Pet Care Application

By

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A REPORT

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ABSTRACT

The major purpose of this project is to create a full Pet Care application designed specifically for Malaysian pet owners, incorporating services such as pet transportation, medical booking, e-commerce for pet items, and a Tamagotchi-style game. This project is an academic endeavor designed to improve competence in mobile application development, user-centric design, and new technology solutions for the pet care business.

Many businesses turned to online platforms in response to the COVID-19 outbreak, but Malaysian pet owners confront problems such as public transport constraints, cultural sensitivities, and limited access to necessary services. These issues, combined with an increasing number of pet owners, highlight the necessity for a specialized application that offers convenient solutions. The Pet Care program solves these concerns by providing a dedicated platform for users to book pet taxis, plan medical visits, purchase pet supplies, and participate in a virtual pet care game that teaches users about pet ownership responsibilities.

The program is built utilizing the Agile technique, which emphasizes iterative development, continual feedback, and adaptability to changing requirements. Agile enables regular updates and communication with end-users, ensuring that the application grows to suit user needs throughout the development cycle. Key features include pet taxi services with verified drivers, a veterinary booking system that lowers wait times, and an e-commerce platform with a diverse assortment of pet products. Furthermore, the Tamagotchi-style game offers an interesting educational experience by allowing users to practice taking care of a virtual pet.

To provide a consistent and user-friendly experience, the Agile strategy includes intensive user testing and regular feedback loops. By bringing together drivers, doctors, and merchants, the project seeks to not only provide value to pet owners but also to create new job possibilities in the pet care business, thereby benefiting the local economy.

Finally, the Pet Care application aims to transform Malaysia's pet care landscape by providing a comprehensive, all-in-one solution that fits pet owners' different needs while encouraging innovation and growth in the field. This initiative solves a significant market gap by addressing the unique issues that pet owners confront, paving the path for future developments in pet care services.

Area of Study (Minimum 1 and Maximum 2):

- Mobile Application Development
- Pet Care Technology

Keywords (Minimum 5 and Maximum 10):

- Pet Care Application
- Mobile App Development
- Veterinary Booking System
- Pet Taxi Services
- Gamification
- E-commerce Platform
- Tamagotchi-Style Game
- User-Centric Design
- Digital Pet Solutions
- Integrated Pet Services

Table of Contents

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1 INTRODUCTION

You do not have to limit yourself to establishing friends with only other people. The majority of homes worldwide will have at least one pet of some form. Whether a person decides to maintain a dog, cat, bird, turtle, or even a snake as a pet, all of these creatures contribute positively to their owners' daily lives. As a result, many organizations and individuals throughout the world are attempting to sell their products or services over the internet. Examples include pet grooming, pet taxi, and pet walking services.

Unlike other countries, Malaysia is multi-cultural, with each culture having its own set of values about what to do and what not to do. For example, Malay culture prohibits them from touching dogs since they are considered "unclean" [1]. Aside from culture, some people suffer from pet allergies caused by proteins present in the skin cells, saliva, or urine of animals. Sneezing and a runny nose are signs of a pet allergy [2].

Furthermore, the government forbids the carriage of dogs on public transit. As a result, Malaysia does not have many applications nor website with a pet function or features tailored specifically for pet owners.

As a result, the Pet Care application is offered to address the problem of a lack of apps that can help pet owners. The suggested application includes features such as pet taxi, nearest vet booking session, selling goods, and pet delivery services. This system targets a wide range of end users, including customers, vendors, drivers, veterans, and administrators. As previously indicated, this is an application that must be downloaded onto the user's mobile phone. Because pets are not permitted on public transit, pet taxi services are recommended. So, a pet taxi is one in which the driver confirms that the pet can travel in their vehicle. Customers can hire a pet taxi to carry them and their pets from one area to another. Moving on, pet delivery services are mostly aimed at customers who do not have time to take their pets to the veterinarian for a medical inspection or whose pets are too large or heavy for the user to transport. As a result, consumers can schedule a delivery service in which a driver in a customized car brings the customer's pet to a local

veterinarian for a checkup. In addition, there is a local vet booking session. This feature primarily allows clients to plan a vet session for their dogs rather than waiting in long lines or feeling anxious about calling the vet to schedule an appointment. Finally, the application supports e-commerce for pet supplies. This option is recommended for clients who are too busy or too lazy to go out and buy supplies for their dogs. As a result, clients will be able to purchase items from a pet store and have them delivered to them or their home via phone.

So, to summarize. There are many pet owners around the world, however due to cultural, government, and personal health issues, pet applications are not widely available or used in Malaysia [3]. As a result, a Pet Care application is available to assist pet owners who are having problems caring for their pets.

This chapter discusses the background and motivations for developing the Pet Care Application, as well as the project's issue definition, aims, and contributions.

1.1 Problem Statement and Motivation

Pets are treasured as valuable companions in today's world, and caring for them has become an important element of many households worldwide. However, cultural sensitivities, government laws, and personal health concerns all pose problems for Malaysian pet owners. For example, in Malaysian culture, particularly among the Malay community, dogs are considered "unclean," limiting people's interactions with these animals [1]. Furthermore, public transit regulations prevent pet owners from simply transferring their pets, and there is a scarcity of programs expressly developed to meet the needs of pet owners.

These problems highlight the need for a dedicated platform that can help pet owners manage their pets' demands more easily. The Pet Care Application is designed to replace this void by providing integrated services such as pet taxis, veterinarian appointment reservations, and e-commerce for pet-related products all in one application. The program is intended to serve a variety of end users, including clients, drivers, veterinarians, and administrators, providing a holistic solution for pet care in Malaysia.

Problem Statement:

1. **Pet transportation limitations** in Malaysia make it difficult for owners to relocate their animals, especially during emergencies. Grab, the LRT, and Taxi all have severe laws prohibiting passengers from bringing their pets inside, making it hard for owners to transport their pets to the nearest veterinarian in an emergency.
2. Pet owners have **restricted access to crucial services**, including veterinary treatment. The difficulties associated with keeping a huge, substantial pet that is difficult to carry are exacerbated by the fact that not everyone is physically capable of handling this duty, particularly children and the elderly.
3. **Increasing numbers of people** are choosing to have their own pets. However, taking care of a pet is a responsibility similar to raising a child, requiring attention to feeding, play, and more. There is a lack of applications that teach the responsibilities needed to adopt a pet.

Motivation:

- Improve pet care by **offering a user-friendly platform** that includes key services, making it more convenient for owners.
- **Overcome cultural and logistical barriers** to make pet care more accessible.
- **Fill a market need in** Malaysia by introducing a dedicated app that consolidates pet care services into a user-friendly platform.
- Encourage proper pet ownership. **Increase awareness** and **understanding of the responsibilities** associated with pet ownership by incorporating educational components such as the Tamagotchi-style game.
- The application promises to **increase career prospects** by combining services like pet transportation and veterinary care, which were previously done in person.

1.2 Objectives

The primary goal of this project is to create a mobile application that offers pet owners important services such as pet transportation, veterinary booking and online purchasing for pet goods. The program is intended to be user-friendly, accessible, and capable of solving the unique issues that pet owners encounter in Malaysia. Specific aims include:

1. **Creating a Pet Taxi Service**: Allowing consumers to plan transportation for their pets, selecting drivers who are experienced with animals, and ensuring safe transportation to locations.
2. **Implementing a Veterinary Booking System**: Allowing users to book appointments with local veterinarians without waiting in long lines or making phone calls, expediting the process of providing medical care to pets.
3. **Implement Tamagotchi Game**: Introducing a Tamagotchi-style game that simulates pet care and raises awareness of pet ownership duties.

1.3 Project Scope and Direction

The Pet Care Application's scope includes designing, developing, and implementing a full mobile application customized to the needs of Malaysian pet owners. The application has numerous fundamental features that solve specific issues faced by pet owners, allowing them to manage their dogs' requirements from a single platform. The **Agile methodology** will be used to build the project, with an emphasis on flexibility, continuous feedback, and iterative development. This strategy lets the program to adapt based on user feedback, ensuring that the end product satisfies the needs of its users. The project will also include comprehensive testing and validation to verify that the application is user-friendly, dependable, and effective in delivering the required services.

Core Features of the Pet Care Application:

1.3.1 Appointment Booking Feature:

- **Vet Clinic Selection**: The system enables users to select a veterinarian clinic and a date and time for an appointment.
- **Session Management**: Once a session is booked by the user, it is locked to prevent duplicate reservations.
- **Pet Selection**: Users can indicate which pets require medical treatment.
- **Appointment Modifications**: Users can amend or cancel their bookings as needed.
- **Administrator Approval**: All appointment information is submitted to the administrator for approval. Administrators have the ability to alter or cancel appointments.

1.3.2 Pet Delivery and Transportation Feature:

- **Driver Verification**: Drivers must be recognized as qualified to carry pets in their vehicles.
- **Delivery Scheduling**: Users can plan deliveries to veterinary clinics or specific location by selecting a suitable date and time.
- **Delivery Modifications**: Users can update or cancel delivery appointments as needed.
- **Driver Acceptance**: The delivery appointment data is forwarded to the driver for acceptance. Drivers have the opportunity to alter or cancel appointments for appropriate reasons.

1.3.3 E-Commerce Platform:

- **Product Selection**: Users can browse a list of pet-related products and add them to their cart.
- **Checkout Process**: Users may proceed to checkout with the items in their cart.
- **Order Modifications**: Users can alter or cancel orders before they are finalised.
- **Seller Approval**: The order data is sent to the seller for approval. Sellers have the option to alter or cancel orders for valid reasons.

1.3.4 Tamagotchi-Style Game:

- **Virtual Pet Care**: Users can create and maintain many virtual pets (e.g., "White Cat" or "BSH Cat"), each with its own happiness, hunger, and cleanliness statistics. Users engage with their pets by feeding, playing, and cleaning, which are depicted by animated sequences.
- **Status Monitoring and Growth**: The game monitors and displays each pet's current status, with the pet's mood altering according to its metrics. A day counter represents the passage of time, and pets can level up with constant care, indicating long-term growth and development.
- **Pet Diary System**: Users can keep a digital diary for each pet, adding entries to document their experiences and achievements. This feature allows users to document their pet's journey, personalizing the virtual pet care experience.

Project Direction: The application is being developed to address the following goals:

- **Pet Taxi Services**: Provide a service that allows customers to arrange transportation for their dogs while ensuring that drivers are verified and animal-friendly. This service allows customers to plan transportation to veterinary clinics, pet grooming businesses, and other locations as needed.
- **Veterinary Booking System**: Simplify the process of booking veterinary appointments by allowing customers to arrange them directly through the app, eliminating the need for phone calls or in-person visits.
- **E-Commerce Platform**: Provide a marketplace where consumers can easily acquire a large choice of pet items, with many payment ways and home delivery alternatives.
- **Tamagotchi-Style Game**: Engage users in a pleasant and dynamic way by simulating pet care chores, ultimately educating them on good pet ownership techniques.

1.4 Contributions

The Pet Care Application is poised to make significant contributions to Malaysia's pet care industry by addressing the various challenges pet owners face and offering a comprehensive, multi-service platform. By integrating transportation, veterinary care, and e-commerce, the application will enhance access to essential pet care services, thereby improving overall pet well-being. Furthermore, it will stimulate the local economy by creating job opportunities for drivers, veterinarians, and sellers, connecting them with a broader customer base. The inclusion of a Tamagotchi-style game serves as an educational tool, promoting responsible pet ownership by teaching users about proper pet care, leading to better outcomes for both pets and their owners. Finally, the application represents a substantial innovation within the Malaysian pet care industry, offering a user-friendly, comprehensive solution that lays the groundwork for future advancements in the delivery of pet care services.

1.5 Report Organization

The remainder of this report is organized as follows:

- **Chapter 2** provides a literature review, discussing previous works related to pet care applications and identifying gaps in existing solutions.
- **Chapter 3** outlines the project scope and objectives in more detail, specifying the functionalities and features of the proposed application.
- **Chapter 4** describes the methodologies and technologies involved in the development of the Pet Care Application.
- **Chapter 5** presents the preliminary work and results, including the initial design and implementation phases.
- **Chapter 6** concludes the report, summarizing the findings and suggesting potential areas for future work.

CHAPTER 2 LITERATURE REVIEW

2.1 Previous work on Pet Care Application

2.1.1 Petotum

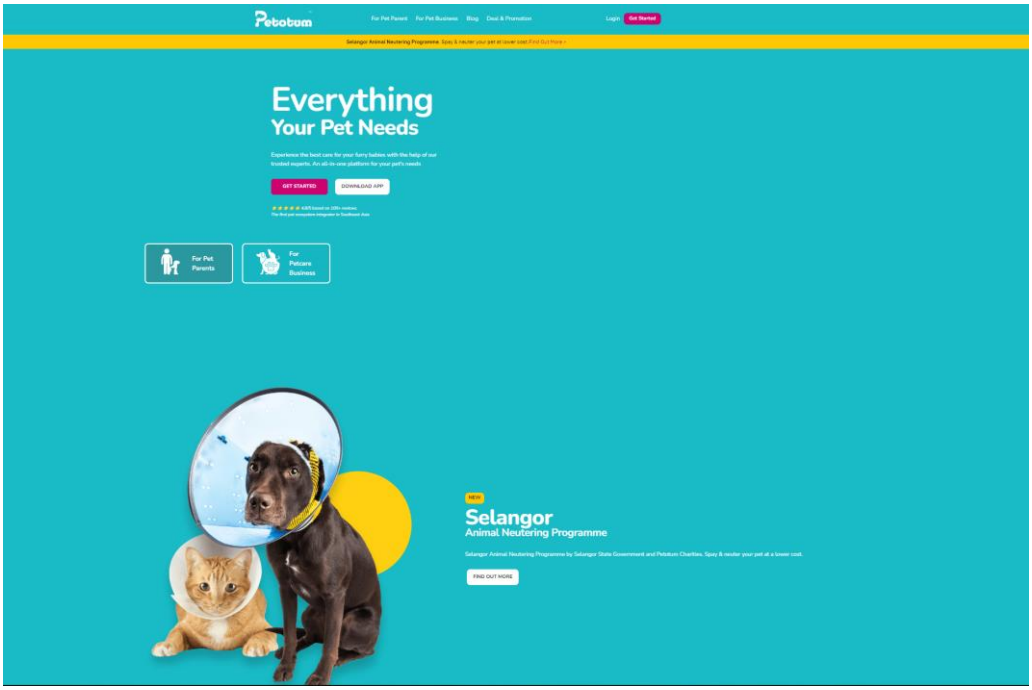

Figure 1: Petotum

Petotum is a Malaysian platform that aims to centralise pet care by offering services to pet owners, animal enthusiasts, and businesses. It provides a variety of services, including pet adoption, vet appointments, and purchasing pet supplies. Petotum focusses on establishing a more integrated pet care ecosystem that allows consumers to easily manage their pets' requirements on a single platform (Pet Care App) [4].

2.1.2 PetSmart

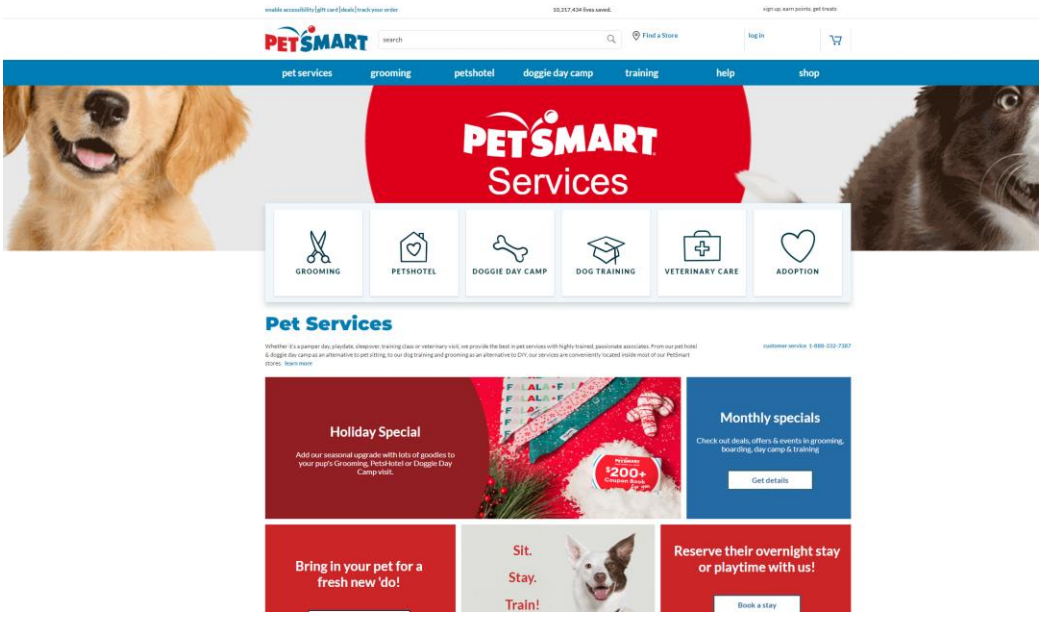

Figure 2: PetSmart Website

PetSmart LLC is a well-known pet retailer in the United States, Canada, and Puerto Rico that provides a diverse range of pet-related items and services. PetSmart PetsHotel® offers dog training, grooming, and boarding facilities. Furthermore, the company has been actively involved in pet adoption, collaborating with a variety of animal welfare organisations to help pets find homes (Pet Care Web-site) [5].

2.1.3 Kate's Canine Resort

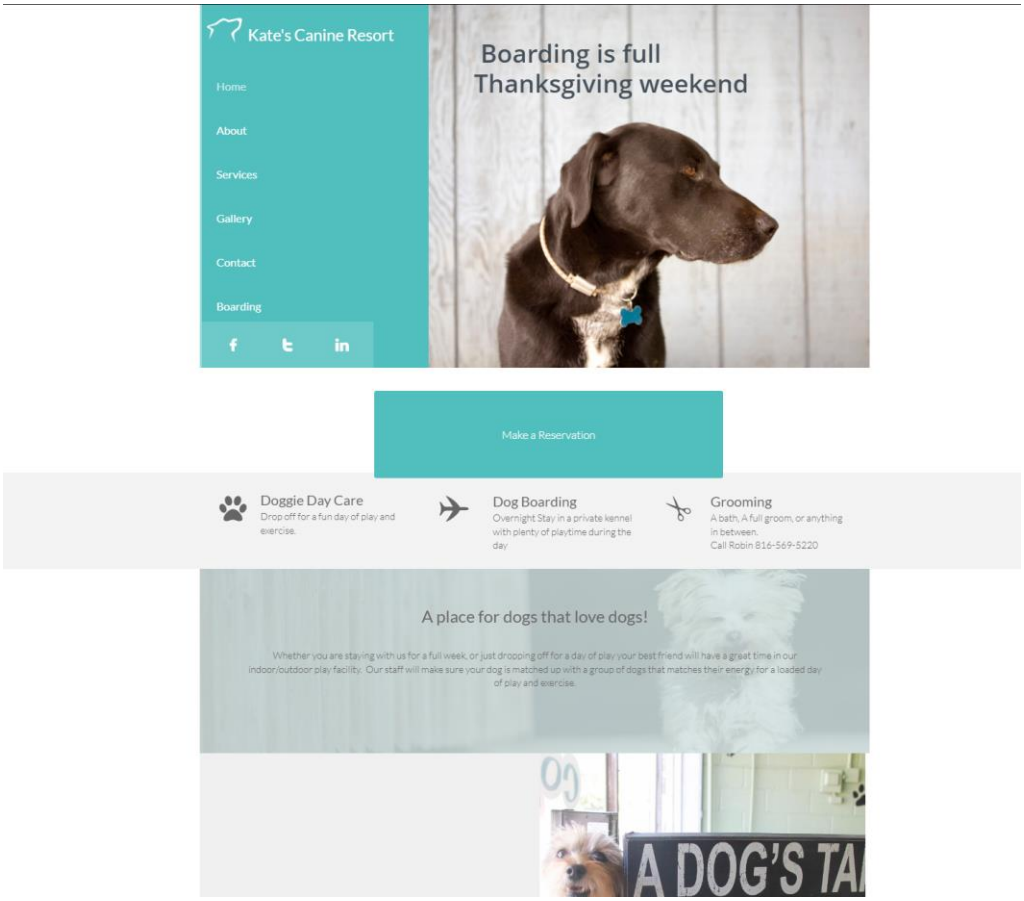

Figure 3: Kate's Canine Resort Website

Kate's Canine Resort is a premium boarding facility dedicated to canines. It is located in the United States and provides high-end services such as personalized care, gourmet meals, and large play areas. The facility is intended to provide a comfortable and joyful experience for dogs while emphasizing high levels of care and attention (Pet Care Website) [6].

2.2 Overview of Three Similar Existing Systems

Existing systems, such as Petotum, PetSmart, and Kate's Canine Resort, all provide significant services to pet owners, but all focus on various areas:

- **Petotum**: The goal is to centralize all pet care needs on one platform, providing a comprehensive range of services for both pet owners and businesses.
- **PetSmart**: The company's primary focus is on retail, offering items and a variety of in-store services, with a heavy emphasis on pet adoption and care.
- **Kate's Canine Resort**: specializes in high-end dog boarding services, including exquisite lodgings and personalized care.

System/ Model Name	Functionalities	Features	Strength	Weaknesses
Petotum	Petotum focuses on better pet care. Petotum wants to help everyone, regardless of size, breed, or quirkiness, take better care of their pet.	Provide pet grooming service. Provide pet hotel service. Provide pet veterinary service. Provide pet wellness service.	Services are available for dog cat. Available in Malaysia. More features are available. Available in mobile application platform.	Lack of pet taxi features. Lack of pet training features. Lack of Pet adoption features. Not recommended using on website platform.

				No games that are related of taking care of a pets.
Pet Smart	PetSmart's dedicated associates assist pet owners and pets enjoy more satisfied lives every day.	Provide pet grooming service. Provide pet hotel service. Provide pet day camp service. Provide pet training service. Provide pet veterinary care service. Provide adoption service.	Services are available for dog cat. Well known around the world. More features are available. Used website platform to use their service.	Only available in Canada and United State America. Lack of Pet wellness service. Lack of pet taxi features. Not available in mobile application platform. No games that are related of taking care of a pets.
Kate' Canine Resort	Provide services specifically for dogs.	Provide doggie day care service. Provide dog boarding service.	Used website platform to use their service.	Services are limited to dog only.

		Provide dog grooming Service.	Does not need account to book for their services. Specialize in dog services.	Limited in United State America only. Lack of pet taxi features. Lack of pet training features. Lack of Pet adoption features. Lack of Pet wellness service. Not available in mobile application platform. Website platform is still under development. No games that are related of

				taking care of a pets.

Table 1: Overview of Three Similar Existing Systems

2.3 Comparison Between Similar Systems

A comparison of these systems highlights the following:

- **Scope of Services**: Petotum provides a wide range of services, making it a one-stop shop for pet owners, whereas PetSmart is more focused on retail, and Kate's Canine Resort specialises in luxury boarding.
- **Target Audience**: Petotum and PetSmart cater to a broad spectrum of pet owners, but Kate's Canine Resort caters to a specific group of dog owners looking for luxury services.
- **Geographical Focus**: Petotum is situated in Malaysia, PetSmart operates throughout North America, and Kate's Canine Resort is a US-based service.

System/ Model Name	Type of Pets	Need an account?	Pet Grooming	Pet Hotel	Veterinary service	Pet Wellness features	Pet Taxi	Pet Adoption	Pet Training	Available in Malaysia?	Games or quiz related of taking care of a pet	Platform
Petotum	Cat and Dog	/	/	/	/	/	X	X	X	/	X	Mobile
PetSmart	Cat and Dog	/	/	/	/	X	X	/	/	X	X	Website
Kate's Canine Resort	Dog only	X	/	/	X	X	X	X	/	X	X	Website

Table 2: Comparison Between Similar Systems

2.4 Proposed Solution

The proposed Pet Care Application aims to combine the strengths of these existing systems while addressing their limitations:

- **Integration of Services**: Unlike Petotum, which is primarily concerned with centralizing services, the proposed application will include features such as pet transportation and a Tamagotchi-style game to teach users.
- **Geographical Adaptation**: The application will be developed specifically for the Malaysian market, addressing issues such as pet transit restrictions and cultural sensitivity.
- **User Engagement**: To improve user engagement and promote ethical pet ownership, the application will incorporate a gamified experience in the form of a Tamagotchi-style game that is not currently accessible on any other platforms.

Similar System	Ways to Resolve the Weakness
Petotum	• Provide pet taxi • Provide pet adoption feature. • Provide pet training feature. • Provide a quiz game of taking care of a pets
PetSmart	• Provide a pet wellness feature. • Provide pet taxi. • Make it available to use in Malaysia. • Make it into a mobile application platform. • Provide a quiz game of taking care of a pets
Kate's Canine Resort	• Provide an account to keep track of data of a user. • Provide a veterinary service feature. • Provide a pet wellness feature. • Provide pet taxi. • Provide pet adoption feature. • Make it available to use in Malaysia. • Make it into a mobile application platform.

	• Provide a quiz game of taking care of a pets

Table 3: Proposed Solutions

2.5 Summary

This literature review has focused on existing platforms and their approaches to pet care services. The proposed Pet Care Application aims to innovate by combining many features into a single platform that caters to the specific needs of Malaysian pet owners, hence filling a huge vacuum in the present market. The following chapter will discuss the project's precise scope and objectives.

CHAPTER 3 PROPOSED METHOD/APPROACH

3.1 System Requirement

3.1.1 Hardware

The following table lists the hardware requirements for developing the Pet Care Application:

Hardware	Specifications
Model	MacBook Pro (13-inch, M1 2020)
Processor	Apple M1 Chip, 8-core CPU (4 performance cores, 4 efficiency cores)
Memory	8GB RAM
Storage	256GB SSD
Graphics	8-core GPU, 16-core Neural Engine
Operating System	macOS 13.0 Ventura

Table 4: Hardware Specifications

3.1.2 Software

The following table lists the software requirements for the development of the Pet Care Application:

Software	Specifications
Operating System	macOS 13.0 Ventura
Front-End Development	React Native, Node.js
Mobile Development Tools	Android Studio (for Android), Xcode (for iOS)
Back-End Development	FastAPI
Content Management	Sanity.io
Database Management	MySQL
Integrated Development Environment (IDE)	Visual Studio Code

Table 5: Software Specifications

These tables provide a clear overview of the hardware and software tools necessary for the successful development of the Pet Care Application.

3.2 System Design Diagram

3.2.1 Use Case Diagram

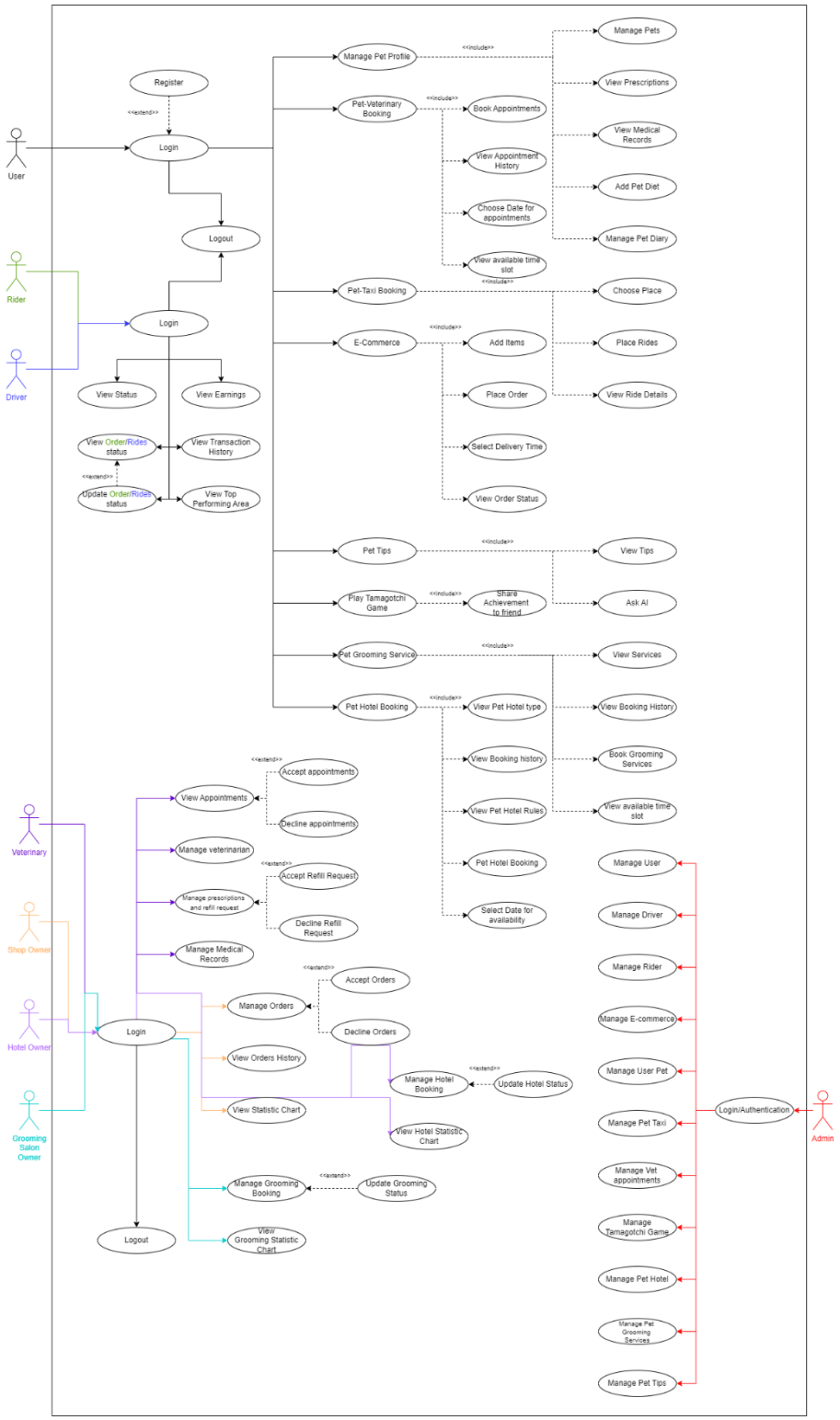

Figure 4: Use Case Diagram

3.2.2 Use case Description

3.2.2.1 Login – User Perspective

Use Case Description
Name: Login
Brief Description: The user authenticates themselves to access the system.
Actors: User
Relationship: Association: User, Rider, Driver, Shop Owner, Veterinarian Include: Extends: Register Generalization:
Preconditions: 1. User has a registered account in the system
Basic Flow: 1. Users click the Login link on the navigation header 2. System will appear a form for user to fill in
Alternate Flow: When user clicks the "Email" input field 1. User can enter their email address When user clicks the "Password" input field 1. User can enter their password After user fills in all the input fields 1. User allows to click the login button
Exception Flow: Incorrect user input (invalid email or password)

Post Conditions: 1. User session will be created in the system 2. System will navigate to the home screen

Table 6: Use Case Descriptions [Login]

3.2.2.2 Register – User Perspective

Use Case Description
Name: Register
Brief Description: Allow new user to create an account in the system
Actors: User
Relationship: Association: User Include: Extends: Generalization:
Preconditions: 1. User does not have an existing account
Basic Flow: 1. Users click the Sign Up link on the navigation header 2. System will appear a registration form for user to fill in
Alternate Flow: When user clicks the "Name" input field 1. User can enter their name When user clicks the "Email" input field 1. User can enter their email address When user clicks the "Password" input field 1. User can enter their desired password

When user clicks the "Phone Number" input field 1. User can enter their phone number When user taps on the profile picture area 1. System will open device's image picker 2. User can select a profile picture After user fills in all the required input fields 1. User allows to click the sign-up button
Exception Flow: Incorrect user input or email already exists
Post Conditions: 1. New user account will be stored in the database 2. System will display successful registration message 3. System will navigate to the login screen

Table 7: Use Case Descriptions [Register]

3.2.2.3 Play Tamagotchi Game– User Perspective

Use Case Description
Name: Play Tamagotchi Game
Brief Description: Allow user to interact with their virtual pet
Actors: User
Relationship: Association: User Include: Feed Pet, Clean Pet, Play with Pet Extends: Generalization:
Preconditions: 1. User needs to login account first 2. User has at least one virtual pet
Basic Flow:

1. Users click the Tamagotchi Game link on the navigation header 2. System will display the user's virtual pet and its status
Alternate Flow: When user clicks the "Play" button 1. System will animate the pet playing 2. Pet's happiness level will increase When user clicks the "Feed" button 1. System will animate the pet eating 2. Pet's hunger level will decrease When user clicks the "Clean" button 1. System will animate the pet being cleaned 2. Pet's cleanliness level will increase When user clicks the "Add Pet" button 1. System will navigate to the Add Pet screen 2. User can create a new virtual pet When user clicks the "Pet Diary" button 1. System will navigate to the Pet Diary screen 2. User can view or add diary entries for their pet
Exception Flow: Pet's needs are already fully satisfied
Post Conditions: 1. Pet's status will be updated in the database 2. System will display updated pet status and statistics

Table 8: Use Case Descriptions [Tamagotchi Game]

3.2.2.4 E-commerce– User Perspective

Use Case Description
Name: E-Commerce
Brief Description: Allow user to browse products, add to cart, place orders, and view order details
Actors: User
Relationship: Association: User Include: Add to Cart, Place Order, Select Delivery Time, View Order Details Extends: Generalization:
Preconditions: User needs to login account first
Basic Flow: 1. Users click the E-Commerce link on the navigation header 2. System will display available products and shops
Alternate Flow: When user scrolls through products 1. User can view different products and their details When user clicks on a product 1. System will display detailed product information 2. User can select quantity and add item to cart When user clicks the cart icon 1. System will display the cart contents 2. User can review added items When user proceeds to checkout

1. System will prompt user to confirm delivery address 2. User can select existing address or add a new one When user selects delivery time 1. System will display available delivery time slots 2. User can choose preferred delivery time After user confirms order details 1. User allows to click the place order button When user navigates to order history 1. System will display a list of past orders 2. User can select an order to view details When user clicks on a specific order 1. System will display detailed order information including items, quantities, prices, and delivery status
Exception Flow: Insufficient stock or payment failure
Post Conditions: 1. Order details will store into database 2. System will display successful order placement message 3. User's cart will be emptied 4. User can access order details in order history

Table 9: Use Case Descriptions [E-commerce]

3.2.2.5 Rider Operations – Rider Perspective

Use Case Description
Name: Rider Operations
Brief Description: Allow rider to manage deliveries and view earnings

Actors: Rider
Relationship: Association: Rider Include: View Status, Update Status, View Earnings, View Transaction History, Accept Orders Extends: Login Generalization:
Preconditions: Rider needs to login account first
Basic Flow: 1. Rider clicks the Rider Dashboard link on the navigation header 2. System will display rider's current status and available actions
Alternate Flow: When rider clicks "View Status" 1. System will display current delivery status if any When rider clicks "Update Status" 1. System will prompt rider to select new status (e.g., "On the way", "Delivered") 2. Rider can update the status of current delivery When rider clicks "View Earnings" 1. System will display rider's current earnings When rider clicks "View Transaction History" 1. System will display a list of past deliveries and earnings When rider clicks "View available orders" 1. System will show a list of available delivery orders

2. Rider can accept an order When rider clicks "View Top Performing Area" 1. System will display a map or list of high-demand areas
Exception Flow: No available orders or network connectivity issues
Post Conditions: 1. Updated status will be stored in the database 2. Earnings and transaction history will be updated 3. System will display relevant information based on rider's actions

Table 10: Use Case Descriptions [Rider]

3.2.2.6 Driver Operations – Driver Perspective

Use Case Description
Name: Driver Operations
Brief Description: Allow driver to manage rides and view earnings
Actors: Driver
Relationship: Association: Driver Include: View Status, Update Status, View Earnings, View Transaction History, Accept Rides Extends: Login Generalization:
Preconditions: Driver needs to login account first
Basic Flow: 1. Driver clicks the Driver Dashboard link on the navigation header 2. System will display driver's current status and available actions
Alternate Flow: When driver clicks "View Status" 1. System will display current ride status if any

When driver clicks "Update Status" 1. System will prompt driver to select new status (e.g., "On the way", "Arrived") 2. Driver can update the status of current ride When driver clicks "View Earnings" 1. System will display driver's current earnings When driver clicks "View Transaction History" 1. System will display a list of past rides and earnings When driver clicks "View available orders" 1. System will show a list of available ride requests 2. Driver can accept a ride When driver clicks "View Top Performing Area" 1. System will display a map or list of high-demand areas When driver clicks "View Rides Details" 1. System will display detailed information about current or selected ride
Exception Flow: No available ride requests or network connectivity issues
Post Conditions: 1. Updated status will be stored in the database 2. Earnings and transaction history will be updated 3. System will display relevant information based on driver's actions

Table 11: Use Case Descriptions [Driver]

3.2.2.7 Shop Owner Operations– Shop Owner Perspective

Use Case Description
Name: Shop Owner Operations
Brief Description: Allow shop owner to manage orders and products
Actors: Shop Owner
Relationship: Association: Shop Owner Include: View Orders, Accept Orders, Decline Orders Extends: Login Generalization:
Preconditions: Shop Owner needs to login account first
Basic Flow: 1. Shop Owner clicks the Shop Dashboard link on the navigation header 2. System will display a list of current orders and management options
Alternate Flow: When Shop Owner clicks "View Orders" 1. System will display a list of pending and active orders When Shop Owner clicks on a specific order 1. System will show detailed information about the selected order When Shop Owner clicks "Accept Order" 1. System will update the order status to accepted 2. System will notify the customer of the acceptance When Shop Owner clicks "Decline Order" 1. System will prompt for a reason for declining 2. System will update the order status to declined

3. System will notify the customer of the declination When Shop Owner clicks "Logout" 1. System will end the shop owner's session 2. System will return to the login screen
Exception Flow: System fails to update order status
Post Conditions: 1. Order statuses will be updated in the database 2. Customers will be notified of order status changes

Table 12: Use Case Descriptions[Shop Owner]

3.2.2.8 Veterinary Operations – Veterinary Perspective

Use Case Description
Name: Veterinary Operations
Brief Description: Allow veterinarian to manage appointments and medical records
Actors: Veterinarian
Relationship: Association: Veterinarian Include: View Appointments, Accept/Decline Appointments, Manage Medical Records Extends: Login Generalization:
Preconditions: Veterinarian has a registered and verified account in the system and veterinary is logged in
Basic Flow: 1. Veterinarian accesses the dashboard 2. System displays pending appointments and medical records 3. Veterinarian can select specific actions to perform
Alternate Flow:

When veterinarian selects "View Appointments" 1. System displays list of pending and scheduled appointments 2. Veterinarian can view appointment details 3. System shows pet history and owner information When veterinarian selects "Manage Appointments" 1. Veterinarian can accept or decline appointments 2. System updates appointment status 3. System notifies pet owner of status change When veterinarian selects "Medical Records" 1. Veterinarian can view pet medical history 2. System allows adding new medical records 3. Veterinarian can update existing records
Exception Flow: System fails to update appointment status, unable to access medical records, connection timeout during record update
Post Conditions: 1. Appointment statuses are updated in the system 2. Medical records are maintained and updated 3. Pet owners are notified of any changes

Table 13: Use Case Descriptions [Veterinarian]

3.2.2.9 Admin Operations– Admin Perspective

Use Case Description
Name: Admin Operations
Brief Description: Allow admin to manage various aspects of the system

Actors: Admin
Relationship: Association: Admin Include: Manage User, Manage Driver, Manage Rider, Manage E-commerce, Manage User Pet, Manage Pet Taxi, Manage Vet Appointments, Manage Tamagotchi Game, Manage Pet Hotel, Manage Pet Grooming Extends: Login (Authentication) Generalization:
Preconditions: Admin needs to login account first
Basic Flow: Admin logs into admin dashboard System displays all management modules Admin selects specific management function
Alternate Flow: When admin selects "Manage User" 1. System displays list of all users 2. Admin can view user details 3. Admin can edit user information 4. Admin can disable/enable user accounts When admin selects "Manage Driver" 1. System displays list of all drivers 2. Admin can view driver details 3. Admin can verify driver documents 4. Admin can approve/reject driver applications 5. Admin can suspend driver accounts

When admin selects "Manage Rider"

1. System displays list of all riders
2. Admin can view rider details
3. Admin can verify rider information
4. Admin can suspend rider accounts

When admin selects "Manage E-commerce"

1. System displays all shop listings
2. Admin can review product listings
3. Admin can manage shop registrations
4. Admin can monitor transactions

When admin selects "Manage User Pet"

1. System shows all registered pets
2. Admin can verify pet registrations
3. Admin can review pet documentation

When admin selects "Manage Pet Taxi"

1. System displays all pet taxi services
2. Admin can monitor ongoing rides
3. Admin can review service complaints

When admin selects "Manage Vet Appointments"

1. System shows all veterinary bookings
2. Admin can monitor appointment schedules
3. Admin can handle booking disputes

When admin selects "Manage Tamagotchi Game" 1. System displays game statistics 2. Admin can adjust game parameters 3. Admin can monitor user engagement When admin selects "Manage Pet Hotel" 1. System shows all hotel bookings 2. Admin can review hotel facilities 3. Admin can handle booking issues When admin selects "Manage Pet Grooming" 1. System displays grooming appointments 2. Admin can manage service providers 3. Admin can handle service complaints
Exception Flow: System fails to update or save changes
Post Conditions: 1. Changes made by admin will be stored in the database 2. System will display successful update messages for each action 3. Affected users, drivers, riders, or customers may be notified of relevant changes

Table 14: Use Case Descriptions [Admin]

3.2.2.10 Tamagotchi Game – User Perspective

Use Case Description
Name: Tamagotchi Game
Brief Description: Allow user to interact with virtual pets and maintain their well-being.
Actors: User
Relationship: Association: User Include: Play Pet Game, Share Achievement, Display Pet Tips for virtual pets Extends: Login Generalization:
Preconditions: User needs to be logged into the system and User must have created at least one virtual pet
Basic Flow: 1. User accesses the Tamagotchi game section 2. System loads user's virtual pets and their status 3. User can select actions to interact with pets
Alternate Flow: When user selects "Play Pet Game" 1. System displays pet's current status 2. User can feed the pet 3. User can play with the pet 4. User can clean the pet 5. System updates pet's happiness levels When user selects "Share Achievement" 1. System displays user's achievements 2. User can select achievements to share

3. System generates shareable content 4. User can post to connected platforms When user selects display pet tips 1. System shows the tips 2. User can tick on what tasks has been done
Exception Flow: 1. Connection loss during gameplay 2. Failed to update pet status 3. Unable to share achievements 4. AI service unavailable
Post Conditions: 1. Pet status is updated in the system 2. Achievement records are maintained 3. User progress is saved 4. System logs are updated

Table 15:Use Case Descriptions [Tamagotchi Game]

3.2.2.11 Pet Taxi Booking – User Perspective

Use Case Description
Name: Pet Taxi Booking
Brief Description: Allow users to book transportation services for their pets
Actors: User
Relationship: Association: User, Driver Include: Choose Place, View Available Time Slot Extends: Login Generalization:
Preconditions: 1. User must be logged into the system 2. User must have registered pet information 3. Valid payment method must be available
Basic Flow: 1. User accesses pet taxi booking section 2. System displays available services 3. User selects booking preferences
Alternate Flow: When user selects "Choose Place" 1. System shows map interface 2. User can input pickup location 3. User can input destination 4. System calculates estimated fare When user selects "View Available Time Slot" 1. System displays calendar 2. User can select preferred date 3. System shows available time slots 4. User can choose preferred time
Exception Flow:

1. No available drivers in area 2. Payment processing failure 3. Booking confirmation error 4. Location services unavailable
Post Conditions: 1. Booking is confirmed in system 2. Driver is assigned 3. User receives confirmation 4. Payment is processed

Table 16:Use Case Descriptions [Pet Taxi Booking]

3.2.2.12 Pet Profile Management – User Perspective

Use Case Description
Name: Pet Profile Management
Brief Description: Allow users to manage their pet's information and records
Actors: User
Relationship: Association: User Include: Manage Pets, View Medical Records, View Prescriptions, Add Pet Diet, Manage Pet Diary Extends: Login Generalization:
Preconditions: 2. User must be logged into the system 3. User must have owner verification
Basic Flow: 1. User accesses pet profile section 2. System displays registered pets 3. User selects management options
Alternate Flow: 1. When user selects "Manage Pets"

2. System shows list of registered pets 3. User can add new pet 4. User can update pet information 5. User can upload pet photos When user selects "View Medical Records" 1. System displays pet's medical history 2. User can view past treatments 3. User can access vaccination records 4. User can download medical reports When user selects "View Prescriptions" 1. System shows current medications 2. User can view dosage instructions 3. User can set medication reminders 4. User can request prescription renewals When user selects "Add Pet Diet" 1. System displays dietary options 2. User can create meal schedules 3. User can log food preferences 4. User can track dietary restrictions When user selects "Manage Pet Diary" 1. System shows pet diary entries 2. User can add new diary entries 3. User can track pet's milestones 4. User can record behavioral notes
Exception Flow: 1. Failed to update pet information 2. Unable to access medical records 3. Error saving diary entries 4. Profile picture upload failure

Post Conditions: 1. Pet profile is updated 2. Records are maintained 3. Changes are logged 4. Notifications are sent if needed

Table 17:Use Case Descriptions [Pet Profile Management]

3.2.2.13 Pet Hotel Booking – User Perspective

Use Case Description
Name: Pet Hotel Booking
Brief Description: Allow users to manage their pet's information and records
Actors: User
Relationship: Association: User Include: View Pet Hotel Type, View Booking History, View Pet Hotel Rules, View Available Time Slot, Book Hotel Booking Extends: Login Generalization:
Preconditions: 1. User must be logged into the system 2. Pet information must be registered in the system
Basic Flow: 1. User accesses pet hotel booking section 2. System displays available hotel options 3. User selects booking preferences
Alternate Flow: When user selects "View Pet Hotel Type" 1. System displays different room categories 2. User can view amenities for each type 3. User can see pricing details 4. System shows room availability

When user selects "View Booking History" 1. System shows past and current bookings 2. User can view booking details 3. User can access receipt history 4. User can review past stays When user selects "View Pet Hotel Rules" 1. System displays hotel policies 2. User can view check-in/out times 3. User can see pet requirements 4. User can review cancellation policy When user selects "View Available Time Slot" 1. System shows calendar interface 2. User can select check-in date 3. User can select check-out date 4. System displays available rooms When user selects "Book Hotel Booking" 1. System shows booking form 2. User selects room type 3. User enters pet details 4. User confirms booking details
Exception Flow: 1. No rooms available for selected dates 2. Booking confirmation failure 3. Invalid pet documentation
Post Conditions: 1. Booking is confirmed in system 2. Confirmation is sent to user 3. Hotel staff is notified

Table 18:Use Case Descriptions [Pet Hotel Booking]

3.2.2.14 Pet Grooming Service– User Perspective

Use Case Description
Name: Pet Grooming Service
Brief Description: Allow users to book and manage pet grooming appointments
Actors: User
Relationship: Association: User Include: View Services, Book Grooming Services, View Available Time Slot Extends: Login Generalization:
Preconditions: 1. User must be logged into the system 2. Pet profile must be complete
Basic Flow: 1. User accesses grooming service section 2. System displays available services 3. User selects desired grooming service
Alternate Flow: When user selects "View Services" 1. System shows list of grooming services 2. User can view service descriptions 3. User can see pricing details 4. User can check service duration When user selects "Book Grooming Services" 1. System displays booking form 2. User selects specific services 3. User chooses preferred groomer 4. User enters pet requirements

When user selects "View Available Time Slot" 1. System shows calendar interface 2. User can select preferred date 3. System displays available times 4. User can book preferred slot
Exception Flow: 1. Selected time slot unavailable 2. Groomer not available 3. Service booking failure 4. Payment processing error
Post Conditions: 1. Appointment is confirmed 2. Grooming staff is notified 3. User receives confirmation 4. Reminder is scheduled

Table 19:Use Case Descriptions [Pet Grooming Booking Service]

3.2.2.15 Pet Tips – User Perspective

Use Case Description
Name: Pet Tips
Brief Description: Allow users to access and interact with pet care tips and advice
Actors: User
Relationship: Association: User Include: View Tips, ask AI Extends: Login Generalization:

Preconditions: User must be logged into the system
Basic Flow: 1. User accesses pet tips section 2. System displays categories of tips 3. User selects desired category
Alternate Flow: When user selects "View Tips" 1. System shows list of available tips 2. User can filter tips by category 3. User can search specific topics 4. User can save favorite tips 5. User can share tips with others When user selects "Ask AI" 1. System activates AI assistant 2. User can ask questions about pet care 3. AI provides relevant answers and tips 4. System logs interaction for future reference
Exception Flow: 1. Content loading failure 2. Search function error 3. Unable to save favorites 4. Sharing feature unavailable
Post Conditions: 1. Viewed tips are logged 2. User preferences are updated 3. Shared content is tracked

Table 20:Use Case Descriptions [Pet Tips]

3.2.2.16 Hotel Owner Operations– Hotel Owner Perspective

Use Case Description
Name: Hotel Owner Operations
Brief Description: Allow hotel owner to manage pet hotel operations and bookings
Actors: Hotel Owner
Relationship: Association: Hotel Owner Include: Manage Hotel Booking, View Hotel Statistic Chart Extends: Login Generalization:
Preconditions: 1. Hotel owner must be logged into the system 2. Hotel must be verified in the system
Basic Flow: 1. Hotel owner accesses hotel management dashboard 2. System displays current bookings and statistics 3. Hotel owner selects management function
Alternate Flow: When hotel owner selects "Manage Hotel Booking" 1. System shows list of pending bookings 2. Hotel owner can view booking details 3. Hotel owner can accept/decline bookings 4. Hotel owner can view pet information 5. Hotel owner can update room status 6. System notifies customers of booking status 7. Hotel owner can manage check-in/check-out When hotel owner selects "View Hotel Statistic Chart" 1. System displays occupancy rates 2. System shows revenue statistics 3. System presents booking trends

4. System displays customer feedback metrics 5. Hotel owner can filter statistics by date range 6. Hotel owner can export reports 7. System shows popular room types When hotel owner selects "Update Hotel Status" 1. System shows current room status 2. Hotel owner can mark rooms as available/unavailable 3. Hotel owner can update maintenance schedule 4. System updates availability in real-time
Exception Flow: 1. System fails to update booking status 2. Statistics generation error 3. Room status update failure 4. Customer notification error
Post Conditions: 1. Booking statuses are updated 2. Room availability is current 3. Statistics are generated 4. Customer notifications are sent

Table 21:Use Case Descriptions [Hotel Owner Management]

3.2.2.17 Grooming Salon Owner– Grooming Salon Perspective

Use Case Description
Name: Grooming Salon Owner
Brief Description: Allow grooming salon owner to manage services and appointments
Actors: Grooming Salon Owner

Relationship: Association: Grooming Salon Owner Include: Manage Grooming Booking, View Grooming Statistic Chart Extends: Login Generalization:
Preconditions: 1. Grooming salon owner must be logged into the system 2. Salon must be verified in the system
Basic Flow: 1. Grooming salon owner accesses management dashboard 2. System displays appointments and statistics 3. Grooming salon owner selects management function
Alternate Flow: When grooming salon owner selects "Manage Grooming Booking" 1. System displays list of appointments 2. Grooming salon owner can view appointment details 3. Grooming salon owner can accept/decline bookings 4. Grooming salon owner can view pet requirements 5. Grooming salon owner can assign groomers 6. System notifies customers of appointment status 7. Grooming salon owner can update service status When grooming salon owner selects "View Grooming Statistic Chart" 1. System shows service utilization rates 2. System displays revenue statistics 3. System presents popular services 4. System shows customer satisfaction metrics 5. Grooming salon owner can view groomer performance 6. Grooming salon owner can analyze peak hours 7. System generates service demand reports

When grooming salon owner selects "Update Grooming Status" 1. System displays current service status 2. Grooming salon owner can update service progress 3. Grooming salon owner can mark services as completed 4. System updates appointment schedule 5. Grooming salon owner can manage groomer availability
Exception Flow: 1. Appointment status update failure 2. Statistics calculation error 3. Service status update error 4. Groomer assignment failure
Post Conditions: 1. Appointment statuses are updated 2. Service availability is current 3. Statistics are generated 4. Customers are notified of updates 5. Staff schedules are maintained

Table 22:Use Case Descriptions [Grooming Salon Management]

3.2.3 Activity Diagram

3.2.3.1 User Authentication Activity Diagram

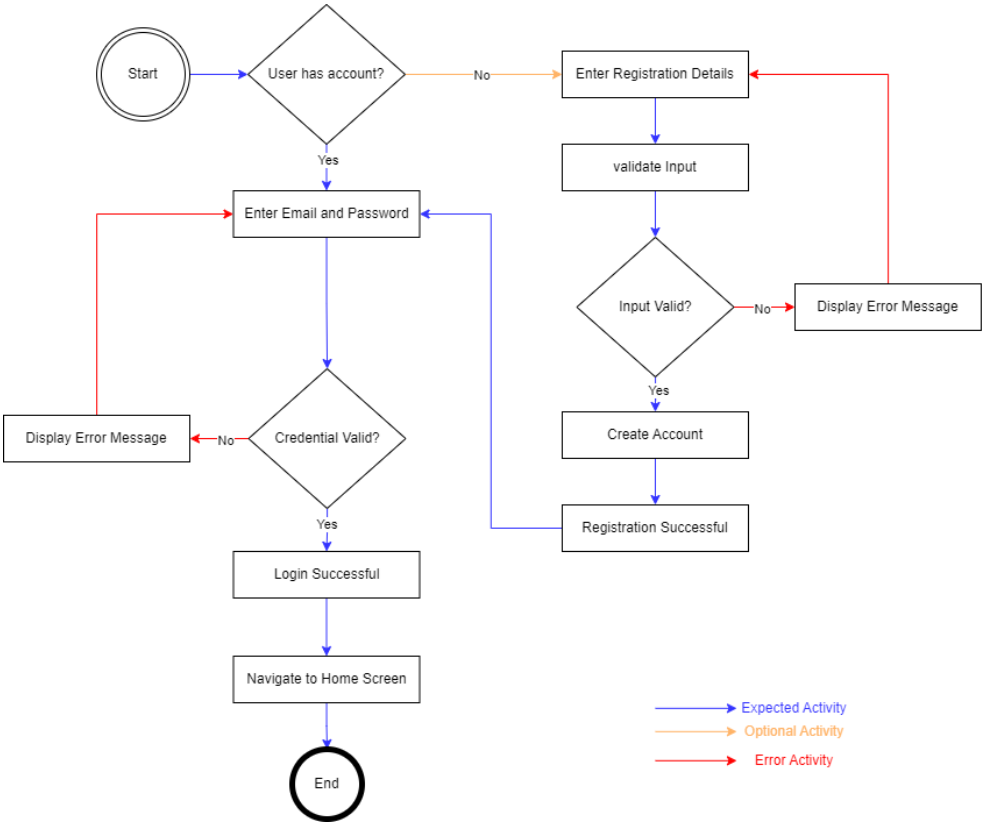

Figure 5: Activity Diagram

The **User Authentication Activity Diagram** illustrates the process by which a user interacts with the system to log in or register an account. The process starts with the user identifying if they already have an account. If the user does not already have an account, they are prompted to provide registration information, which is then validated by the system. If the input is correct, the system generates a new account and confirms the successful registration. However, if the input is incorrect, an error message appears, encouraging the user to address the problems. Users with existing accounts enter their email and password. The system verifies the validity of these credentials. If the credentials are correct, the user will be successfully logged in and directed to the home screen. If the credentials are invalid, an error notice is presented, prompting the user to try again. This graphic depicts the major decision points and probable outcomes of the login and registration

process, ensuring that the user is authenticated or guided through the necessary procedures to access the system.

3.2.3.2 Veterinary Appointment Activity Diagram

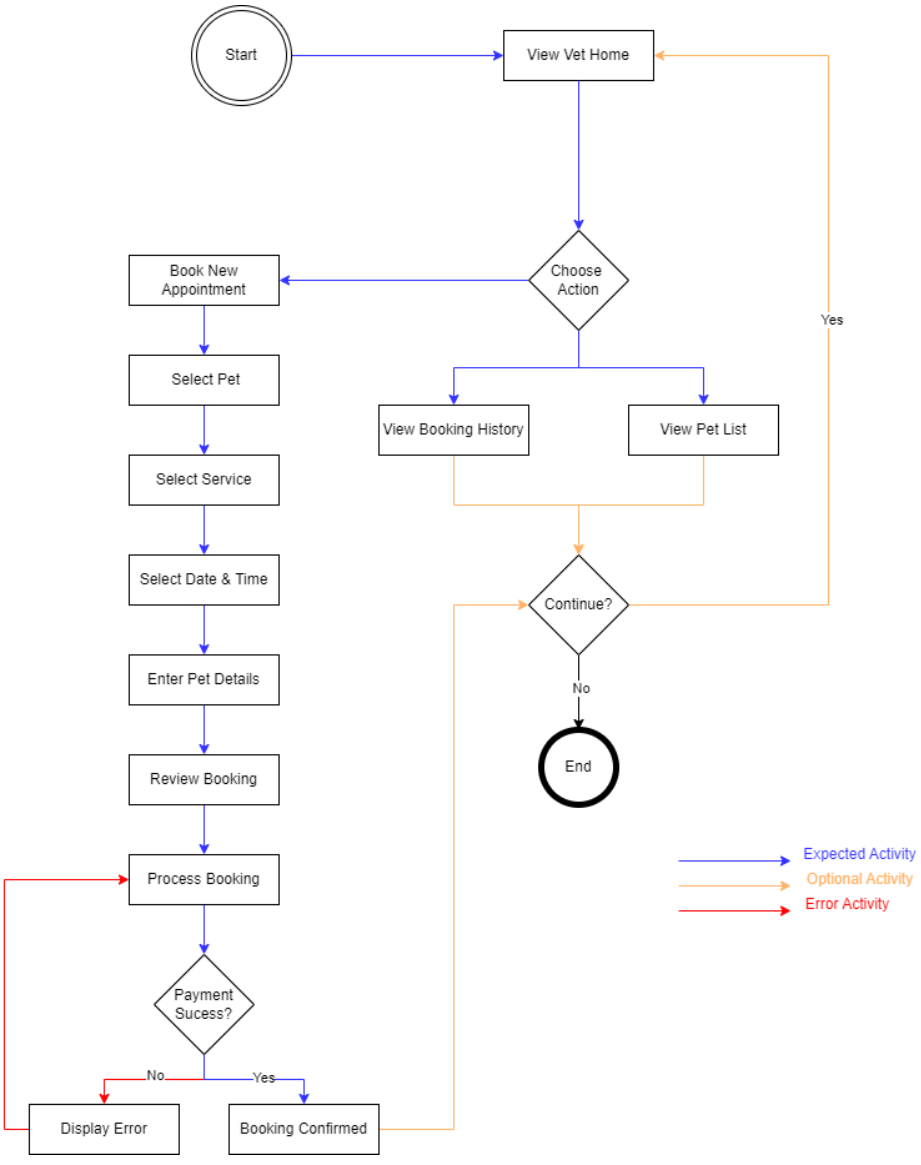

Figure 6: Veterinary Activity Diagram

The **Veterinary Appointment Activity Diagram** demonstrates the steps that a veterinarian uses to handle appointments in the system. The process begins with the veterinarian logging in and accessing the appointment list. The veterinarian can then select an appointment to see the details, including the pet's information and the appointment time. The veterinarian determines whether to

proceed with the appointment at this time. If they choose to process it, they can accept or decline the appointment. Accepting the appointment changes the status to "Confirmed," whereas declining requires the veterinarian to provide a reason, which changes the status to "Declined." The system then checks to see if there are any more appointments to manage. If there are, the veterinarian can continue the process. otherwise, they log out and end their session. The following diagram helps to visualize the sequence of actions and decisions that a veterinarian must do in order to efficiently manage appointments, ensuring that the status of each appointment is appropriately reported in the system.

3.2.3.3 Shop Owner Activity Diagram

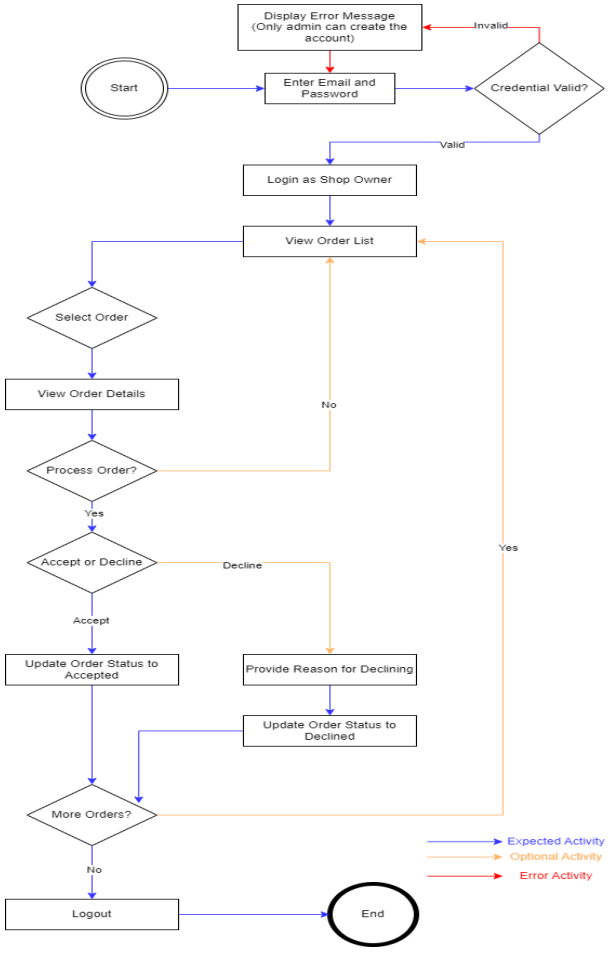

Figure 7: Shop Owner Activity Diagram

The **Shop Owner Activity Diagram** describes the procedure a business owner takes to manage customer orders. The procedure starts with the store owner logging in to see the list of orders. The

business owner picks an order from the list to examine its details, which include the items ordered as well as the delivery information. The shop owner then determines whether to process the order. If they decide to proceed, they can either accept the order and change its status to "Accepted," or deny it and explain why, changing the status to "Declined." After processing an order, the system determines whether there are any additional orders to handle. If there are any, the store owner can continue examining and processing orders; otherwise, they will log out and finish their session. This image depicts the important stages that a business owner takes to manage orders, ensuring that customer requests are processed efficiently and accurately within the system.

3.2.3.4 Admin Management Activity Diagram

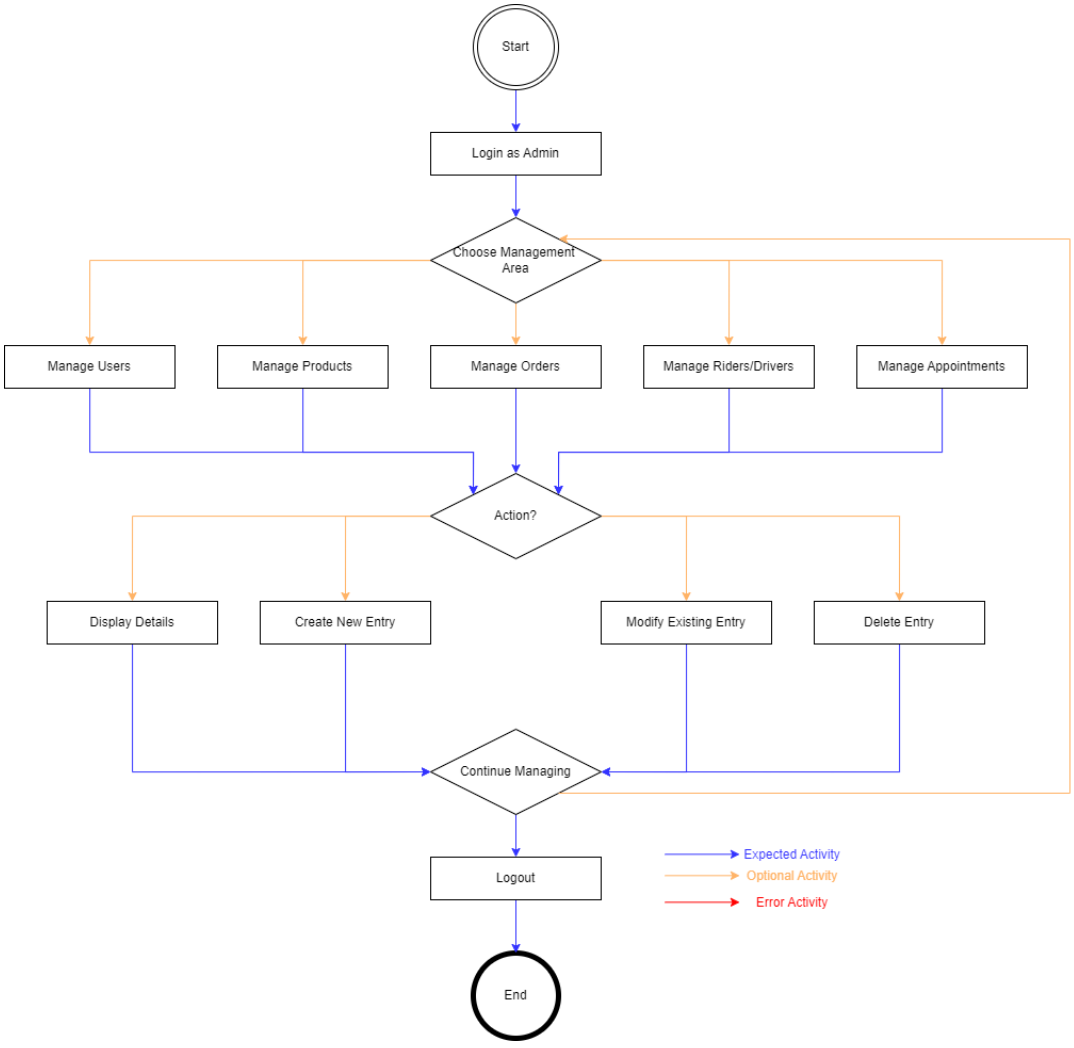

Figure 8: Admin Management Activity Diagram

The **Admin Management** Activity Diagram represents the workflow an administrator uses to handle various aspects of the system. Following login, the administrator is prompted to select a management area, such as Users, Products, Orders, Riders/Drivers, or Appointments. After selecting the management area, the administrator decides what action to take: display details of existing entries, add new entries, change existing ones, or delete entries. After doing the necessary action, the administrator can either continue managing other areas or log out once their tasks are completed. This graphic depicts administrators' flexibility and control over the system's numerous components, allowing them to manage critical data and system functions efficiently.

3.2.3.5 Rider and Driver Operations Activity Diagram

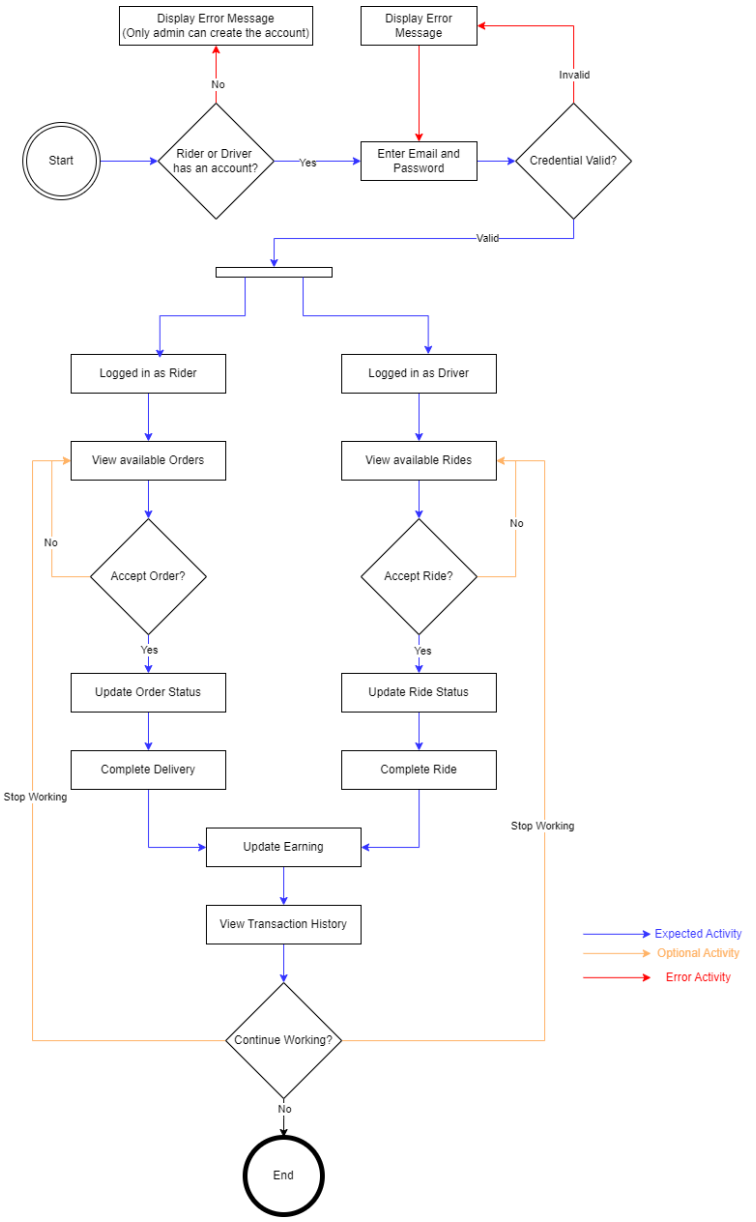

Figure 9: Rider and Driver Operations Activity Diagram

The **Rider and Driver Operations Activity Diagram** illustrates the workflow for riders and drivers to manage their separate tasks. The procedure begins with the rider or driver login with their credentials then the system determining if the user is a rider or a driver. If there is an invalid user credentials it will prompt that the user that whether they entered incorrect password or email or they do not have accounts. If they managed to login, riders are directed to view available orders, while drivers are directed to view available trips. If a rider or driver accepts an order or ride, the

system updates the status accordingly. After completing the delivery or ride, the system updates the rider's or driver's earnings. They can then evaluate their transaction history, which includes completed tasks and payments. If they want to continue working, the process cycles back to display available orders or rides; otherwise, the process terminates. This figure depicts the decision-making process and the sequence of actions that a rider or driver takes, ensuring that jobs are managed efficiently and revenues are accurately documented.

3.2.3.6 Tamagotchi Game Activity Diagram

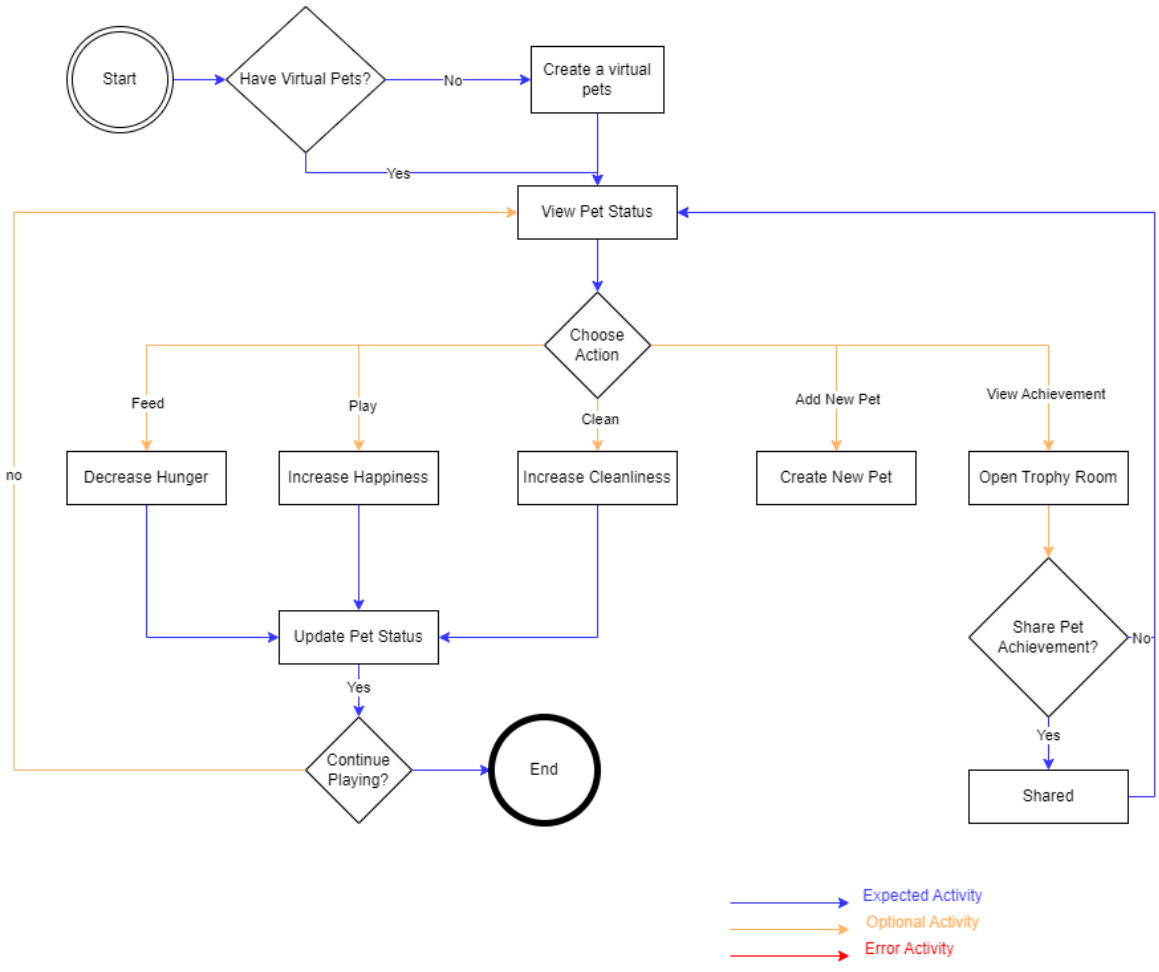

Figure 10: Tamagotchi Game Activity Diagram

The **Tamagotchi Game Activity Diagram** illustrates the comprehensive flow of user interactions within the virtual pet system, beginning with a check for existing virtual pets. If none exist, users

create new pets before proceeding to the main View Pet Status screen. From there, users can choose between five key actions: feeding to reduce hunger, playing to boost happiness, cleaning to improve cleanliness, adding new pets, or viewing achievements in the trophy room. The three core care activities (feeding, playing, cleaning) lead to an Update Pet Status action, followed by a choice to continue playing or end the session. The achievement path allows users to view and optionally share their accomplishments before returning to pet care. The diagram uses a clear color-coding system with blue arrows for primary activities and orange for optional ones, creating an intuitive representation of this engaging virtual pet care system that combines basic maintenance with social and achievement features.

3.2.3.7 E-Commerce Flow Activity Diagram

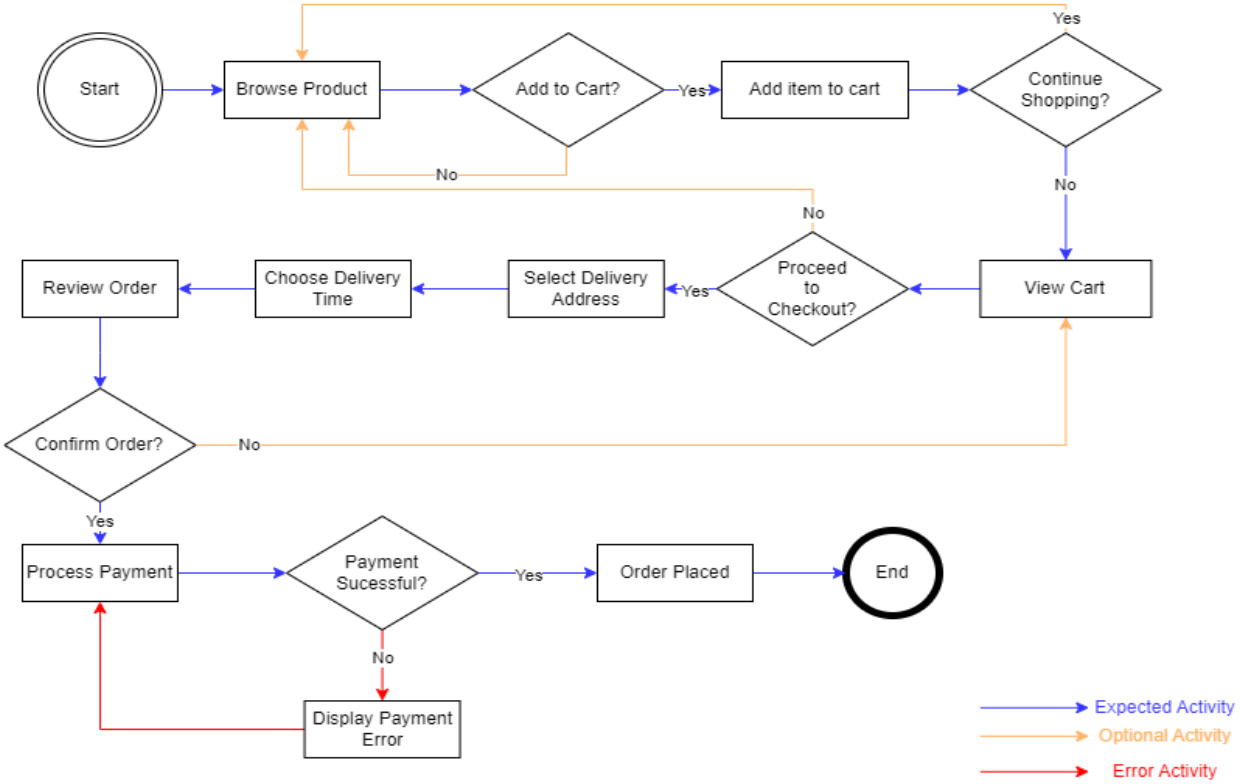

Figure 11: E-commerce flow Activity Diagram

The **E-Commerce Flow Activity Diagram** illustrates the processes that a user takes to browse and purchase products from the e-commerce module. The process starts with the user viewing the available products. If the user adds a product to their cart, they can choose to continue shopping

or view their cart. Once in the cart, the user specifies the delivery address and time before proceeding to checkout. The user reviews their order information and confirms the transaction. The system next processes the payment and, if successful, places the order. If the payment fails, an error notice appears, instructing the user to try again. The diagram ends with the successful placing of the order. This activity map depicts the user's journey from browsing to purchasing, highlighting critical decision points and guaranteeing a seamless and efficient shopping experience.

3.2.3.8 Pet Hotel Booking Activity Diagram

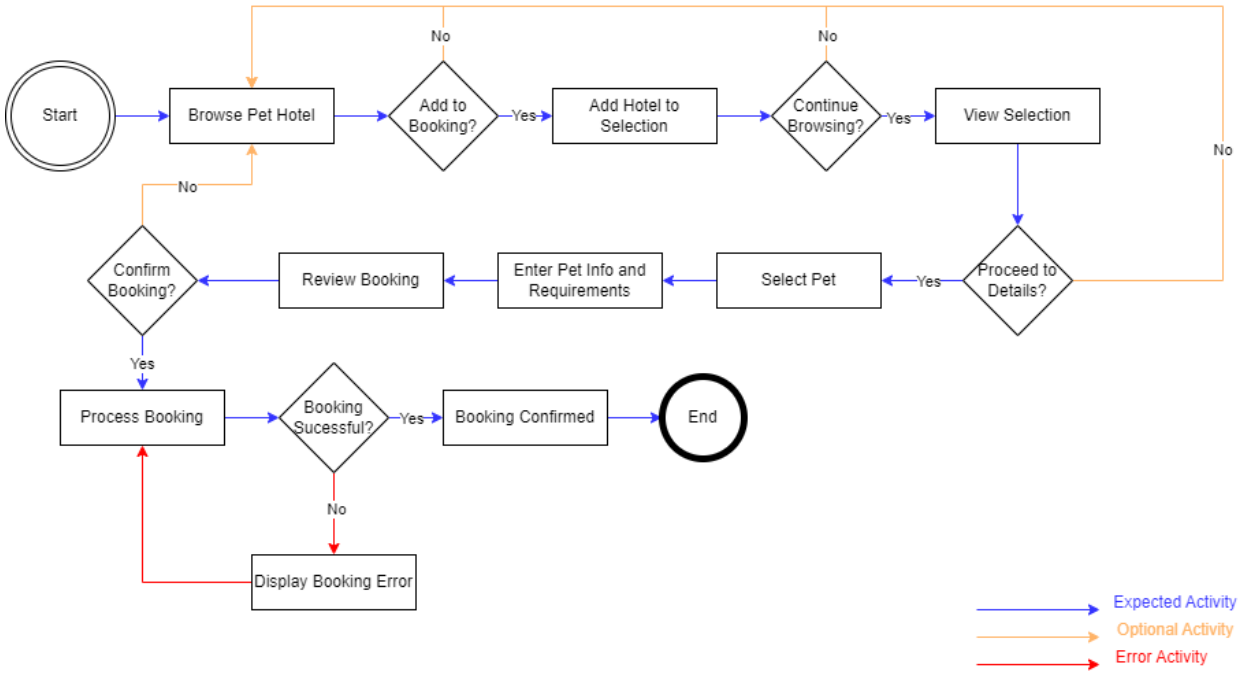

Figure 12: Pet Hotel Booking Activity Diagram

The **Pet Hotel Booking Activity Diagram** illustrates the streamlined process of reserving accommodations for pets. The flow begins at the Start node, where users browse available pet hotels. When a suitable hotel is found, users can choose to add it to their booking; if they decide to add it, the hotel is added to their selection, after which they can either continue browsing or proceed to view their selection. From the View Selection screen, users can proceed to enter details, which initiates a sequence of providing pet information and requirements, followed by a booking review. At the review stage, users can either confirm their booking or return to browsing if changes are needed. Once confirmed, the system processes the booking, which can either result in a

successful confirmation, ending the process, or display a booking error that routes users back to the processing step. The diagram employs a color-coded system where blue arrows indicate standard procedures, orange arrows show optional paths, and red arrows highlight error scenarios, creating a comprehensive visual representation of the pet hotel booking experience.

3.2.3.9 Pet Grooming Activity Diagram

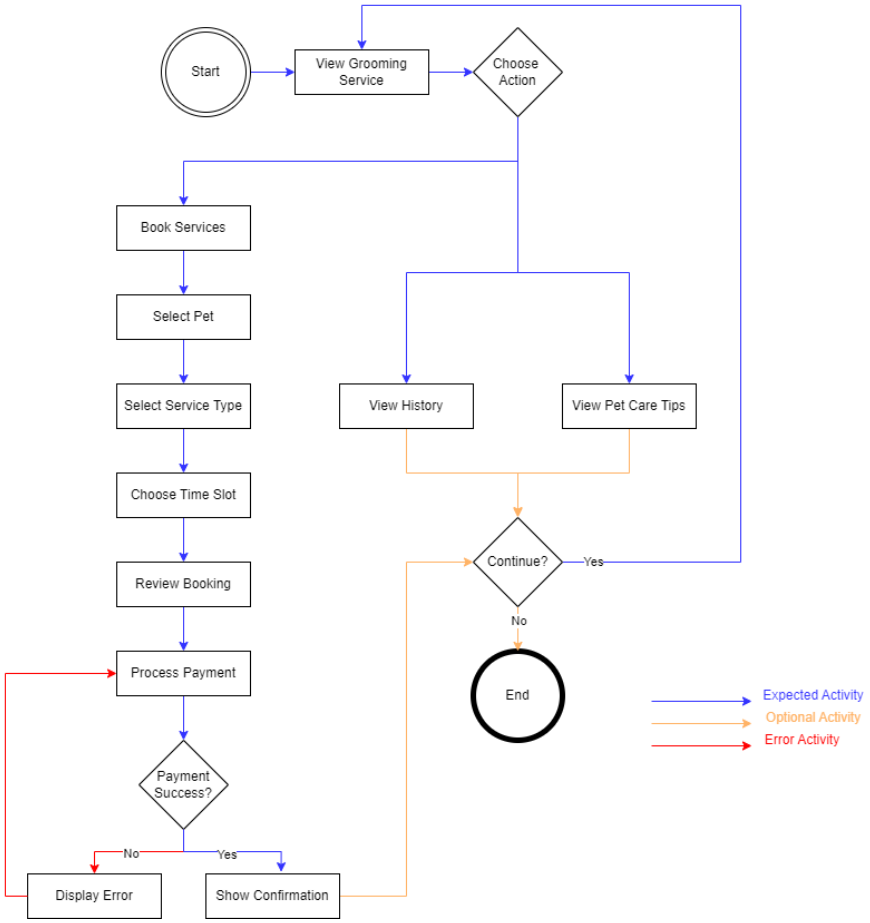

Figure 13: Pet Grooming Activity Diagram

The **Pet Grooming Activity Diagram** outlines the end-to-end process of booking a pet grooming appointment. Starting from the initial View Grooming Service screen, users are presented with three main action choices: they can book services, view service history, or access pet care tips. If booking services is selected, users follow a sequential process of selecting their pet, choosing a service type, picking a time slot, and reviewing their booking before proceeding to payment. The

payment process can either result in success, leading to a confirmation display, or failure, triggering an error message with the option to retry. From either the history view or pet care tips sections, users can choose to continue, which returns them to the action selection screen, or end their session. The diagram uses blue arrows to indicate standard pathways, orange for optional routes, and red arrows to highlight error scenarios, effectively mapping out the complete grooming service booking experience.

3.2.3.10 Pet Taxi Activity Diagram

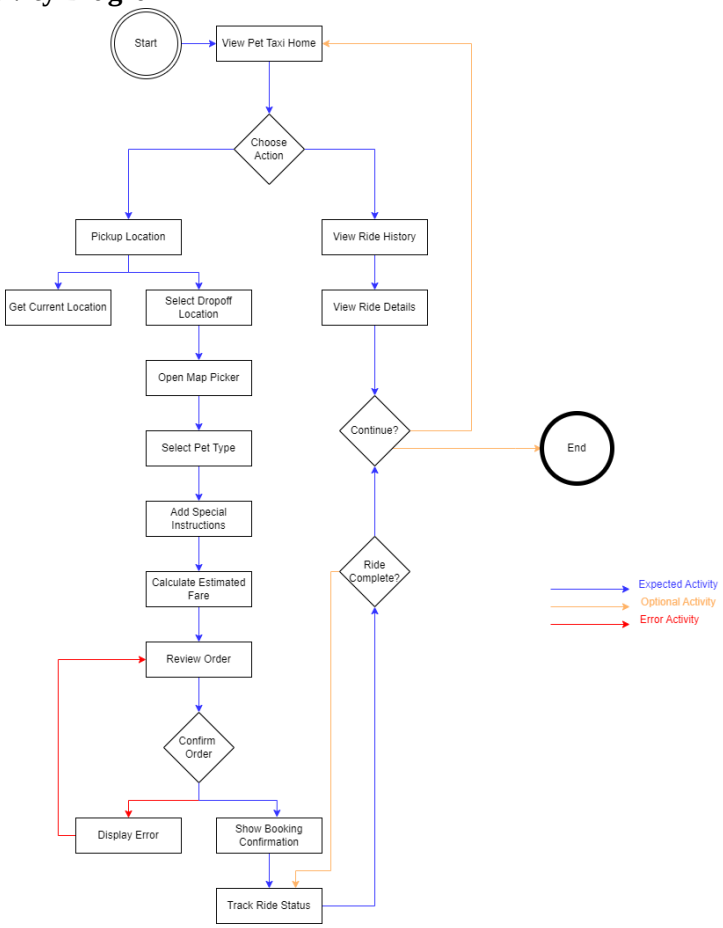

Figure 14: Pet Taxi Activity Diagram

The **Pet Taxi Activity Diagram** illustrates the process of arranging pet transportation services. Beginning at the View Pet Taxi Home screen, users can choose between booking a new ride or viewing their ride history. For new bookings, the system follows a detailed sequence: getting the current pickup location, selecting a dropoff location via a map picker, specifying the pet type, adding any special instructions, and calculating the estimated fare. After reviewing the order, users

can confirm their booking, which either results in a confirmation or displays an error requiring revision. Meanwhile, the ride history path allows users to view detailed records of past trips. Once a booking is confirmed, users can track their ride status until it's complete. The diagram uses blue arrows for primary actions, orange for optional paths, and red for error scenarios, effectively mapping the complete pet taxi booking and tracking experience.

3.2.3.11 Pet Tips and AI Activity Diagram

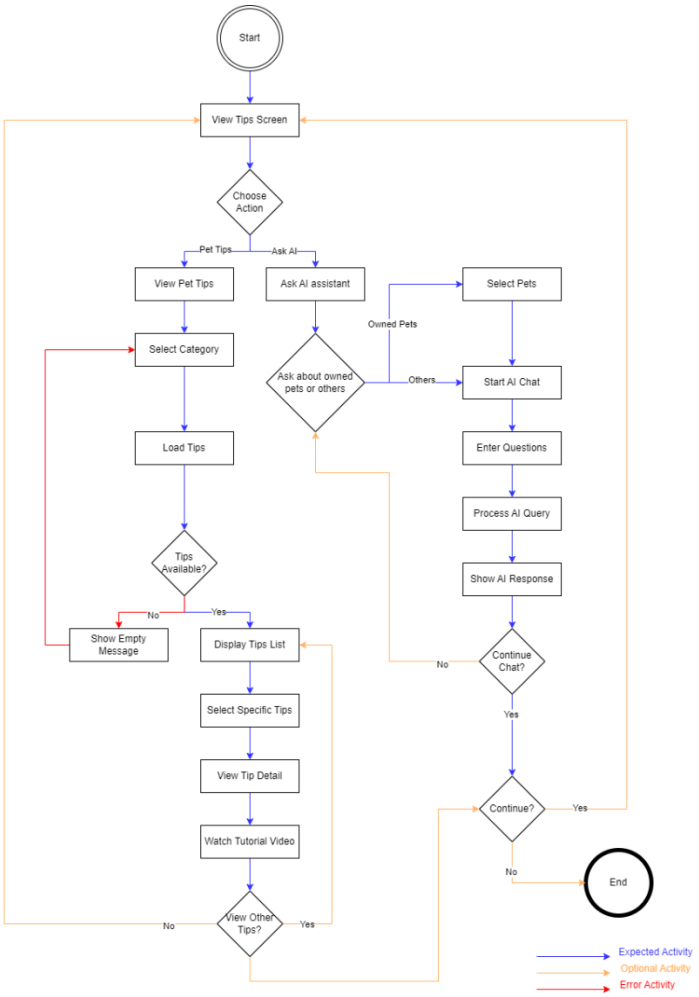

Figure 15: Pet Tips and AI Activity Diagram

The **Pet Tips and AI Assistant Activity Diagram** outlines two main pathways for accessing pet care information. Starting at the View Tips Screen, users can either browse pet tips or interact with an AI assistant. In the pet tips path, users select a category, and the system loads relevant tips; if

tips are available, they're displayed in a list, otherwise an empty message appears. Users can then select specific tips to view details and watch tutorial videos, with the option to browse more tips afterward. The AI assistant path offers two routes: for owned pets, users select their pets directly; for other pets, users start a general AI chat. Users can enter questions, receive AI responses, and continue the conversation as needed. The diagram uses blue arrows for standard flows, orange for optional paths, and red for error scenarios, creating a comprehensive map of both traditional tips browsing and AI-assisted pet care guidance.

3.2.3.12 Pet Hotel Owner Dashboard Activity Diagram

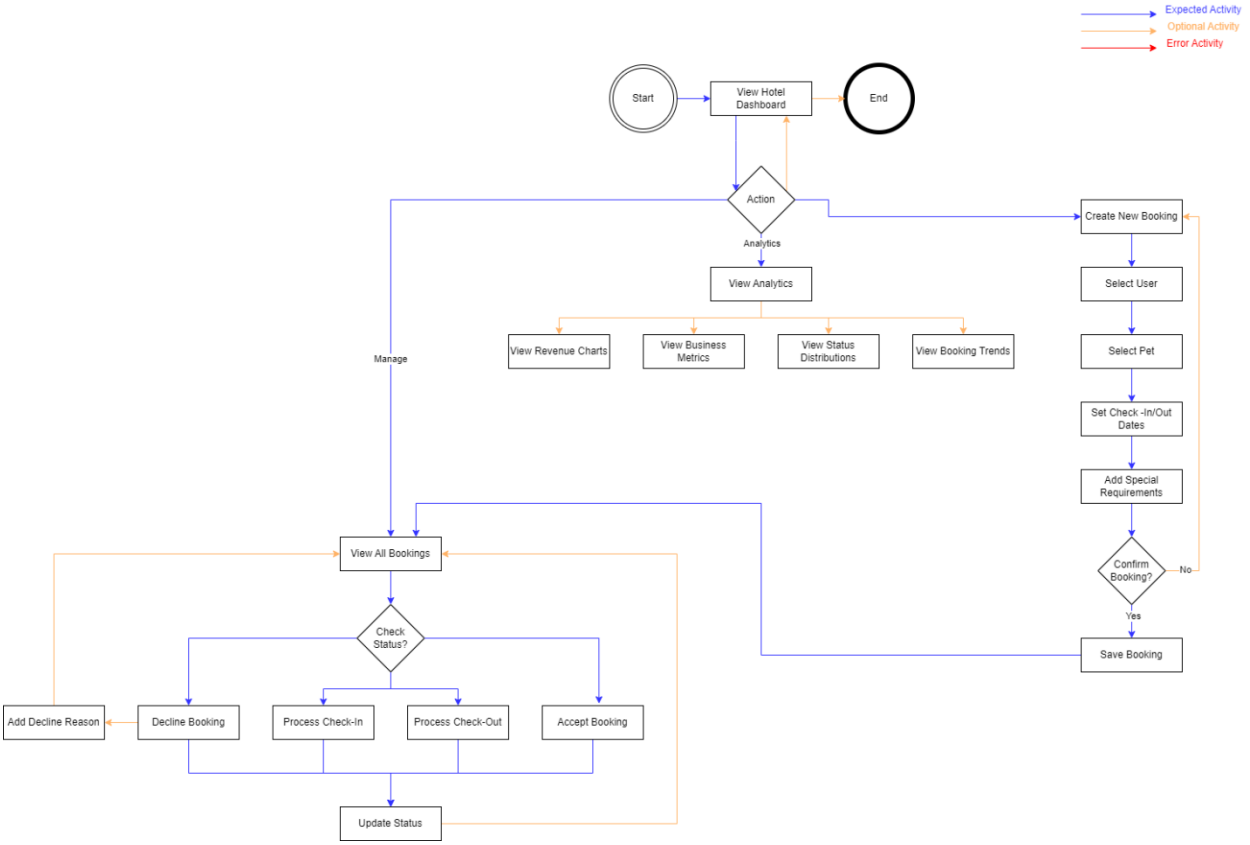

Figure 16: Pet Hotel Owner Dashboard Activity Diagram

The **Pet Hotel Owner Dashboard Activity Diagram** illustrates the management system for pet hotel operators. Beginning at the View Hotel Dashboard, owners have three main action paths: analytics viewing, booking management, and creating new bookings. The analytics section provides comprehensive business insights through revenue charts, business metrics, status distributions, and booking trends. In the booking management path, owners can view all bookings

and process different status changes including check-ins, check-outs, accepting bookings, or declining them (with required reason). Each status change updates the system accordingly. For new bookings, owners follow a sequence of selecting users, choosing pets, setting check-in/out dates, adding special requirements, and saving the confirmed booking. The diagram uses blue arrows to indicate standard operations, orange for optional activities, and includes a decision flow for booking confirmations, creating a complete visualization of the pet hotel management system from an owner's perspective.

3.2.3.13 Pet Grooming Salon Management Activity Diagram

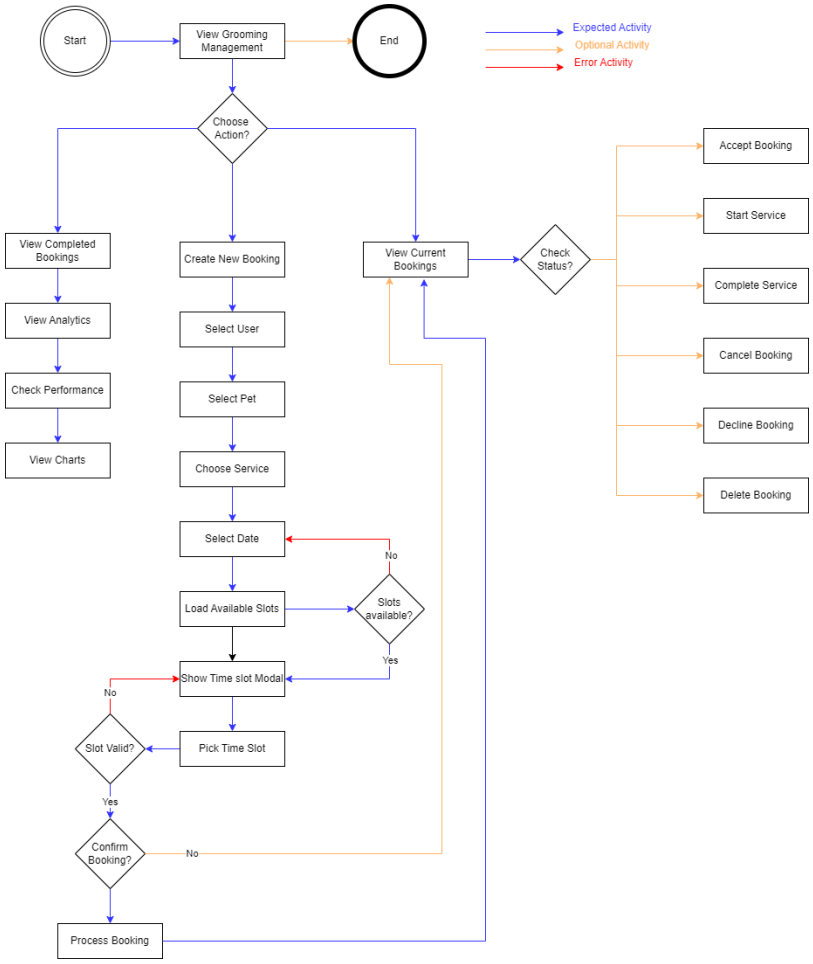

Figure 17: Pet Grooming Salon Management Activity Diagram

The **Pet Grooming Salon Management Activity Diagram** outlines the complete workflow for grooming service providers. Starting at the View Grooming Management screen, operators have three main pathways: viewing completed bookings with analytics, creating new bookings, or

managing current bookings. The completed bookings path allows review of analytics, performance checks, and chart visualizations. For new bookings, the system guides through a detailed process of selecting users, pets, services, and dates, then checks slot availability. If slots are available, users can pick a specific time slot, with error handling for invalid selections. The current bookings management path enables various status actions including accepting bookings, starting services, completing services, canceling or declining bookings, and deleting entries. The diagram employs blue arrows for standard operations, orange for optional paths, and red for error scenarios, providing a comprehensive visualization of the grooming salon's booking and service management system.

3.2.3.14 Pet Veterinary Management System Activity Diagram

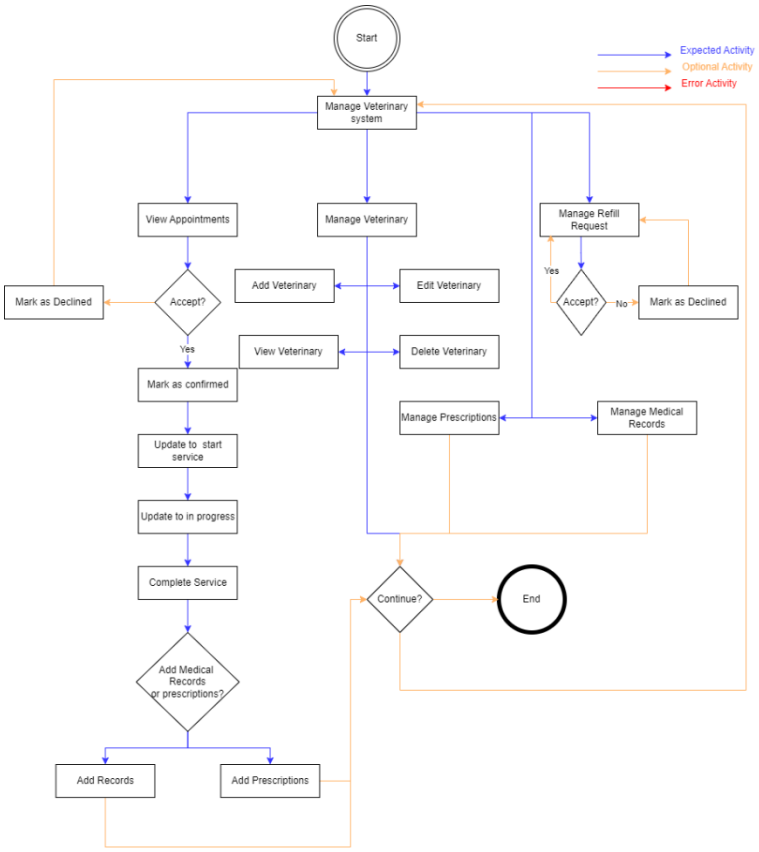

Figure 18: Pet Veterinary Management System Activity Diagram

The **Veterinary Management System Activity Diagram** illustrates the comprehensive workflow for managing a veterinary practice. From the initial Manage Veterinary System screen, the system

branches into three primary functions: appointment management, veterinary staff management, and refill request handling. The appointment pathway follows a sequential process from acceptance (or declination) through service delivery, including status updates for service start and progress, culminating in service completion with options to add medical records or prescriptions. The veterinary staff management section enables adding, editing, viewing, and deleting veterinary profiles, along with prescription and medical records management. The refill request pathway allows for accepting or declining medication refills. The diagram uses blue arrows for standard procedures, orange for optional activities, and includes decision points for appointment acceptance and medical record additions, creating a complete visualization of veterinary practice operations from both clinical and administrative perspectives.

3.3 System Architecture Diagram

The Pet Care Application represents a sophisticated software architecture designed to provide comprehensive pet care services through an integrated digital platform. The system's architecture is meticulously structured to support various pet-related services, from basic pet care to specialized medical attention, all while maintaining seamless user experiences across different roles and access points.

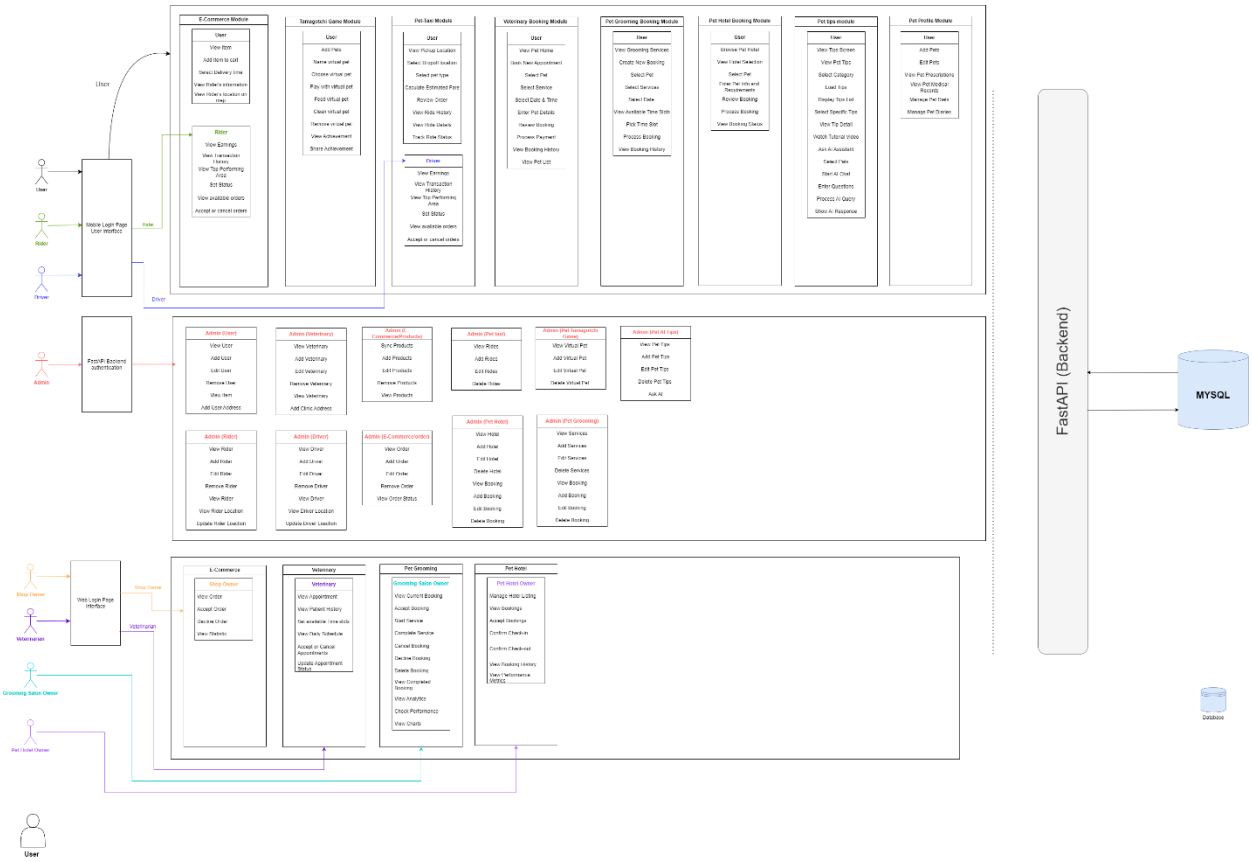

Figure 19: System Architecture Diagram

The architecture's foundation begins with a sophisticated Presentation Layer that implements a dual-interface strategy for optimal user access. The Mobile Login Page Interface is specifically engineered for end-users including pet owners who need on-the-go access to services, riders managing pet transportation requests, and drivers coordinating pet taxi services. Complementing this, the Web Login Page Interface serves the business and administrative side, providing robust

management tools for administrators overseeing system operations, shop owners managing their pet-related products, veterinarians handling medical appointments, and pet grooming salon owners coordinating grooming services.

The Application Layer stands as the system's operational cornerstone, orchestrating eight meticulously designed modules. The E-Commerce Module facilitates comprehensive product management, enabling users to browse, purchase, and track pet-related items while allowing sellers to manage inventories and monitor transactions. The Tamagotchi Game Module introduces an engaging virtual pet care experience, helping users understand pet care responsibilities through interactive gameplay. The Pet Taxi Module coordinates real-time transportation services, managing booking requests, driver assignments, and journey tracking. The Veterinary Booking Module streamlines medical care access, handling appointment scheduling, medical record management, and prescription tracking. The Pet Grooming Booking Module manages grooming service appointments, including service selection, scheduling, and status tracking. The Pet Hotel Module oversees accommodation services, managing bookings, check-ins/check-outs, and facility operations. The Pet Tips Module combines traditional care guides with AI-powered assistance, offering personalized pet care advice. The Pet Profile Module serves as a centralized repository for pet information, managing records, preferences, and care history.

The admin section demonstrates the system's robust management capabilities through specialized interfaces for different service providers. It includes comprehensive tools for user account management, veterinary service administration including appointment oversight and medical record access, product catalog management, driver and rider coordination for transportation services, pet hotel operations management, grooming service oversight, order processing across all services, and unified booking administration.

At the system's technical foundation, FastAPI serves as the backend powerhouse, employing modern API development practices to ensure efficient data processing and seamless communication. It handles all API calls with high performance, implements complex business logic for various modules, and manages secure data exchange between the front-end interfaces and the MySQL database. This choice of FastAPI ensures rapid processing, robust error handling, and automatic API documentation, facilitating both development and maintenance.

The Database Layer, built on MySQL, implements a sophisticated data management system that securely handles diverse data types. It maintains detailed user profiles with authentication credentials, comprehensive product catalogs with real-time inventory tracking, booking and appointment information across all services, detailed pet profiles including medical history, complete transaction records, virtual pet game progress data, and service provider information. The database design emphasizes data integrity, efficient querying, and secure access control, ensuring that sensitive information remains protected while maintaining high performance across all system operations.

This robust architecture is fortified by modern security protocols, implementing authentication mechanisms, authorization controls, and data encryption to protect user information and system operations. The modular design facilitates system scalability, allowing for future service additions and modifications to meet evolving market demands in the pet care industry.

Attached Link to download draw.io file:
https://drive.google.com/file/d/1ovipOuy0aleL5EEL8WixgqCPxHA4vebU/view?usp=sharing
Please open the file through this link after downloaded:
https://app.diagrams.net/

3.4 Timeline

FYP1

Task	Period													
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Chapter 1 - Introduction														
Problem Statement and Motivation														
Objectives														
Project Scope and Direction														
Contributions														
Report Organization														
Chapter 2 - Literature Review														
Previous Works on Pet Care Application														
Overview of Three Similar Existing Systems														
Comparison Between Similar Systems.														
Proposed Solution														
Chapter 3 Proposed Method/Approach														
System Requirements														
System Architecture Diagram														
System Design Diagram														
Timeline														
Chapter 4 Preliminary Work														
Setting Up														
Chapter 5 Conclusion														

Figure 20: FYP1 Timeline

The first week of the project focusses on **Chapter 1 - Introduction**, which includes precisely identifying the problem statement and justification for the project. This includes defining the problem being addressed, its significance, and why it is worth tackling. The objectives are then defined using the SMART criteria (Specific, Measurable, Achievable, Relevant, and Time-bound) to guide the development process. The project's scope and direction are specified, detailing what will be included and eliminated. The project's anticipated contributions to the field of study, the community, or the industry are highlighted, and an outline of the report organization is provided, specifying the chapters and parts that will be included.

The second week focusses on **Chapter 2 - Literature Review**, which researches and summarizes past works on pet care apps to identify pertinent trends, technologies, and market gaps. A full introduction of three similar existing applications is provided, followed by a comparative analysis to determine their strengths and limitations. Based on the literature review and comparisons, a proposed solution is built to solve the identified gaps while leveraging the strengths of existing systems.

From weeks 3 to 6, the project progresses to **Chapter 3 - Proposed Method/Approach**, which defines system requirements for both functional and non-functional aspects. A system architecture diagram is intended to provide a high-level overview of how the system's components will interact, ensuring that it is well-organized and scalable. Along with this, a more thorough system design diagram is created to demonstrate how the components will interact at a granular level. A timeline for the project's development is defined, including milestones, deadlines, and major deliverables, to guarantee that all tasks are completed on schedule.

During weeks 7 through 10, the emphasis is on **Chapter 4 - Preliminary Work**, which includes setting up the development environment, selecting tools and technologies, and ensuring that everything is ready for the development phase. This preparation guarantees that the foundation is firm before proceeding with the system's construction.

In week 11, the final chapter, **Chapter 5 - Conclusion**, is written to summarize the project's results, lessons learnt, and prospective future work. This chapter reviews the project as a whole, assessing how effectively the objectives were completed and recommending opportunities for further improvement or research.

FYP2

Task	Period						
	W1	W2	W3	W4	W5	W6	W7
Mobile Application Implementation							
FastAPI							
MYSQL							
React							
React Native							
Chapter 5: Testing							
Chapter 6: Conclusion							

Figure 21: FYP2 Timeline

The **Mobile Application Implementation** phase, running from weeks 1 to 6, forms the core development period where the actual software is built. This begins with setting up FastAPI as the backend framework, providing robust and efficient API endpoints to handle all server-side operations. The MySQL database integration follows, establishing the data persistence layer that will store and manage all application data

securely. The frontend development then progresses on two parallel tracks - React for the web interface and React Native for the mobile application, ensuring a consistent user experience across all platforms while maintaining platform-specific optimizations.

Week 7 marks the transition into the final stages of the project. **Chapter 5 - Testing** encompasses comprehensive testing of all components, ensuring the application meets quality standards and functions as intended across different scenarios and use cases. This includes everything from basic functionality testing to complex integration scenarios, ensuring robust performance and security.

The project concludes with **Chapter 6 - Conclusion**, which serves as a reflective capstone to both FYP1 and FYP2. This final chapter ties together the entire project journey, evaluating the success of the implementation against the original objectives set in FYP1, discussing the challenges encountered and overcome during development, and suggesting potential future enhancements to the system.

3.5 Methodology

3.5.1 Agile Methodology

Figure 22: Agile methodology

Overview:

Agile software development involves iterative and incremental processes. It emphasizes adaptability, ongoing user input, and quick delivery of working software. Agile approaches are adaptable, which makes it simpler to implement modifications even late in the development cycle. [7]

Explanation:

Agile methodology is an iterative and incremental approach to software development that prioritizes flexibility, collaboration, and fast delivery of functioning software. The project is divided into short, manageable pieces known as iterations or sprints, which generally run between

one and four weeks. The team plans the precise features or components to be built throughout each sprint from the start. [7] The development phase follows, during which design, coding, and testing are completed within the sprint, with the goal of delivering a working section of the application at the conclusion of the sprint. Following the sprint, the product is reviewed and shown to stakeholders, who offer comments on its development. This input is then utilised to improve the product and plan for the next sprint. The process continues iteratively, with each sprint building on the previous one, until the final product is delivered. Agile's strength is its adaptability and responsiveness to change, which allows the project to grow depending on ongoing user feedback and improvement. This makes it ideal for projects whose requirements are not completely specified at the start or may grow over time, since it allows the development team to adjust fast and provide a solution that closely fits with customer demands [8].

How It Works:

- **Iteration 1: Planning**: The project is divided into short, manageable sections known as iterations or sprints. Each sprint usually lasts 1-4 weeks.
- **Iteration 2: Development**: During each sprint, a functional component of the application is built and deployed. During the sprint, teams focus on design, development, and testing.
- **Iteration 3: Review and Feedback**: Following each sprint, the product is displayed to stakeholders to solicit feedback. This feedback is then utilized to design the following sprint.
- **Iteration 4: Refinement and Release**: The procedure is iterative until the final result is produced. The emphasis is on ongoing development and adaptability to changes.

Suitability for the Pet Care Application:

- **Advantages**: Agile is highly adaptable and ideal for projects whose requirements may change. It supports ongoing feedback and improvement, making it ideal for a university FYP project that requires iterative development and input from supervisors.

- **Disadvantages**: Agile requires active user participation and ongoing input, which can be resource-intensive. However, in a university project context, supervisors and peers frequently provide assistance to counteract this.

3.5.1 Why Agile was Chosen

The Agile methodology was chosen as the best approach for the Pet Care Application because of its flexibility, iterative development process, and emphasis on user feedback. As a Final Year Project (FYP) for a university student, the Agile methodology enables continuous development and adaptation, which is critical while working on a project that may evolve in response to feedback from supervisors and end-users. Agile's capacity to tolerate modifications even in later phases of development ensures that the application meets the project's goals and criteria, making it the greatest choice of this situation.

CHAPTER 4 PRELIMINARY WORK

4.1 Setting up

4.1.1 Software

Before starting work on the PetPaw program, numerous accounts must be created and software installed to establish the development environment. The following actions were done to prepare for the development process:

1. Expo CLI Installation: Expo CLI was installed globally on the development machine using npm:

```
npm install -g expo-cli
```

2. Visual Studio Code: Visual Studio Code was chosen as the primary IDE because to its vast feature set and React Native support.
3. Node.js and npm: The LTS version of Node.js was installed, along with npm for managing project dependencies.
4. Git and GitHub: Git was installed for version control, and a GitHub account was created to host the project's repository.
5. Expo Account: An Expo account was created at expo.dev to manage Expo projects and use Expo services.
6. React Native Dependencies: npm was used to install the necessary React Native dependencies, such as navigation and UI component libraries.
7. AsyncStorage Setup: AsyncStorage was configured to handle local data persistence for features such as user login and game state.
8. FastAPI Setup: Python FastAPI was installed using pip:

```
pip install fastapi
```

Uvicorn, an ASGI server, was also installed to run the FastAPI application:

```
pip install uvicorn
```

9. MySQL Installation: MySQL Community Server and MySQL Workbench were installed to administer and query databases.
10. Python MySQL Connector: The MySQL Connector for Python was installed to interface with MySQL from the FastAPI backend:

```
pip install mysql-connector-python
```

11. Sanity CMS Setup: Sanity.io was selected as the headless CMS for handling content in the PetPaw app. The Sanity CLI was installed globally:

```
npm install -g @sanity/cli
```

A new Sanity project was launched for PetPaw, and the appropriate content models (for items, shops, etc.) were created in the Sanity Studio.

12. Sanity Client: Sanity client was installed in the React Native project to connect with the Sanity API:

```
npm install @sanity/client
```

13. API Keys and Configuration: The necessary API keys were retrieved and securely stored, including the Sanity project ID and dataset name.
14. Environment Setup: A [.env] file was established to hold sensitive data such as database credentials, API keys, and Sanity project details.
15. Database Setup: The MySQL database for PetPaw was created and setup. Initial tables were created for users, pets, orders, and other required entities.
16. FastAPI Project Structure: A project structure for the FastAPI backend was developed, with folders for routes, models, and utilities.
17. Development Device/Emulator: Testing was conducted using both actual devices (Android and iOS) and emulators. The Expo Go app was loaded on physical devices to facilitate speedy testing.

18. Postman: Postman was deployed to test API endpoints during development of the FastAPI backend.

4.1.2 Hardware

The hardware requirements for developing and testing the PetPaw program were low, with a primary focus on the development environment and testing devices.

1. Development Computer: An ordinary laptop or desktop computer with the processing power and memory to run Visual Studio Code, Expo CLI, and other development tools.
2. Mobile Devices for Testing:
    - An Android smartphone (e.g., Vivo Iqoo 8 pro) using the most recent stable version of Android.
    - An iOS device (e.g., iPhone 14 Pro Max) using the most recent stable version of iOS
    - Expo Go was installed on both devices to allow for application testing during development.
3. Expo Go Application: Expo Go was installed on both the Android and iOS test devices. This allows rapid testing and iteration of the program without the requirement to create native binaries.
4. Internet Connection: Downloading dependencies, submitting updates to Expo, and testing real-time application capabilities all required a reliable and fast internet connection.
5. USB Cables: USB cables are used to connect mobile devices to development computers for debugging and deployment of builds.

While not exactly hardware, it is worth noting that several device emulators were used during development.

6. iOS Simulator (on macOS): Used to evaluate the app's behavior on different iOS device models.
7. Android Emulator: Used to test the app on various Android device settings.

4.2 Screens Development

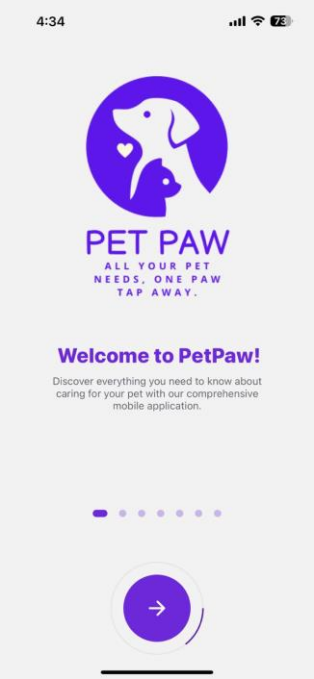

Figure 23: Onboarding Screens

This is the main app onboarding screen. It introduces users to the PetPaw app's features and functionality through a series of informational slides.

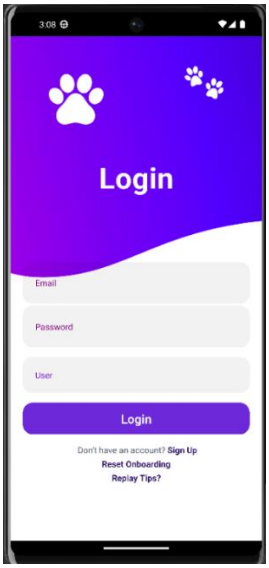

Figure 24: Login Screens

This is the login screen. It authenticates users, allowing them to access their accounts. It also provides options to sign up, reset onboarding, or replay introductory tips.

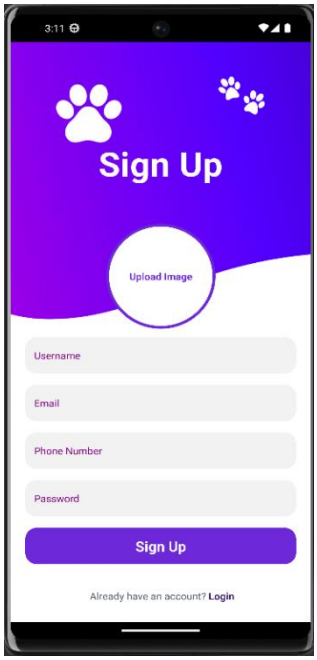

Figure 25: Sign Up Screens

This is the user registration screen. It allows new users to create an account by providing their details and uploading a profile picture.

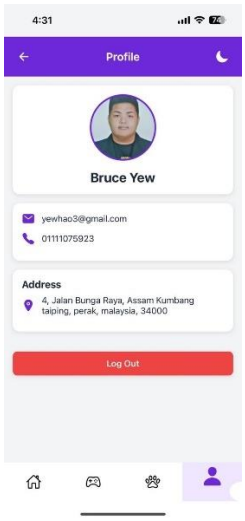

Figure 26: User Profile Screens

This screen displays the user's profile information. It allows users to view their personal details, add new addresses, change dark theme and log out of the application.

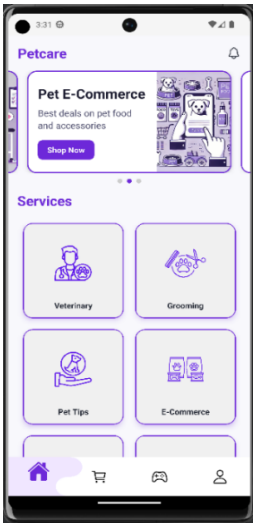

Figure 27: User Home Screens

This is the home screen of the PetPaw app. It displays various services and features available to users, including Pet E-Commerce, Veterinary services, Grooming, Pet Tips, and E-Commerce. Users can navigate to different sections of the app from here.

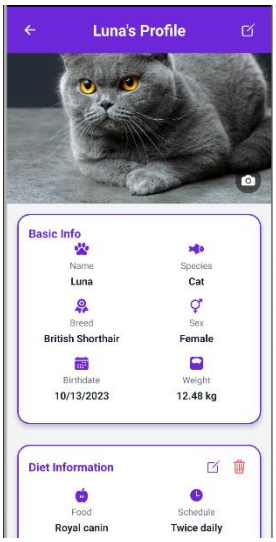

Figure 28: Detailed Pet Profile Screens

This screen shows Luna's detailed profile with basic information (name, breed, gender, birthdate, weight) and diet information. Users can edit their pet's details and manage dietary requirements.

Figure 29: Pet Profile Screens

The My Pets screen displays thumbnail navigation for multiple pets, with Luna's profile card highlighted. It includes quick access to Pet Diary, Medical Records, and Prescriptions, with a bottom navigation bar for core app functions.

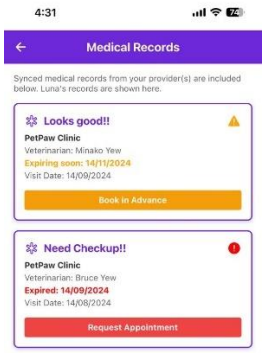

Figure 30: Pet Medical Records Screens

This screen displays the pet's medical history, showing past check-ups and upcoming appointments. It includes status indicators for visits that are "Looks good!" and those that "Need Checkup!" with the ability to request new appointments.

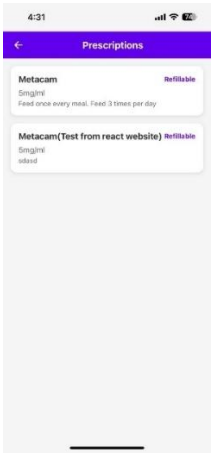

Figure 31: Pet Prescriptions Screens

This screen lists the pet's current medications and prescriptions, showing dosage instructions and refill status. Each prescription includes the medication name, dosage details, and timing for administration.

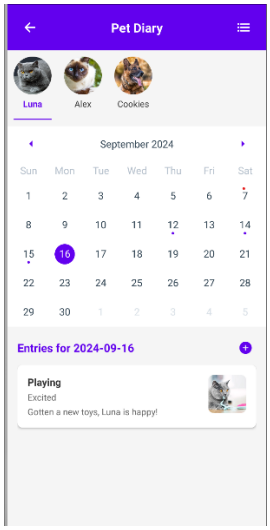

Figure 32: Pet Diary Screens

This screen shows a calendar interface for pet diary entries. Users can select different pets from the top thumbnails and view diary entries for specific dates, with a calendar for navigation and entry previews below.

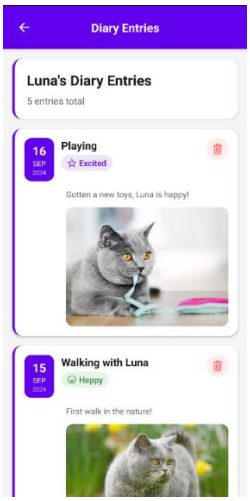

Figure 33: Pet Diary Entries List Screens

This screen lists Luna's diary entries chronologically, showing 5 entries total. Each entry includes a date, activity title, mood indicator, description, and accompanying photo of the pet's activities or moments.

Figure 34: Tamagotchi Game Onboarding Screens

This is the Tamagotchi onboarding screen. It checks if the user has any virtual pets and prompts them to create their first pet if they don't have any.

Figure 35: Tamagotchi Game Interface Screens

This screen displays the main Tamagotchi game interface. It shows the user's virtual pet (Luna) along with its stats (happiness, fullness, cleanliness) and available actions (play, feed, clean, diary). Users can interact with their pet and monitor its well-being here.

Figure 36: Tamagotchi Add Pet Screens

This is the Add New Pet screen in the Tamagotchi game. It allows users to create a new virtual pet by entering a name and selecting a cat type (White Cat or BSH). This screen is accessed when users want to add another pet to their collection.

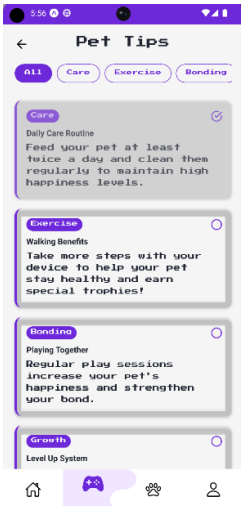

Figure 37: Tamagotchi Pet Diary Screens

This screen provides essential pet care tips within the Tamagotchi game, organized by categories (All, Care, Exercise, Bonding). Each tip card includes advice on daily care routines, exercise activities, and bonding suggestions to help users maintain their virtual pet's happiness and health. The tips include guidance on feeding schedules, exercise activities, and ways to increase the pet's happiness levels.

Figure 38: Tamagotchi Let Go Pet Screens

This screen is part of the Tamagotchi-style game. It shows a confirmation dialog for letting go of a virtual pet named Luna. This feature allows users to remove pets from their care in the game.

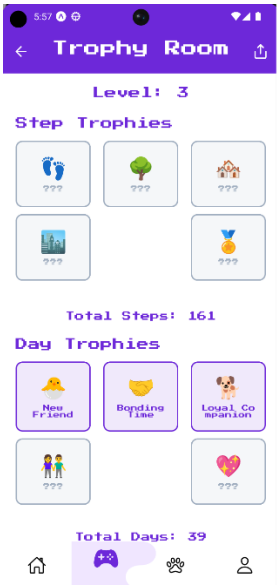

Figure 39: Tamagotchi Pet Trophy Room Screens

This screen displays the user's achievements in the Tamagotchi game, showing both Step Trophies and Day Trophies. The user is currently at Level 3, with various unlocked trophies represented by icons. It tracks total steps (161) and total days (39) of gameplay, allowing users to view their progress and earned accomplishments.

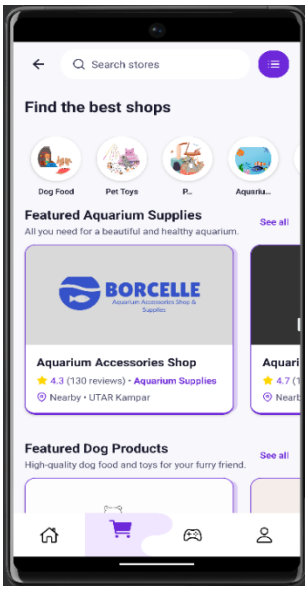

Figure 40: E-commerce Home Screens

This screen is part of the e-commerce section of the PetPaw app, specifically focusing on helping users find and browse pet-related shops and products.

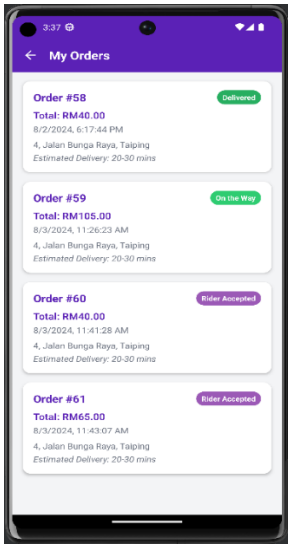

Figure 41: E-commerce Order History Screens

This is the order history screen. It displays a list of the user's past and current orders, showing order numbers, totals, dates, delivery addresses, and order statuses. Users can track their orders' progress from this screen.

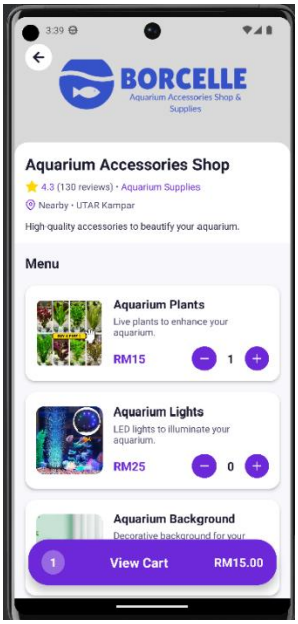

Figure 42: E-commerce Shop Screens

This screen shows a specific shop (Borcelle Aquarium Accessories Shop) within the e-commerce section. It displays shop details, ratings, and a menu of products available for purchase. Users can add items to their cart directly from this screen.

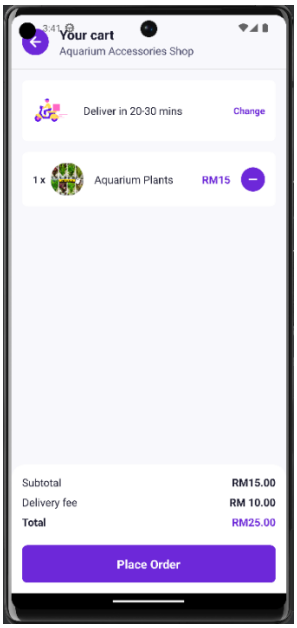

Figure 43: E-commerce Cart Screens

This is the cart screen in the e-commerce section. It displays the items in the user's cart, delivery time, subtotal, delivery fee, and total cost. Users can modify quantities and place their order from this screen.

Figure 44: E-commerce Order Processing Screens

This screen is part of the order processing flow. It shows a loading state while waiting for the shop to accept the user's order. It's displayed after a user place an order and before the shop confirms it.

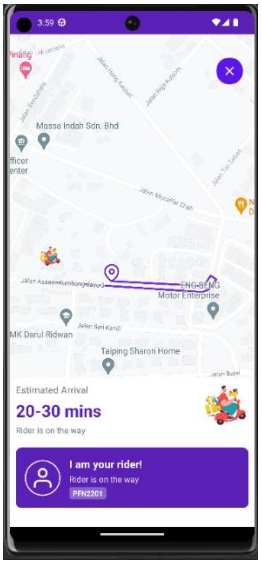

Figure 45: E-commerce Order Map View Screens

This screen shows the delivery tracking interface for riders. It displays a map with the rider's route, estimated arrival time, and rider information. Users can track their order's progress and see the rider's location in real-time.

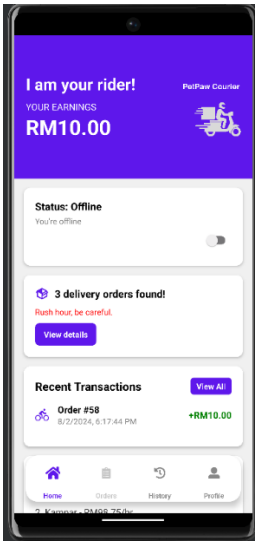

Figure 46: Rider Home Screens

This is the rider's home screen in the PetPaw Courier app. It shows the rider's current earnings, online/offline status toggle, available delivery orders, and recent transactions. Riders can view their performance and manage their availability from this screen.

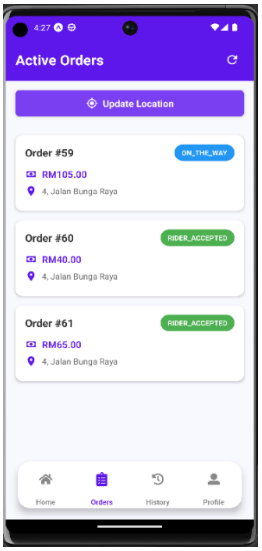

Figure 47: Rider Order List Screens

This screen displays the active orders for a rider. It lists current delivery assignments with order numbers, amounts, and delivery addresses. Riders can update their location and view details of each order from this interface.

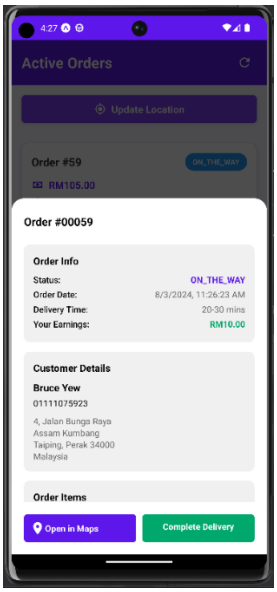

Figure 48: Rider Order Overview Screens

This screen shows detailed information about a specific order for the rider. It includes order status, customer details, delivery address, and options to open the location in maps or complete the delivery. This helps riders manage individual deliveries effectively.

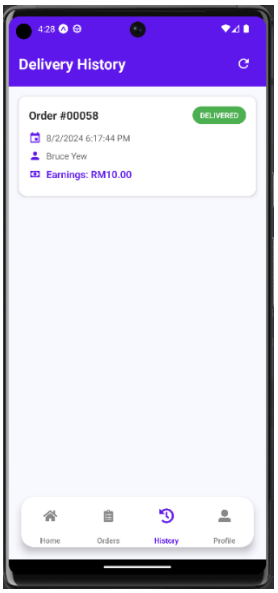

Figure 49: Rider Delivery History Screens

This is the delivery history screen for riders. It shows completed deliveries with order numbers, delivery times, customer names, and earnings. Riders can review their past deliveries and track their performance over time from this screen.

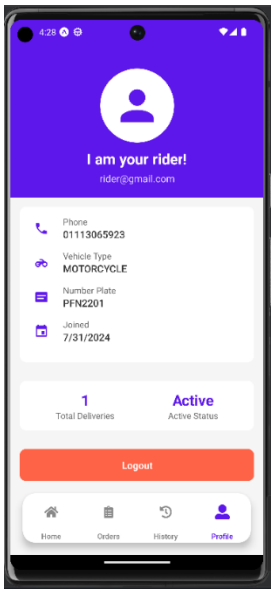

Figure 50: Rider Profile Screens

This screen displays the rider's profile information in the PetPaw Courier app. It shows the rider's email, phone number, vehicle type, number plate, join date, total deliveries, and active status. Riders can view their personal information and log out from this screen.

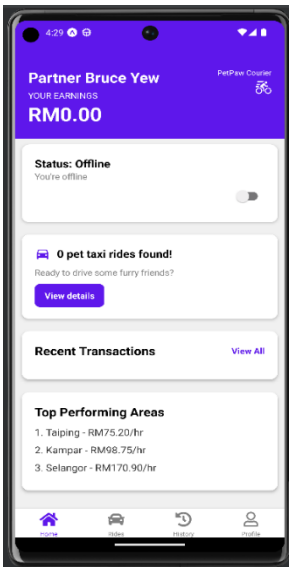

Figure 51: Driver Home Screens

This is the driver's home screen in the PetPaw Courier app for pet taxi services. It shows the driver's name, current earnings, online/offline status toggle, available pet taxi rides, recent transactions, and top performing areas. Drivers can manage their availability and view performance metrics from this screen.

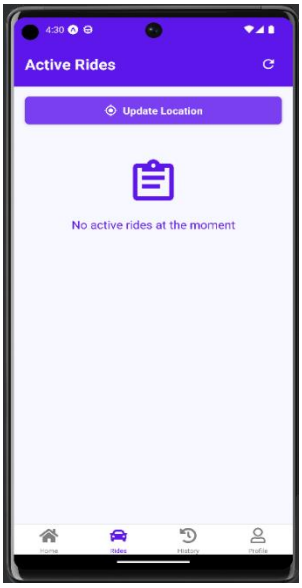

Figure 52: Driver Active Rides Screens

This screen displays the active rides for a driver. Currently, there are no active rides, as indicated by the message "No active rides at the moment". Drivers can update their location and view new ride requests from this interface when they become available.

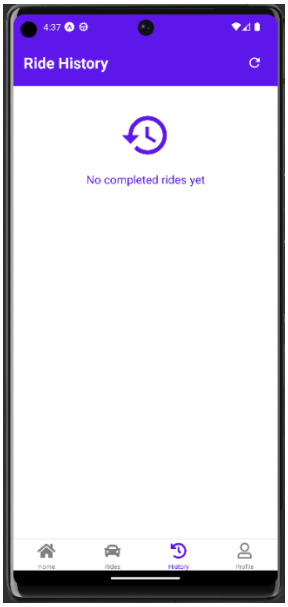

Figure 53: Driver Ride History Screens

This is the ride history screen for drivers. It currently shows that there are no completed rides yet, as indicated by the message "No completed rides yet". In the future, this screen will display a list of past rides and related information for the driver to review.

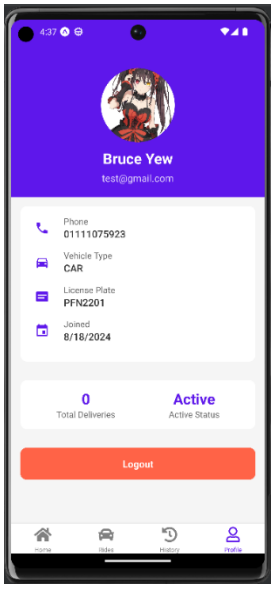

Figure 54: Driver Profile Screens

This screen shows the driver's profile information in the PetPaw Courier app. It displays the driver's name, email, phone number, vehicle type, license plate, join date, total deliveries, and active status. Drivers can view their personal information and log out from this screen.

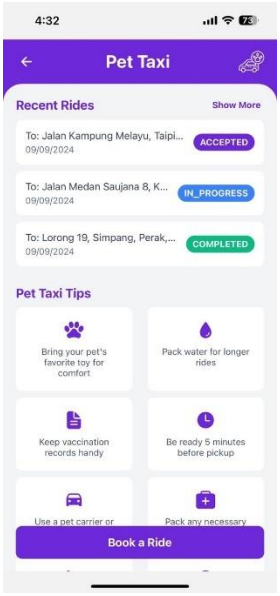

Figure 55: Pet Taxi Home Screens

This screen shows recent ride history and pet taxi tips, with a "Book a Ride" button at the bottom. Recent rides are marked with different statuses (ACCEPTED, IN_PROGRESS, COMPLETED).

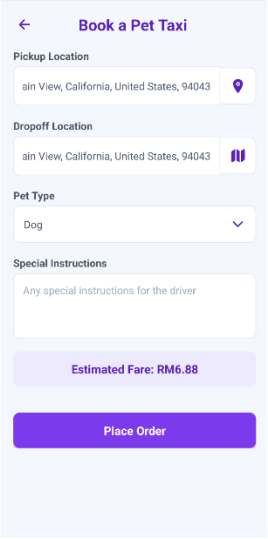

Figure 56: Book Pet Taxi Screens

This screen allows users to input pickup and dropoff locations, select pet type, add special instructions, and shows the estimated fare before placing an order.

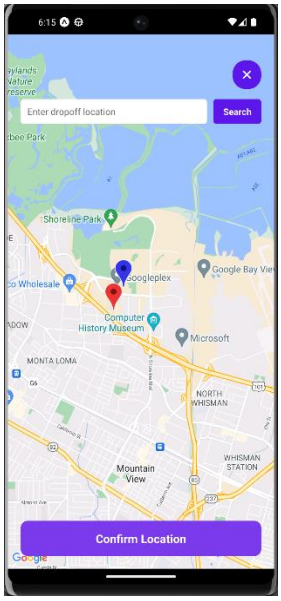

Figure 57: Drop off map location Screens

This screen displays a map interface where users can search and confirm their dropoff location using Google Maps integration.

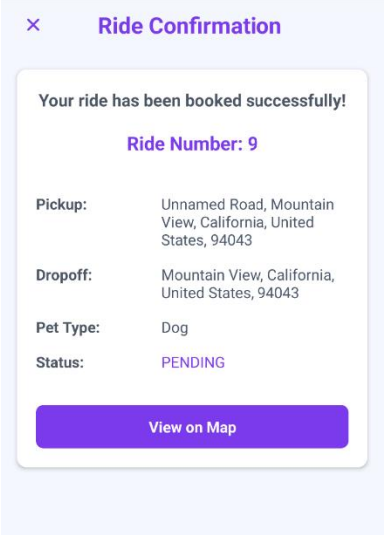

Figure 58: Pet Taxi Ride Confirmation Screens

This screen shows the booking confirmation details including ride number, pickup/dropoff locations, pet type, and current status, with an option to view the route on map.

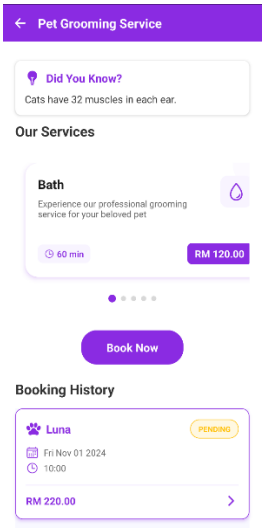

Figure 59: Pet Grooming Home Screens

This screen shows available grooming services, featuring a fun fact at the top, service options with pricing, and a booking history section below.

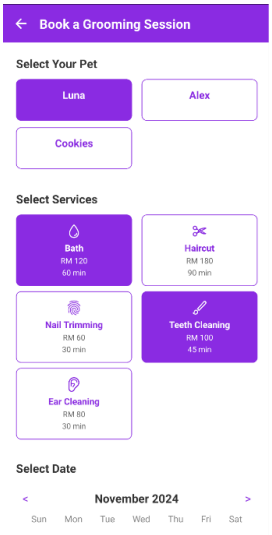

Figure 60: Pet Grooming Booking Screens 1

This screen allows users to select their pet from multiple options and choose from various grooming services like Bath, Haircut, Nail Trimming, Teeth Cleaning, and Ear Cleaning, each with pricing and duration.

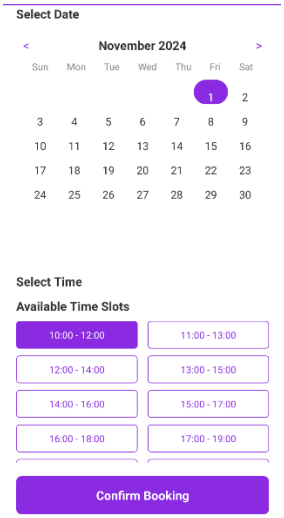

Figure 61: Pet Grooming Booking Screens 2

This screen displays a calendar for date selection and available time slots for the grooming appointment, with a confirm booking button at the bottom.

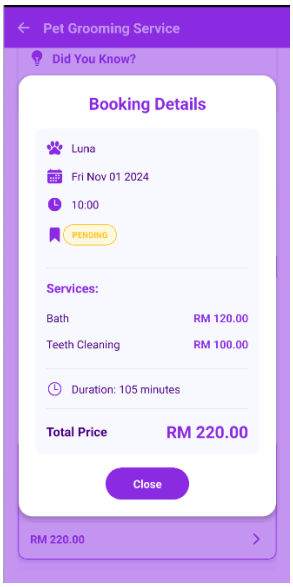

Figure 62: Pet Grooming Booking Confirmation Modal

This screen shows a summary of the booking details including selected pet, date, time, chosen services, duration, and total price.

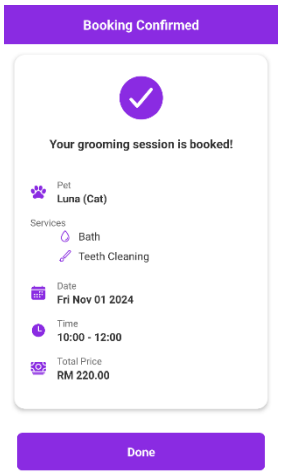

Figure 63: Pet Grooming Booking Confirmation Screen

This screen confirms the successful booking with a checkmark icon, displaying the final booking details including pet name, selected services, date, time, and total price, with a "Done" button to complete the process.

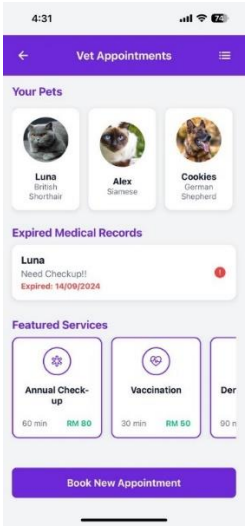

Figure 64: Pet Veterinary Booking Screens

This screen shows user's pets, any expired medical records, and featured veterinary services. Users can book new appointments through the button at the bottom.

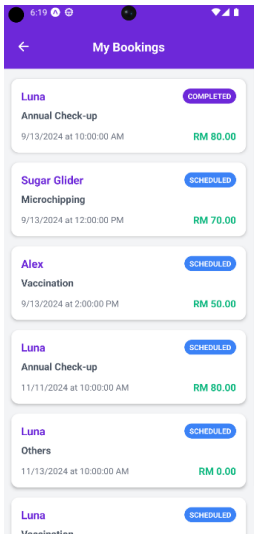

Figure 65: Pet Veterinary Booking History Screens

This screen displays a list of all veterinary appointments, both completed and scheduled, showing pet name, service type, date/time, and cost.

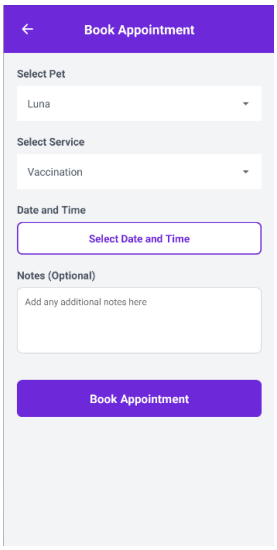

Figure 66: Pet Veterinary Booking Screens

This screen allows users to select their pet, choose a service type, select date and time, and add optional notes for the appointment.

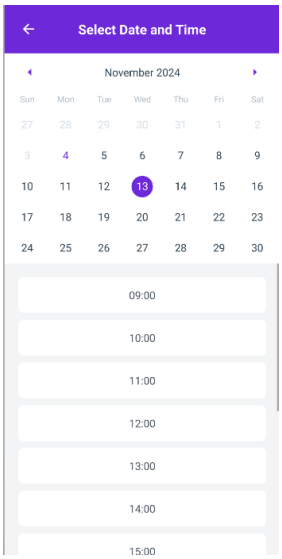

Figure 67: Pet Veterinary Custom Calendar Booking Screens

This screen shows a calendar interface for selecting appointment date and time slots available for the selected service.

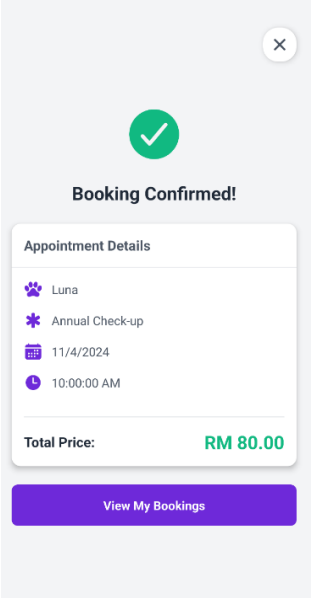

Figure 68: Pet Veterinary Booking Confirmed Screens

This screen confirms the successful booking, displaying appointment details including pet name, service type, date, time, and total price, with an option to view all bookings.

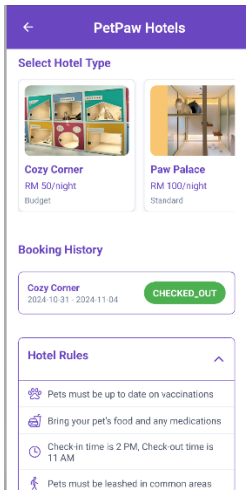

Figure 69: Pet Hotel Home Screens

This screen displays available hotel types (Cozy Corner and Paw Palace) with nightly rates, booking history, and hotel rules for pet owners.

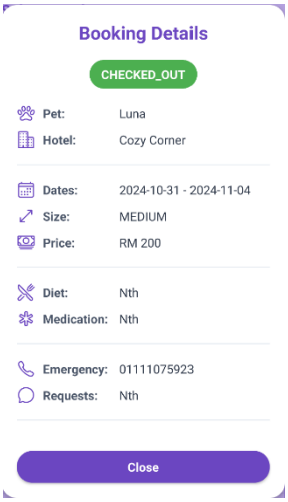

Figure 70: Pet Hotel Booking Details Screens

This screen shows details of a completed stay including pet name, hotel choice, dates, size, price, dietary requirements, medications, and emergency contact information.

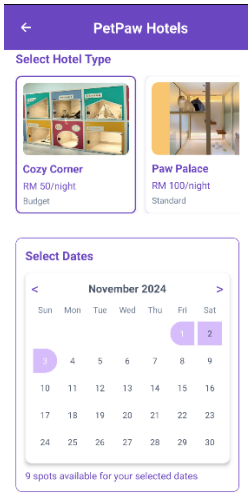

Figure 71: Pet Hotel Booking Screens 1

This screen allows users to select a hotel type and dates for their stay, with a calendar interface showing available spots.

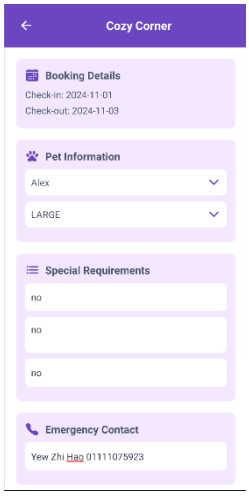

Figure 72: Pet Hotel Booking Screens 2

This screen lets users input booking details including check-in/out dates, pet information (selecting pets and size), and any special requirements.

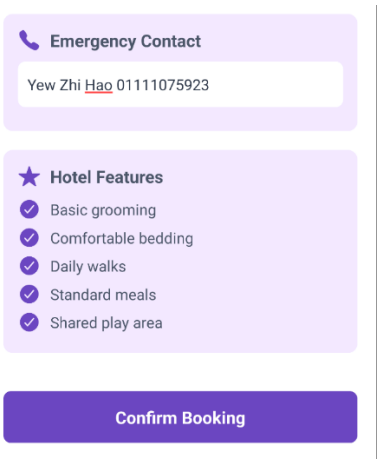

Figure 73: Pet Hotel Booking Screens 3

This screen shows emergency contact input and lists hotel features including basic grooming, comfortable bedding, daily walks, standard meals, and shared play area, with a confirm booking button.

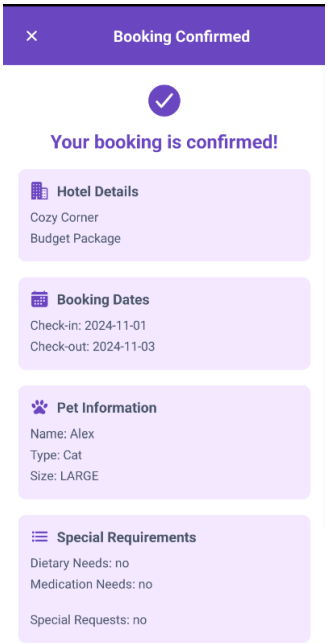

Figure 74: Pet Hotel Booking Confirmed Screens

This screen confirms the successful hotel booking, displaying all details including hotel name, package type, check-in/out dates, pet information, and any special requirements.

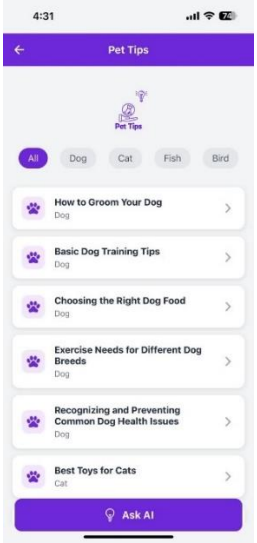

Figure 75: Pet Tips Screens

This screen shows different pet categories (All, Dog, Cat, Fish, Bird) and lists various pet care topics. Users can select specific care guides or use the "Ask AI" feature at the bottom.

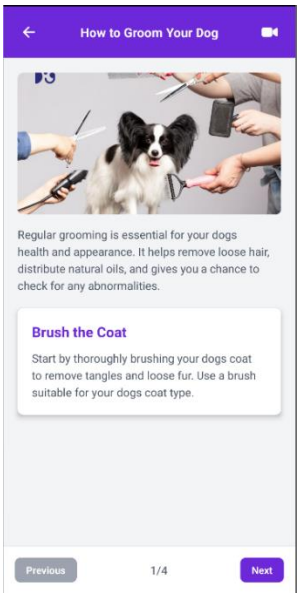

Figure 76: Pet Tips Detailed Tips Screens

This screen displays detailed grooming instructions with images, showing step-by-step guidance with navigation buttons (Previous/Next) and progress indicator (1/4).

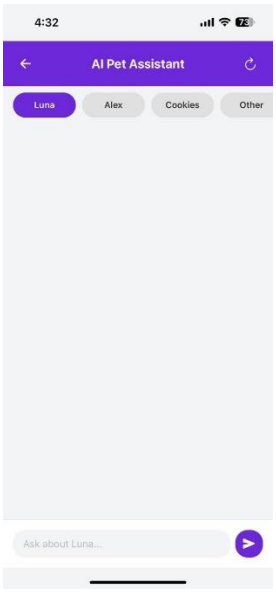

Figure 77: Ask AI Screens 1

This screen shows the AI chat interface where users can select their pet (Luna, Alex, Cookies, Other) to get specific pet care advice.

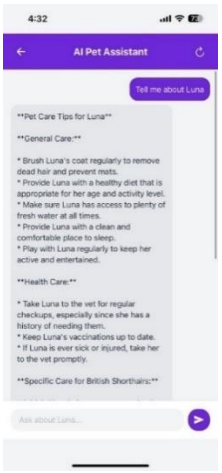

Figure 78: Ask AI Screens 2

This screen displays the AI's detailed response about Luna's care, including general care tips, health care recommendations, and specific advice for British Shorthairs.

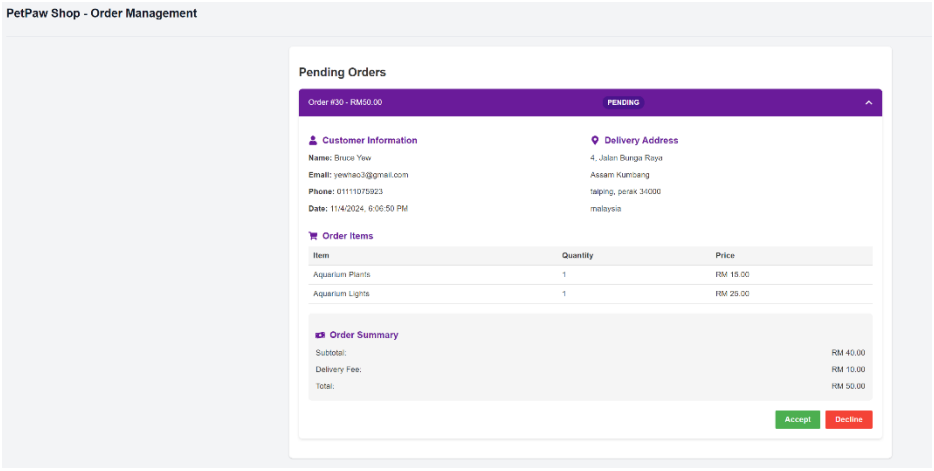

Figure 79: Shop Management Website

This screen shows pending orders with customer information, delivery address, order items, quantities, prices, and order summary. Shop owners can accept or decline orders using buttons at the bottom.

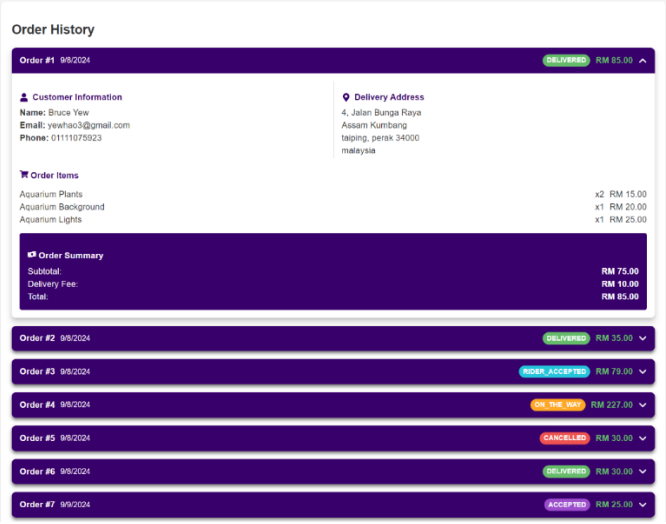

Figure 80: Shop Management Order History Website

This screen displays a comprehensive order history with each order's status (DELIVERED, ORDER_ACCEPTED, ON_THE_WAY, CANCELLED), detailed order information including customer details, items purchased, and total amounts.

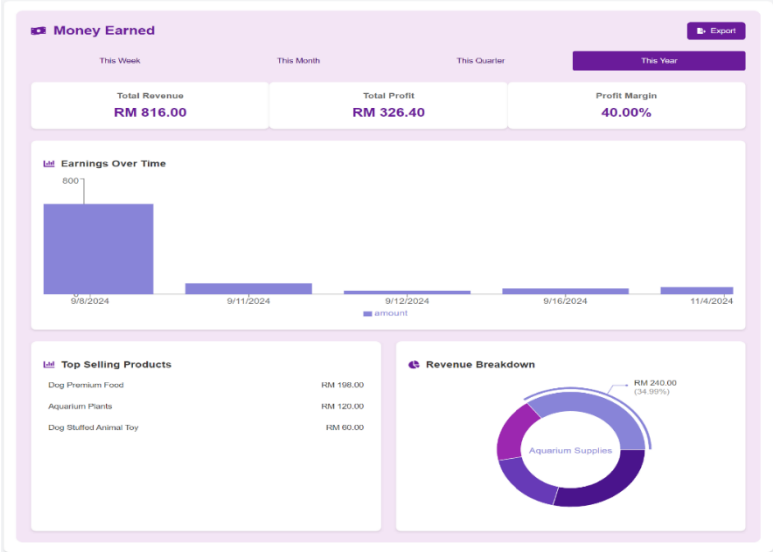

Figure 81: Shop Management Statistic Website

This screen shows the shop's financial analytics including total revenue, profit, and profit margin. It features graphs showing earnings over time, a list of top-selling products, and a revenue breakdown pie chart. Users can view statistics by week, month, quarter, or year.

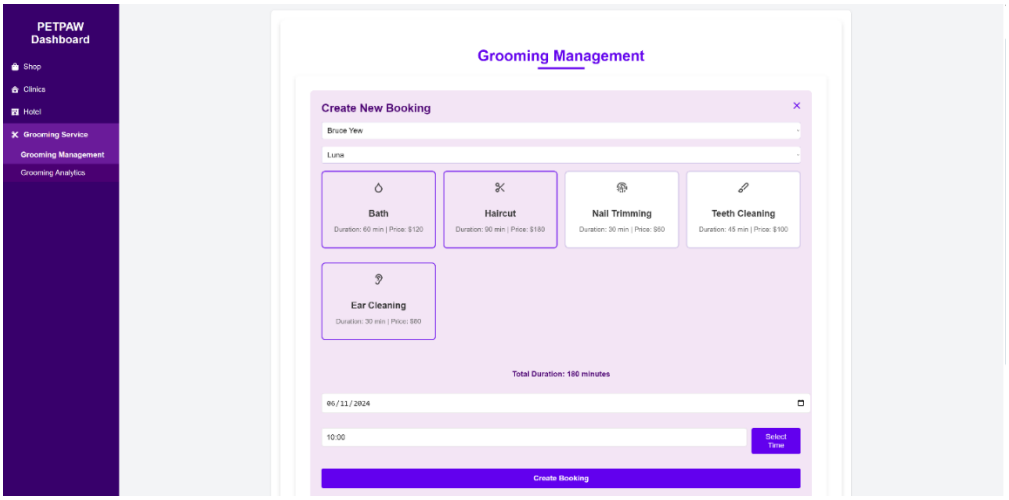

Figure 82: Salon Management New Booking Website

This screen shows the grooming service management interface where owners can create new bookings, selecting services like Bath, Haircut, Nail Trimming, Teeth Cleaning, and Ear Cleaning, with their respective durations and prices.

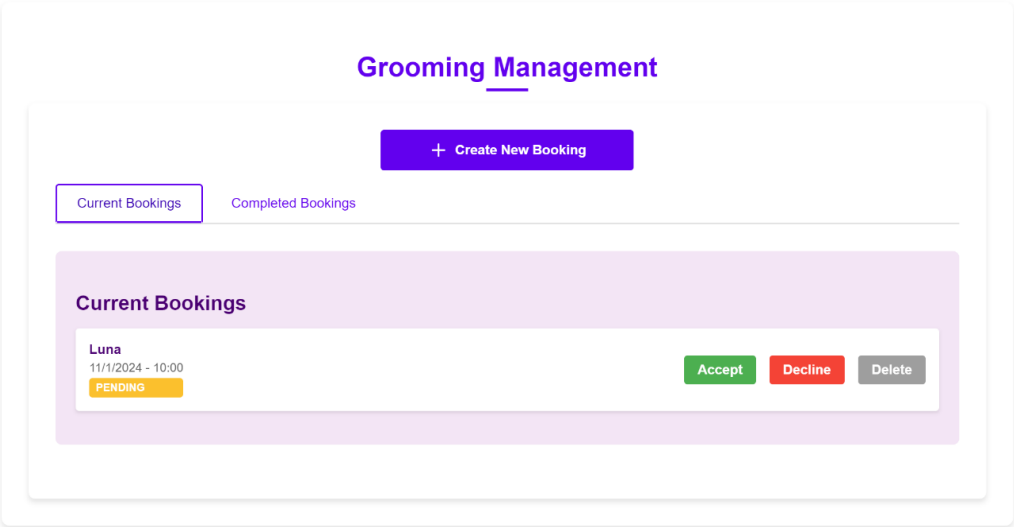

Figure 83: Salon Management Booking List Website

This screen displays current bookings with options to switch between current and completed bookings. For each booking, owners can Accept, Decline, or Delete the appointment.

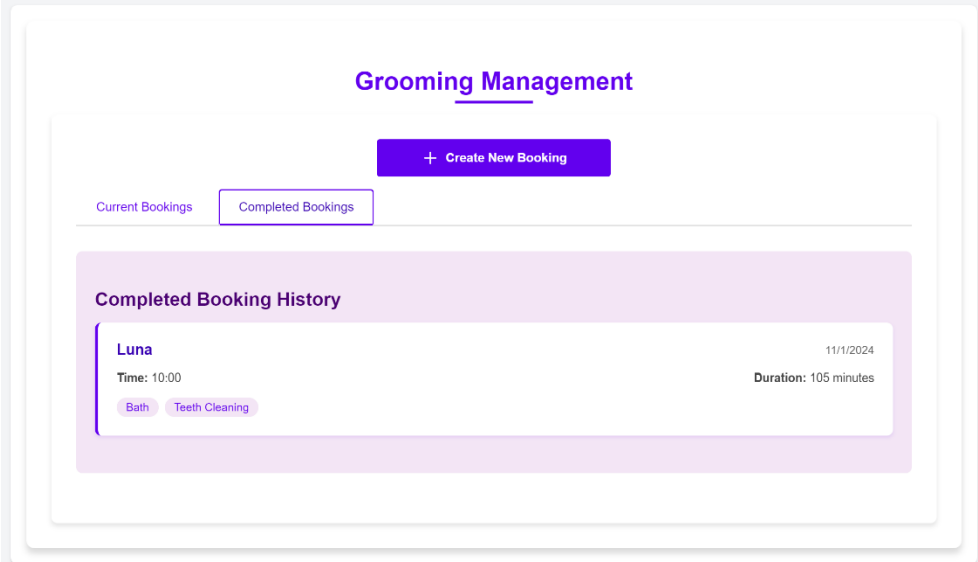

Figure 84: Salon Management Completed Booking Website

This screen shows the history of completed grooming appointments, displaying details like pet name, time, services provided, and duration of each session.

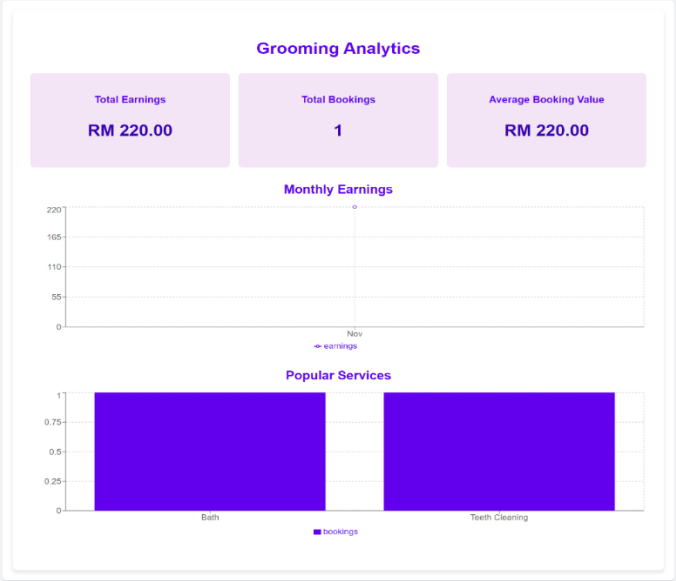

Figure 85: Salon Management Statistic Website

This screen presents business analytics including total earnings, total bookings, average booking value, monthly earnings graph, and a chart showing popular services (Bath and Teeth Cleaning being the most booked services).

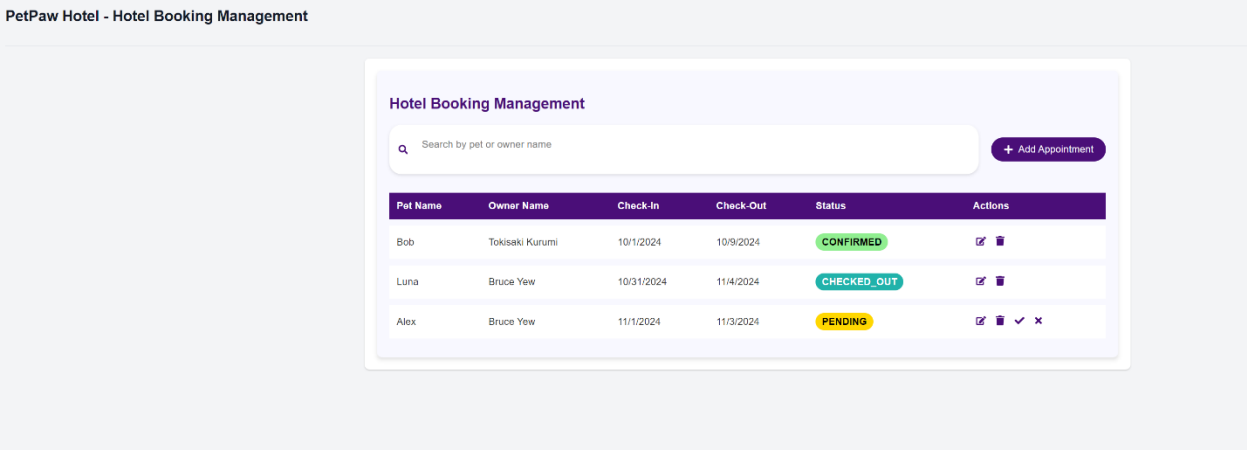

Figure 86: Hotel Owner Management Website

This screen displays a list of hotel bookings with pet names, owner names, check-in/out dates, and status (CONFIRMED, CHECKED_OUT, PENDING). It includes a search bar and options to manage bookings.

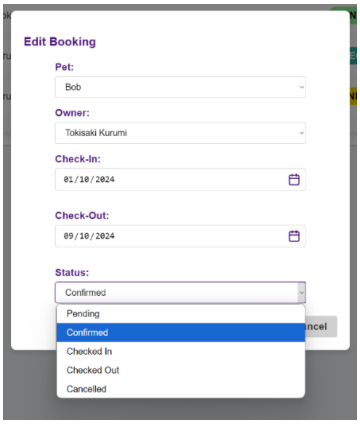

Figure 87: Hotel Management Update Status Website

This modal shows booking editing options where administrators can modify pet details, owner information, check-in/out dates, and update booking status through a dropdown menu (Confirmed, Pending, Checked In, Checked Out, Cancelled).

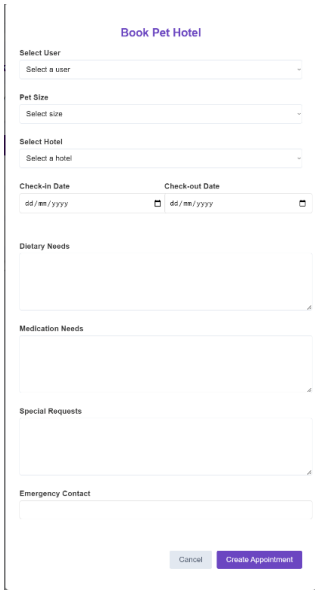

Figure 88: Hotel Mangement Booking Website

This screen provides a form to create new hotel bookings, including fields for user selection, pet size, hotel selection, check-in/out dates, dietary needs, medication needs, special requests, and emergency contact information.

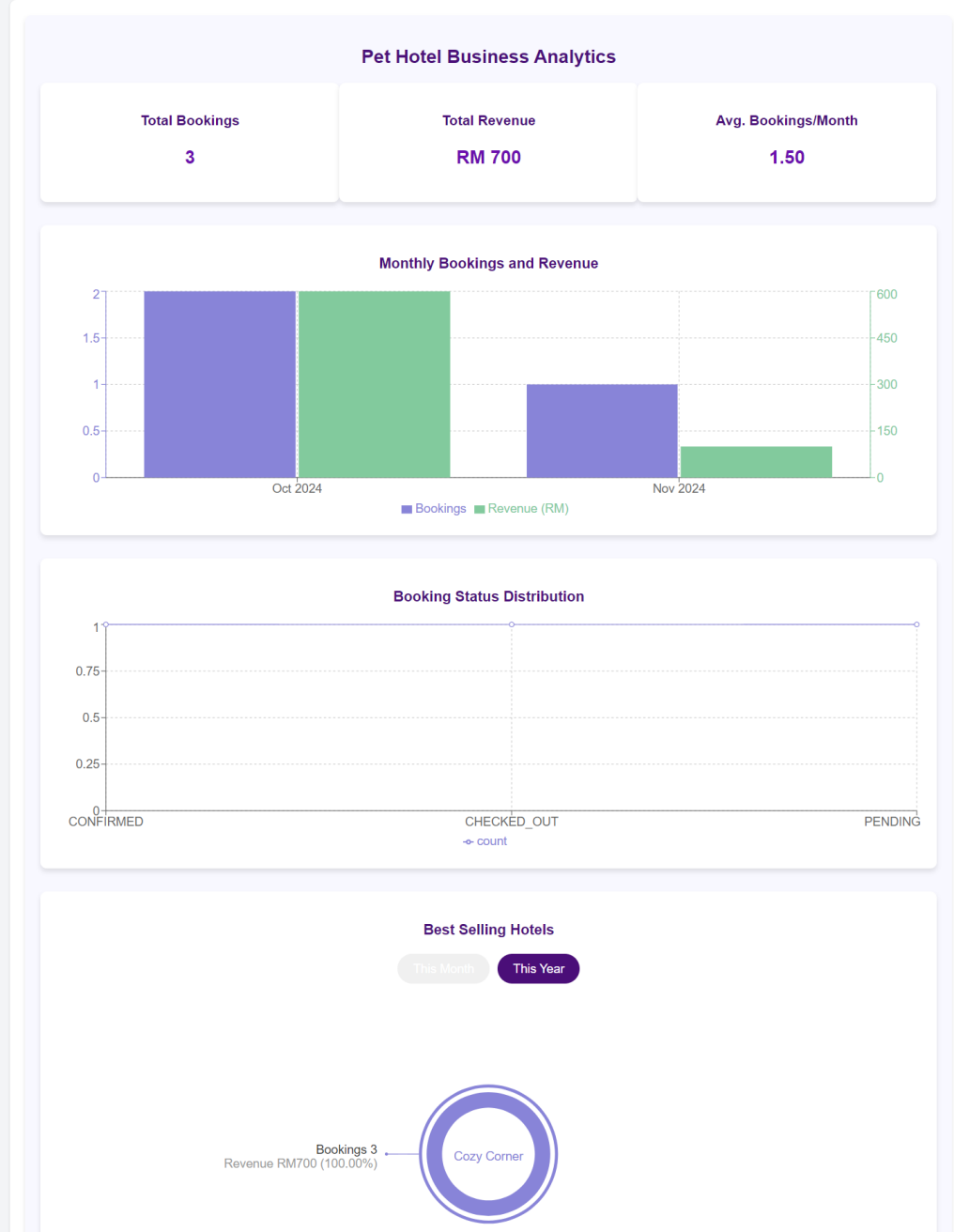

Figure 89: Hotel Management Statistic Website

This comprehensive dashboard shows business metrics including total bookings (3), total revenue (RM 700), and average bookings per month (1.50). It features graphs showing monthly bookings and revenue trends, booking status distribution, and a pie chart showing Cozy Corner as the best-selling hotel option.

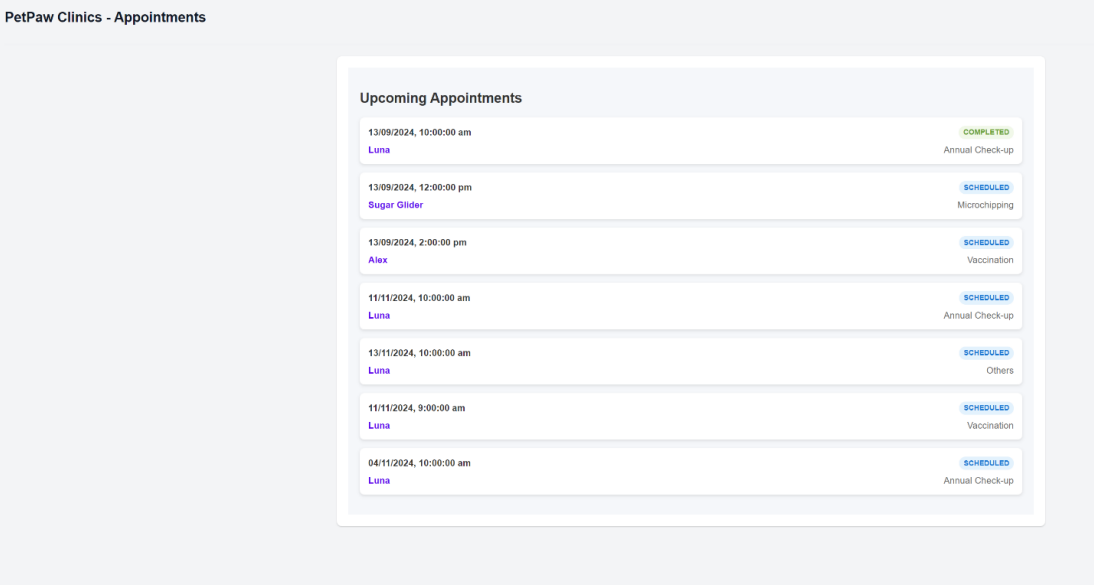

Figure 90: Veterinary Appointments Mangement Website

This screen shows a list of scheduled veterinary appointments, displaying date, time, pet name, and service type (Annual Check-up, Microchipping, Vaccination) with their respective status (COMPLETED or SCHEDULED).

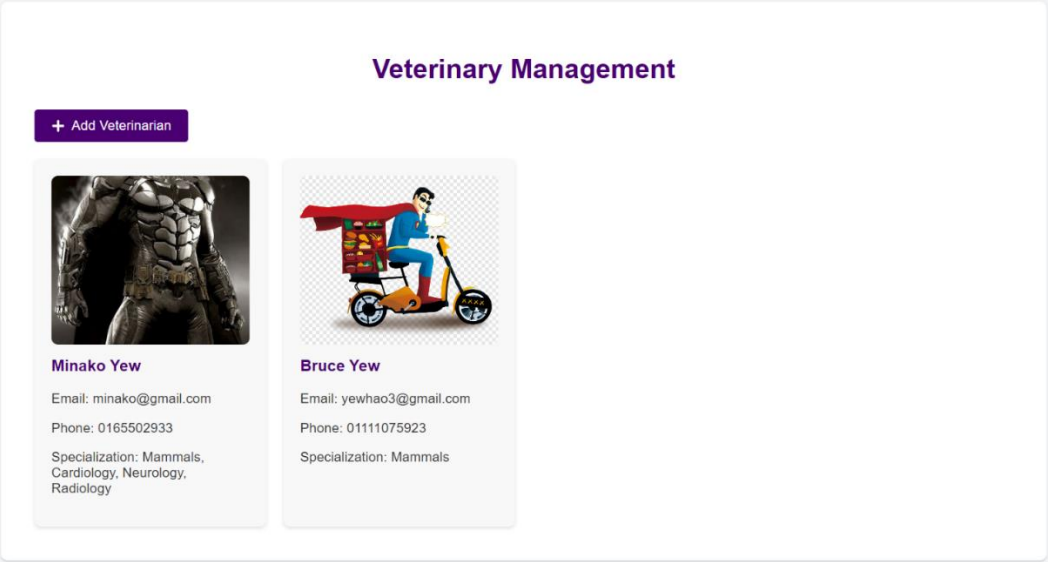

Figure 91: Veterinary Management Website

This screen displays the veterinarian profiles with an option to add new veterinarians. Each profile shows the vet's photo, name, email, phone number, and specializations.

Figure 92: Veterinary Refill Request Management Website

This screen manages prescription refill requests, showing medication details including customer name, pet name, dosage information, and number of refill requests for each prescription.

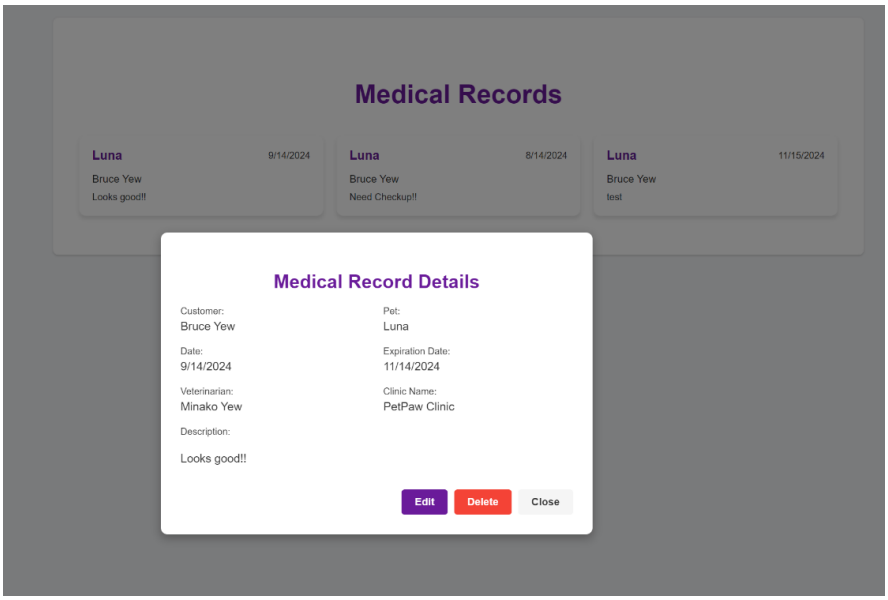

Figure 93: Veterinary Medical Record Mangement Website

This screen shows detailed medical record information in a modal view, including customer and pet details, dates, veterinarian information, and clinic name. Users can edit, delete, or close the record using buttons at the bottom.

CHAPTER 5 SYSTEM EVALUATION AND DISCUSSION

5.1 User Authentication Test Cases

5.1.1 Login Functionality Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Successful Login	Launch app. Enter valid email and password. Tap login.	User redirected to home screen with navigation visible	Expected	Pass
Invalid Email Format	Enter invalid email format. Enter password. Tap login.	Display "Invalid email format" error	Expected	Pass
Wrong Password	Enter valid email. Enter incorrect password. Tap login.	Display "Invalid credentials" error	Expected	Pass
Empty Fields	Leave fields empty. Tap login.	Display "Required fields empty" error	Expected	Pass

Table 23: Login Functionality Test Cases

5.1.2 Registration Functionality Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Successful Registration	Fill all fields. Upload profile picture. Submit form.	Account created, redirect to login	Expected	Pass
Duplicate Email	Enter existing email. Complete other fields. Submit.	Display "Email already exists" error	Expected	Pass
Invalid Phone	Enter invalid phone format. Submit form.	Display "Invalid phone format" error	Expected	Pass
Password Validation	Enter weak password. Submit form.	Display password requirements	Expected	Pass
Image Upload	Select invalid image format. Attempt upload.	Display "Invalid file format" error	Expected	Pass

Table 24: Registration Functionality Test Cases

5.1.3 Profile Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Profile	Access profile section from menu.	Display user information correctly	Expected	Pass
Edit Profile	Modify profile fields. Save changes.	Profile updated successfully	Expected	Pass
Add Address	Enter new address details. Save.	Address added to profile	Expected	Pass
Logout	Tap logout button. Confirm action.	Return to login screen	Expected	Pass

Table 25: Profile Management Test Cases

5.2 Tamagotchi Game Test Cases

5.2.1 Pet Creation and Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Create First Pet	Access game. Enter pet name. Choose White Cat or BSH Cat.	New pet created and tutorial starts	Expected	Pass
View Pet Details	Access pet profile. Check pet stats and info.	Display pet level, mood, stats accurately	Expected	Pass
Multiple Pet Creation	Create second pet. Switch between pets.	Both pets maintain separate stats	Expected	Pass
Let Go Pet	Select pet. Choose Let Go option. Confirm action.	Pet removed, confirmation shown	Expected	Pass
Invalid Pet Name	Submit empty pet name. Submit special characters.	Show appropriate error message	Expected	Pass

Table 26: Pet Creation and Management Test Cases

5.2.2 Pet Interaction and Status Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Feed Pet	Select feed action. Watch animation.	Hunger decreases, mood improves	Expected	Pass
Play with Pet	Select play action. Watch animation.	Happiness increases, energy decreases	Expected	Pass
Clean Pet	Select clean action. Watch animation.	Cleanliness improves, mood changes	Expected	Pass
Status Changes	Leave pet unattended. Check stats after time.	Stats decrease appropriately	Expected	Pass
Achievement Tracking	Complete required actions. Check trophy room.	Achievements unlock correctly	Expected	Pass
Pet Diary Update	Add diary entry. Add photo. Save entry.	Entry appears in diary timeline	Expected	Pass
Pet Tips Access	View pet tips. Check tip categories.	Tips display with correct info	Expected	Pass
Step Counter Activity	Walk with phone. Check step count with pet.	Steps counted, pet happiness increases	Expected	Pass

Table 27: Pet Interaction and Status Test Cases

5.3 E-commerce Test Cases

5.3.1 Shopping and Cart Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Browse Products	Access shop section. View product listings.	Products displayed with details and prices	Expected	Pass
Product Details	Select product. View full details.	Show product info, price, description	Expected	Pass
Add to Cart	Select product. Add to cart.	Item added, cart count updated	Expected	Pass
Update Quantity	Access cart. Modify item quantity.	Cart total updates automatically	Expected	Pass
Remove Item	Select item in cart. Remove item.	Item removed, cart updated	Expected	Pass
Save for Later	Move item to saved list. Check saved items.	Item appears in saved list	Expected	Pass

Table 28: Shopping and Cart Management Test Cases

5.3.2 Checkout and Order Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Delivery Address	Enter new delivery address. Save address.	Address saved for delivery	Expected	Pass
Delivery Time	Select delivery date and time slot.	Time slot reserved for order	Expected	Pass
Order Placement	Review order. Confirm purchase.	Order placed successfully	Expected	Pass
Order Tracking	Access active order. View status.	Current order status displayed	Expected	Pass
Order History	View past orders. Check order details.	Order history displays correctly	Expected	Pass
Order Cancellation	Select active order. Cancel order.	Order cancelled, status updated	Expected	Pass

Table 29: Checkout and Order Management Test Cases

5.4 Pet Taxi Test Cases

5.4.1 Booking and Ride Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Select Location	Enter pickup and dropoff location. Confirm locations.	Locations set, fare estimate shown	Expected	Pass
Add Pet Details	Select pet type. Add special instructions.	Pet details saved for driver	Expected	Pass
View Available Time	Check available time slots. Select preferred time.	Time slot booked successfully	Expected	Pass
Driver Matching	Submit booking. Wait for driver match.	Driver assigned to request	Expected	Pass
Cancel Booking	Select active booking. Cancel ride.	Booking cancelled, status updated	Expected	Pass
Rate Driver	Complete ride. Rate driver experience.	Rating submitted successfully	Expected	Pass

Table 30: Booking and Ride Management Test Cases

5.4.2 Ride Tracking and History Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Track Active Ride	Open active ride. View map.	Real-time location updates shown	Expected	Pass
Driver Details	View driver profile. Check vehicle info.	Driver and vehicle details displayed	Expected	Pass
Ride History	Access ride history. View past rides.	Past rides listed with details	Expected	Pass
Contact Driver	Use in-app chat/call. Send message.	Communication channel opened	Expected	Pass
Emergency Contact	Access emergency button. Trigger alert.	Emergency contact notified	Expected	Pass
Ride Receipt	View completed ride. Check receipt.	Detailed receipt displayed	Expected	Pass

Table 31: Ride Tracking and History Test Cases

5.5 Veterinary Booking Test Cases

5.5.1 Appointment Booking Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Services	Access vet services. Browse available options.	Services listed with details	Expected	Pass
Select Pet	Choose registered pet. View medical history.	Pet records displayed correctly	Expected	Pass
Book Appointment	Select service type. Choose date and time.	Appointment scheduled successfully	Expected	Pass
Add Notes	Enter medical concerns. Add special instructions.	Notes saved with appointment	Expected	Pass
Emergency Booking	Select emergency service. Request immediate slot.	Priority booking processed	Expected	Pass
Cancel Appointment	Select booked appointment. Cancel booking.	Appointment cancelled, slot freed	Expected	Pass

Table 32: Appointment Booking Test Cases

5.5.2 Medical Records and History Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Medical History	Access pet records. Check past visits.	Complete medical history shown	Expected	Pass
View Prescriptions	Check active prescriptions. View details.	Current medications displayed	Expected	Pass
Request Refill	Select medication. Request refill.	Refill request sent to vet	Expected	Pass
Download Records	Select records. Download documents.	Records downloaded successfully	Expected	Pass
Update Pet Info	Modify pet medical info. Save changes.	Medical profile updated	Expected	Pass
Vaccination Records	Check vaccination status. View due dates.	Vaccination schedule displayed	Expected	Pass

Table 33: Medical Records and History Test Cases

5.6 Pet Grooming Test Cases

5.6.1 Grooming Service Booking Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Services	Browse grooming services list. Check prices.	Services and rates displayed	Expected	Pass
Select Pet	Choose pet profile. View grooming history.	Pet details loaded correctly	Expected	Pass
Book Service	Select services. Choose date and time.	Booking confirmed successfully	Expected	Pass
Special Instructions	Add grooming preferences. Note pet behavior.	Instructions saved with booking	Expected	Pass
Package Selection	Choose grooming package. View included services.	Package details displayed correctly	Expected	Pass
Reschedule Booking	Select active booking. Change time slot.	Appointment time updated	Expected	Pass

Table 34: Grooming Service Booking Test Cases

5.6.2 Grooming History and Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Appointments	Access booking history. Check status.	Past appointments listed	Expected	Pass
Service Tracking	Check active appointment status. View progress.	Current status displayed	Expected	Pass

Table 35: Grooming History and Management Test Cases

5.7 Pet Hotel Test Cases

5.7.1 Hotel Booking Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Room Types	Browse room categories. Check amenities and rates.	Room details displayed correctly	Expected	Pass
Book Room	Select room type. Choose check-in/out dates.	Booking confirmed successfully	Expected	Pass
Pet Details	Enter pet information. Add care requirements.	Pet details saved with booking	Expected	Pass
Special Requests	Add dietary needs. Note medical requirements.	Special requests recorded	Expected	Pass
Emergency Contact	Enter emergency contact details. Verify info.	Contact information saved	Expected	Pass

Table 36: Hotel Booking Test Cases

5.7.2 Hotel Stay Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Check-in Process	Arrive at check-in time. Verify booking details.	Check-in completed successfully	Expected	Pass
Stay Updates	Request daily pet updates. View photos/videos.	Updates received as scheduled	Expected	Pass
View Stay History	Access past stays. Check details and receipts.	Stay history displayed correctly	Expected	Pass
Booking Modification	Change stay dates. Update room type.	Booking updated successfully	Expected	Pass

Table 37: Hotel Stay Management Test Cases

5.8 Pet Tips Feature Test Cases

5.8.1 Content Access Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Categories	Access pet tips section. Browse categories.	Categories displayed correctly	Expected	Pass
Filter Tips	Select specific category. Apply filters.	Filtered tips shown	Expected	Pass
Search Tips	Enter search term. View results.	Relevant tips displayed	Expected	Pass
View Tutorials	Access tutorial content. Play video/animation.	Tutorial plays correctly	Expected	Pass

Table 38: Content Access Test Cases

5.8.2 AI Assistant Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Ask Question	Enter pet care question. Submit to AI.	Relevant answer provided	Expected	Pass

Select Pet Type	Choose specific pet. Ask targeted question.	Pet-specific advice given	Expected	Pass

Table 39: AI Assistant Test Cases

5.9 Admin Management Test Cases

5.9.1 User Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Users	Access user management. Filter user list.	Users displayed correctly	Expected	Pass
Edit User	Select user. Modify details. Save changes.	User info updated	Expected	Pass
Suspend Account	Select user. Apply suspension. Set duration.	Account suspended	Expected	Pass
Verify Documents	Check submitted documents. Approve/reject.	Verification status updated	Expected	Pass
Reset Password	Select user. Trigger password reset.	Reset email sent	Expected	Pass
Delete Account	Select user. Confirm deletion.	Account removed from system	Expected	Pass

Table 40: User Management Test Cases

5.9.2 Service Provider Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Approve Driver	Review driver application. Check documents.	Driver status updated	Expected	Pass
Monitor Shops	View shop analytics. Check performance.	Shop statistics displayed	Expected	Pass
Vet Verification	Review vet credentials. Approve listing.	Vet profile activated	Expected	Pass
Hotel Management	Check hotel listings. Monitor bookings.	Hotel data displayed	Expected	Pass

Review Reports	Access user reports. Take action.	Report status updated	Expected	Pass
Service Settings	Modify service parameters. Update prices.	Settings saved successfully	Expected	Pass

Table 41: Service Provider Management Test Cases

5.10 Shop Owner Dashboard Test Cases

5.10.1 Order Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Orders	Access order dashboard. Check pending orders.	Orders listed with details	Expected	Pass
Accept Order	Select pending order. Process acceptance.	Order status updated	Expected	Pass
Decline Order	Select order. Provide reason. Decline order.	Order declined, customer notified	Expected	Pass
Update Status	Change order status. Mark as ready.	Status updated successfully	Expected	Pass
View History	Access order history. Filter by date.	Order history displayed	Expected	Pass
Process Refund	Select order. Issue refund. Add reason.	Refund processed successfully	Expected	Pass

Table 42: Order Management Test Cases

5.10.2 Shop Analytics Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Revenue	Check daily/monthly revenue. View charts.	Financial data displayed	Expected	Pass
Product Analysis	View best sellers. Check stock levels.	Product statistics shown	Expected	Pass
Customer Metrics	View customer data. Check satisfaction rates.	Customer insights displayed	Expected	Pass
Export Reports	Select date range. Generate report.	Report downloaded successfully	Expected	Pass

Stock Alerts	Check low stock notifications. Update inventory.	Alerts shown correctly	Expected	Pass
Performance Stats	View shop ratings. Check review metrics.	Performance data displayed	Expected	Pass

Table 43: Shop Analytics Test Cases

5.11 Rider Dashboard Test Cases

5.11.1 Delivery Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Go Online	Toggle availability status. Check active mode.	Status changed to online	Expected	Pass
View Orders	Check available orders. View delivery details.	Order list displayed	Expected	Pass
Accept Delivery	Select order. Accept delivery request.	Order assigned successfully	Expected	Pass
Update Location	Enable location sharing. Update position.	Location updated real-time	Expected	Pass
Complete Delivery	Mark order as delivered. Capture proof.	Delivery marked complete	Expected	Pass
Cancel Delivery	Select active delivery. Provide reason. Cancel.	Delivery cancelled, reassigned	Expected	Pass

Table 44: 5.11.1 Delivery Management Test Cases

5.11.2 Rider Performance Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Earnings	Check daily/weekly earnings. View breakdown.	Earnings displayed correctly	Expected	Pass
Track Performance	View delivery stats. Check ratings.	Performance metrics shown	Expected	Pass
View History	Access delivery history. Filter by date.	Past deliveries listed	Expected	Pass

Check Incentives	View active incentives. Check progress.	Incentive details displayed	Expected	Pass
Update Profile	Modify rider details. Update documents.	Profile updated successfully	Expected	Pass
View Schedule	Check working hours. View upcoming shifts.	Schedule displayed correctly	Expected	Pass

Table 45: Rider Performance Test Cases

5.12 Driver Dashboard Test Cases

5.12.1 Pet Taxi Ride Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Toggle Availability	Change online status. Check availability.	Status updated successfully	Expected	Pass
View Ride Requests	Access incoming requests. Check ride details.	Available rides displayed	Expected	Pass
Accept Ride	Select ride request. Review pet details. Accept.	Ride assigned to driver	Expected	Pass
Navigate Route	Access pickup location. Follow route to destination.	Navigation works correctly	Expected	Pass
Update Ride Status	Change status (arrived/started/completed).	Status updates in real-time	Expected	Pass
Emergency Handling	Trigger emergency protocol. Contact support.	Emergency response activated	Expected	Pass

Table 46: Pet Taxi Ride Management Test Cases

5.12.2 Driver Performance and Analytics Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Earnings	Check current earnings. View payment history.	Earnings displayed accurately	Expected	Pass
Track Metrics	View acceptance rate. Check completion rate.	Performance stats shown	Expected	Pass
Review Ratings	Check customer ratings. View feedback.	Ratings history displayed	Expected	Pass
View Schedule	Access work history. Check ride patterns.	Schedule data accessible	Expected	Pass

Vehicle Management	Update vehicle details. Add maintenance records.	Vehicle info updated	Expected	Pass
Document Updates	Upload required documents. Check expiry dates.	Documents processed correctly	Expected	Pass

Table 47: Driver Performance and Analytics Test Cases

5.13 Veterinarian Dashboard Test Cases

5.13.1 Appointment Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Schedule	Access daily appointments. Check time slots.	Schedule displayed correctly	Expected	Pass
Accept Booking	Review appointment request. Confirm booking.	Appointment confirmed	Expected	Pass
Check Patient History	Select pet. View medical records.	Complete history displayed	Expected	Pass
Update Appointment	Modify appointment time. Add notes.	Changes saved successfully	Expected	Pass
Cancel Session	Select appointment. Provide reason. Cancel.	Session cancelled, slot freed	Expected	Pass
Emergency Slots	Check emergency availability. Block time slot.	Emergency slot reserved	Expected	Pass

Table 48: Appointment Management Test Cases

5.13.2 Medical Records and Prescription Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Add Medical Record	Create new record. Enter diagnosis details.	Record saved successfully	Expected	Pass
Issue Prescription	Select medications. Set dosage. Add instructions.	Prescription created	Expected	Pass

Review Refill Request	Check refill request. Approve/deny request.	Request processed	Expected	Pass
Upload Documents	Add test results. Attach X-rays/reports.	Documents uploaded	Expected	Pass
Generate Health Report	Select pet. Create comprehensive report.	Report generated correctly	Expected	Pass
Update Vaccination	Record new vaccination. Set next due date	Vaccination record updated	Expected	Pass

Table 49: Medical Records and Prescription Test Cases

5.14 Hotel Owner Dashboard Test Cases

5.14.1 Booking and Room Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Bookings	Access booking calendar. Check occupancy.	All bookings displayed correctly	Expected	Pass
Process Check-in	Select booking. Verify pet details. Complete check-in.	Check-in processed successfully	Expected	Pass
Handle Check-out	Process check-out. Update room status.	Check-out completed, room freed	Expected	Pass
Room Status Update	Change room availability. Update maintenance status.	Room status updated	Expected	Pass
Manage Pet Diet	View dietary requirements. Update meal schedule.	Diet plan recorded correctly	Expected	Pass
Emergency Contact	Access owner contact. Test emergency protocol.	Contact info accessible	Expected	Pass

Table 50: Booking and Room Management Test Cases

5.14.2 Hotel Analytics and Service Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Revenue Analytics	View daily/monthly revenue. Check occupancy rates.	Financial data displayed	Expected	Pass
Customer Reviews	Access feedback. Respond to reviews.	Reviews managed properly	Expected	Pass
Service Tracking	Monitor additional services. Update pet activities.	Services recorded correctly	Expected	Pass
Staff Management	Assign staff to rooms. Track task completion.	Staff tasks updated	Expected	Pass
Photo Updates	Upload pet photos. Send to owners.	Photos shared successfully	Expected	Pass
Generate Reports	Create occupancy report. Export financial data.	Reports generated correctly	Expected	Pass

Table 51: Hotel Analytics and Service Test Cases

5.15 Grooming Salon Dashboard Test Cases

5.15.1 Grooming Appointment Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
View Schedule	Access daily appointments. Check time slots.	Schedule displayed accurately	Expected	Pass
Accept Booking	Review grooming request. Confirm appointment.	Booking confirmed successfully	Expected	Pass
Assign Groomer	Select available groomer. Assign to appointment.	Groomer assigned properly	Expected	Pass
Service Start	Update appointment status. Start timer.	Service status updated	Expected	Pass
Service Complete	Mark services completed. Add grooming notes.	Completion recorded	Expected	Pass

Table 52: Grooming Appointment Management Test Cases

5.15.2 Salon Analytics and Management Test Cases

Test Case	Test Steps	Expected Result	Actual Result	Pass/Fail
Revenue Tracking	View daily earnings. Check service popularity.	Financial data displayed	Expected	Pass
Staff Performance	Monitor groomer ratings. Check completion times.	Performance metrics shown	Expected	Pass
Inventory Control	Check supplies level. Update stock count.	Inventory updated correctly	Expected	Pass
Customer History	Access pet grooming history. View preferences.	History displayed properly	Expected	Pass
Service Packages	Update service prices. Modify package details.	Packages updated successfully	Expected	Pass
Marketing Tools	Send promotions. Track campaign effectiveness.	Marketing data recorded	Expected	Pass

Table 53: Salon Analytics and Management Test Cases

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The Pet Care Application was developed to address the critical challenges faced by Malaysian pet owners, providing a comprehensive and user-friendly platform for managing their pets' needs. The application integrates a range of features to cater to diverse requirements, including **pet taxi services**, **veterinary appointment booking**, **e-commerce for pet supplies**, **Tamagotchi-style educational gameplay**, **pet hotel booking**, **pet grooming services**, and **pet tips with an AI assistant**. These features collectively aim to enhance the convenience, accessibility, and knowledge base of pet owners.

The **pet taxi service** solves logistical issues by connecting users with verified drivers who are trained to handle pets, making transportation safe and reliable. The **veterinary appointment system** simplifies medical care by streamlining the booking process and reducing waiting times. The **e-commerce platform** enables users to shop for pet-related products from the comfort of their homes, while the **pet hotel booking** and **pet grooming services** ensure comprehensive care and pampering for pets. Furthermore, the **Tamagotchi-style game** promotes responsible pet ownership in a fun and engaging way, while the **AI-powered pet tips** offer personalized guidance for pet care.

Developed using the Agile methodology, the application underwent iterative improvements and rigorous testing to ensure its usability, reliability, and adaptability to user needs. The system has demonstrated its ability to bridge critical gaps in pet care services, addressing cultural sensitivities, logistical challenges, and limited accessibility in Malaysia. By fostering responsible pet ownership and creating new job opportunities, the Pet Care Application contributes to improving the welfare of pets and their owners alike, while also supporting the local economy.

6.2 Recommendations

While the application has successfully met its primary objectives, there are several opportunities for further enhancement and expansion. Future iterations of the project could benefit from the inclusion of **additional services**, such as pet training programs, pet adoption platforms, and advanced wellness monitoring. Collaborating with local pet shelters and training centers would further enrich the application's ecosystem.

The integration of **sophisticated AI features** could elevate the user experience by providing predictive analytics for pet health, real-time support, and tailored recommendations. Additionally, **scalability** should be a key focus, enabling the application to serve pet owners in regions beyond Malaysia. Localization efforts would help address cultural and geographical differences, making the platform more adaptable and widely accepted.

User engagement could be improved through gamification elements like challenges, leaderboards, and rewards for consistent usage. An in-app community forum for pet owners could also foster interaction and knowledge-sharing. Sustainability initiatives, such as promoting eco-friendly products on the e-commerce platform, could appeal to environmentally conscious users, and partnerships with green organizations could amplify these efforts.

For service providers, incorporating **advanced analytics tools** would enable veterinarians, shop owners, and other stakeholders to gain insights into customer trends and optimize their offerings. Performance optimization through stress testing and enhanced data security measures should also be prioritized to ensure the application's reliability and safety as user adoption scales.

Finally, future work could explore the integration of IoT devices, such as GPS trackers and health monitors, to offer real-time data and insights about pets. Collaborations with governmental and non-governmental organizations could further enhance the platform's impact by supporting pet welfare initiatives and encouraging widespread adoption of responsible pet care practices

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APPENDIX
POSTER