



*Mini Project Report On*

## **Pet Connect**

*Submitted in partial fulfillment of the requirements for the  
award of the degree of*

**Bachelor of Technology**

*in*

**Computer Science & Engineering**

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# CERTIFICATE

*This is to certify that the mini project report entitled "**Pet Connect**" is a bonafide record of the work done by **Muhammed Ashir K Abdul Selim (U2103141)**, **Gouree-shankar Shoyson (U2103098)**, **Joyal Mozhoor Joji (U2103118)**, **Joel John Jestin (U2103115)**, submitted to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (B. Tech.) in Computer Science and Engineering during the academic year 2023-2024.*

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## **Abstract**

Pet Connect is a comprehensive Android app created to enrich the experience of pet ownership. It serves as a platform where pet enthusiasts can easily connect with others in their vicinity. Whether you're looking for nearby pet shops, grooming centers, or hospitals, Pet Connect has you covered, fostering a convenient and supportive community. One of its standout features is the collection of blogs authored by fellow pet owners, offering valuable insights and experiences to the community. Additionally, Pet Connect functions as a centralized hub for news and information on responsible pet care, ensuring users stay informed about best practices. In times of urgency, Pet Connect transforms into an emergency help center, providing quick access to essential resources. Beyond emergencies, the app facilitates socialization and companionship among pets by helping users find playmates for their furry friends. Moreover, Pet Connect includes a useful feature for setting vaccine reminders and other important alerts, ensuring timely healthcare for pets. But perhaps most importantly, the app prioritizes user engagement and knowledge sharing within the pet community. Pet owners can easily share their experiences, seek advice, and stay updated on the latest trends in pet care. With its user-friendly interface, Pet Connect aims to simplify the pet ownership journey, creating a space where pet owners can connect, learn, and support each other. Regular updates and improvements, including new features and relevant content, keep the app dynamic and tailored to the evolving needs of pet owners.

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# **Chapter 1**

## **Introduction**

### **1.1 Background**

Pet Connect was born from a realization of the diverse needs of pet owners today. With pets becoming more like family, there was a need for a simple yet comprehensive platform. Thereby creating Pet Connect, an Android app that seamlessly connects pet lovers, offers nearby services, and builds a supportive community. We believe technology could improve pet care and strengthen the bond between pets and owners. With features like healthcare reminders and emergency assistance, Pet Connect aims to transform how pet owners interact and support each other.

### **1.2 Problem Definition**

Existing solutions often lack integration and fail to provide a centralized platform for pet owners. Users struggle to connect with other enthusiasts, locate nearby pet services, and access reliable information on pet care. Emergency assistance and healthcare management tools are also limited.

### **1.3 Scope and Motivation**

**Scope:** Pet Connect is your ultimate companion in the world of pet ownership. It's like having a knowledgeable friend who's always there for you and your furry friend. From connecting with other pet lovers nearby to finding essential services and sharing heartwarming stories, Pet Connect simplifies every aspect of pet care. With its user-friendly interface and regular updates, it's designed to evolve with you and your pet's needs.

**Motivation:** The motivation behind Pet Connect stems from the recognition of the

challenges faced by pet owners in accessing comprehensive and user-friendly solutions for their needs. By providing a centralized platform, Pet Connect aims to simplify the pet ownership experience, enhance community engagement, and promote responsible pet care practices. The app is driven by a passion for fostering a supportive pet community where users can connect, learn, and support each other. Additionally, the desire to leverage technology to improve the well-being of pets and strengthen the bond between pets and their owners serves as a key motivator for developing Pet Connect. Overall, the motivation is to create a valuable and indispensable tool that enriches the lives of both pets and their owners.

## 1.4 Objectives

- Develop a user-friendly Android application that serves as a all in one platform for pet owners, integrating features for community interaction, resource location, and healthcare management.
- Facilitate seamless connection between pet enthusiasts, enabling them to find and interact with other pet owners in their vicinity.
- Provide easy access to nearby pet shops, grooming centers, hospitals, and other essential pet services, fostering a supportive community and simplifying pet care activities.
- Establish an emergency help center within the app, offering quick access to essential resources and assistance in times of urgency.
- Enable users to find playmates for their pets, promote companionship amongst pets, thereby enhancing their overall well-being.
- Include features for setting vaccine and other healthcare reminders, ensuring timely care for pets and promoting responsible pet ownership practices.

## **1.5 Challenges**

The project might encounter hurdles in merging different functions smoothly, providing accurate local pet service details, and keeping the pet owner community active. Adding reliable emergency help and healthcare tools can be difficult. Along with integration of the software aspects can increase the overall difficulty. Balancing privacy and security while encouraging community participation also presents a complex challenge.

## **1.6 Assumptions**

1. The target user demographic primarily consists of pet owners who own Android devices and are comfortable with using mobile applications for managing their pet-related activities.
2. Users will be willing to engage with the community features of the app, such as sharing their experiences, seeking advice, and participating in discussions, thus contributing to the overall value and vibrancy of the platform.
3. The availability and accuracy of location-based data for nearby pet services, including pet shops, grooming centers, and hospitals, are reliable and consistently updated to ensure the effectiveness of the resource location feature within the app.

## **1.7 Societal / Industrial Relevance**

The Pet Connect project finds application in both society and the pet care industry. For society, it promotes responsible pet ownership through features like healthcare reminders, community engagement among pet owners. In the industry, Pet Connect streamlines operations for pet services and sets a benchmark for digital pet care solutions, potentially enhancing efficiency and innovation within the sector.

## **1.8 Organization of the Report**

The organization of the report is as follows:

- **Chapter 1-Introduction:** The introduction covers the background of the project, the problem definition, the scope and motivation, the objectives, the societal and industrial relevance, the assumptions and the challenges faced by the project.
- **Chapter 2-Software Requirements Specification:** This chapter outlines the functional and nonfunctional requirements of Pet Connect. It defines the overall description of the software, external interface requirements, system features, and other nonfunctional requirements necessary for the development and deployment of the tools.
- **Chapter 3-System Architecture and Design:** The system architecture and design chapter provides an overview of the project's technical framework. It includes discussions on the system overview, architectural design, identified datasets, proposed algorithms, implementation strategies, module division, and a work schedule presented as a Gantt chart for project planning and management.
- **Chapter 4-Results and Discussions:** This chapter presents an overview of the testing process, including graphical analysis and discussion.
- **Chapter 5-Conclusion:** This chapter comprises the conclusion of the project along with suggestions for future improvement.

## **Chapter 2**

# **Software Requirements Specification**

### **2.1 Product Perspective**

Pet Connect is an innovative product born out of the increasing demand for comprehensive solutions to enhance the pet ownership experience. Unlike its predecessors or existing systems, Pet Connect represents a new, self-contained app tailored specifically for pet owners. While there may be other pet-related apps on the market, Pet Connect distinguishes itself by offering a wide range of features designed to address the diverse needs of pet owners in a single, cohesive platform. The origin of Pet Connect lies in recognizing the challenges faced by pet owners in managing various aspects of pet care, from finding services to connecting with other pet enthusiasts. Drawing inspiration from the growing popularity of mobile apps and the desire for community-driven platforms, Pet Connect was conceptualized to provide a centralized hub where pet owners can access services, share knowledge, seek advice, and connect with like-minded individuals. In terms of the larger system, Pet Connect can be seen as a standalone component within the broader ecosystem of pet care services and resources. While it may interface with external systems such as emergency services or veterinary clinics for certain functionalities like emergency assistance, the primary focus remains on providing a comprehensive solution within the app itself. This includes features such as community engagement, service location, knowledge-sharing, emergency assistance, and pet socialization.

### **2.1.1 Product Functions**

- Facilitate connections between pet enthusiasts in the vicinity.
- Enable users to locate nearby pet shops, grooming centers, and hospitals.
- Assist users in finding playmates for their dogs to foster socialization.
- Provide a platform for pet owners to share blogs, insights, and experiences.
- Function as an emergency help center, providing quick access to essential resources.
- Include features for setting vaccine and other reminders for timely healthcare.
- Serve as a centralized hub for news and information on responsible pet care.
- Regularly update and improve the app to meet evolving needs of pet owners.
- Prioritize user engagement and knowledge sharing within the pet community.
- Offer a user-friendly interface to simplify the pet ownership journey.

### **2.1.2 Operating Environment**

The Pet Connect app is tailored to operate on Android devices, such as smartphones and tablets, with a recommended minimum screen size of 5 inches and a minimum screen resolution of 720x1280 pixels. The application relies on the Android operating system, compatible with versions 6.0 and above. A stable internet connection is essential for various features, including user authentication, location services, the emergency help center, and socialization features. Device sensors, particularly GPS, are utilized for accurate location tracking. It is crucial to ensure that users' devices meet these hardware and software specifications to guarantee optimal performance. Additionally, the app may leverage other sensors for enhanced functionality, such as accelerometer or gyroscope for accurate location detection. These considerations collectively contribute to a seamless and effective user experience within the Pet Connect app.

## **2.2 Design and Implementation Constraints**

Design and implementation constraints for the Pet Connect app outline factors that influence the development process and impact the final product. These constraints guide decisions related to the app's architecture, features, and overall functionality.

### **2.2.1 Android Design Guidelines**

Pet Connect adheres to Android design guidelines to ensure a consistent and intuitive user interface. The app's layout, navigation, and interaction elements follow established patterns and principles, promoting familiarity among users and facilitating a seamless experience across various Android devices.

### **2.2.2 Third-Party Service Dependencies**

The implementation of Pet Connect involves integrating third-party services for location-based features, emergency resources, and potentially social media authentication. The app is dependent on the availability and reliability of these external services, and any changes or disruptions in these services may impact the app's functionality.

### **2.2.3 Internet Connectivity**

Given the app's reliance on real-time data, internet connectivity is a critical constraint. Users must have a stable internet connection to access features such as location services, socialization, and emergency resources. The app's design assumes a consistent and reliable network connection for optimal performance.

### **2.2.4 Android Studio Development**

Pet Connect is developed using Android Studio, and its design and implementation are constrained by the capabilities and limitations of this development environment. The app's codebase, user interface design, and overall architecture are structured according to Android Studio's conventions and tools.

### **2.2.5 Security Considerations**

Security constraints dictate the need for robust measures to protect user data and sensitive information. Pet Connect employs secure authentication mechanisms, encrypted data transmission, and safeguards against common security threats, such as SQL injection and cross-site scripting.

### **2.2.6 Device Compatibility**

To ensure a broad user reach, Pet Connect must be compatible with a variety of Android devices. However, certain device-specific variations may pose challenges in terms of screen sizes, resolutions, and hardware capabilities. Design decisions aim to provide a consistent and optimized experience across diverse devices.

### **2.2.7 Resource Limitations**

Optimizing resource usage, such as memory and processing power, is a constraint considered during implementation. The app aims to provide a smooth user experience while operating within the resource limitations of mobile devices, avoiding excessive battery consumption and performance degradation.

### **2.2.8 Regulatory Compliance**

Pet Connect must comply with relevant privacy regulations and policies, ensuring the secure handling of user data and adherence to ethical standards. Design and implementation decisions are influenced by legal and ethical considerations to safeguard user privacy and uphold industry standards.

## **2.3 Assumptions and Dependencies**

### **2.3.1 Stable Internet Connectivity**

Users will have consistent and stable internet connections while using the Pet Connect app. Any disruptions or unreliable connectivity may impact real-time features, including location services and emergency resources.

### **2.3.2 Third-Party Service Availability**

The availability and reliability of third-party services, such as location-based APIs and emergency resources, are assumed to be consistent. Changes, disruptions, or discontinuation of these services could affect the app's functionality.

### **2.3.3 User Adoption of Updates**

Users are expected to adopt and regularly update the Pet Connect app to access new features, improvements, and security updates. The project's success relies on user engagement and acceptance of these updates.

### **2.3.4 Device Compatibility**

Users will have Android and iOS devices that meet or exceed the recommended specifications, including screen size, resolution, and operating system versions. Variations in device capabilities may impact the app's performance and user experience.

### **2.3.5 Regulatory Compliance**

Pet Connect must comply with relevant privacy regulations and policies, ensuring the secure handling of user data and adherence to ethical standards. Design and implementation decisions are influenced by legal and ethical considerations to safeguard user privacy and uphold industry standards.

## **2.4 External Interface Requirements**

### **2.4.1 User Interfaces**

Pet Connect offers an intuitive and user-friendly interface, leveraging the Flutter framework for a consistent experience across android devices. Below are descriptions of the logical characteristics of key interfaces within the app:

- Login and Registration Interface The login and registration interface presents users with input fields for username and password during login or prompts them to register a new account. Utilizes Flutter's built-in form elements for secure input and validation.

- Home Screen Interface The home screen acts as the central hub, displaying a personalized feed of pet-related content, including blogs, forums, and notifications. Users can easily navigate to different sections using a bottom navigation bar, providing quick access to key features.
- Connection Platform Interface The connection platform allows users to discover and connect with other pet owners based on location and shared interests. Utilizes a visually appealing card-based layout to display user profiles, fostering a sense of community.
- Location Services Interface The location services interface enables users to find nearby pet-related services, such as pet shops, grooming centers, and hospitals. Utilizes Flutter's map integration for an interactive and visually appealing map display with markers for service locations.
- Emergency Help Center Interface The emergency help center provides quick access to essential resources during emergencies. Features prominent buttons for immediate assistance, including emergency contacts, veterinary services, and location-based emergency services.
- Socialization Feature Interface The socialization feature allows users to find playmates for their pets. Displays profiles of nearby pets, with options to initiate contact and schedule meet-ups. Utilizes playful visuals and interactive elements to encourage engagement.
- Knowledge Sharing Interface The knowledge sharing interface includes blogs and forums for pet owners to share experiences, seek advice, and stay informed. Offers a clean and organized layout, utilizing Flutter's rich text support for blog content and threaded discussions for forums.
- Reminder System Interface The reminder system interface enables users to set vaccine and other reminders for timely pet healthcare. Utilizes a straightforward form-based design for creating and managing reminders, with push notifications to alert users.

- Navigation and Menu Interface The app includes a consistent navigation bar for easy access to primary features. A slide-in menu provides additional options, including settings, user profile, and app-related information.

## 2.5 Hardware Interfaces

Pet Connect is optimized for Android devices, including smartphones and tablets. The logical and physical characteristics of the interface between the software product and hardware components for Android devices are as follows:

- Supported Device Types: Android smartphones and tablets.
- Nature of Interactions: The app interacts with device hardware, including GPS for location services, internet connectivity for data exchange, and device sensors for enhanced features (e.g., accelerometer, gyroscope).
- Communication Protocols: Utilizes standard communication protocols for internet connectivity (HTTP/HTTPS) and location services (e.g., GPS protocols). Implements secure data transmission for user authentication and information exchange. These hardware requirements ensure Pet Connect's optimal performance on a variety of Android devices, offering features like location-based services and real-time data interactions.

## 2.6 Software Interfaces

Pet Connect relies on various software components to ensure its functionality and integration with external services. The connections between the Pet Connect app and other specific software components are as follows:

### 2.6.1 Operating System

- Components: Android OS (version 6.0 and above).
- Connections: Pet Connect is designed to operate on devices running the Android operating system, leveraging OS functionalities for device interaction, file management, and security.

### **2.6.2 Flutter Framework**

- Components: Flutter framework .
- Connections: Pet Connect is developed using the Flutter framework, ensuring cross-platform compatibility for both Android and iOS devices. The app relies on Flutter's UI components and features for seamless user experiences.

### **2.6.3 Database Management System**

- Components: Firebase
- Connections: Pet Connect utilizes Firebase to store user data, preferences, and essential information. The integration ensures efficient data management within the app.

### **2.6.4 Location Services API**

- Components: Google Maps API
- Connections: Pet Connect integrates with the Google Maps API for accurate location services. This enables users to find nearby pet-related services and connect with other pet owners based on location.

### **2.6.5 Third-Party Services**

- Components: Third-party APIs for emergency resources, social media authentication, and content delivery
- Connections: Pet Connect interacts with external APIs for emergency resources, user authentication, and content delivery. These connections facilitate real-time information retrieval and user engagement features.

### **2.6.6 Notification Service**

- Components: Firebase Cloud Messaging (FCM)

- Connections: Pet Connect uses FCM to deliver push notifications, including reminders, updates, and alerts. This ensures timely communication with users even when the app is not actively in use.

#### **2.6.7 Secure Authentication**

- Components: OAuth 2.0
- Connections: Pet Connect employs OAuth 2.0 for secure user authentication during login and registration processes. This integration ensures a reliable and standardized authentication mechanism.

#### **2.6.8 HTTP/HTTPS Communication**

- Components: Standard HTTP/HTTPS protocols.
- Connections: Pet Connect communicates with external servers and services using secure HTTP/HTTPS protocols. This ensures encrypted data transmission, safeguarding user privacy and sensitive information.

#### **2.6.9 User Interface Libraries**

- Components: Flutter UI libraries
- Connections: Pet Connect utilizes UI libraries provided by Flutter for consistent and visually appealing user interfaces across different screens and devices.

### **2.7 Communications Interfaces**

Pet Connect relies on various communication functions to facilitate seamless interactions and data exchange. The requirements associated with these communication functions are outlined as follows:

#### **2.7.1 Communication Functions**

- Email: Pet Connect utilizes email for user account verification, notifications, and communication purposes.

- Web Browser: Users access Pet Connect through web browsers on both Android and iOS devices for a consistent experience.
- Network Server Communications Protocols: The app uses standard HTTP/HTTPS protocols for communication with network servers, ensuring secure data transmission.
- Electronic Forms: Pet Connect employs electronic forms for user registration, pet profiles, and setting reminders.

#### **2.7.2 Message Formatting**

- Message Structure: Messages conform to standard data formats, ensuring compatibility and ease of processing. JSON is commonly used for data exchange between the app and servers.

#### **2.7.3 Communication Standards**

- Protocols: Pet Connect adheres to industry-standard communication protocols, including HTTP for general data exchange and HTTPS for secure transactions.

#### **2.7.4 Communication Security**

- Encryption: Secure data transmission is implemented using encryption methods, especially for sensitive information such as user credentials and personal data.
- Security Standards: The app complies with industry security standards to protect user privacy and prevent unauthorized access.

#### **2.7.5 Data Transfer Rates**

- Optimization: Pet Connect is optimized for efficient data transfer rates, ensuring a responsive user experience and minimizing latency in communication with servers.

#### **2.7.6 Synchronization Mechanisms**

- Real-time Updates: Pet Connect employs real-time synchronization mechanisms to update user feeds, notifications, and location-based services promptly.

- Push Notifications: Synchronization includes push notifications to alert users of new messages, updates, and reminders.

## 2.8 System Features

### 2.8.1 User Registration and Profile Management

- Description and Priority: This feature allows users to register for accounts and manage their profiles, including pet information, location, and preferences. Given that user registration is essential for accessing the app's functionalities, this feature is of high priority.

- Stimulus/Response Sequences:

Stimulus: User selects the "Sign Up" option.

Response: System displays registration form.

Stimulus: User fills out the registration form and submits it.

Response: System verifies user information and creates a new account.

- Functional Requirements:

REQ-1: The system shall provide a user registration form with fields for username, email, password, pet information, location, and preferences.

REQ-2: The system shall validate user inputs for completeness and correctness, displaying appropriate error messages for any invalid entries.

REQ-3: Upon successful registration, the system shall create a new user account and store the provided information securely.

REQ-4: The system shall allow users to update their profile information, including pet details, location, and preferences.

REQ-5: Users shall have the option to delete their accounts, with the system securely removing all associated data upon confirmation.

REQ-6: The system shall provide an option for users to recover their accounts in case of forgotten passwords, requiring verification through email or other secure means.

### **2.8.2 Connection and Interaction**

- Description and Priority: This feature enables users to search for and connect with other pet owners nearby, fostering a sense of community. Additionally, it includes a messaging feature for users to interact with connected pet owners.

- Stimulus/Response Sequences:

Stimulus: User selects the "Connect" or "Search" option.

Response: System displays a search interface where users can find nearby pet owners.

Stimulus: User selects a pet owner from the search results and initiates a connection request.

Response: System sends a connection request to the selected pet owner.

Stimulus: Pet owner receives a connection request.

Response: System notifies the pet owner and provides options to accept or decline the request.

Stimulus: Connection request is accepted.

Response: System establishes a connection between the users, enabling messaging.

- Functional Requirements:

REQ-1: The system shall provide a search functionality for users to find nearby pet owners based on location and preferences.

REQ-2: The system shall allow users to send connection requests to other pet owners.

REQ-3: The system shall notify pet owners when they receive connection requests, providing options to accept or decline.

REQ-4: Upon acceptance of a connection request, the system shall establish a connection between the users, enabling messaging.

REQ-5: The messaging feature shall allow users to exchange text messages, images, and other media with their connected pet owners.

REQ-6: The system shall maintain privacy and security measures to protect user information and communication.

### **2.8.3 Content Sharing and Discovery**

- Description and Priority: This feature enables users to create, share, and discover blogs on pet care topics within the Pet Connect app. Additionally, it includes a content discovery mechanism to suggest relevant blogs to users based on their interests and preferences.

- Stimulus/Response Sequences:

Stimulus: User selects the "Create Blog" option.

Response: System displays a blog creation interface where users can write and publish their blogs.

Stimulus: User selects the "Share Blog" option.

Response: System provides options for users to share their blogs within the app or on external platforms.

Stimulus: User selects the "Discover Blogs" option.

Response: System presents a curated list of blogs based on user preferences and interests.

Stimulus: User interacts with a suggested blog.

Response: System displays the full blog content and allows the user to engage with it (e.g., like, comment, share).

- Functional Requirements:

REQ-1: The system shall provide a blog creation interface with text editing capabilities for users to write and publish their blogs.

REQ-2: Users shall have the option to include images, videos, and other media in their blogs.

REQ-3: The system shall allow users to share their blogs within the app or on external platforms through social media integration.

REQ-4: The system shall implement a content discovery mechanism to suggest relevant blogs to users based on their pet preferences, past interactions, and other relevant factors.

REQ-5: Users shall be able to search for blogs using keywords or categories.

REQ-6: The system shall display curated lists of popular or trending blogs for users to discover new content.

REQ-7: The system shall allow users to interact with blogs by liking, commenting, and sharing them with other users.

REQ-8: The system shall provide privacy settings for users to control the visibility of their blogs and interactions.

#### **2.8.4 Pet Socialization**

- Description and Priority: This feature facilitates pet socialization by providing users with a pet friend finder to locate playmates for their dogs and the ability to organize or join pet meetups and playdates. Enhancing socialization opportunities for pets is essential for their well-being, making this feature of high priority.

- Stimulus/Response Sequences:

Stimulus: User selects the "Pet Friend Finder" option.

Response: System displays a search interface where users can search for nearby dogs to arrange playdates.

Stimulus: User initiates a search for compatible playmates for their dog.

Response: System presents a list of nearby dogs based on compatibility criteria such as size, age, and temperament.

Stimulus: User selects a dog from the search results and sends a playdate invitation.

Response: System notifies the owner of the selected dog about the playdate invitation.

Stimulus: Pet owner receives a playdate invitation.

Response: System notifies the pet owner and provides options to accept or decline the invitation.

Stimulus: Playdate invitation is accepted.

Response: System confirms the playdate and provides details to both pet owners.

- Functional Requirements:

REQ-1: The system shall provide a pet friend finder feature allowing users to search for compatible playmates for their dogs based on criteria such as size, age, and temperament.

REQ-2: Users shall be able to send playdate invitations to other pet owners for their dogs.

REQ-3: The system shall notify pet owners when they receive playdate invitations, providing options to accept or decline.

REQ-4: Upon acceptance of a playdate invitation, the system shall confirm the playdate and provide details to both pet owners.

REQ-5: The system shall allow users to organize and schedule pet meetups and playdates, specifying details such as location, date, and time.

REQ-6: Users shall be able to join pet meetups and playdates organized by other users.

REQ-7: The system shall provide privacy settings for users to control the visibility of their pet profiles and playdate activities.

#### **2.8.5 Pet Service Locator**

- Description and Priority : This feature enables users to search for nearby pet shops, grooming centers, and hospitals within the Pet Connect app. It allows users to access detailed information for each service, including contact details and reviews.

- Stimulus/Response Sequences :

Stimulus: User selects the "Pet Service Locator" option.

Response: System displays a search interface where users can search for nearby pet services.

Stimulus: User enters search criteria such as location or service type.

Response: System retrieves and displays a list of nearby pet shops, grooming centers, and hospitals matching the search criteria.

Stimulus: User selects a specific service from the search results.

Response: System presents detailed information for the selected service, including contact details and reviews.

- Functional Requirements :

REQ-1: The system shall provide a search feature allowing users to locate nearby pet shops, grooming centers, and hospitals based on location or service type.

REQ-2: The system shall display search results in a clear and organized manner, presenting the name and address of each service.

REQ-3: Users shall be able to filter search results by service type, distance, and user ratings.

REQ-4: The system shall provide detailed information for each service, including contact details (phone number, email), address, operating hours, and user reviews.

REQ-5: Users shall have the option to view and submit reviews for pet services, contributing to the overall rating.

REQ-6: The system shall allow users to save favorite pet services for quick access in the future.

REQ-7: Users shall be able to access directions to the selected pet service via integrated map functionality for easy navigation.

#### **2.8.6 Healthcare Management**

- Description and Priority : This feature enables users to manage their pet's healthcare effectively by allowing them to set vaccine and healthcare reminders and track their pet's medical history and appointments within the Pet Connect app.

- Stimulus/Response Sequences :

Stimulus: User selects the "Healthcare Management" option.

Response: System displays the healthcare management interface where users can set reminders and track medical history.

Stimulus: User sets a vaccine reminder for their pet.

Response: System saves the reminder and schedules notifications for the specified date.

Stimulus: User adds a medical appointment to their pet's schedule.

Response: System records the appointment details and adds it to the pet's medical

history.

- Functional Requirements :

REQ-1: The system shall provide a feature allowing users to set vaccine and health-care reminders for their pets, specifying the type of reminder (e.g., vaccine, check-up).

REQ-2: Users shall be able to specify the date, time, and frequency of reminders for each healthcare task.

REQ-3: The system shall send notifications to users to remind them of upcoming healthcare tasks for their pets.

REQ-4: The system shall allow users to view and manage their pet's medical history, including past appointments and treatments.

REQ-5: Users shall be able to add new medical appointments and treatments to their pet's medical history, specifying details such as date, type of treatment, and veterinarian information.

REQ-6: The system shall provide a calendar view to visualize upcoming healthcare tasks and appointments for users' pets.

REQ-7: Users shall have the option to export or share their pet's medical history with veterinarians or other pet caregivers when needed.

#### **2.8.7 User-Friendly Interface**

- Description and Priority : This feature focuses on designing a user-friendly interface for the Pet Connect app, ensuring it is intuitive, visually appealing, and accessible to users of all technical proficiency.

- Stimulus/Response Sequences :

Stimulus: User opens the Pet Connect app.

Response: System displays the home screen with clear navigation options and visually appealing design elements.

Stimulus: User selects a specific feature or function within the app.

Response: System navigates to the corresponding interface with smooth transitions

and clear layout.

- Functional Requirements :

REQ-1: The system shall employ a clean and visually appealing design with intuitive layout and navigation.

REQ-2: User interface elements shall be appropriately sized and spaced for ease of interaction, especially on mobile devices.

REQ-3: The system shall ensure consistency in design elements, such as color schemes, fonts, and icons, throughout the app.

REQ-4: User interface elements shall be responsive to different screen sizes and orientations, providing a consistent experience across devices.

REQ-5: The system shall implement clear and descriptive labels for all features and functions within the app to aid user understanding.

REQ-6: Accessibility features, such as screen reader compatibility and adjustable font sizes, shall be implemented to accommodate users with disabilities.

REQ-7: User interactions within the app, such as button clicks and navigation gestures, shall produce immediate and intuitive responses to enhance usability.

REQ-8: The system shall incorporate user feedback mechanisms to gather input on the usability and effectiveness of the interface, enabling continuous improvement.

## 2.9 Other Nonfunctional Requirements

### 2.9.1 Performance Requirements

Pet Connect features performance requirements tailored to various circumstances, ensuring optimal functionality and responsiveness. The specific requirements for different scenarios are outlined below:

- General Usage:

- Requirement: The app should respond to user interactions, such as button clicks and content loading, within 2 seconds.

- Rationale: Swift response times enhance the overall user experience, promoting engagement and satisfaction during standard usage.
- Initial Loading:
  - Requirement: The app's initial loading time should not exceed 5 seconds.
  - Rationale: Quick loading times during the app's launch contribute to a positive first impression and encourage user retention.
- Concurrent User Handling:
  - Requirement: Pet Connect must support many concurrent users without a degradation in performance.
  - Rationale: Scalability is crucial to accommodate a growing user base, ensuring a consistent experience even during peak usage periods.
- Real-time Interactions:
  - Requirement: Achieve a response time of 1 second for real-time interactions, such as updating feeds and receiving push notifications.
  - Rationale: Real-time interactions are vital for user engagement, especially in social and location-based features.
- Offline Functionality:
  - Requirement: Provide offline functionality for essential tasks, with a response time of 3 seconds for cached data access.
  - Rationale: Offline capabilities enhance user accessibility, allowing them to perform basic tasks even without an active internet connection.
- Location Accuracy:
  - Requirement: Ensure a location accuracy of within 5 meters for location-based services.
  - Rationale: Accurate location information is critical for users seeking nearby pet-related services and socializing with other pet owners.

- Push Notification Delivery:
  - Requirement: Maintain a push notification delivery success rate of at least 95%
  - Rationale: Timely delivery of push notifications is essential for keeping users informed about updates, messages, and reminders.
- Resource Utilization:
  - Requirement: Optimize resource utilization to ensure the app runs efficiently on devices with varying specifications, avoiding excessive battery consumption.
  - Rationale: Efficient resource usage contributes to a positive user experience across a diverse range of Android devices.

These performance requirements provide specific benchmarks for the Pet Connect app under different circumstances, guiding developers in making design choices that prioritize responsiveness, scalability, and usability in various usage scenarios.

### **2.9.2 Safety Requirements**

Pet Connect prioritizes user and pet safety throughout its design and usage. The safety requirements are outlined below:

- User Data Security:
  - Requirement: Pet Connect must implement robust security measures, including encryption and secure authentication, to safeguard user data from unauthorized access or data breaches.
  - Safeguard: Regular security audits and adherence to industry best practices will be implemented to protect user information.
- Emergency Help Center:
  - Requirement: The emergency help center feature must provide accurate and relevant information promptly during urgent situations.
  - Safeguard: Continuous verification of emergency resources and collaboration with certified organizations to ensure the availability and accuracy of information.

- User Privacy:
  - Requirement: Pet Connect must adhere to privacy regulations and policies, ensuring transparent data handling practices and obtaining user consent for data collection.
  - Safeguard: Regular privacy audits and compliance checks will be conducted to maintain adherence to external regulations.
- Vaccine Reminders:
  - Requirement: The vaccine and reminder feature must accurately notify users of upcoming pet healthcare needs to prevent oversights.
  - Safeguard: Implement double-confirmation mechanisms to ensure users acknowledge and confirm the accuracy of vaccine reminders.
- Socialization Safety:
  - Requirement: The socialization feature must provide secure communication channels to protect users and pets from potential harm.
  - Safeguard: Implement user verification processes and moderation mechanisms to ensure responsible and safe interactions within the community.
- Pet Playdates:
  - Requirement: The playdate feature should facilitate safe meet-ups, ensuring users are well-informed about each other's pets and taking necessary precautions.
  - Safeguard: Encourage users to share relevant information about their pets, promote public meeting spaces, and provide safety guidelines.
- Third-Party Service Validation:
  - Requirement: Pet Connect must validate and ensure the reliability of third-party services, such as location-based APIs and emergency resources.
  - Safeguard: Regular assessments and monitoring of third-party services to guarantee their continued reliability and adherence to safety standards.

- User Education:
  - Requirement: Pet Connect must include educational resources on responsible pet ownership and safety practices.
  - Safeguard: Regular updates to educational content and collaboration with veterinary professionals to provide accurate and current information.
- Compliance with Regulations:
  - Requirement: Pet Connect must comply with relevant safety regulations and policies governing pet-related apps.
  - Safeguard: Periodic reviews of regulations and continuous updates to the app to ensure compliance with changing safety standards.

### **2.9.3 Security Requirements**

Pet Connect gives importance to the security and privacy of user data and interactions. The security requirements are outlined below:

- User Authentication:
  - Requirement: Pet Connect must implement a secure user authentication system, requiring unique usernames and strong passwords.
  - Rationale: Protects user accounts from unauthorized access, ensuring only legitimate users can access and modify their data.
- Data Encryption:
  - Requirement: All sensitive data, including user credentials and personal information, must be encrypted during transmission and storage.
  - Rationale: Mitigates the risk of data interception and unauthorized access, safeguarding user privacy.
- Secure Communication Protocols:
  - Requirement: Pet Connect must utilize secure communication protocols (e.g., HTTPS) to protect data exchange between the app and external servers.

- Rationale: Ensures the confidentiality and integrity of data during transit, preventing potential eavesdropping or data tampering.
- Access Control:
  - Requirement: Implement access control mechanisms to restrict user access based on roles and permissions.
  - Rationale: Minimizes the risk of unauthorized actions within the app, ensuring users have appropriate access to features and data.
- Security Audits:
  - Requirement: Conduct regular security audits to identify and address potential vulnerabilities in the app's codebase and infrastructure.
  - Rationale: Proactive measures to enhance the overall security posture and responsiveness to emerging threats.
- Privacy Policies and Consent:
  - Requirement: Pet Connect must display clear privacy policies to users and obtain explicit consent for data collection and processing.
  - Rationale: Fosters transparency and compliance with privacy regulations, establishing trust with users.
- Incident Response Plan:
  - Requirement: Develop and maintain an incident response plan to address and mitigate security incidents promptly.
  - Rationale: Minimizes the impact of security breaches and ensures a swift and organized response to potential threats.
- User Data Deletion:
  - Requirement: Provide users with the ability to delete their accounts and associated data securely.
  - Rationale: Respects user privacy rights and allows users to control the retention of their personal information.

- Regulatory Compliance:
  - Requirement: Pet Connect must adhere to relevant data protection and privacy regulations governing pet-related applications.
  - Rationale: Ensures legal compliance and protection of user rights within the regulatory landscape.
- Security Certifications:
  - Requirement: Obtain and maintain security certifications (e.g., ISO 27001) to demonstrate a commitment to industry-recognized security standards.
  - Rationale: Enhances credibility and assures users of Pet Connect's adherence to rigorous security practices.

These security requirements establish a comprehensive framework to protect user data, ensure secure interactions, and maintain compliance with privacy regulations and industry standards. Regular audits, user education, and adherence to privacy policies contribute to a secure and trustworthy environment within Pet Connect.

#### **2.9.4 Software Quality Attributes**

Pet Connect aims to deliver a high-quality user experience, emphasizing specific, quantitative, and verifiable attributes that are important to both customers and developers

- Usability:
  - Attribute: The app should achieve a usability score of at least 85
  - Rationale: Prioritizing ease of use to ensure a positive and intuitive experience for pet owners.
- Reliability:
  - Attribute: Pet Connect must maintain a system uptime of 99.9
  - Rationale: Enhancing user trust by minimizing service disruptions and downtime.

- Performance Efficiency:
  - Attribute: Achieve an average app response time of 1.5 seconds for critical user interactions.
  - Rationale: Enhancing user engagement by providing a responsive and efficient experience.
- Maintainability:
  - Attribute: The app's codebase must adhere to a maintainability index of at least 80, as measured by static code analysis tools.
  - Rationale: Facilitating ease of future development and updates for developers.
- Security:
  - Attribute: The app should pass regular penetration tests with a score of at least 90
  - Rationale: Ensuring the app remains resilient to potential security threats and vulnerabilities.
- Interoperability:
  - Attribute: Pet Connect must demonstrate interoperability with the latest versions of Android and iOS operating systems.
  - Rationale: Ensuring compatibility with a diverse range of devices and platforms.
- Scalability:
  - Attribute: The app should handle a simulated load of 150,000 concurrent users without a degradation in performance.
  - Rationale: Ensuring the app's ability to scale with a growing user base.

- Adaptability:
  - Attribute: Pet Connect should adapt seamlessly to varying screen sizes and resolutions, achieving a consistent UI on different devices.
  - Rationale: Enhancing user experience across a diverse range of Android devices.
- Testability:
  - Attribute: Achieve a test coverage of 80%
  - Rationale: Facilitating efficient testing and validation processes during development and maintenance.
- Portability:
  - Attribute: Pet Connect should be portable across different mobile devices with minimal adjustments, ensuring a consistent user experience.
  - Rationale: Supporting a broad user base with various Android devices.

These software quality attributes establish clear and quantifiable goals, addressing both user expectations and development priorities. Regular assessments and measurements will be conducted to ensure Pet Connect consistently meets or exceeds these quality standards.

# **Chapter 3**

## **System Architecture and Design**

### **3.1 System Overview**

The Pet Connect app is crafted to elevate the pet ownership experience by consolidating all essential services into one user-friendly platform. It facilitates connections among pet owners, provides access to necessary pet services, fosters community engagement, and offers valuable resources for responsible pet care. This overview highlights the app's features and goals, alongside its detailed architecture, to effectively realize its objectives.

Connection Between Pet Enthusiasts:

- Users can find and interact with other pet owners within their locality, while building a supportive community where they can share experiences and seek advice.

Locating Nearby Pet Services:

- The app allows users to locate nearby pet shops, grooming centers, and veterinary hospitals, making it convenient to access essential services for their pets.

Blogs Authored by Pet Owners:

- Pet owners can read blogs authored by fellow enthusiasts, offering insights, experiences, and tips on pet care, contributing to knowledge sharing within the community as well as create their own blogs for the community to view them.

Centralized Hub for Pet Care Information:

- Pet Connect serves as a centralized hub for news and information on responsible pet care, providing users with relevant and up-to-date resources.

Finding Playmates for Pets:

- Users can also connect with playmates for their pets in their area, fostering socialization and companionship among both pets and owners, which is essential for their overall well-being.

Setting Vaccination and Other Reminders:

- The app includes a feature for setting vaccination and other reminders such as pet walking reminders, ensuring timely healthcare for pets and helping users stay organized with their pet care routines.

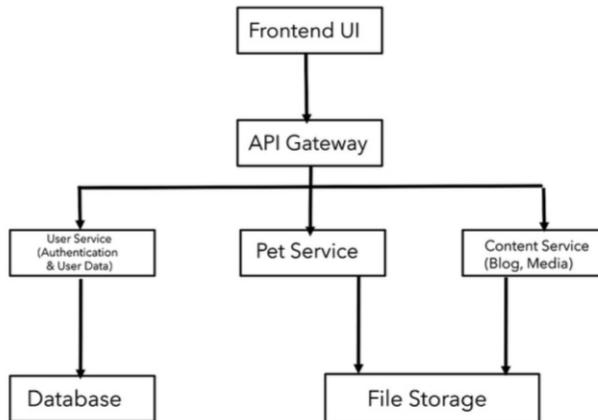


Figure 3.1: System Architecture Diagram

## 3.2 Architectural Design

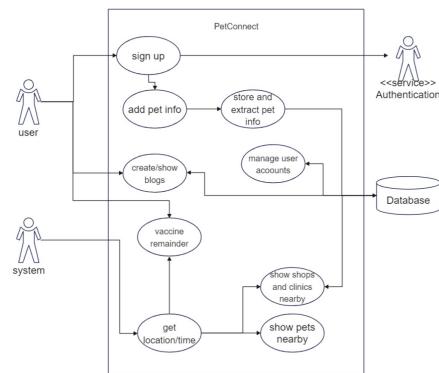


Figure 3.2: Use Case Diagram

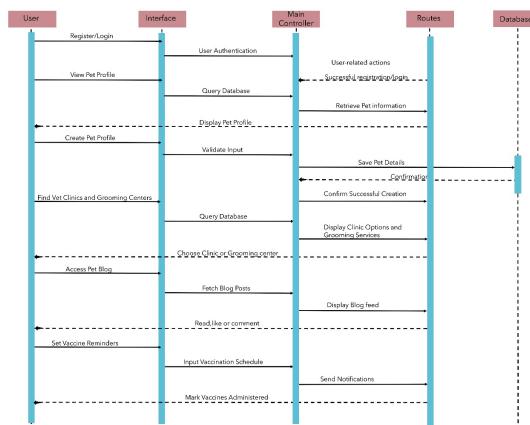


Figure 3.3: Sequence Diagram

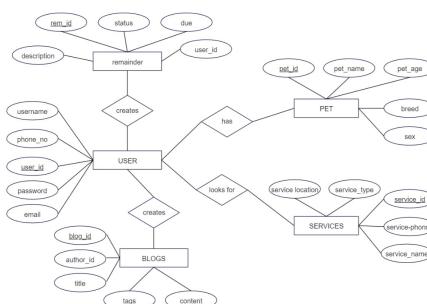


Figure 3.4: ER Diagram

### **3.3 Dataset identified**

The Pet Connect project makes use of various datasets related to pet ownership, pet services, pet care information, and user interactions. These datasets are sourced from reputable sources such as pet industry databases, public APIs, and user-generated content platforms. The properties of the data source include:

**Comprehensive Pet Data:** The dataset includes information about different types of pets, their breeds, characteristics, and care requirements. This data allows users to find relevant information about their specific pets and their needs.

**Pet Services Listings:** Information about pet shops, grooming centers, veterinary hospitals, and other pet-related services is included in the dataset. Users can easily locate nearby services and access essential resources for their pets.

**User-Generated Content:** The dataset contains user-generated content such as blogs, articles, and forums related to pet care, experiences, and tips. This content enriches the user experience by providing valuable insights and advice from fellow pet owners.

**Emergency Resources:** Essential resources for pet emergencies, including contact information for emergency veterinary services, pet hospitals, and helplines, are included in the dataset. This information ensures quick access to assistance in times of urgency.

**Geolocation Data:** Geolocation data is integrated into the dataset, allowing users to search for nearby pet services based on their location. This feature enhances the convenience and accessibility of the app.

Sample Subsets of the Dataset:

**Pet Breeds and Characteristics:** A subset of the dataset showcasing different pet breeds along with their characteristics, such as size, temperament, and exercise needs.

**Pet Services Listings:** A subset containing listings of nearby pet shops, grooming centers, and veterinary hospitals, including their contact information and services offered.

**User-Generated Blogs:** A sample subset of user-generated blogs and articles on various topics related to pet care, training, nutrition, and health.

**Emergency Resources:** A subset providing contact information for emergency veterinary services, pet hospitals, and helplines, categorized by location.

These sample subsets highlight the diversity and richness of the dataset used in the Pet Connect project, demonstrating its relevance and utility in providing valuable resources and information to pet owners within the app.

### 3.4 Proposed Methodology/Algorithms

The Methodologies and Algorithms used in Pet Connect app include:

#### 1. Geolocation Services:

Methodology: Pet Connect utilizes geolocation services to help users find nearby pet services such as shops, grooming centers, and hospitals. Algorithm: The Haversine formula is employed to calculate the distance between two geographical coordinates (latitude and longitude). This formula determines the shortest distance over the earth's surface, taking into account the curvature of the earth.

Algorithm :

```
function haversine(lat1, lon1, lat2, lon2)
const R = 6371; // Earth's radius in kilometers
const dLat = (lat2 - lat1) * Math.PI / 180;
const dLon = (lon2 - lon1) * Math.PI / 180;
const a =
Math.sin(dLat / 2) * Math.sin(dLat / 2) + Math.cos(lat1 * Math.PI / 180) * Math.cos(lat2
* Math.PI / 180) * Math.sin(dLon / 2) * Math.sin(dLon / 2);
const c = 2 * Math.atan2(Math.sqrt(a), Math.sqrt(1 - a));
const distance = R * c; // Distance in kilometers
return distance;
```

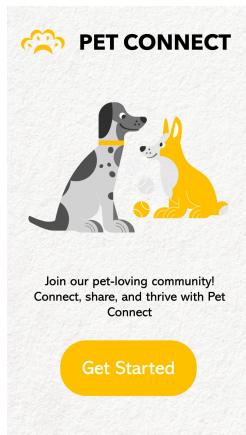
## 2. Reminders for vaccine

Methodology: Pet Connect includes a reminder system to alert users about upcoming vaccines and other health-related tasks for their pets.

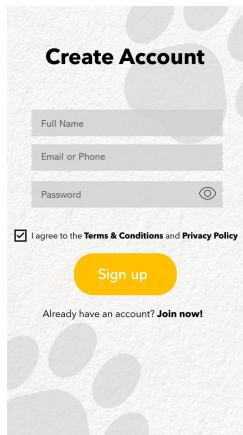
Algorithm: The scheduling algorithm schedules reminders based on the frequency of the event (e.g., annual vaccination), and the desired notification time. It sends notifications to users at the specified time intervals before the event.

```
function scheduleReminder(event, frequency, notificationTime)
// Calculate next occurrence based on frequency and current date
const nextOccurrence = calculateNextOccurrence(event, frequency);
// Schedule notification time based on user preference
const notificationDateTime = calculateNotificationTime(nextOccurrence, notificationTime);
// Set up system to send notification to user
sendNotification(notificationDateTime);
```

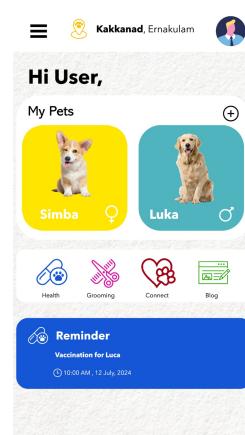
### 3.5 User Interface Design



Start page



Login Page



Main Page



Connect page

### 3.6 Database Design

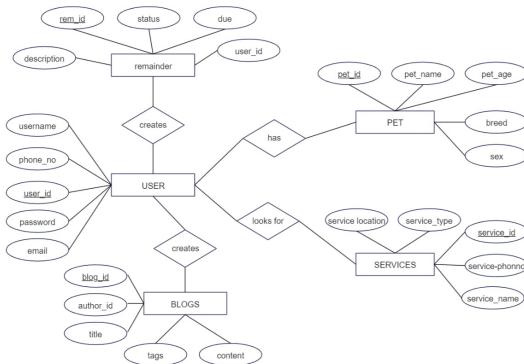


Figure 3.9: ER Diagram

### Database Schema

#### USERS table:

- user\_id
- username
- password
- phone\_no
- email

#### SERVICES table:

- service\_id
- service\_name
- service\_type
- service\_location
- service\_phone

**BLOGS table:**

- blog\_id
- author\_id (foreign key references USERS.user\_id)
- title
- tags
- content

**PETS table:**

- pet\_id
- user\_id (foreign key references USERS.user\_id)
- pet\_name
- pet\_age
- breed
- sex

**COMMENTS table:**

- comment\_id
- user\_id (foreign key references USERS.user\_id)
- blog\_id (foreign key references BLOGS.blog\_id)
- description
- due\_date
- status

### **3.7 Description of Implementation Strategies**

Implementation Strategies used in the Pet Connect App:

#### **3.7.1 User Authentication and Authorization:**

Strategy: Implement user authentication and authorization using JWT (JSON Web Tokens) for secure user login and access control.

Implementation: Used Python libraries like Flask-JWT-Extended or PyJWT to generate and verify JWT tokens. Utilize decorators or middleware to protect routes and enforce authentication and authorization rules.

#### **3.7.2 Pet Profile Management:**

Strategy: Enable users to create, update, and delete profiles for their pets, including adding medical records and uploading pictures.

Implementation: Implement CRUD (Create, Read, Update, Delete) operations for pet profiles in the API. Store pet pictures and medical records in the file storage system.

### **3.7.3 Geolocation Services:**

Strategy: Integrate geolocation services to provide users with nearby pet services based on their location.

Implementation: Utilize geolocation APIs like Google Maps API to perform location-based searches for pet shops, grooming centers, and hospitals.

## **3.8 Module Division**

The various modules used in the Pet Connect App are:

- User Management Module: This module handles user registration, login, profile management, and authentication-related functionalities.
- Pet Profile Module: Responsible for managing pet profiles, including creation, updating, and deletion of pet profiles, as well as storing pet-related information such as breed, age, and medical history.
- Service Locator Module: Deals with locating nearby pet services such as pet shops, grooming centers, and veterinary hospitals based on user's location.
- Content Management Module: Manages user-generated content such as blogs and articles related to pet care and experiences. It includes functionalities for creating, reading, updating, and deleting content.
- Emergency Help Module: Provides quick access to essential resources in times of pet emergencies, including contact information for emergency veterinary services and helplines.
- Reminder System Module: Implements a reminder system for users to set vaccine and other reminders for their pets' healthcare needs.
- Geolocation Integration Module: Integrates geolocation services to enable location-based searches for nearby pet services.
- Admin Panel Module: Provides administrators with tools to manage user accounts, monitor app usage metrics, moderate content, and perform administrative tasks.

Module Assignment:

User Management Module: Assigned to Goureeshankar

Pet Profile Module: Assigned to Goureeshankar

Service Locator Module: Assigned to Ashir

Content Management Module: Assigned to Joyal

Emergency Help Module: Assigned to Joyal

Reminder System Module: Assigned to Joel

Geolocation Integration Module: Assigned to Ashir

Admin Panel Module: Assigned to Joel

### 3.9 Work Schedule - Gantt Chart



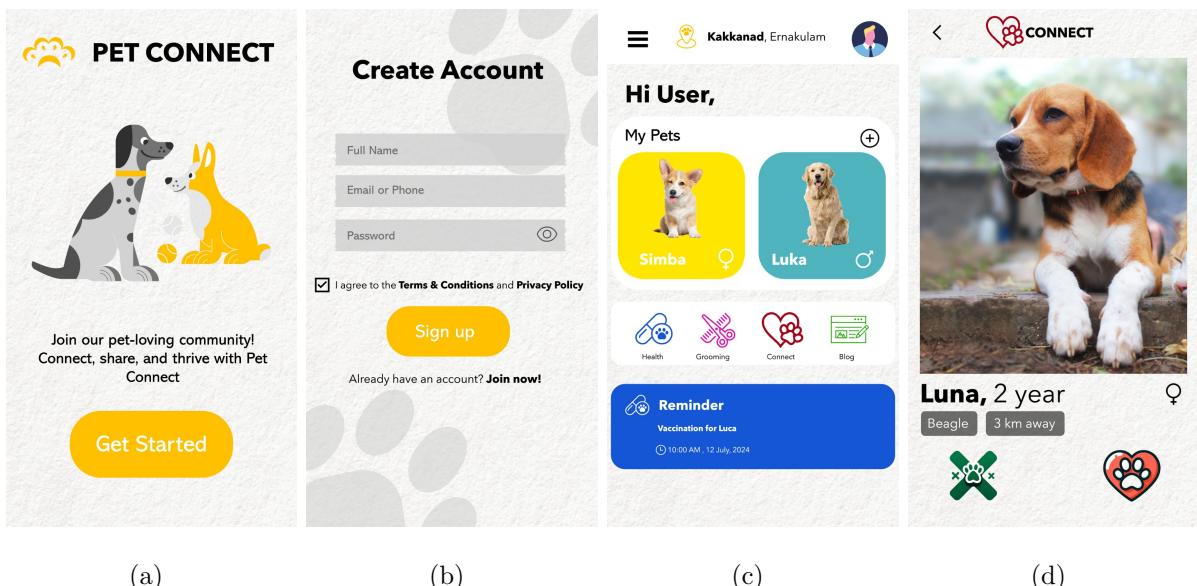
Figure 3.10: Gantt Chart

# Chapter 4

## Results and Discussions

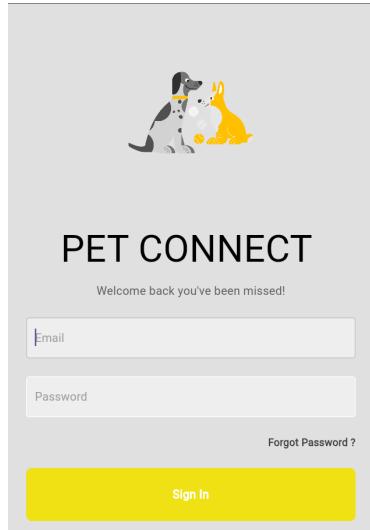
### 4.1 Overview

PetConnect has greatly enhanced the pet ownership experience by facilitating community engagement and knowledge sharing. Users can easily add multiple pets and manage their information in one place, streamlining the care process. The Pet Service Locator and healthcare management tools have helped users to boost convenience and improve overall pet health. The Emergency Help Center offers essential vet contacts and first aid guides, helping users stay prepared for emergencies. Additionally, socialization features have helped users to foster companionship among pets through organized playdates and meetups.

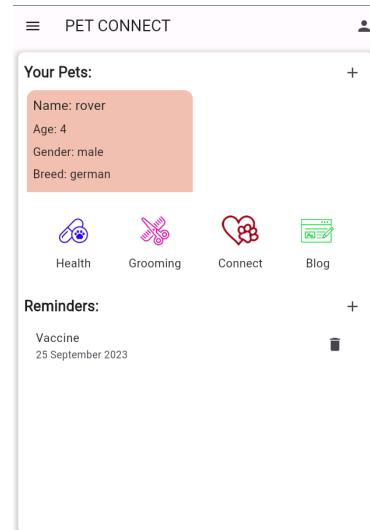


## 4.2 Testing

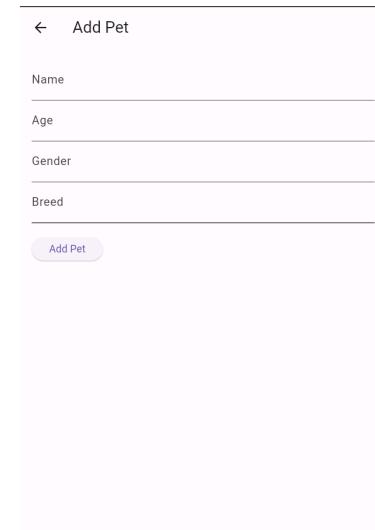
The following screenshots contain the results in chronological order:



Login Page



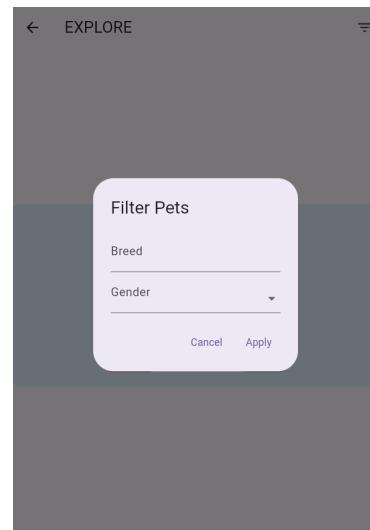
Main page



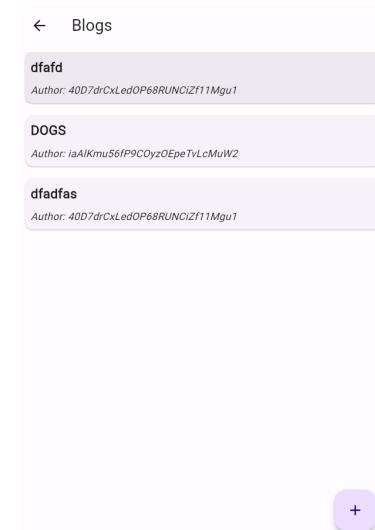
Add Pet Screen



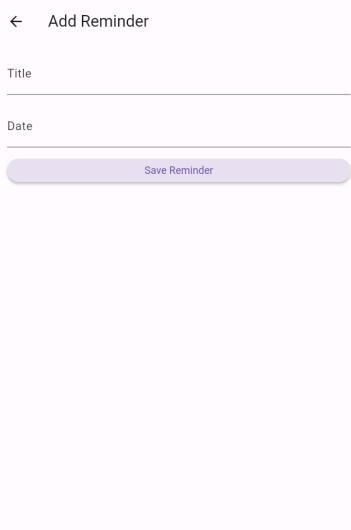
User Pet Information



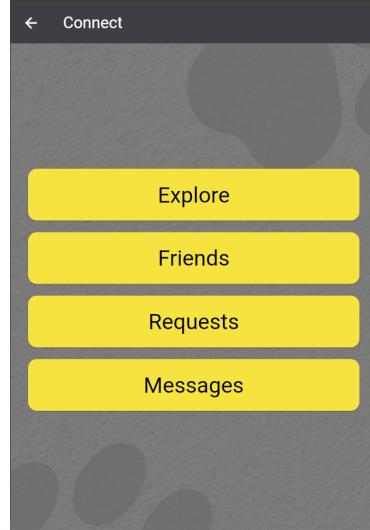
Filter Pets Screen



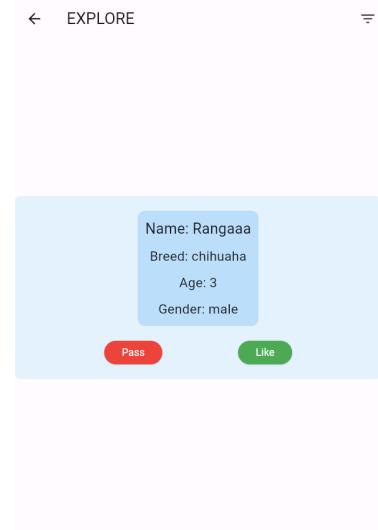
Blog Page



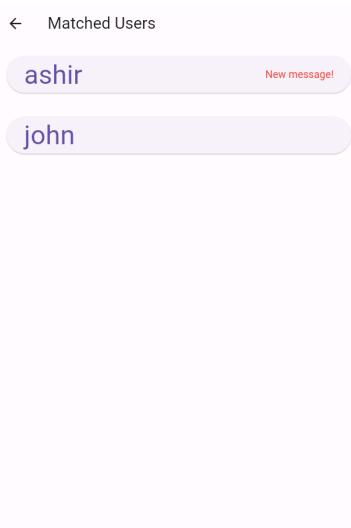
Add Reminder Screen



Connect Menu



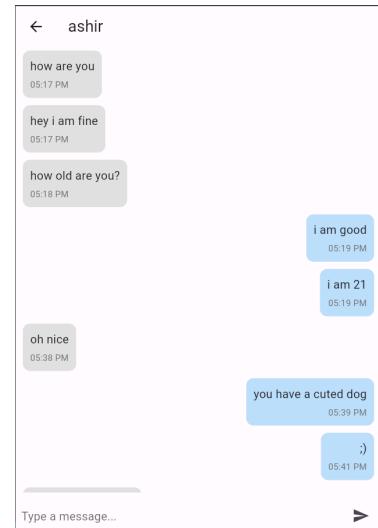
Explore Page



Friends Screen



Requests Screen



Messages Screen

### **4.3 Discussion**

- 1.High User Interaction - Users loved connecting with other pet owners, sharing tips, and getting advice, fulfilling a strong social need.
- 2.Easy Access to Services - The app made it simple to find nearby pet shops, vets, and groomers, making life more convenient for pet owners.
- 3.Valuable Pet Care Information - Users appreciated the blogs and articles on pet care, helping them take better care of their pets.
- 4.Better Pet Socialization - Organizing playdates and meetups helped pets make friends, which was important for their well-being.
- 5.Effective Emergency Help - The app provided quick access to emergency contacts and first aid tips, helping users handle pet emergencies better.
- 6.Improved Pet Healthcare - Features like vaccine reminders ensured pets received timely medical care, keeping them healthy.
- 7.Positive User Experience - A user-friendly design and regular updates made the app easy and enjoyable to use.

Pet Connect succeeded because it covered all the important aspects of pet ownership. It helped pet owners connect, find services, learn about pet care, socialize their pets, prepare for emergencies, and manage pet healthcare. The app's easy-to-use design and regular improvements kept users happy and engaged.

# **Chapter 5**

## **Conclusion**

### **5.1 Conclusion**

In summary, Pet Connect has truly excelled in serving the needs of pet owners. It facilitates connections with fellow pet enthusiasts, locates nearby pet services, offers valuable pet care insights, and even fosters socialization and play among pets. In times of urgency, it provides swift access to emergency contacts and advice, while also ensuring pets' health through timely reminders for vet visits and vaccinations. With its user-friendly design and commitment to regular updates, Pet Connect remains a trusted companion for anyone with a pet, keeping both owners and their furry friends happy and engaged.

### **5.2 Future Scope**

- 1.AI Chatbots - Adding AI chatbots to provide instant, personalized assistance for pet-related questions and advice.
- 2.Advanced Community Features - Enhancing community engagement with specialized forums, groups, and events for different pet breeds or interests.
- 3.Telemedicine Services - Integrating telemedicine for virtual vet consultations, allowing users to get professional advice from home.
- 4.Smart Device Integration - Connecting with smart pet devices like tracking collars and automated feeders for better monitoring and care.
- 5.Localized Recommendations - Offering personalized suggestions for pet services and products based on location and pet needs.

## References

- [1] Website Referred on 14-04-2024 - <https://stackoverflow.com/questions/73694776/how-to-setup-firebase-distribution-in-a-flutter-app>
- [2] Website Referred on 14-04-2024 - <https://codingwitht.com/flutter-login-app>
- [3] Website Referred on 14-04-2024 - <https://www.freepik.com/icons/>
- [4] Website Referred on 14-04-2024 - <https://designer.microsoft.com/design>
- [5] Website Referred on 14-04-2024 - <https://bootcamp.uxdesign.cc/decoding-ui-ux-quick-comparison-of-tinder-and-bumble-9a3cb2b76f28>
- [6] Website Referred on 14-04-2024 - <https://console.cloud.google.com/apis/dashboard?organizationId=423212-a0pli=1>

## **Appendix A: Presentation**

# PetConnect

## DESIGN PRESENTATION

GOUREESHANKAR SHOYSON

JOEL JOHN JESTIN

JOYAL MOZHOOR JOJI

MUHAMMED ASHIR K

GUIDE: MS. ANITA JOHN





## CONTENTS

- Introduction
- Problem Definition
- Objectives
- Scope and Relevance
- System Design
- Datasets (if any)
- Work Division – Gantt Chart
- Software/Hardware Requirements
- Results
- Conclusion
- Future Enhancements
- References

# INTRODUCTION

- Revolutionizes pet ownership by fostering community, convenience, and knowledge-sharing
- Seamlessly connects with local pet enthusiasts
- Provides access to essential services and information via blogs and news
- Offers emergency assistance, socialization opportunities, and healthcare management
- Simplifies the pet ownership journey with a user-friendly interface
- Regularly updated to enhance the user experience



# PROBLEM DEFINITION

**To design, develop, and implement a comprehensive platform for pet owners, streamlining the pet ownership journey through community, convenience, and knowledge-sharing**





## OBJECTIVES



- Conduct research on pet owner needs and preferences.
- Design and prototype Pet Connect's interface and features.
- Develop and test Pet Connect's community, convenience, and knowledge-sharing functionalities.
- Launch and market Pet Connect to attract pet owners and foster engagement.

# Scope and Relevance

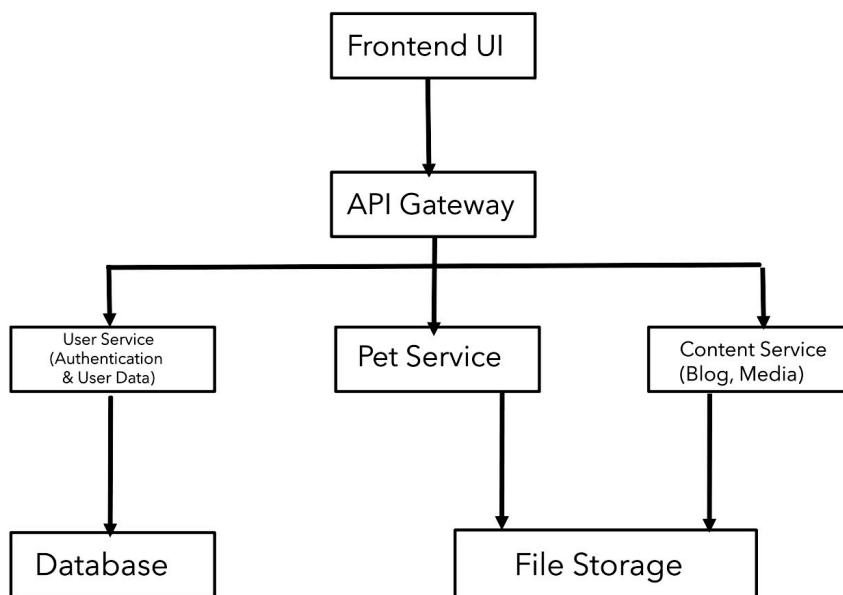
## Scope

- Connection and Engagement: Users connect, share experiences, and discuss pet care tips.
- Pet Service Locator: Easily find nearby pet shops, grooming centers, and hospitals.
- Knowledge Sharing: Access blogs and curated content for responsible pet care.
- Pet Socialization: Arrange playdates and meetups for pets to foster companionship.
- Emergency Help Center: Access vet contacts and first aid guides for swift pet care.
- Healthcare Management: Receive vaccine reminders and healthcare alerts.

## RELEVANCE

- The platform allows pet owners to connect, share experiences, and seek advice, fostering a supportive community.
- Pet Connect simplifies the process of locating pet services, making it easier for users to access essential resources.
- Users can access curated content and blogs on responsible pet care, promoting awareness and sharing valuable insights.
- Pet Connect's Emergency Help Center equips users with essential information and contacts for handling pet emergencies effectively.

# SYSTEM DESIGN

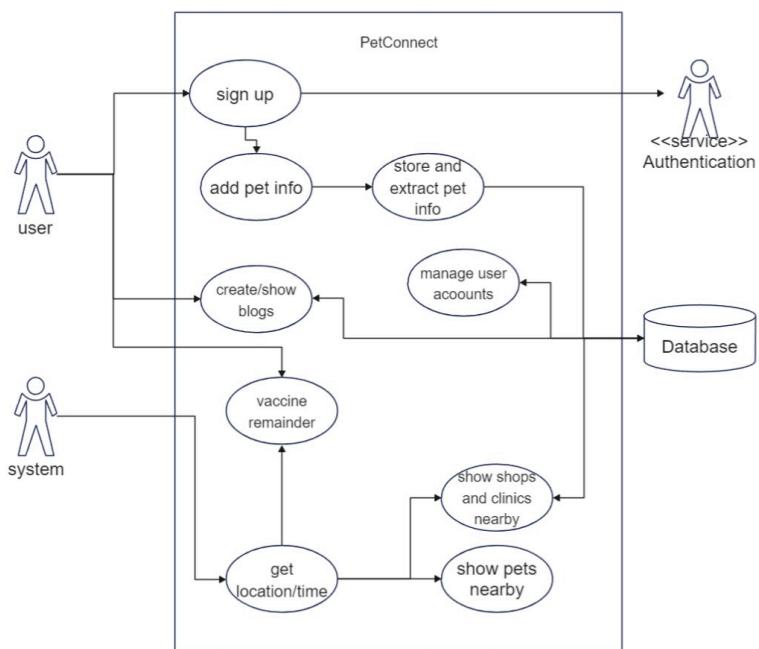


**ARCHITECTURAL  
DESIGN**

# SYSTEM DESIGN



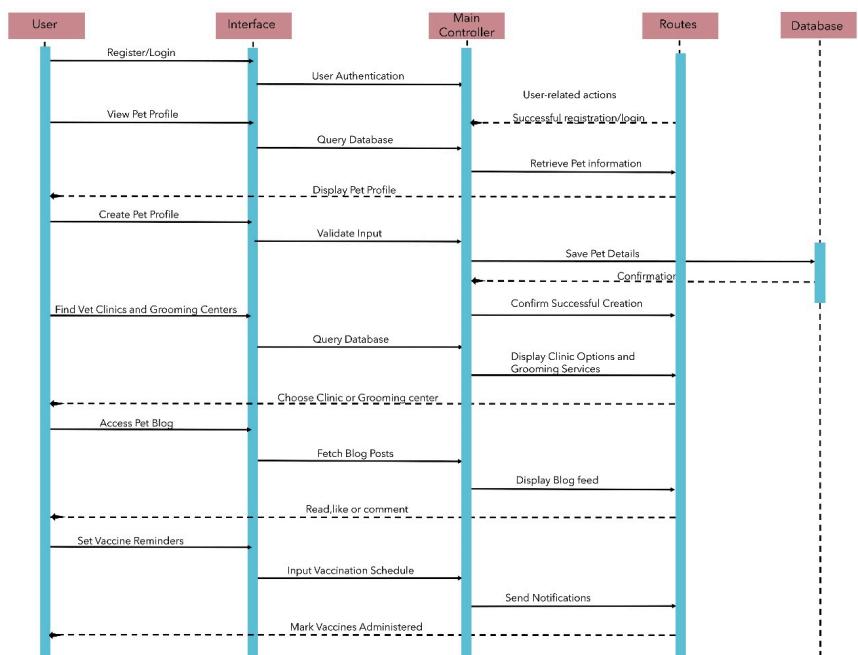
**USE CASE  
DIAGRAM**



# SYSTEM DESIGN



## SEQUENCE DIAGRAM



# DATASETS



The Pet Connect app utilizes diverse datasets sourced from reputable sources to provide comprehensive pet-related information and services:

- **Pet Data:** Covers various pet types, breeds, and care needs, aiding users in understanding and meeting their pets' requirements.
- **Service Listings:** Includes pet shops, grooming centers, and veterinary hospitals, ensuring easy access to essential services.
- **User-Generated Content:** Incorporates blogs, articles, and forums on pet care, offering insights and advice from the community.
- **Emergency Resources:** Provides contact details for emergency veterinary services and helplines, ensuring quick assistance during urgent situations.
- **Geolocation Integration:** Enables users to find nearby services based on their location, enhancing convenience.

# UI DESIGN



## PET CONNECT



Join our pet-loving community!  
Connect, share, and thrive with Pet Connect

**Get Started**

### Create Account

Full Name

Email or Phone

Password

I agree to the [Terms & Conditions](#) and [Privacy Policy](#)

**Sign up**

Already have an account? [Join now!](#)



Kakkanad, Ernakulam

**Hi User,**

**My Pets**



Simba ♀



Luka ♂

 Health

 Grooming

 Connect

 Blog

 **Reminder**

Vaccination for Luca

⌚ 10:00 AM, 12 July, 2024



**Luna, 2 year**

Beagle 3 km away

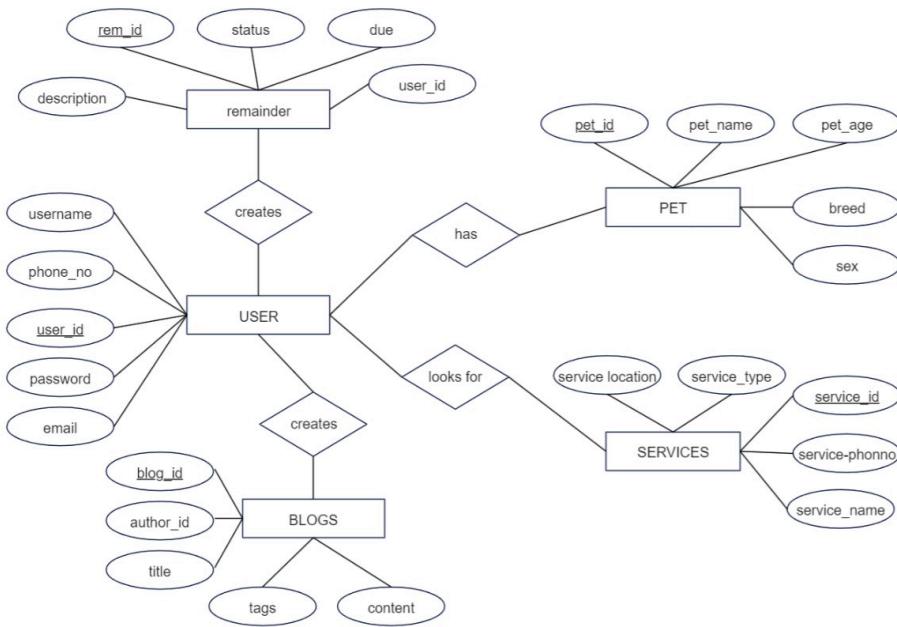




# DATABASE DESIGN



**ER DIAGRAM**



# WORK DIVISION



Gantt Chart



**GANTT  
CHART**

# HARDWARE REQUIREMENTS



## Android Device Compatibility:

- Requires minimum Android OS version Android 8.0 (Oreo)
- Processor : minimum octa-core processors with 2.0 GHz or above
- RAM : minimum 3GB or more

## Interactions:

- Utilizes device hardware such as GPS, internet connectivity, and sensors (accelerometer, gyroscope).

## Communication Protocols:

- Uses standard internet protocols (HTTP/HTTPS) and GPS protocols.
- Implements secure data transmission for user authentication and information exchange.

# SOFTWARE REQUIREMENTS



- **Operating System:** Android OS (version 8.0 and above).
- **Flutter Framework:**
- **Database Management System:** SQLite
- **Location Services API:** Google Maps API
- **Third-Party Services:** Third-party APIs for emergency resources, social media authentication, and content delivery
- **Notification Service:** Firebase Cloud Messaging (FCM)
- **Secure Authentication:** OAuth 2.0
- **HTTP/HTTPS Communication:** Standard HTTP/HTTPS protocols.
- **User Interface Libraries:** Flutter UI libraries

# Results

The image displays five screenshots of the Pet Connect mobile application interface, arranged horizontally against an orange background.

- Splash Screen:** Shows the Pet Connect logo with two dogs, a welcome message, and a "Get Started" button.
- Sign up page:** A form for entering Full Name, Email, and Password, with a "Sign Up" button and a "Login" link.
- Home page:** Displays a grid of four pets: Max (Husky), Luka (Golden Retriever), Rover (German Shepherd), and Bella (Doberman). It includes sections for Health, Grooming, Connect, and Bio, and a Reminders section with a vaccine reminder.
- Add pet Screen:** A form for adding a new pet with fields for Pet Name, Age, Gender (Male), Breed (Labrador Retriever), and a "Add Pet" button.
- Connect page:** A profile for a dog named Lucy, showing details like Age (♀), Breed (German Shepherd), and Distance (7.8 km). It features three decorative icons at the bottom.

# CONCLUSION

- Pet Connect enhances the pet ownership experience through facilitating connection, convenience, and knowledge-sharing.
- It facilitates access to essential pet care services such as shops, grooming centers, and hospitals within close proximity.
- The platform cultivates a supportive community wherein pet owners can connect, acquire knowledge, and provide mutual support.



# Future Enhancements

**Integration of AI Chatbots:** Implementing AI-powered chatbots to provide instant assistance and guidance on pet-related queries, offering a more personalized user experience.

**Telemedicine Services:** Integrating telemedicine services for virtual consultations with veterinarians, allowing users to seek professional advice and guidance from the comfort of their homes.

## REFERENCES



1. <https://stackoverflow.com/questions/73694776/how-to-setup-firebase-distribution-in-a-flutter-app>
2. <https://codingwitht.com/flutter-login-app>
3. <https://www.freepik.com/icons/>
4. <https://designer.microsoft.com/design>
5. <https://bootcamp.uxdesign.cc/decoding-ui-ux-quick-comparison-of-tinder-and-bumble-9a3cb2b76f28>
6. <https://console.cloud.google.com/apis/dashboard?organizationId=0&project=vaulted-bus-423212-a0>

# **THANK YOU !**



## **Appendix B: Vision, Mission, Programme Outcomes and Course Outcomes**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY  
(AUTONOMOUS)**

**RAJAGIRI VALLEY, KAKKANAD, KOCHI, 682039**

**(Affiliated to APJ Abdul Kalam Technological University)**



**Vision, Mission, Programme Outcomes and Course  
Outcomes**

**Institute Vision**

To evolve into a premier technological institution, moulding eminent professionals with creative minds, innovative ideas and sound practical skill, and to shape a future where technology works for the enrichment of mankind.

**Institute Mission**

To impart state-of-the-art knowledge to individuals in various technological disciplines and to inculcate in them a high degree of social consciousness and human values, thereby enabling them to face the challenges of life with courage and conviction.

**Department Vision**

To become a centre of excellence in Computer Science and Engineering, moulding professionals catering to the research and professional needs of national and international organizations.

## **Department Mission**

To inspire and nurture students, with up-to-date knowledge in Computer Science and Engineering, ethics, team spirit, leadership abilities, innovation and creativity to come out with solutions meeting societal needs.

## **Programme Outcomes (PO)**

Engineering Graduates will be able to:

- 1. Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and re-

sponsibilities and norms of the engineering practice.

**9. Individual and Team work:** Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.

**10. Communication:** Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.

**11. Project management and finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments.

**12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

### **Programme Specific Outcomes (PSO)**

A graduate of the Computer Science and Engineering Program will demonstrate:

#### **PSO1: Computer Science Specific Skills**

The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas by understanding the core principles and concepts of computer science and thereby engage in national grand challenges.

#### **PSO2: Programming and Software Development Skills**

The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry.

#### **PSO3: Professional Skills**

The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

### **Course Outcomes**

After the completion of the course the student will be able to:

**CO1:**

Identify technically and economically feasible problems (Cognitive Knowledge Level: Apply)

**CO2:**

Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes (Cognitive Knowledge Level: Apply)

**CO3:**

Perform requirement analysis, identify design methodologies and develop adaptable and reusable solutions of minimal complexity by using modern tools and advanced programming techniques (Cognitive Knowledge Level: Apply)

**CO4:**

Prepare technical report and deliver presentation (Cognitive Knowledge Level: Apply)

**CO5:**

Apply engineering and management principles to achieve the goal of the project (Cognitive Knowledge Level: Apply)

## **Appendix C: CO-PO-PSO Mapping**

## COURSE OUTCOMES:

After completion of the course the student will be able to

| <b>SL.<br/>NO</b> | <b>DESCRIPTION</b>  | <b>Blooms'<br/>Taxonomy<br/>Level</b> |
|-------------------|---|---------------------------------------|
| CO1               | Identify technically and economically feasible problems (Cognitive Knowledge Level: Apply)  | Level 3:<br>Apply                     |
| CO2               | Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes (Cognitive Knowledge Level: Apply)  | Level 3:<br>Apply                     |
| CO3               | Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions of minimal complexity by using modern tools & advanced programming techniques (Cognitive Knowledge Level: Apply) | Level 3:<br>Apply                     |
| CO4               | Prepare technical report and deliver presentation (Cognitive Knowledge Level:<br>Apply)   | Level 3:<br>Apply                     |
| CO5               | Apply engineering and management principles to achieve the goal of the project<br>(Cognitive Knowledge Level: Apply)  | Level 3:<br>Apply                     |

## CO-PO AND CO-PSO MAPPING

|         | PO<br>1 | PO<br>2 | PO<br>3 | PO<br>4 | PO<br>5 | PO<br>6 | PO<br>7 | PO<br>8 | PO<br>9 | PO<br>10 | PO<br>11 | PO<br>12 | PSO<br>1 | PSO<br>2 | PS<br>O3 |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|
| C<br>O1 | 3       | 3       | 3       | 3       |         | 2       | 2       | 3       | 2       | 2        | 2        | 3        | 2        | 2        | 2        |
| C<br>O2 | 3       | 3       | 3       | 3       | 3       | 2       |         | 3       | 2       | 3        | 2        | 3        | 2        | 2        | 2        |
| C<br>O3 | 3       | 3       | 3       | 3       | 3       | 2       | 2       | 3       | 2       | 2        | 2        | 3        |          |          | 2        |
| C<br>O4 | 2       | 3       | 2       | 2       | 2       |         |         | 3       | 3       | 3        | 2        | 3        | 2        | 2        | 2        |
| C<br>O5 | 3       | 3       | 3       | 2       | 2       | 2       | 2       | 3       | 2       |          | 2        | 3        | 2        | 2        | 2        |

3/2/1: high/medium/low

## JUSTIFICATIONS FOR CO-PO MAPPING

| MAPPING                  | LOW/<br>MEDIUM/<br>HIGH | JUSTIFICATION   |
|--------------------------|-------------------------|---|
| 101003/CS6<br>22T.1-PO1  | <b>HIGH</b>             | Identify technically and economically feasible problems by applying the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| 101003/CS6<br>22T.1-PO2  | <b>HIGH</b>             | Identify technically and economically feasible problems by analysing complex engineering problems reaching substantiated conclusions using first principles of mathematics.   |
| 101003/CS6<br>22T.1-PO3  | <b>HIGH</b>             | Design solutions for complex engineering problems by identifying technically and economically feasible problems.  |
| 101003/CS6<br>22T.1-PO4  | <b>HIGH</b>             | Identify technically and economically feasible problems by analysis and interpretation of data.   |
| 101003/CS6<br>22T.1-PO6  | <b>MEDIUM</b>           | Responsibilities relevant to the professional engineering practice by identifying the problem.  |
| 101003/CS6<br>22T.1-PO7  | <b>MEDIUM</b>           | Identify technically and economically feasible problems by understanding the impact of the professional engineering solutions.  |
| 101003/CS6<br>22T.1-PO8  | <b>HIGH</b>             | Apply ethical principles and commit to professional ethics to identify technically and economically feasible problems.  |
| 101003/CS6<br>22T.1-PO9  | <b>MEDIUM</b>           | Identify technically and economically feasible problems by working as a team.   |
| 101003/CS6<br>22T.1-PO10 | <b>MEDIUM</b>           | Communicate effectively with the engineering community by identifying technically and economically feasible problems.   |
| 101003/CS6<br>22T.1-P011 | <b>MEDIUM</b>           | Demonstrate knowledge and understanding of engineering and management principles by selecting the technically and economically feasible problems.   |
| 101003/CS6<br>22T.1-PO12 | <b>HIGH</b>             | Identify technically and economically feasible problems for long term learning.   |
| 101003/CS6<br>22T.1-PSO1 | <b>MEDIUM</b>           | Ability to identify, analyze and design solutions to identify technically and economically feasible problems.   |
| 101003/CS6<br>22T.1-PSO2 | <b>MEDIUM</b>           | By designing algorithms and applying standard practices in software project development and Identifying technically and economically feasible problems.   |
| 101003/CS6<br>22T.1-PSO3 | <b>MEDIUM</b>           | Fundamentals of computer science in competitive research can be applied to Identify technically and economically feasible problems.   |
| 101003/CS6<br>22T.2-PO1  | <b>HIGH</b>             | Identify and survey the relevant by applying the knowledge of mathematics, science, engineering fundamentals.   |

|                          |               |  |
|--------------------------|---------------|--|
| 101003/CS6<br>22T.2-PO2  | <b>HIGH</b>   | Identify, formulate, review research literature, and analyze complex engineering problems get familiarized with software development processes.  |
| 101003/CS6<br>22T.2-PO3  | <b>HIGH</b>   | Design solutions for complex engineering problems and design based on the relevant literature.   |
| 101003/CS6<br>22T.2-PO4  | <b>HIGH</b>   | Use research-based knowledge including design of experiments based on relevant literature.   |
| 101003/CS6<br>22T.2-PO5  | <b>HIGH</b>   | Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes by using modern tools.                                 |
| 101003/CS6<br>22T.2-PO6  | <b>MEDIUM</b> | Create, select, and apply appropriate techniques, resources, by identifying and surveying the relevant literature.   |
| 101003/CS6<br>22T.2-PO8  | <b>HIGH</b>   | Apply ethical principles and commit to professional ethics based on the relevant literature.   |
| 101003/CS6<br>22T.2-PO9  | <b>MEDIUM</b> | Identify and survey the relevant literature as a team.   |
| 101003/CS6<br>22T.2-PO10 | <b>HIGH</b>   | Identify and survey the relevant literature for a good communication to the engineering fraternity.  |
| 101003/CS6<br>22T.2-PO11 | <b>MEDIUM</b> | Identify and survey the relevant literature to demonstrate knowledge and understanding of engineering and management principles.   |
| 101003/CS6<br>22T.2-PO12 | <b>HIGH</b>   | Identify and survey the relevant literature for independent and lifelong learning.   |
| 101003/CS6<br>22T.2-PSO1 | <b>MEDIUM</b> | Design solutions for complex engineering problems by Identifying and survey the relevant literature.   |
| 101003/CS6<br>22T.2-PSO2 | <b>MEDIUM</b> | Identify and survey the relevant literature for acquiring programming efficiency by designing algorithms and applying standard practices.  |
| 101003/CS6<br>22T.2-PSO3 | <b>MEDIUM</b> | Identify and survey the relevant literature to apply the fundamentals of computer science in competitive research.   |
| 101003/CS6<br>22T.3-PO1  | <b>HIGH</b>   | Perform requirement analysis, identify design methodologies by using modern tools & advanced programming techniques and by applying the knowledge of mathematics, science, engineering fundamentals. |
| 101003/CS6<br>22T.3-PO2  | <b>HIGH</b>   | Identify, formulate, review research literature for requirement analysis, identify design methodologies and develop adaptable & reusable solutions.  |

|                          |               |  |
|--------------------------|---------------|--|
| 101003/CS6<br>22T.3-PO3  | <b>HIGH</b>   | Design solutions for complex engineering problems and perform requirement analysis, identify design methodologies.   |
| 101003/CS6<br>22T.3-PO4  | <b>HIGH</b>   | Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.  |
| 101003/CS6<br>22T.3-PO5  | <b>HIGH</b>   | Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools.  |
| 101003/CS6<br>22T.3-PO6  | <b>MEDIUM</b> | Perform requirement analysis, identify design methodologies and assess societal, health, safety, legal, and cultural issues.   |
| 101003/CS6<br>22T.3-PO7  | <b>MEDIUM</b> | Understand the impact of the professional engineering solutions in societal and environmental contexts and Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions.                                 |
| 101003/CS6<br>22T.3-PO8  | <b>HIGH</b>   | Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions by applying ethical principles and commit to professional ethics.   |
| 101003/CS6<br>22T.3-PO9  | <b>MEDIUM</b> | Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.  |
| 101003/CS6<br>22T.3-PO10 | <b>MEDIUM</b> | Communicate effectively with the engineering community and with society at large to perform requirement analysis, identify design methodologies.   |
| 101003/CS6<br>22T.3-PO11 | <b>MEDIUM</b> | Demonstrate knowledge and understanding of engineering requirement analysis by identifying design methodologies.   |
| 101003/CS6<br>22T.3-PO12 | <b>HIGH</b>   | Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change by analysis, identify design methodologies and develop adaptable & reusable solutions. |
| 101003/CS6<br>22T.3-PSO3 | <b>MEDIUM</b> | The ability to apply the fundamentals of computer science in competitive research and prior to that perform requirement analysis, identify design methodologies.   |
| 101003/CS6<br>22T.4-PO1  | <b>MEDIUM</b> | Prepare technical report and deliver presentation by applying the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.                                  |
| 101003/CS6<br>22T.4-PO2  | <b>HIGH</b>   | Identify, formulate, review research literature, and analyze complex engineering problems by preparing technical report and deliver presentation.  |

|                          |               |   |
|--------------------------|---------------|---|
| 101003/CS6<br>22T.4-PO3  | <b>MEDIUM</b> | Prepare Design solutions for complex engineering problems and create technical report and deliver presentation.   |
| 101003/CS6<br>22T.4-PO4  | <b>MEDIUM</b> | Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions and prepare technical report and deliver presentation. |
| 101003/CS6<br>22T.4-PO5  | <b>MEDIUM</b> | Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools and Prepare technical report and deliver presentation.   |
| 101003/CS6<br>22T.4-PO8  | <b>HIGH</b>   | Prepare technical report and deliver presentation by applying ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.  |
| 101003/CS6<br>22T.4-PO9  | <b>HIGH</b>   | Prepare technical report and deliver presentation effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.  |
| 101003/CS6<br>22T.4-PO10 | <b>HIGH</b>   | Communicate effectively with the engineering community and with society at large by prepare technical report and deliver presentation.  |
| 101003/CS6<br>22T.4-PO11 | <b>MEDIUM</b> | Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work by prepare technical report and deliver presentation.  |
| 101003/CS6<br>22T.4-PO12 | <b>HIGH</b>   | Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change by prepare technical report and deliver presentation.       |
| 101003/CS6<br>22T.4-PSO1 | <b>MEDIUM</b> | Prepare a technical report and deliver presentation to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas.  |
| 101003/CS6<br>22T.4-PSO2 | <b>MEDIUM</b> | To acquire programming efficiency by designing algorithms and applying standard practices in software project development and to prepare technical report and deliver presentation.                                     |
| 101003/CS6<br>22T.4-PSO3 | <b>MEDIUM</b> | To apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs by preparing technical report and deliver presentation.                             |
| 101003/CS6<br>22T.5-PO1  | <b>HIGH</b>   | Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.   |
| 101003/CS6<br>22T.5-PO2  | <b>HIGH</b>   | Identify, formulate, review research literature, and analyze complex engineering problems by applying engineering and management principles to achieve the goal of the project.   |

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| 101003/CS6<br>22T.5-PO3  | <b>HIGH</b>   | Apply engineering and management principles to achieve the goal of the project and to design solutions for complex engineering problems and design system components or processes that meet the specified needs.   |
| 101003/CS6<br>22T.5-PO4  | <b>MEDIUM</b> | Apply engineering and management principles to achieve the goal of the project and use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.   |
| 101003/CS6<br>22T.5-PO5  | <b>MEDIUM</b> | Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools and to apply engineering and management principles to achieve the goal of the project.  |
| 101003/CS6<br>22T.5-PO6  | <b>MEDIUM</b> | Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities by applying engineering and management principles to achieve the goal of the project.  |
| 101003/CS6<br>22T.5-PO7  | <b>MEDIUM</b> | Understand the impact of the professional engineering solutions in societal and environmental contexts, and apply engineering and management principles to achieve the goal of the project.  |
| 101003/CS6<br>22T.5-PO8  | <b>HIGH</b>   | Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice and to use the engineering and management principles to achieve the goal of the project.   |
| 101003/CS6<br>22T.5-PO9  | <b>MEDIUM</b> | Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings and to apply engineering and management principles to achieve the goal of the project.  |
| 101003/CS6<br>22T.5-PO11 | <b>MEDIUM</b> | Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments and to apply engineering and management principles to achieve the goal of the project. |
| 101003/CS6<br>22T.5-PO12 | <b>HIGH</b>   | Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change and to apply engineering and management principles to achieve the goal of the project.   |
| 101003/CS6<br>22T.5-PSO1 | <b>MEDIUM</b> | The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas. Apply engineering and management principles to achieve the goal of the project.   |

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| 101003/CS6<br>22T.5-PSO2 | <b>MEDIUM</b> | The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry and to apply engineering and management principles to achieve the goal of the project. |
| 101003/CS6<br>22T.5-PSO3 | <b>MEDIUM</b> | The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur and apply engineering and management principles to achieve the goal of the project.        |

