**Tailwag Dog Grooming Application - Final Report**

**1) Introduction**

Tailwag is a mobile application designed to simplify the process of booking grooming appointments for dog owners. The app provides a seamless experience for managing grooming services, keeping track of past and upcoming appointments, and offering AI-driven health insights for pets. The goal of this application is to provide a user-friendly, efficient solution for dog owners to maintain their pets' grooming schedules and overall health.

**2) Context**

* **Opportunity**: The pet care industry is growing rapidly, and Tailwag capitalizes on this by offering digital solutions like appointment booking, pet health tracking, and grooming services.
* **Industry**: Pet care and grooming services, leveraging mobile technology and AI for improved pet management.
* **Learning Expectations**: Gained experience in mobile app development, real-time booking systems, and AI integration for pet health analysis..

**3) Methodology**

Tailwag was developed using **Agile methodology**, with an iterative approach to development and regular user feedback. The project moved through the following phases:

1. **Requirement gathering**: Collected user and stakeholder needs.
2. **Design and prototyping**: Developed wireframes and interactive prototypes.
3. **Development**: Built the app using Swift for iOS.
4. **Testing**: Ensured usability, reliability, and bug fixes.

**4) Requirements Collection**

**End Users:**  
Dog owners looking for a convenient way to manage grooming appointments and track their pets' health.

* **End Users**: Dog owners looking for an easy way to book and track grooming appointments and monitor their pets' health.
* **Client Needs**: Real-time appointment booking, pet health analysis, and appointment history tracking.
* **User Needs**: Simple, easy-to-use booking interface, real-time updates on appointments, and personalized health advice..

**5) Suggested Solution**

**Architecture:**  
Tailwag follows a **client-server** architecture:

* **Mobile app UI**: User interacts with the app.
* **AI health analysis**: AI processes pet data for health insights.
* **SQLite database**: Stores pet and appointment data locally.
* **Location services**: Finds nearby grooming centers.

**Design**: The design includes wireframes that ensure smooth user navigation. The app’s layout includes a simple home page, services page, and booking page..

**6) Tools and Software Used**

* **Databases, Browsers, and Technologies Used**  
  • **SQLite**: For local data storage of pet information.  
  • **MapKit**: For location-based services, such as finding nearby grooming centers.  
  • **OpenAI**: Powers the AI analysis and health insights feature.  
  • **Swift**: The main programming language used for iOS app development.  
  • **Segue**: Used for navigation between screens within the app.  
  • **Pixabay**: Images of cheerful dogs were sourced from Pixabay.

**7) Projects / Tasks**

**1. Appointment Booking System**

**Description**:  
This core feature allows users to schedule grooming sessions for their pets. The appointment booking system is designed to be intuitive and easy to use, with fields for selecting the service type, date, time, pet details, and grooming location.

**Key Features**:

* Users can choose grooming services (e.g., brushing, fur trim, mouth cleaning).
* A **date picker** allows users to select a specific date and time for the appointment.
* The system provides **real-time availability** updates, ensuring users can only choose time slots that are free.
* Integration with **SQLite database** stores appointment details.
* A UI picker allows you to choose a specific field.

**Technologies Used**:

* **Swift (NS)**: The primary programming language used to develop the app on iOS.
* **SQLite Database**: For storing and retrieving appointments and pet details locally.
* **UIKit**: For building the interactive user interface, especially the date picker,UI picker, input fields, and buttons.

**2. Appointment History Tracker**

**Description**:  
This feature enables users to view their past and upcoming grooming appointments. Users can also reschedule or cancel any future appointments directly from this section.

**Key Features**:

* Displays a chronological list of previous and upcoming appointments.
* Users can track appointments with a simple tap.

**Technologies Used**:

* **SQLite Database**: For storing and managing historical appointment data locally.
* **Swift (NS)**: For implementing the functionality and logic to retrieve appointment history from the database.
* **UIKit** : For displaying the list of appointments and handling user interactions.

**3. Our Services Page (Service Listings)**

**Description**:  
The services page displays a list of available grooming services, including descriptions and prices. Users can select which services they would like to book for their pets.

**Key Features**:

* Displays grooming packages (e.g., brushing, fur trimming, flea protection) with detailed descriptions.
* Users can see the price of each service.
* The page is designed to be scrollable, accommodating a variety of services.

**Technologies Used**:

* **UIKit** : For displaying the scrollview of images and prices of services.
* **Swift (NS)**: For handling logic and display of services.

**4. AI Health Insights and Analysis**

**Description**:  
The AI health analysis feature provides personalized health advice based on the pet’s data (e.g., age, breed, weight). The AI module analyzes this data and gives recommendations on how to keep the pet healthy.

**Key Features**:

* Uses **Open AI Chatgpt API call** to analyze pet data and offer health advice.
* Provides recommendations such as "more exercise," "change in diet," or "check-up needed."
* The AI module improves over time by learning from user input and feedback.

**Technologies Used**:

* **ChatGPT4o API: Used for AI integration to provide personalized health insights.**
* **SQLite Database**: For storing pet data locally, allowing the app to analyze the pet’s age, breed, and weight.
* **Swift (NS)**: For integrating AI analysis and displaying recommendations.

**5. Map Integration (Find Nearby Grooming Centers)**

**Description**:  
The map integration allows users to find the nearest grooming centers based on their location. This feature leverages real-time GPS data to provide location-based services.

**Key Features**:

* Displays nearby grooming centers on a map.
* Provides directions using **Apple Maps** .

**Technologies Used**:

* **MapKit:** For location-based services such as finding nearby grooming centers.
* **Swift (NS)**: To handle real-time updates and display of the map.

**Databases, Browsers, and Technologies Used**

**Databases, Browsers, and Technologies Used**  
• **SQLite Database**: Used throughout the app for local data storage, including pet profiles, appointment details, services, and history.  
• **MapKit**: For location-based services, such as finding nearby grooming centers.  
• **OpenAI**: Powers the AI analysis and health insights feature.  
• **Swift (NS)**: The main programming language used for all functionalities, from appointment booking to AI integration.

**6) Final Solution**

The final version of Tailwag allows users to book grooming appointments, track their history, and receive AI-powered health insights for their pets. Real-time updates are sent to users regarding appointments, and services are displayed with detailed information.

**7) Challenges**

* **Technical Challenges**: Integrating AI to provide health insights was complex, and ensuring smooth functionality on all iOS devices required rigorous testing.
* **Scope and Limitations**: The app initially launched with core features, and expansion to more complex features is planned for future updates.
* **Deadlines and Resources**: The project had a tight timeline, focusing on essential features first.

**8) Conclusion**

**Reflection**

The development of **Tailwag** has provided an excellent opportunity to apply various technical and design skills. The app was designed to meet the needs of dog owners, focusing on features such as **real-time appointment booking**, **AI health insights**, and **location-based services**. Through this process, we were able to create a simple, user-friendly platform that integrates essential services for pet owners.

One of the key takeaways from this project was understanding how to combine multiple technologies to provide a comprehensive solution. Integrating **AI-driven health insights** into the app was a challenge, but it proved to be a rewarding experience as it added a unique personalized touch to the app’s functionality. The project also emphasized the importance of an **intuitive UI/UX design**, ensuring that the app is easy to navigate, which is crucial for user adoption.

**Learning Attained**

This project allowed us to learn and apply several important technical concepts:

* **Swift and iOS Development**: We used **Swift** to build the app and learned how to develop a clean, efficient interface for iOS devices. This gave us hands-on experience with **MapKit** to manage local data and implement location services.
* **AI Integration for Health Insights**: The integration of AI to analyze pet data and provide health advice was a significant learning experience. We learned how to create an AI-driven feature that delivers personalized suggestions to users based on their pets’ information.
* **SQLite Database Management**: SQLite was used for storing **pet data** and **appointment history**, providing us with practical knowledge of local data storage for mobile applications.
* **UI/UX Design**: The project helped us understand the importance of user experience and how to design a simple yet effective interface using **Swift**.

**Proposed Improvements**

While **Tailwag** meets its primary objectives, several improvements could be made in future versions:

1. **AI Health Insights Expansion**: The AI-powered health insights could be expanded to provide more detailed recommendations based on a broader range of data, allowing for deeper health analysis and preventative care suggestions.
2. **Cross-Platform Support**: The app is currently designed for iOS. Expanding the app to **Android** would increase its reach and make it accessible to a larger audience, particularly those who use Android devices.
3. **Eco-Friendly Options and Loyalty Rewards**: Adding eco-friendly options and a **loyalty rewards system** could further enhance the app’s appeal. This would not only attract users who are conscious about the environment but also foster customer loyalty and repeat business.
4. **Enhanced User Interface**: Although the app’s design is functional, further refinement could improve user engagement. For example, introducing more interactive services or customizing features could increase user satisfaction.
5. **Veterinary Integration**: Integrating veterinary services into the app could provide a comprehensive pet care solution. Users would be able to track both grooming and health services in one place, offering added value.
6. **Cat Inclusion**: Future updates will add services for cats as well, expanding the app’s offerings to include both dog and cat care.

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**Conclusion**

In conclusion, **Tailwag** is a simple and user-friendly app that effectively meets the needs of dog owners by providing a convenient way to book grooming appointments and access personalized health insights. The app combines essential pet care services like appointment tracking, health analysis, and location-based services into one cohesive platform. With further improvements, such as **cross-platform support**, **expanded AI capabilities**, and the addition of **eco-friendly options**, **Tailwag** has the potential to become a more comprehensive pet care tool, benefiting both pets and their owners

**1Bibliography**

* **SQLite Documentation**: Used for local storage of pet-related data in the app.  
  SQLite Official Documentation
* **Swift Programming Language**: The app was developed using Swift for iOS.  
  [Swift Official Documentation](https://developer.apple.com/swift/)
* **Pixabay**: The cheerful dog images used in the app were sourced from Pixabay.  
  [Pixabay](https://pixabay.com/)
* **Segue**: Used for smooth navigation between screens within the app.  
  [Segue Documentation](https://developer.apple.com/documentation/uikit/segue)
* **AI Integration**: Used for providing personalized health advice for pets. While not specific to a single framework, AI was integrated to analyze pet data like age, breed, and weight for health recommendations.

**12) Appendix**

* **Diagrams and Flowcharts**  
   **System Architecture Diagram**

**A diagram of a software company

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**UI Wireframe Diagram**

**A screenshot of a application

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* **Flowchart for Appointment Booking Process**

A screenshot of a phone

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**User Interface Screenshots-:**

* + - * **Booking Page Screenshot**

A cell phone with a dog on it

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* + - * **Appointment History Screenshot**

**A cell phone with a white screen

Description automatically generated**

* + - * **Our Services Page Screenshot**

**A screenshot of a cell phone

Description automatically generated**

* + - * **Our Pet-Health Analysis Page Screenshot**

**A screenshot of a cell phone

Description automatically generated**

**Use Case Diagram-:**

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