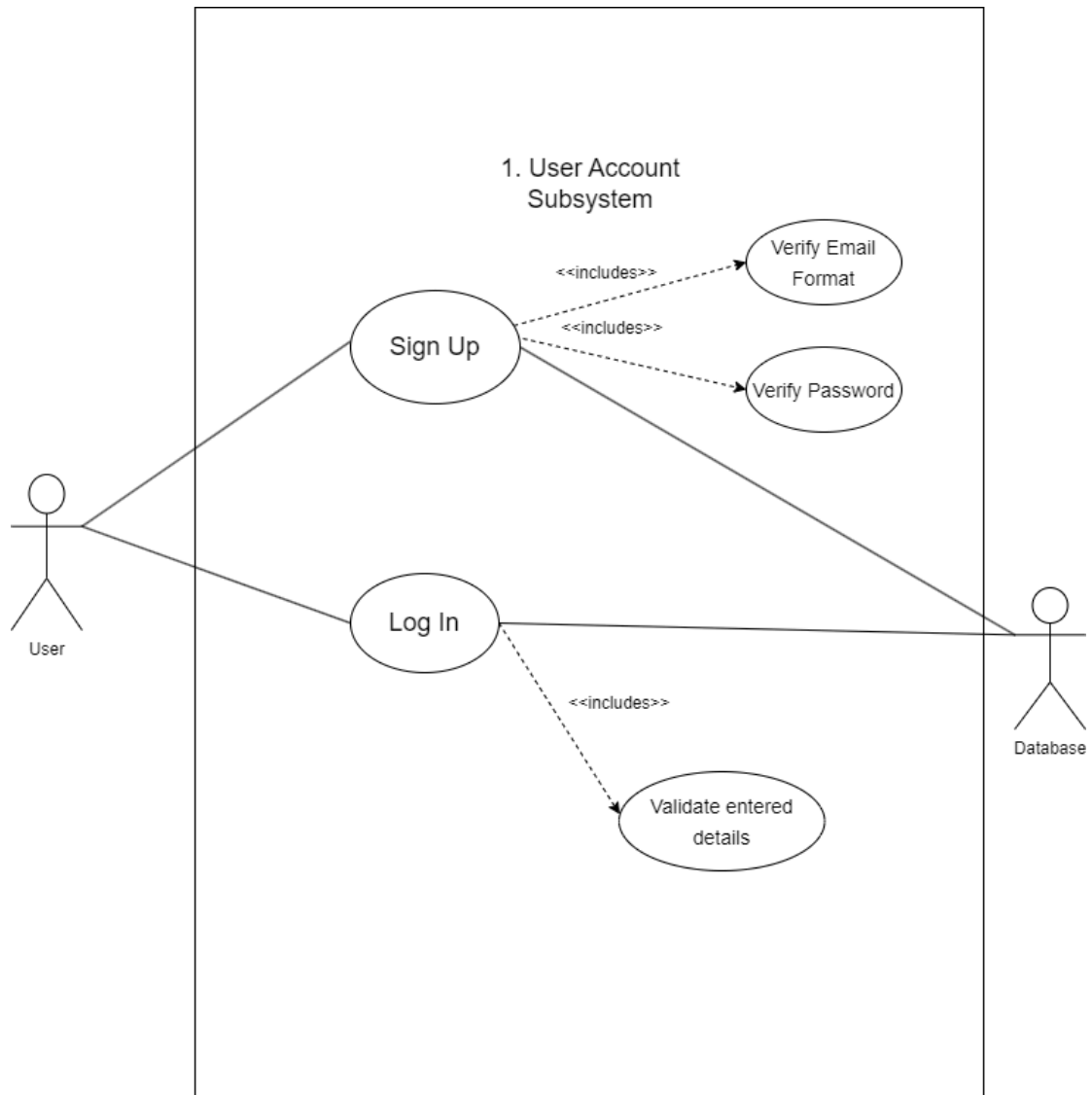
- b. User should be deleted from the database
  - v. User must be able to edit a pet profile:
    - a. User must be able to edit pet details
    - b. User must be able to edit pet gallery
  - vi. Vet must be able to become registered
    - a. Vet must be able to upload proof of qualification
    - b. Vet must be able to provide contact details
    - c. Vet must be able to share clinic location
  - vii. Pet Caretaker must be able to become registered
    - a. Caretaker must be able to provide contact details
    - b. Caretaker must be able to share location
  - viii. User must be able to search for other users
    - a. User must be able to enter other user's name
    - b. User must be able to view matching user search results
- 3. Location subsystem:
  - i. User must be able to search for found pets:
    - a. User must be able to enter a pet name
    - b. The user must be able to view search results
  - ii. User must be able to find Veterinarians around their area:
    - a. Users must be able to see the location of the vet clinic
    - b. Users must be able to see the vet details
  - iii. Users must be able to find a pet caretaker:
    - a. Users must be able to see pet caretaker details
    - b. User must be able to see the pet caretaker location
- 4. Forums subsystem:
  - i. Users must be able to create forum
    - a. Users must be able to create forums
    - b. Users must be able to create forum posts
    - c. Users must be able to select or create relevant tags to categorise the forum
  - ii. Users must be able to interact with posts
    - a. Users must be able to like a post
    - b. Users must be able to share a post
    - c. Users must be able to comment on a post
- 5. Notifications subsystem:
  - i. Users must be able to receive notifications from their forum posts
    - a. Users must receive notifications if they receive a like on their forum posts
    - b. User must receive notifications if they receive a comment on their forum posts
    - c. Users must receive notifications if their forum post is shared
  - ii. Users must be able to receive notifications from followed forums
    - a. Users must be able to receive notifications about new comments on forums they follow

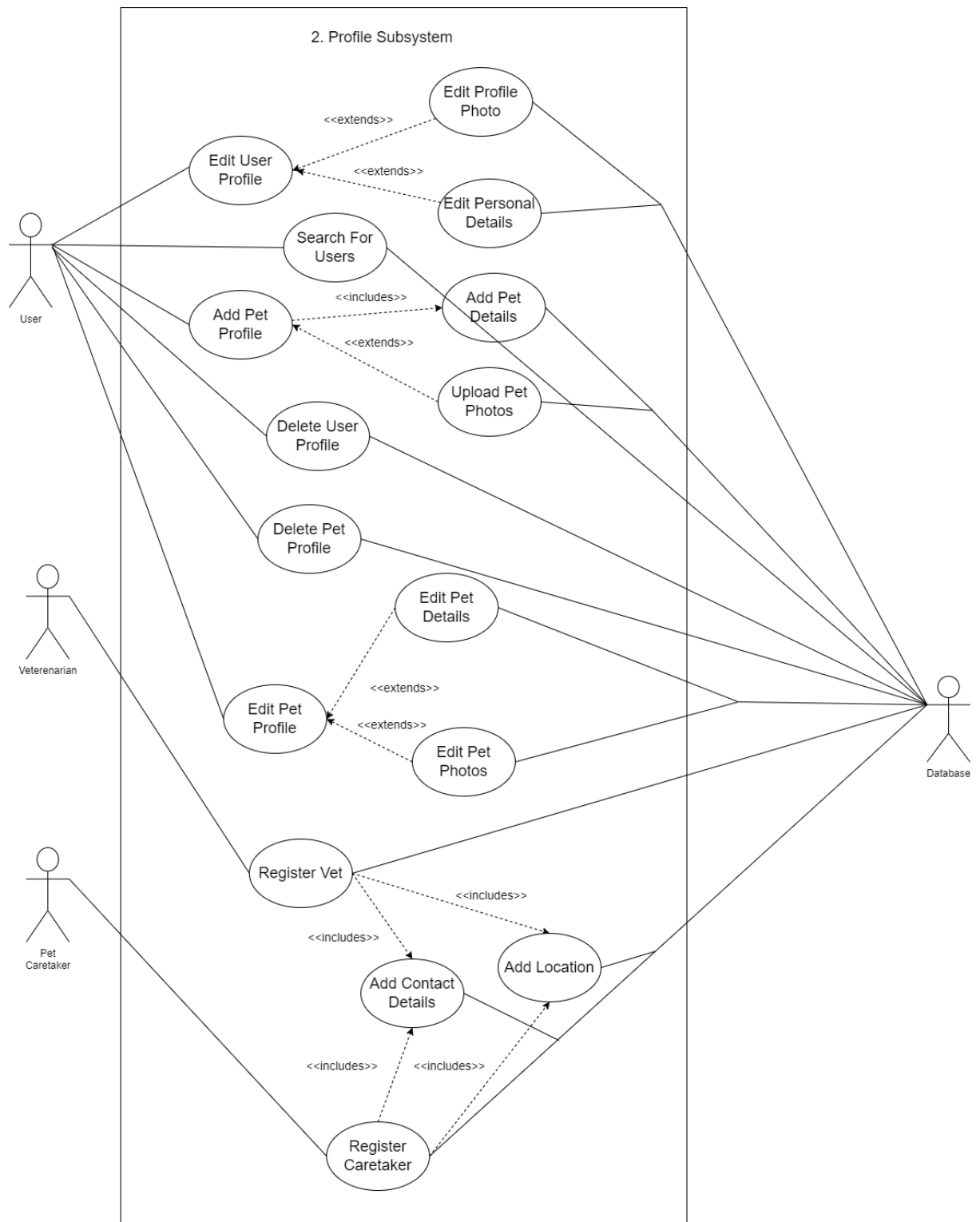
- b. Users must be able to receive notifications for replies on their comments on forums
- iii. Pet caretakers must receive notifications of users interested in their services
  - a. Pet caretakers must receive notifications of users requesting their service
  - b. Pet caretakers must receive notifications of upcoming appointments for their pets

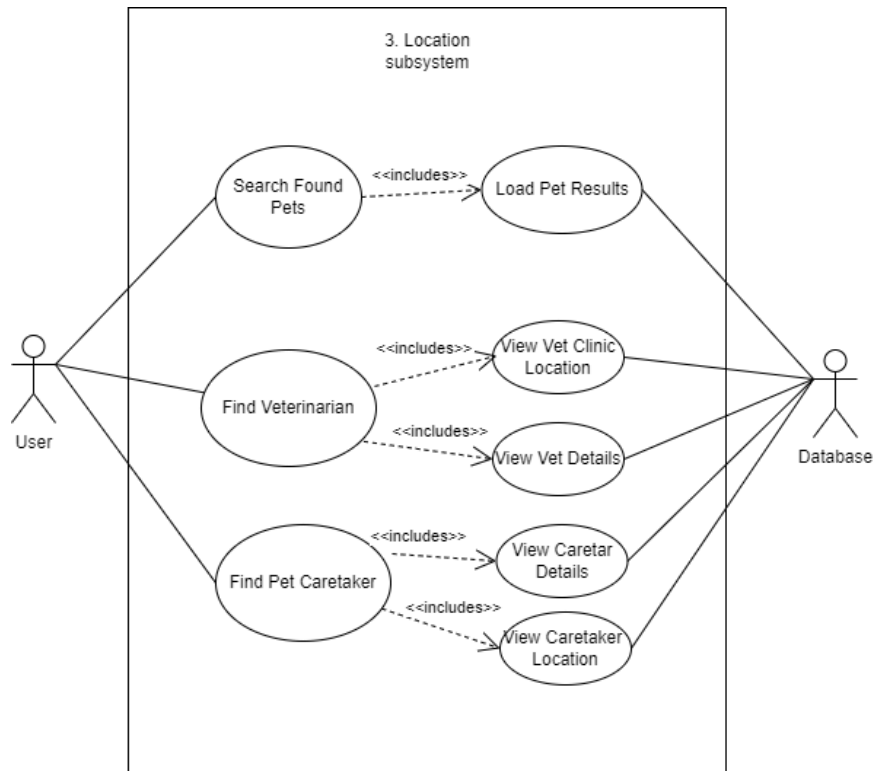
## **Use Case diagrams:**

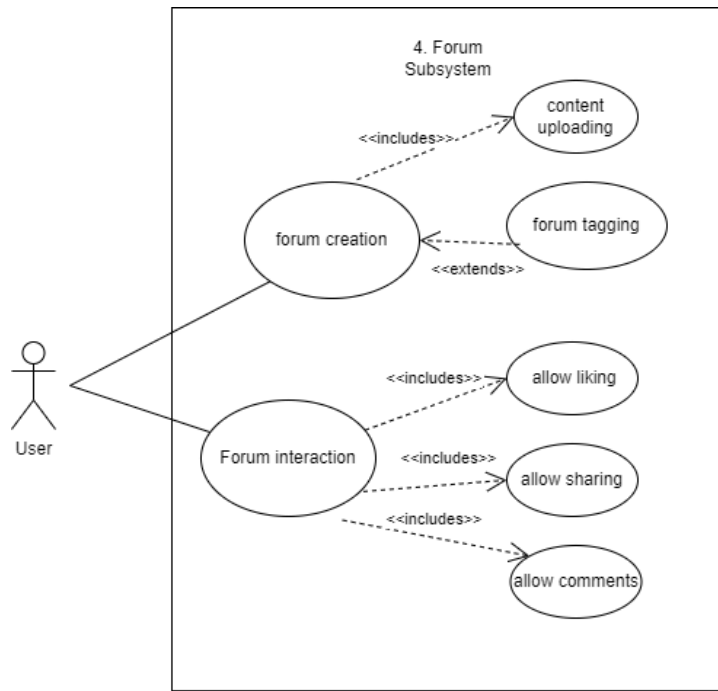


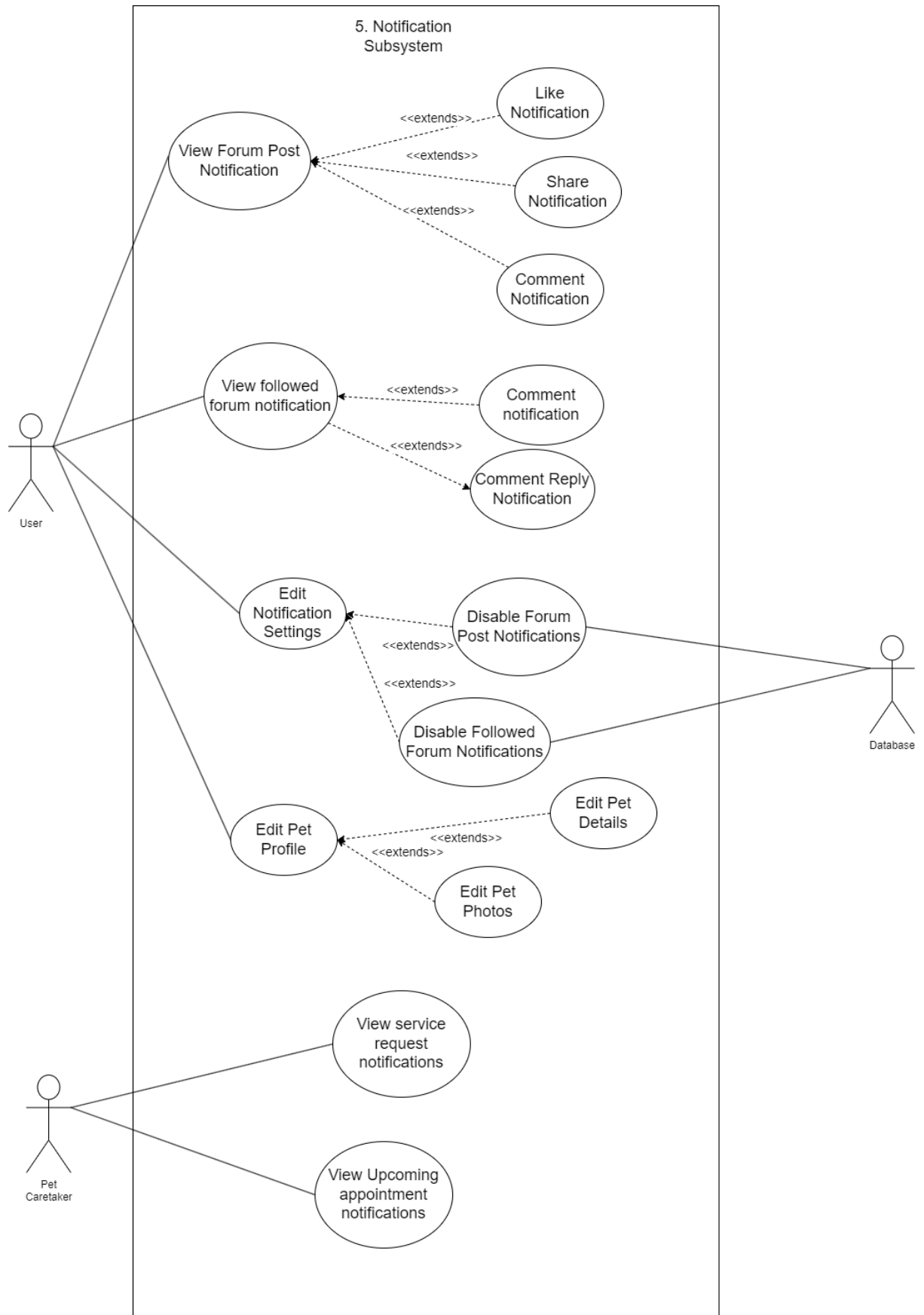












# Quality Attributes and Architecture Strategies

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## 1. Performance:

- Optimize Firebase queries to ensure efficient data retrieval and usage throughout the application.
- Use caching mechanisms in Flutter to minimize unnecessary calls to the backend.
- Implement lazy loading for images and data to improve app load times.

## 2. Scalability:

- Use Firebase's scalable infrastructure to handle changes in traffic and usage effectively.
- Implement Firebase Functions to handle backend logic, allowing the app to scale horizontally.
- Design the app architecture to support future enhancements and additional features without significant refactoring.

## 3. Reliability:

- Monitor Firebase backend using Firebase Performance Monitoring to ensure system components are operating within safe parameters.
- Implement robust error handling and retry mechanisms in Flutter to handle intermittent network issues.
- Use Firebase Firestore's offline data capabilities to ensure the app remains functional during network disruptions.

## 4. Security:

- Use Firebase Authentication to manage user sessions securely.
- Implement Firestore Security Rules to control access to database records.
- Ensure all data transmitted between the app and backend is encrypted using HTTPS.

## 5. Usability:

- Design the user interface in Flutter to follow intuitive navigation patterns.
- Provide customization options for users to adjust the interface to their preferences.
- Ensure the app is accessible, adhering to WCAG (Web Content Accessibility Guidelines) standards.

## 6. Availability:

- Utilize Firebase's global infrastructure to ensure high availability and low latency.
- Implement asynchronous operations in Flutter to maintain a responsive user experience.
- Use Cloud Firestore's offline capabilities to allow users to continue working during network outages.

#### 7. **Maintainability:**

- Adhere to a modular architecture in Flutter, separating UI, business logic, and data layers.
- Use a linter and formatter to enforce coding standards and consistency.
- Write unit and integration tests for Flutter components and Firebase Functions to ensure reliability and ease of maintenance.

#### 8. **Extensibility:**

- Use Flutter's plugin system to integrate new features and services seamlessly.
- Structure Firebase Firestore schema to allow easy addition of new data fields and relationships.
- Design backend services in a modular fashion to accommodate future enhancements with minimal changes.

#### 9. **Cost-effectiveness:**

- Utilize Firebase's pay-as-you-go model to manage costs effectively, scaling expenses with usage.
- Optimize cloud function deployments to minimize execution time and reduce costs.
- Use shared components and services in Flutter to reduce development and maintenance costs.

## Projected Burndown Chart

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