

**A project**

**Tail Wagging: A Pet Care & Reminder App**



CSE 328: Software Engineering LAB

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## Introduction

The Pet Care Reminder app is an AI-powered Android application designed to help pet owners manage their pets' daily routines, health schedules, and veterinary appointments. With the increasing number of pet owners and the busy lifestyles of modern individuals, this app aims to simplify pet care by providing timely reminders, personalized insights, and a centralized platform for managing all pet-related tasks. By leveraging AI, the app will offer smart suggestions to improve pet health and well-being.

## Purpose

The purpose of the Pet Care Reminder app is to:

- Help pet owners stay organized and never miss feeding times, medication schedules, or vet appointments.
- Provide AI-driven insights to improve pet care based on the pet's breed, age, and health conditions.
- Create a seamless and user-friendly experience for managing multiple pets.
- Promote responsible pet ownership by ensuring pets receive timely and proper care.

## Intended Audience

The app is designed for:

- **Pet Owners:** Individuals who own one or more pets and want to streamline their care routines.
- **Busy Professionals:** People with hectic schedules who need reminders to care for their pets.
- **First-Time Pet Owners:** New pet owners who may need guidance on pet care schedules.
- **Pet Enthusiasts:** Individuals who want to ensure their pets are healthy and happy.
- **Veterinarians:** Professionals who can recommend the app to their clients for better pet care management.

## Conclusion

The Pet Care Reminder app will revolutionize how pet owners manage their pets' daily routines and health needs. By combining AI-powered insights with a user-friendly interface, the app will ensure pets receive the care they deserve while making life easier for their owners. This app has the potential to become an essential tool for pet owners worldwide, fostering stronger bonds between pets and their caregivers.

## List of Stakeholders

- **Pet Owners:** Primary users who will benefit from the app's features.
- **Veterinarians:** Secondary stakeholders who may recommend the app to clients.
- **Developers:** The team responsible for designing, developing, and maintaining the app.
- **Investors:** Individuals or organizations funding the project.

- **Marketing Team:** Responsible for promoting the app and acquiring users.
- **AI/ML Experts:** Professionals developing the AI models for insights and recommendations.
- **Pet Care Brands:** Potential partners for collaborations or sponsorships.

## Story of the Project

The idea for the Pet Care Reminder app originated from the growing need for pet owners to manage their pets' care routines effectively. Many pet owners struggle to remember feeding times, medication schedules, or vet appointments, especially when juggling busy lives. Inspired by the love for pets and the desire to make pet care easier, the project aims to create a solution that combines technology and empathy. By integrating AI, the app will not only remind users but also provide actionable insights to improve their pets' health and happiness. This project is a testament to how technology can enhance the bond between pets and their owners.

## Functional Requirements

- User Authentication:
  1. Allow users to sign up and log in using email, Google, or social media accounts.
- Pet Profiles:
  1. Enable users to create and manage profiles for multiple pets.
  2. Include fields for name, species, breed, age, weight, and photo.
- Vet Profiles:
  1. Allow users to create and manage profiles for their veterinarians, including:
    - a. Vet's name
    - b. Clinic name
    - c. Contact information (phone, email, address)
    - d. Specialization (e.g., general practice, surgery, etc.)
- Reminders:
  1. Allow users to set feeding, medication, and vet appointment reminders.
  2. Support recurring reminders (daily, weekly, etc.).
- AI Insights:
  1. Provide personalized care tips based on pet data.
  2. Analyze pet behavior and suggest improvements.
- Notifications:
  1. Send push notifications for upcoming reminders.
  2. Allow users to customize notification preferences.
- Calendar View:
  1. Display all reminders in a calendar or list format.

- Data Backup:
  - 1. Sync data to the cloud for backup and cross-device access.
- Social Sharing:
  - 1. Allow users to share pet milestones or achievements on social media.
- Breed Identification:
  - 1. Use AI to identify pet breeds from uploaded photos.
- Offline Mode:
  - 1. Allow users to access reminders and pet profiles offline.

### **Non-Functional Requirements**

- Performance:
  - 1. The app should load within 2-3 seconds on most devices.
- Scalability:
  - 1. The app should handle up to 1 million users without performance degradation.
- Security:
  - 1. Ensure user data is encrypted and stored securely.
  - 2. Implement secure authentication methods.
- Usability:
  - 1. The app should have an intuitive and user-friendly interface.
  - 2. Provide a seamless experience for users of all ages.
- Reliability:
  - 1. The app should have 99.9% uptime for cloud-based features.
- Compatibility:
  - 1. Support Android devices running version 8.0 (Oreo) and above.
- Accessibility:
  - 1. Ensure the app is accessible to users with disabilities (e.g., screen reader support).
- Maintainability:
  - 1. The codebase should be well-documented and easy to update.
- Battery Efficiency:
  - 1. Minimize battery consumption for background tasks like reminders.

- Data Privacy:
  1. Comply with data protection regulations (e.g., GDPR, CCPA).

### Software Requirement Elicitation (Quality Function Deployment - QFD)

Quality Function Deployment (QFD) is a structured approach to defining customer needs and translating them into technical requirements. For the Pet Care Reminder app, the QFD process can be summarized as follows:

#### Customer Needs (What)

- Never miss feeding times, medication schedules, or vet appointments.
- Receive personalized pet care tips.
- Manage multiple pets in one place.
- Access reminders offline.
- Get AI-powered insights for better pet care.

#### Technical Requirements (How)

- Implement a reminder system using AlarmManager or WorkManager.
- Use AI/ML models (e.g., TensorFlow Lite) for personalized insights.
- Create a user-friendly UI with pet profiles and a calendar view.
- Store data locally using Room Database and sync with Firebase for backup.
- Develop an offline mode for accessing reminders without internet.

#### QFD Matrix

Customer Needs	Technical Requirements	Priority
Never miss schedules	A reminder system with notifications	High
Personalized pet care tips	AI/ML models for insights	High
Manage multiple pets	Pet profiles with local and cloud storage	Medium
Offline access	Offline mode with local database	Medium
AI-powered insights	TensorFlow Lite integration	High

### Software Usage Scenario (From Multiple Points of View)

#### Scenario 1: Pet Owner

- User: Sarah, a busy professional with a dog named Max.
- Goal: Ensure Max is fed on time and receives his medication.
- Steps:
  1. Sarah opens the app and creates a profile for Max.
  2. She sets a daily feeding reminder for 8 AM and 6 PM.

3. She adds a medication reminder for Max's daily pill at 7 PM.
4. The app sends push notifications at the scheduled times.
5. Sarah marks tasks as completed in the app.

### **Scenario 2: First-Time Pet Owner**

- User: John, who recently adopted a cat named Luna.
- Goal: Learn how to care for Luna and set up a routine.
- Steps:
  1. Dr. Smith downloads the app and explores its features.
  2. She recommends the app to her clients for tracking medication schedules.
  3. Clients use the app to set reminders for vet appointments and medications.
  4. Dr. Smith receives fewer calls about missed appointments or doses.

### **Use Case Diagram**

A use case diagram visually represents the interactions between users (actors) and the system. Below is a textual description of the use case diagram for the Pet Care Reminder app:

#### **Actors**

- Pet Owner: The primary user who interacts with the app.
- Veterinarian: A secondary user who may recommend the app.
- System: The app itself, which processes data and sends notifications.

#### **Use Cases**

- Create Pet Profile:
  - Actor: Pet Owner
  - Description: The pet owner creates a profile for their pet, including name, species, breed, age, and photo.

#### **Set Reminders:**

- Actor: Pet Owner
- Description: The pet owner sets reminders for feeding, medication, and vet appointments.

#### **Receive Notifications:**

- Actor: Pet Owner
- Description: The app sends push notifications for upcoming reminders.
- View AI Insights:
  - Actor: Pet Owner
  - Description: The app provides personalized care tips based on the pet's data.

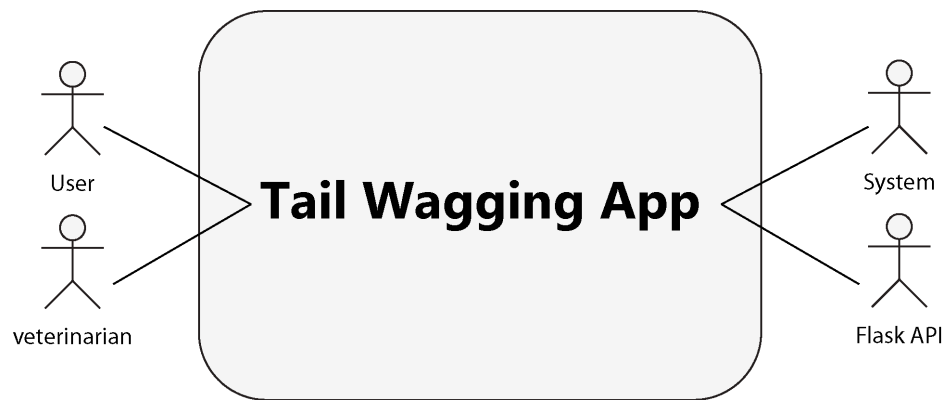
#### **Sync Data:**

- Actor: Pet Owner
- Description: The app syncs pet data to the cloud for backup and cross-device access.
- Recommend App:
  - Actor: Veterinarian

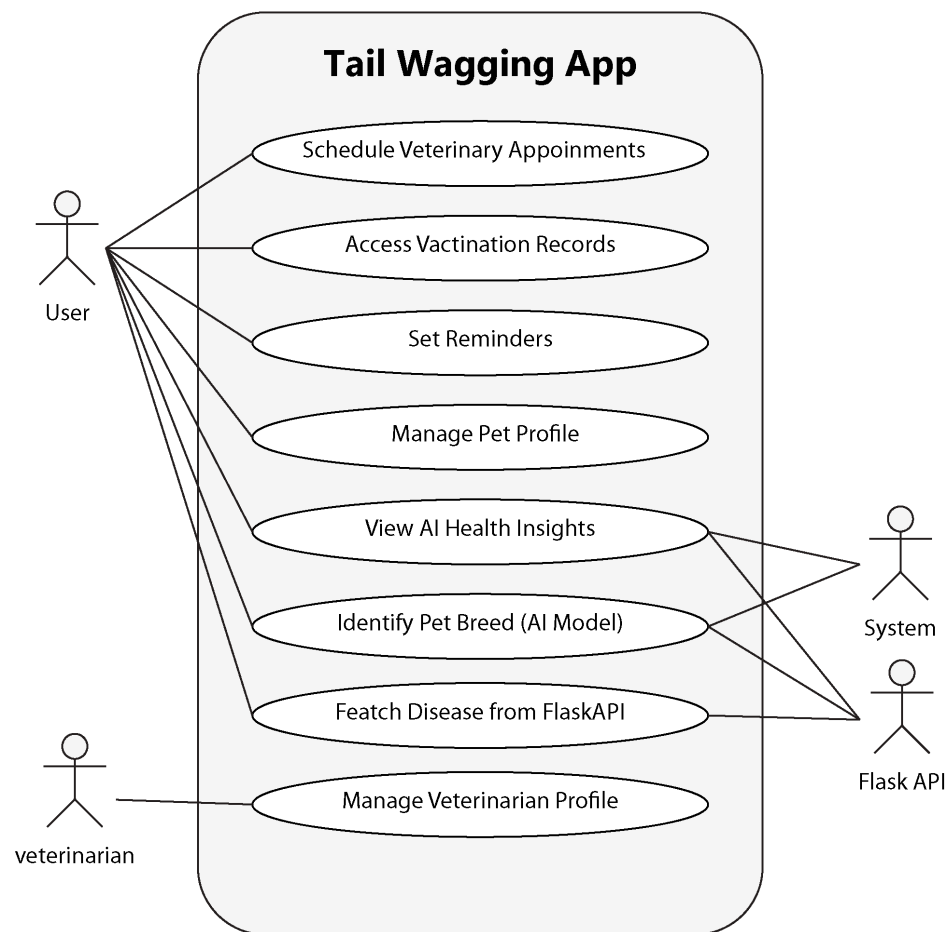
- Description: The veterinarian recommends the app to clients for better pet care management.

## Use Case Diagram

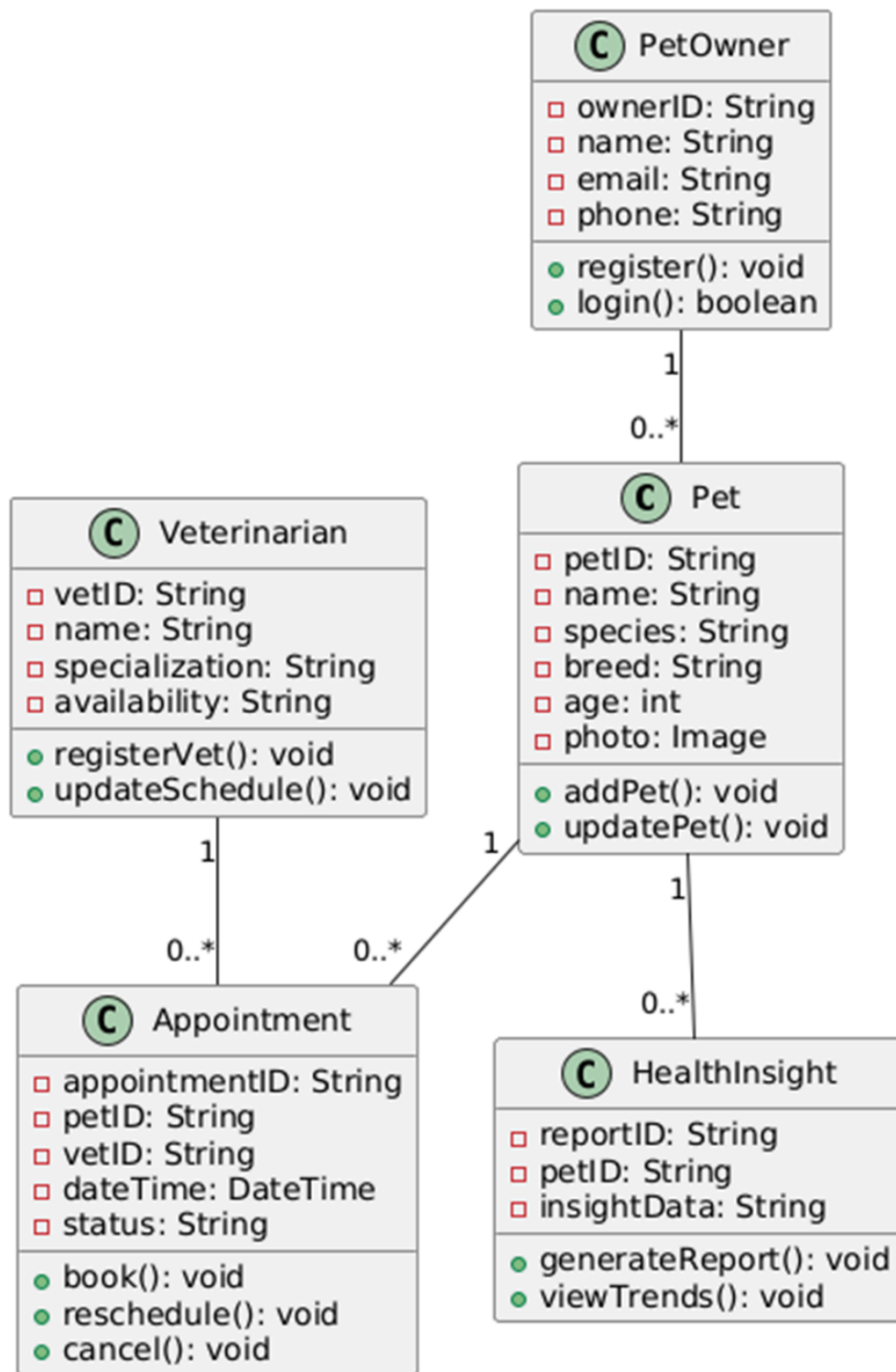
Level-0:



Level-1:

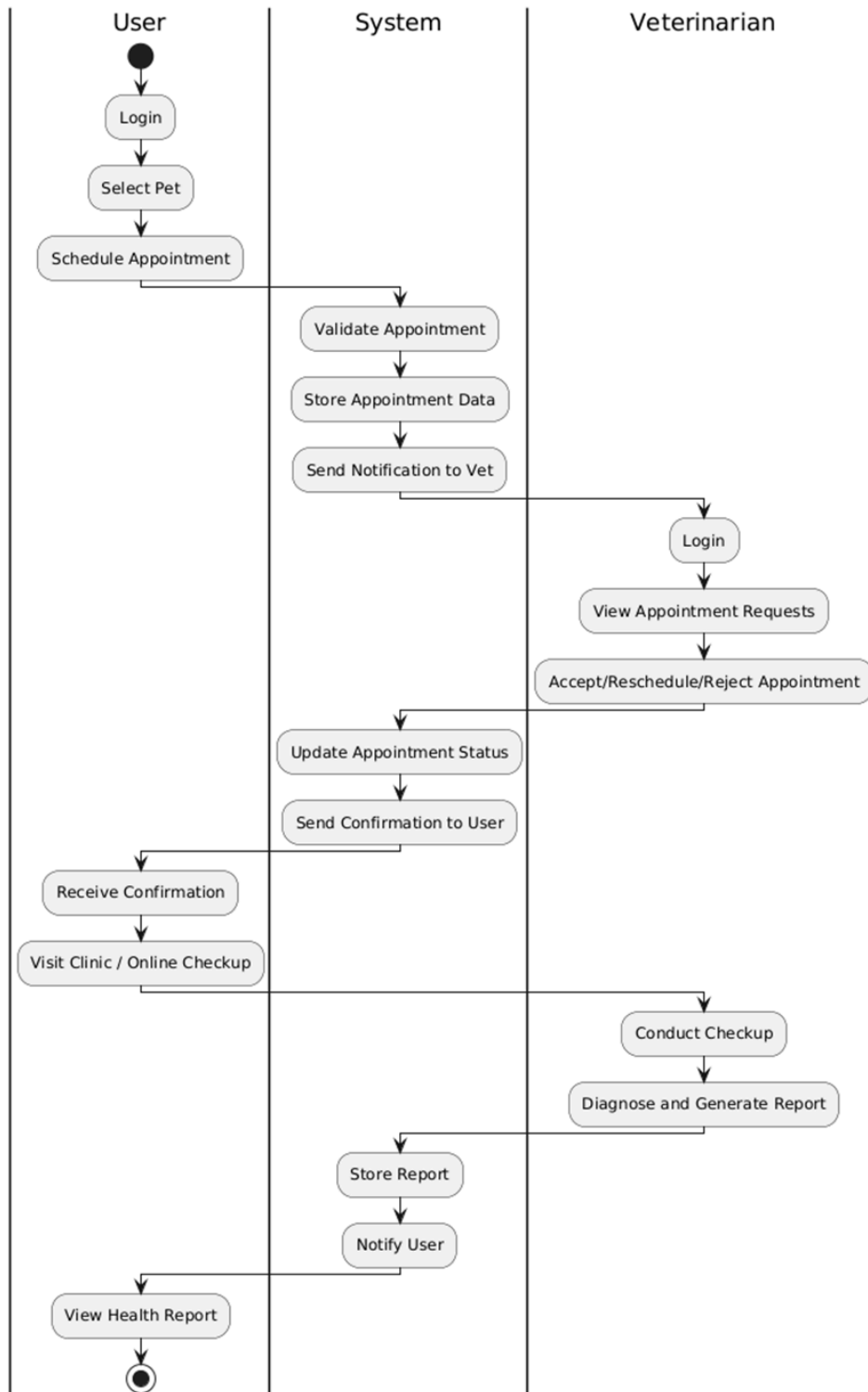


## Class Diagram





## Activity Diagram



## ER Diagram

