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ARCHITECTURE AND DESIGN PRINCIPLES FOR PAW-PAL DOG MANAGEMENT APP (WEB)

ARCHITECTURE

App Architecture Overview

The architecture for PawPal can be organized using a modular, layered structure. This will make the app scalable, maintainable, and flexible to accommodate additional features in the future.

Key Components

• Frontend Layer: The user-facing part of the app, responsible for user interaction. This includes UI elements, navigation, and interactive features. The languages to be implemented in the development of the frontend are HTML/CSS, JavaScript, based out of the CMS tool WordPress.

• Backend Layer: Manages data processing, business logic, and communication between the frontend and database. The languages to be implemented in the development of the backend are PHP, Vue JS, AWS (Amazon Web Services).

• Database Layer: Stores and retrieves user data, service bookings, payment histories, and other necessary information. The language to be implemented in the development of the database layer is SQL.

• External Services: Integrates with payment gateways, notification services. The services to be implemented are Amazon SNS for the push notifications and PayPal/Google Pay.

Additional External Services: WhatsApp API for direct and personalized communication via whatsapp, Google Analytics (GA4) for detailed user tracking.

Detailed Modules

Each module will have specific responsibilities, and together they form the backbone of the app’s functionality. The modules are as follows:

1. Dashboard Module

• Purpose: Acts as the entry point and main control center for users, offering quick access to all essential app sections.

• Features:

Overview Cards: Display a snapshot of the user’s dogs, upcoming appointments, active subscriptions, and community updates.

Quick Links: Direct links to “My Dogs,” “Veterinary Services,” and other frequently accessed areas.

Backend Interaction: Pulls summary data from other modules to display real-time updates on the dashboard.

B. Dog Ownership Management Module

• Purpose: Manages all dog-related data and profiles.

• Features:

Dog Profiles: Create and edit profiles for each dog with information on health records, vaccinations, and milestones.

Health and Vaccination Reminders: Users can set reminders for important dates.

Backend Interaction: Connects to the database to store and retrieve each dog’s profile and health data, ensuring data consistency across devices.

C. Subscription Management Module

• Purpose: Handles subscriptions to dog care packages, including booking and payment.

• Features:

Subscription Plans: Display various care packages (e.g., grooming, training).

Payment Processing: Allows users to pay for and manage subscriptions.

Backend Interaction: Interacts with the payment gateway for secure processing and stores subscription status and renewal dates in the database.

D. Training Services Module

• Purpose: Enables users to book training sessions or access tutorials.

• Features:

Class Scheduling: Users can book in-person or virtual training sessions.

Tutorials Access: Allows users to view training videos and guides within the app.

Backend Interaction: Links to video storage (if tutorials are stored externally) and booking data for appointments.

E. General Veterinary Services Module

• Purpose: Manages veterinary care appointments and reminders.

• Features:

Appointment Booking: Users can schedule vet visits and consultations.

Video Consultation: Supports remote consultations via video.

Reminders: Sends notifications for upcoming appointments.

Backend Interaction: Works with calendar APIs to integrate appointments and sends reminders via the notification service.

F. Boarding and Grooming Services Module

• Purpose: Provides booking services for boarding and grooming.

• Features:

Service Scheduling: Users can book boarding or grooming appointments.

Gallery Display: Showcases photos of facilities or previous grooming results.

Backend Interaction: Updates the booking system and retrieves user feedback to display in profiles for future reference.

G. Dog Walking and Sitting Module

• Purpose: Allows users to book dog walking or sitting services.

• Features:

Booking: Schedule walking or sitting services.

Walker/Sitter Profiles: Users can view profiles, reviews, and ratings of walkers/sitters.

Backend Interaction: Interfaces with the database to manage bookings and stores reviews for reliability.

H. Community Connection Module

• Purpose: Builds a social community for pet owners to interact.

• Features:

Community Board: Users can post tips, stories, and photos.

Event Listings: Users can find or post events (e.g., dog playdates).

Notifications: Sends alerts for new posts or interactions.

Backend Interaction: Manages community posts in the database, ensuring security and moderation of user-generated content.

Data Flow and Interactions

• User Data Flow: User inputs (e.g., booking an appointment) pass from the frontend to the backend, which then updates the database and triggers any required notifications.

• Cross-Module Interactions: Data stored in one module (e.g., dog profile details) should be accessible to other relevant modules (e.g., veterinary services), allowing seamless integration and a unified user experience.

• Database and API Security: Apply security best practices, like token-based authentication and data encryption, to protect sensitive information and ensure secure communication across all modules.

DESIGN

User Interface (UI) Design

The UI part focuses on the visual components that users will see and interact with, ensuring they’re aesthetically pleasing and intuitive.

Color Palette:

Use warm, inviting colors that create a friendly vibe—good choices might be soft blues, greens, and yellows to give a cheerful, pet-friendly feel.

Black or dark shades can provide contrast, making text more readable.

Stick to 2-3 main colors and a few accent colors to avoid overwhelming users.

Typography:

Choose a clean sans-serif font for headings and main navigation (like Roboto or Montserrat) for a professional look.

For body text, you could go with a more playful font to keep things lighthearted, as long as it remains readable.

Ensure font sizes are accessible, with larger text for headings and buttons, and smaller text for detailed descriptions.

Icons and Buttons:

Use dog-related icons (like paws, bones, or leashes) where relevant to keep the theme.

Buttons should be big enough to tap easily on mobile, with clear, contrasting colors so they stand out.

Common actions (like "Add Dog" or "Schedule Appointment") should be emphasized with icons and standout colors to make them intuitive.

Bottom Navigation Bar:

Since users will access this app primarily on mobile, a bottom navigation bar is key for accessing the main modules easily.

Keep 4-5 primary icons here (e.g., Dashboard, Dog Management, Community, Profile) with labels for clarity.

User Experience (UX) Design

UX is about making the app flow smoothly and ensuring that it meets the needs of dog owners by being simple, fast, and intuitive.

Onboarding Process:

Design a welcoming and straightforward onboarding that guides users through setting up a profile and adding their dog’s info.

Include a few screens or tooltips that quickly highlight the main features of the app (like scheduling, training, and community interaction).

Navigation Flow:

Keep navigation consistent across all screens. If the dashboard shows a summary, each module should follow that flow, with the primary actions (like “Add Dog” or “Find Playdates”) easy to locate.

Use simple and familiar gestures for navigation, like swiping to move between tabs or screens, especially in sections like Community or Dog Profiles.

Accessibility:

High contrast between text and backgrounds will make content readable for all users.

Design for one-hand usage on mobile by placing key actions within reach of the thumb.

Make sure all icons, buttons, and touchpoints are large enough and spaced apart to prevent accidental taps.

Add alternative text for images and labels for icons to support visually impaired users.

Minimize Steps for Key Actions:

Important actions, like booking training or updating a dog’s health records, should be fast and require minimal taps.

Implement quick actions on the home screen for frequent tasks like “Book Appointment” or “Check Vaccinations.”

Visual Branding and Style Guide

Branding is about creating a cohesive look and feel that represents \*PawPal\* as a fun, reliable, and supportive app for dog owners. A style guide will help keep the design consistent across all screens.

App Logs:

A friendly, recognizable logo (maybe incorporating a dog paw or a friendly dog face) to reinforce the brand.

Iconography:

Dog-themed icons should be prominent but tasteful. Think of subtle elements like paw prints next to dog profiles or dog bone shapes as dividers.

Imagery and Graphics:

Add friendly pet graphics, like dog illustrations or silhouettes, that complement the color palette.

You could consider adding animated micro-interactions (like a wagging tail or paw shake) when users complete a task (e.g., booking a training session).

Illustrations and Animations:

Use simple, pet-friendly illustrations to liven up pages, particularly the onboarding and empty states (like when no data is available).

Lightweight animations, such as a bouncing paw icon or fading effects, can make the app feel engaging without slowing it down.

Consistency and Reusability:

Design components, like buttons, icons, and form fields, that can be reused throughout the app. For instance, each action button should look and behave the same on every screen.

Develop a consistent tone of voice in any on-screen text, ensuring it’s friendly, informative, and approachable.

Example User Journey

Here’s how a dog owner might interact with PawPal:

Sign Up and Onboard: They enter their name, add their dog’s profile with a photo, and get a tour of the app’s main features, like booking services and tracking health records.

Using the Dashboard: The dashboard provides a quick view of upcoming training sessions, reminders for vet visits, and new messages in the community.

Booking a Service: They navigate to the Training Services module, view available sessions, and book a class—all in a few taps.

Engaging with the Community: They can join a local dog playdate or ask for advice in the community module.

Managing Subscriptions: They go to the Subscription module to renew or change a service package, using the secure payment integration.

This design plan ensures the app feels cohesive, intuitive, and enjoyable for users. The idea is to keep it simple yet engaging, so the user feels supported in managing their dog’s needs while feeling part of a larger pet community.