Furever Care: A Web-Based and Mobile Application Pet Health Management and Veterinary Clinic Operations for Barks and Cuddles Pet Clinic

A Capstone Project Proposal
Presented to the Faculty of the
Information and Communications Technology Program
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In Partial Fulfilment
of the Requirements for the Degree
Bachelor of Science in Information Technology

Shandy C. Mayores
Owen Christian T. Robas
Ben Alfred L. Vergara
Aldrin P. Zantua

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ENDORSEMENT FORM FOR ORAL DEFENSE

TITLE OF RESEARCH:	**Furever Care: A Web-Based System and Application for Managing Pet Health Records, Appointments, and Reminders**
NAME OF PROPONENTS:	**Shandy C. Mayores** **Owen Christian T. Robas** **Ben Alfred L. Vergara** **Aldrin P. Zantua**

In Partial Fulfilment of the Requirements
for the degree Bachelor of Science in Information Technology
has been examined and is recommended for Oral Defense.

ENDORSED BY:

Harvey P. Plazo
Capstone Project Adviser

APPROVED FOR ORAL DEFENSE:

Lance Stephen L. Bronzal
Capstone Project Coordinator

NOTED BY:

Raymond A. Iglesia, LPT
Program Head

OCTOBER 2025

APPROVAL SHEET

This capstone project titled **Furever Care: A Web-Based and Application System for Pet Health Management and Veterinary Clinic Operations**, prepared and submitted by **S qhandy C. Mayores**, **Owen Christian T. Robas, Aldrin P. Zantua**, and **Ben Alfred L. Vergara**, in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology, has been examined and is recommended for acceptance and approval.

Harvey P. Plazo

Capstone Project Adviser

Accepted and approved by the Capstone Project Review Panel in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology

Ace F. Pasag
Panel Member

Everild Gerd R. Pablo, MBA
Panel Member

Carlo Angelo Calleja
Lead Panelist

Noted:

Lance Stephen L. Bronzal
Capstone Project Coordinator

Raymond A. Iglesia, LPT
Program Head

OCTOBER 2025

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ABSTRACT

Title of Research: **FUREVER CARE: A WEB-BASED AND MOBILE APPLICATION FOR PET HEALTH MANAGEMENT AND VETERINARY CLINIC OPERATIONS**

Researchers: **Shandy C. Mayores**
Owen Christian T. Robas
Ben Alfred L. Vergara
Aldrin P. Zantua

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This study introduces Furever Care, a web-based and mobile application designed to modernize veterinary clinic operations and improve pet health management at Barks and Cuddles Pet Clinic in Naga City. The system aims to address challenges such as missed appointments, misplaced medical records, and inefficient communication between pet owners and clinics by providing a centralized digital platform that enables pet owners to manage profiles, view medical histories, and schedule appointments, while allowing administrators to oversee clinic operations, update records, and monitor inventory.

The development process utilized Scrum methodology with iterative design phases conducted from February to October 2025. Data gathering involved surveys of 10 veterinary clinics and 30 pet owners in Naga City, followed by user acceptance testing

with 46 respondents. Technologies such as Flutter, Firebase, and Dart were implemented to support cross-platform functionality, real-time data synchronization, and secure authentication. Testing included functionality, usability, compatibility, and performance evaluations, confirming that the system operates reliably across web and mobile platforms.

Results show that Furever Care significantly reduces administrative workload, minimizes human error, and enhances service efficiency through features like automated reminders, responsive dashboards, and secure data handling. User satisfaction reached 90% overall, with customers rating appointment scheduling at 91% and administrators rating operational efficiency at 92%. The system complies with the Data Privacy Act of 2012, ensuring confidentiality and security of sensitive information. Overall, Furever Care stands as a scalable and sustainable solution that promotes digital transformation in veterinary services, improving convenience and communication for both clinics and pet owners.

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Project Context

Digital technologies increasingly influence daily life, including the care of pets, as a result of rapid societal evolution driven by technological advancements. In several sectors, including veterinary care, this change has increased demands for quicker, more precise, and more convenient services. The need for veterinary clinics to effectively handle patient data, inventory, and appointment scheduling is growing as pet ownership rises. In order to ensure higher operational effectiveness and greater customer satisfaction, veterinary clinics must adopt digital solutions that offer streamlined management, enhanced accessibility, and improved workflow efficiency. However, many clinics continue to rely on manual reservation systems and paper-based record-keeping, which frequently result in errors, inefficiencies, and delays in providing quality care. To ensure operational excellence and meet rising client expectations, veterinary clinics must adopt advanced digital solutions that promote streamlined workflows, centralized management, and real-time data accessibility.

According to the Philippine Statistics Authority (2021), the Bicol Region has seen a steady rise in domestic pet ownership, with households increasingly treating pets as integral family members. Despite this trend, several veterinary clinics in the city still operate using manual or semi-digital systems to manage medical records, appointments, and inventory, leading to inefficiencies such as misplaced files, scheduling conflicts, and service delays. These challenges affect both clinic staff and pet owners, resulting in fragmented service delivery and reduced quality of care. Based on the survey conducted among ten

veterinary clinics in Naga City, 80% of the respondents have already adopted digital systems for their operations, indicating a strong industry shift toward digitalization. However, it is noteworthy that the main client of this study has yet to transition to a digital platform, highlighting a clear need for system modernization. Sixty percent of clinics without digital technology still use manual techniques like phone calls and paper records, forty percent utilize simple computer software, and sixty percent rely on paper-based procedures. The survey also revealed that appointment scheduling (100%), customer notifications (87.5%), and vaccine reminder systems (75%) are among the most utilized features in existing systems, which should be prioritized in the proposed solution. Additionally, integrating online payment options (62.5%) and inventory management (62.5%) is essential. Notwithstanding these developments, 83.3% of clinics, both digital and non-digital, stated that missed appointments were a recurring problem. Other issues mentioned were human recordkeeping, inventory management concerns, and the absence of automated client alerts.

Barks and Cuddles is among the veterinary clinics that have yet to implement a digital system for managing their operations. The discussion among clinic staff showed that manual methods, such as paper-based record-keeping and telephone appointment scheduling and client communication, continue to serve as the basis of operating procedures. This reliance on non-digital practices has been identified as a significant source of operational inefficiencies, manifesting in disorganized patient records, challenges in inventory control, increased incidence of missed appointments, and suboptimal with pet owners. These issues contribute to elevated administrative workload, delays in service provision, and diminished overall clinic performance and client satisfaction. The findings

highlight an urgent need for the adoption of integrated digital solutions to streamline management processes and improve operational effectiveness.

The survey conducted among ten clients of Furever Care Veterinary Clinic revealed notable insights into the current challenges and digital needs of pet owners. A significant 90% of respondents indicated they had previously missed scheduled appointments due to miscommunication or the absence of timely reminders, highlighting inefficiencies in the clinic's existing manual communication system. When asked to rate their satisfaction with the clinic's communication process on a scale of 1 (Very Unsatisfied) to 5 (Very Satisfied), 50% of the participants responded neutrally, while only 10% expressed high satisfaction, indicating room for improvement in client engagement strategies. Regarding the adoption of digital tools, 60% expressed a preference for a mobile or web-based system to manage their pets' health records and appointments, with 30% uncertain and 10% opposed. The survey also explored desired functionalities in a potential digital platform. All respondents (100%) identified online appointment scheduling and online payment options as essential features. Additionally, 80% favored the ability to order pet supplies and medications online, 70% supported access to digital medical history, and 60% valued automated vaccination reminders. These findings suggest a strong demand for a comprehensive digital solution to enhance service accessibility, operational efficiency, and client satisfaction at Furever Care.

Furever Care: A Web-Based and Application System for Pet Health Management and Veterinary Clinic Operations is specifically designed to address the operational challenges identified at the Barks and Cuddles, providing a tailored digital solution to streamline clinic processes, enhance service delivery, and improve overall client and patient management. This customized digital solution unifies client communication, inventory monitoring, appointment scheduling, and patient record administration into a single, easily accessible platform. The solution enables clinic employees to effectively manage operations and obtain vital information instantly by utilizing both web-based and mobile interfaces. On top of that, computerized appointment and notifications improve compliance and engagement among pet owners. The goals of Furever Care's deployment are to decrease administrative burden, avoid missed appointments, eradicate inefficiencies brought on by manual processes, and enhance overall clinic productivity and client happiness. This focused digital transformation supports Furever Care in delivering more reliable and timely veterinary services while modernizing its operational framework.

Purpose and Description

The purpose of this capstone project, Furever Care: A Web-Based and Application System for Pet Health Management and Veterinary Clinic Operations, is to modernize the operational processes of Barks and Cuddles Pet Clinic by providing an integrated digital platform tailored to their specific needs. This system is designed to address existing inefficiencies caused by manual methods of recordkeeping, appointment scheduling, and client communication.

The platform enables both clinic staff and pet owners to manage pet healthcare more effectively through centralized digital tools. Key features include online appointment scheduling, automated reminders for check-ups and vaccinations, digital access to medical records, inventory management, and online payment capabilities. By transitioning to a digital system, the clinic can minimize human error, reduce administrative workload, and improve overall service efficiency. This solution is particularly crucial in light of findings that show a high rate of missed appointments, fragmented communication, and client dissatisfaction resulting from outdated systems. Based on survey data, 90% of clients missed appointments due to lack of reminders, and 60% of pet owners expressed interest in a digital system for managing their pets' health. The system is built to meet these demands while also supporting clinic staff with streamlined workflows and real-time data access.

Overall, Furever Care aims to transform clinic operations and enhance pet healthcare experiences by providing a digital solution that ensures timely service, organized records, and stronger client communication.

Objectives

The main objective of this capstone project is to developed Furever Care, a web-based and application system designed to enhance the healthcare management processes at Barks and Cuddles Pet Clinic. The system aims to replace the clinic's manual, paper-based operations with a centralized digital platform that improves medical record tracking, appointment scheduling, client communication, and real-time reminders. The mobile application will mirror the web platform, offering the same features and processes for improved accessibility and convenience. Specifically, the system aims to:

1. To Develop a cross-platform system accessible via both web and mobile devices that enables pet owners and clinic staff to track, manage, and update pet medical records including vaccination histories, treatments, and procedures. This will ensure that patient data is fully digitized, organized, and accessible in real-time, with development completed within the first four months of the project.
2. To Improve clinic services through a scheduling and notification feature that allows pet owners to book, modify, and cancel appointments while receiving automated email reminders. This aims to reduce missed appointments within three months of system implementation.
3. To Enable continuous communication between pet owners and clinic staff by offering real-time updates and access to pet health records through both the website and the mobile app.
4. To Provide customized dashboards for both clinic administrators and pet owner's admins will manage appointments, follow-ups, notifications, and records, while users will view pet profiles, track medical histories, and receive alerts. These features will be accessible on both platforms, ensuring consistent functionality and user experience.
5. To Promote regular pet healthcare routines by giving pet owners 24/7 access to their pets' medical records, appointment schedules, and automated reminders through both the web-based and mobile platforms. By having continuous access to accurate and updated health information, pet owners can easily monitor upcoming vaccinations, check-up dates, and treatments without relying solely on clinic reminders or memory.

Scope and Limitations

The capstone project Furever Care: A Web-Based and Mobile System for Managing Pet Health Records, Appointments, and Reminders is designed specifically for Barks and Cuddles Pet Clinic in Naga City. It aims to enhance clinic operations and client experience by replacing manual processes with a centralized digital platform accessible via both web and applications.

User Coverage

The system will cater to two main user types: clinic administrators and pet owners. Pet owners can manage pet profiles, view health records, schedule appointments, and receive notification, while administrators can oversee clinic operations, update records, and manage user interactions.

Cross-Platform Access

The system will be available as both a web-based and application. Both platforms will provide identical features and functionality to ensure accessibility for users on different devices.

Appointment Scheduling and Notification

Users will be able to request, reschedule, or cancel appointments. Automated reminders will be sent via email to reduce missed visits and ensure timely care.

Inventory Management and Product Display

The admin dashboard includes an inventory management module that allows clinic staff to post pet-related products such as medications or pet care items. These products will be visible to users on the platform, giving them access to view available items for future in-clinic purchase or inquiry.

Medical Records Management

Administrators will maintain digital records of pet vaccinations, treatments, and other procedures. Pet owners will have real-time access to view their pet's updated medical history.

Admin Dashboard Features

Administrators will have access to tools that allow them to manage appointments, user data, and inventory efficiently through the system's dashboard. In addition, the dashboard provides advanced features such as analytics graphs to monitor the number of client visits over time and printable reports covering appointments, pet health activities, and inventory updates, ensuring streamlined operations and informed decision-making.

Development Timeline:

The system will be developed, implemented, and tested over the course of the academic year 2024–2025, focusing on initial deployment and user feedback collection within the timeframe. Iterative refinements will be made based on the feedback received. The study will conclude with an evaluation of the system's usability, performance, and overall impact on veterinary communication and care continuity.

Limitations:

This system is not intended for use by clinics outside the Barks and Cuddles network. Thus, the platform does not include advanced diagnostic tools, teleconsultation services, or integration with external veterinary databases. Its features are limited to basic medical record management, scheduling, and communication within the clinic. The effectiveness of the system will also depend on the availability of internet access and the willingness of users to engage with digital tools.

User Coverage and Geographical Constraints:

The initial release of the system is designed to serve future customers and clients of Barks and Cuddles Pet Clinic, along with the clinic administrators, ensuring streamlined operations and improved user experience. However, the pilot implementation is geographically limited to Naga City, and any expansion to other areas will require further system adaptation to accommodate varying operational needs and regional requirements.

System Availability:

The web-based system, Furever Care, is exclusively available for use within Barks and Cuddles Pet Clinic. It is not yet integrated with other veterinary clinics, limiting its accessibility to pet owners outside the partnered clinic. Broader availability would require future partnerships and system expansions.

Technical Dependencies:

The platform relies on stable internet connectivity to function effectively, which means areas with poor or inconsistent access may experience usability issues. Additionally, the system is optimized for modern web browsers to ensure smooth performance, but functionality may be limited on outdated devices, highlighting the need for users to maintain updated hardware and software for the best experience.

Integration Limitations:

The current version does not support integration with third-party veterinary management systems. It also lacks compatibility with payment gateways and external laboratory tools, which may be considered for future enhancements.

Security and Privacy:

The Furever Care system is designed to adhere to the provisions of the Data Privacy Act of 2012 (Republic Act No. 10173). All personal and sensitive pet data (e.g., names, contact information, medical records) are collected solely for the purpose of facilitating pet health management and veterinary operations. Data security is maintained through secure transmission protocols (SSL/TLS) and robust user authentication (Google and Firebase Authentication), ensuring data integrity and minimizing unauthorized access, in line with the Act's security requirements.

Scalability:

The platform may encounter performance issues under heavy traffic or when managing large volumes of data until further optimization is implemented.

Automated Messaging Limitations:

While email notifications are implemented, SMS support is not included due to budget and integration constraints, which may affect users who prefer text messaging, the system only provides basic automated email reminders and does not yet support advanced messaging features like personalized follow-ups or chatbot assistance.

Review of Related Literature/Studies/Systems

Foreign Literature

Keeping track of a pet's health routines, such as vaccinations, treatments, and regular checkups, is the owners' and vet's responsibility. With the help of a web-based system or digital system like Furever Care, pet owners can ensure that the information and data of their pet will be stored and managed properly by receiving timely feedback on their pet's health and condition while ensuring easy access to records.

According to Abu-Seida, Abdul Karim, and Hassan (2024) explored the expansion of veterinary telemedicine in response to the COVID-19 pandemic, highlighting its transformative role in improving the accessibility and affordability of animal healthcare. The study emphasized the value of telemedicine in supporting services such as tele radiology, tele dermatology, and remote consultations, which allowed pet owners especially those in rural or underserved areas to continue receiving care for their animals despite restrictions and clinic closures. However, the authors also pointed out existing challenges that could hinder the long-term success of veterinary telemedicine. These include the lack of clear legal frameworks, issues with data security, and ambiguity in veterinary-client-

patient relationship (VCPR) regulations. They concluded that policy makers regulators must prioritize the development of robust guidelines and standards to ensure ethical, effective and sustainable use of telehealth in veterinary practice.

Md Tauseef et al. (2024) examined the evolution of smart pet care technologies and their impact on preventive animal health management. Their study explored innovations such as smart collars that monitor pet activity levels, GPS-enabled devices for real-time tracking, pet cameras for remote observation, and automated feeders that ensure proper nutrition management. These devices collectively improve the daily care experience for pet owners while allowing for continuous monitoring of behavioral and health patterns. Importantly, the integration of such technologies into broader telehealth ecosystems paves the way for early detection of health anomalies, location-based alerts in case of missing pets, and better compliance with treatment regimens.

Juodzente et al. (2024) conducted a region-specific investigation into the readiness of veterinary clinics and awareness among pet owners regarding telemedicine services in Lithuania. Their research discovered that only 1.85% of veterinary clinics provided paid online consultations, and a vast majority of pet owners were unaware of the existence or benefits of digital veterinary care. The study identified key factors necessary for successful digital adoption, including robust public education campaigns, professional development programs for veterinarians, and enhanced marketing strategies. Also, their findings suggest that affordability and flexible hours could increase telemedicine adoption, particularly in areas with limited physical veterinary infrastructure.

Watson et al. (2020) conducted a survey examining veterinarians' knowledge and

utilization of telehealth technologies, which relates to web- based systems like "Furever Care" for tracking pet procedures. Through both qualitative and quantitative analysis of 76 veterinarian participants, the study revealed significant knowledge gaps regarding telehealth terminology inconsistent adoption of digital platforms in veterinary practice. Traditional in-office visits remained the predominant method of interaction, with advanced digital tools like video conferencing being least utilized despite their potential benefits. The researchers identified several barriers to telehealth adoption, including concerns about maintaining proper Veterinarian-Client-Patient Relationships (VCPR), uncertainty about billing protocols, and limited technical familiarity. Particularly relevant to "Barks and Cuddle" was the finding that nearly half of respondents rarely or never utilized telehealth regardless of age demographic, suggesting that digital tracking systems must address adoption barriers through intuitive design and educational components. The study concluded that veterinary telehealth offers significant opportunities to enhance animal healthcare through improved accessibility and efficiency, but requires targeted interventions both in veterinary education and development to increase awareness and utilization.

WIRED (2020) explores the advancements in pet technology, specifically focusing on wearable devices and remote monitoring tools that enhance pet health and owner engagement. The article examines how technologies like GPS-enabled activity trackers (FitBark, Whistle, and Fi) are transforming pet care by providing valuable insights into a dog’s activity levels and potential health issues. It highlights the role of wearable devices in managing chronic conditions and promoting early detection of health changes. Johnson discusses the benefits of continuous blood glucose monitoring for pets, allowing veterinarians to remotely track pet health and adjust, treatment plans accordingly. As well,

the study emphasizes the growing trend of pet wearables that help improve the quality of life for pets by offering peace of mind to owners and facilitating easier communication between pets and veterinarians. The research underlines the significant impact of these technologies on enhancing the overall health and well-being of pets, supporting the relevance of digital systems in veterinary care.

Local Literature

This system had contributed in various sectors, just like in healthcare field, researchers provide web-based design to enhance the overall services, specifically in pet's healthcare. These technological advancements, particularly in web-based solutions, are emerging as crucial tools for enhancing the quality of care and operational efficiency in pet healthcare management.

According to Salazar et al. (2020), it explains that the increasing role of information technology (IT) systems in transforming the healthcare sector in the Philippines. Based on the article, they say how web-based solutions have enhanced various areas of medical services, including patient management, record keeping, and communication between patients and healthcare providers. It emphasizes systems such as improved data accuracy and allows for more effective and efficient access to health information, which is crucial for timely interventions. This study can be interconnected to pet healthcare management, where web-based systems are used to track pets' medical histories, similar to human health records. This research provides the foundational argument that IT systems in the veterinary industry can significantly improve care delivery and operational efficiency Lopez et al. (2021), explains that the impact of innovating a digital platform for veterinary services

enhances the smooth process of both clinics and clients in the Philippines. The study also explored particularly in challenges and benefits of innovating digital solutions for pet health record management systems and online appointment booking, particularly in areas who often encountered such problems. He also found that many veterinary clinics still rely on paper-based records, leading to missed and forgetting in tracking vaccinations, treatments, and medical histories. It also pinpoints that the digital tools not only enhance the management of pet health data but also allow for better communication between Veterinarian workers and pet's owners in improving the overall client experience.

Ponce et al. (2020), explains that altering digital system in healthcare institution in the Philippines enhances the quality of services from removing traditional paper-based record in changing into web-based system in clinics. This focuses on the importance of adopting and adjusting digital solutions for improving data accuracy, reducing errors, and increasing the efficiency of health services. He noted that web-based systems allow for easy access to patient data, which is particularly vital in not expected situations. This study has similarities in veterinary field in which pet health records can be done through digital to improve access to vaccination, schedules, medical treatments, and follow-up care for pets.

Gonzales et al. (2020), discussed the impact of information systems in the management of small-scale clinics in the Philippines, specifically focusing on veterinary clinics. The study found that many veterinary clinics still relied heavily on manual record- keeping, which resulted in issues such as lost data, difficulty tracking ongoing treatments, and inefficiencies in scheduling. The researchers emphasized the role of web-based solutions in streamlining clinic operations, improving communication between veterinary staff and

clients, and ensuring that important health data, such as vaccinations and treatment history, is accurately tracked.

Mendoza et al. (2021), emphasized the analysis on the use of mobile and web applications for healthcare management in the Philippines. It focused on mobile health (mHealth) apps and web-based platforms designed to improve the management and regular medical check-ups for human patients. They found out that with the help of mobile and web applications helped in- crease patient engagement, improved adherence to medication schedules, and facilitated communication between healthcare providers and patients. The researchers come up to an idea to integrate such applications which had a potential to be adapted for managing pet health, including monitoring vaccinations, scheduling veterinary visits, and tracking ongoing treatments. This study emphasizes the emergence for integrating health management systems, including those designed for pets, to ensure that health procedures are efficiently tracked and managed.

Related Studies/Systems

In a study by Chua, Alis, and Oria (2024), the researchers developed a web-based veterinary clinic system integrated with email and SMS notifications to enhance the implementation of Electronic Medical Records (EMRs) in animal healthcare within the Philippine context. The system aimed to address common challenges faced by veterinary clinics, such as inefficient appointment tracking, manual record-keeping, and client communication issues. By automating key processes such as patient record management, appointment notifications, and reminders for follow-up care, the system sought to improve both operational efficiency and client satisfaction.

Key features of the system included a secure database for storing and updating patient records, and the automatic sending of email and SMS notifications to pet owners about scheduled appointments, treatments, and important reminders. The study demonstrated how integrating digital systems, such as electronic medical records and automated notifications, could streamline veterinarian-client interactions and improve the overall efficiency and confidentiality of veterinary procedures. The authors emphasized how such systems could significantly empower pet owners by providing them with important health information about their pets, thus improving the overall.

Gatmaitan et al. (2024), developed a web-based application called iPET, designed primarily for pet adoption, but it also integrates features relevant to pet health management. The study was conducted in Cabanatuan City and evaluated both by IT experts and end-users in Barangay Aduas Norte. The system was developed using the waterfall model, which includes detailed phases such as requirements gathering, system design, implementation, testing, deployment, and maintenance. Although its primary focus was adoption, iPET also allows pet owners to manage profiles for their pets, which can be used to log vaccination and medical data. The developers assessed the system using the ISO 25010 software quality model, covering areas like usability, reliability, and maintainability. End-users reported high satisfaction levels, indicating the system's potential beyond its original scope. The research team also recommended expanding the platform into a mobile version to improve accessibility. Suggestion were made to integrate a chat feature for better communication between adopters and organizations.

Llaneta et al. (2022), introduced VETGO, a mobile application designed to make veterinary services more accessible in the Philippines. The study aimed to solve issues commonly faced by pet owners such as difficulty accessing in-home veterinary care and delayed medication delivery. VETGO allows users to easily book veterinary appointments, request home visits, and order pet medications through their mobile phones. The application connects users with nearby registered veterinarians, reducing the time it takes to secure medical help for pets. One of its major contributions is its convenience, especially for pet owners who live far from clinics or lack transportation. The researchers conducted User Acceptance Testing (UAT), and results showed that users found the application effective, functional, and reliable. The app includes health record management tools that allow pet owners to keep track of their pets past treatments and vaccination schedules. This feature helps ensure pets receive timely medical attention and follow-up procedures. Llaneta and his team recommended expanding the app to cover more cities and include notifications for scheduled check-ups and vaccinations. The VETGO project represents a significant step in integrating health service delivery with modern technology in the Philippine pet care industry.

Amarille et al. (2021), created a Web-Based Integrated Information System for the Phoenix Veterinary Clinic in the Philippines to improve and data management. The primary goal was to transition from manual processes to digital solutions for handling appointments, medical records, and billing. This system allows pet owners to schedule appointments online, view billing statements, and track their pets' medical history through a secure platform. It also enables clinic staff to access and update pet health record quickly, which improves efficiency during consultations. The researchers highlighted how paper- based

systems were prone to data loss and errors, which the new system significantly reduced. They also emphasized the importance of having a cen- tralized, accessible database for both veterinarians and clients. The system was tested and evaluated during actual clinic operations, where it showed promising results in terms of speed, accuracy, and reliability. Pet owners expressed appreciation for the improved transparency and convenience in managing their pets' healthcare needs. Amarille et al. concluded that digitizing veterinary services can boost customer satisfaction and clinic performance. This local study offers practical evidence of how small clinics in the Philippines can benefit from web-based systems.

Bautista et al. (2023), developed an innovative Web-Based Pet Health Management System designed to streamline pet care procedures for veterinary clinics in the Philippines. The system aims to help both pet owners and veterinarians manage pet records, track vaccinations, monitor treatments, and schedule regular check-ups. With the increase in the number of pet owners, especially in urban areas, the researchers noted the need for a more efficient system to handle the growing demand for veterinary services. Before the system, many clinics in the country used paper-based records, leading to inefficiencies and data inaccessibility. He and his team used a user-centered design approach to ensure that the system was easy to navigate for both tech- savvy and less technologically inclined users. The system allows veterinarians to store comprehensive medical records, including vaccination histories, treatment schedules, and diagnostic results. Pet owners can access these records remotely, schedule appointments, and receive reminders for upcoming vaccinations. The researchers found that the system reduced the time needed for manual record retrieval and improved communication between pet owners and clinic staff. The

study concluded that implementing such a web-based system could significantly improve the quality of pet care services in the Philippines, especially for rural areas with limited access to veterinary care.

Reyes et al. (2022), created a Pet Care and Medical Monitoring System, a mobile and web application aimed at improving the management of pet healthcare in Metro Manila. The system's key features include a pet health tracker that records vaccinations, vet visits, and prescribed treatments. Reyes and his team were motivated by the challenges pet owners face in keeping track of their pets' health information. Prior to the development of this system, many pet owners struggled with remembering vaccination dates or tracking their pets' medical history, especially for multi-pet households. The app allows users to input important health data, such as vaccination schedules, and set reminders for upcoming check-ups and treatments. The system also features a real-time communication channel with veterinarians, ensuring that pet owners can easily reach out to professionals for advice or emergency situations. The study revealed that users of the system reported higher levels of satisfaction due to the ease of managing pet health data and improved veterinary service access. Additionally, the system was found to be a valuable tool for veterinary clinics, as it enabled more efficient appointment scheduling and record-keeping. Reyes et al. concluded that the Pet Care and Monitoring System could become a valuable tool for improving overall pet health management, ensuring that pets receive timely treatments.

Synthesis

The integration of web-based management systems in veterinary care has become increasingly significant, as evidenced by both international and local research. Foreign

studies by Abu-Seida et al. (2024), Md Tauseef et al. (2024), and Juodzente et al. (2024) emphasized the transformative role of veterinary telemedicine and smart pet care technologies, particularly during the COVID-19 pandemic, while identifying barriers such as limited awareness, technical unfamiliarity, and unclear legal frameworks. Watson et al. (2019) noted that despite potential benefits, many veterinarians were not utilizing telehealth technologies due to concerns about maintaining proper Veterinarian-Client-Patient Relationships (VCPR) and billing uncertainties.

Local studies in the Philippines mirror these international findings. Salazar et al. (2020), Lopez et al. (2021), Gonzales et al. (2020), and Ponce et al. (2019) highlighted the transformative role of information technology in healthcare, noting improvements in data accuracy and efficiency while observing that many veterinary clinics still rely on manual record-keeping, leading to inefficiencies, data loss, and scheduling conflicts. Mendoza et al. (2021) and Bautista et al. (2023) emphasized the potential of digital platforms in enhancing pet health management, improving communication between clinics and clients, and ensuring timely medical attention.

Related systems such as PawHub (Gatmaitan et al., 2024), VETGO (Llaneta et al., 2022), and the Phoenix Veterinary Clinic system (Amarille et al., 2021) demonstrated practical applications of these technologies through features like electronic health records, online appointment booking, and automated reminders. Chua et al. (2024) and Reyes et al. (2022) further validated the effectiveness of integrated notification systems and mobile health tracking applications in reducing missed appointments and improving service delivery.

Despite these advancements, a critical gap remains: most existing systems focus on either telemedicine consultations or basic record digitization, but few provide a comprehensive, integrated solution that combines appointment management, medical record tracking, inventory control, automated reminders, and cross-platform accessibility specifically tailored for small veterinary clinics in the Philippines. Furthermore, many clinics like Barks and Cuddles have yet to adopt any digital system, continuing to rely entirely on manual, paper-based processes.

The development of Furever Care directly addresses these gaps by providing a fully integrated, user-friendly web-based and mobile application system designed specifically for Barks and Cuddles Pet Clinic and similar small veterinary practices. Unlike existing systems that offer fragmented solutions, Furever Care combines appointment scheduling, digital medical records, automated email reminders, inventory management, real-time notifications, and secure role-based access—all within a single platform accessible through both web browsers and mobile devices. This comprehensive approach aligns with research findings emphasizing the need for centralized, accessible, and efficient digital tools while addressing the specific operational challenges identified in the Philippine veterinary context, including missed appointments, lost records, inefficient communication, and limited technical resources.

METHODOLOGY

Technical Background

The “Furever Care” will be developed as a web-based application to ensure cross- platform accessibility and ease of use. The system leverages modern web technologies to address the challenges of pet health management, focusing on real-time tracking, automated reminders, and secure communication.

Front-end Development:

- Hypertext Markup Language (HTML)
- JavaScript (JS)
- Flutter
- Microsoft Visual Studio (VS) Code

Details of the Technologies to be used

Flutter:

Flutter will serve as the primary framework for building the Furever Current Care web-based application. It allows for the creation of a responsive and interactive interface for both admin and users, supporting features such as appointment management, pet medical records, and procedure tracking. Flutter’s widget-based architecture enables a consistent UI across devices and platforms.

Firebase:

Firebase will be used as the project’s backend service. It provides real-time database functionality, authentication, and cloud storage. Firebase Authentication manages secure

logins for both admin and users, while Cloud Firestore stores data such as pet profiles, appointments, procedures, and medical records. Firebase Cloud Messaging may also be utilized for notification features and reminders.

Dart Programming Language:

The Dart language will be used to develop the application logic in Flutter. It handles functionalities such as navigation, data management, and integration with Firebase services. Dart's asynchronous capabilities are essential for real-time data fetching and updates across the system.

HTML, CSS, and JavaScript (for Web Deployment):

For the web version of the app, HTML5 and CSS3 are utilized under the Flutter Web framework to render UI components. JavaScript enables interactivity and enhances dynamic content rendering within browsers.

Visual Studio Code (VS Code):

Microsoft Visual Studio Code serves as the main development environment for coding, debugging, and version control. Its extensions for Flutter and Firebase streamline testing, code formatting, and real-time collaboration during development.

Firebase Hosting:

The completed web-based application will be deployed using Firebase Hosting, which offers fast and secure global delivery of web content. It ensures the system remains accessible to both admins and users with reliable uptime.

GitHub:

GitHub is used for version control and project collaboration. It stores the project repository, enabling team members to manage code updates, track changes, and work efficiently through branches and commits.

GANTT CHART OF ACTIVITIES

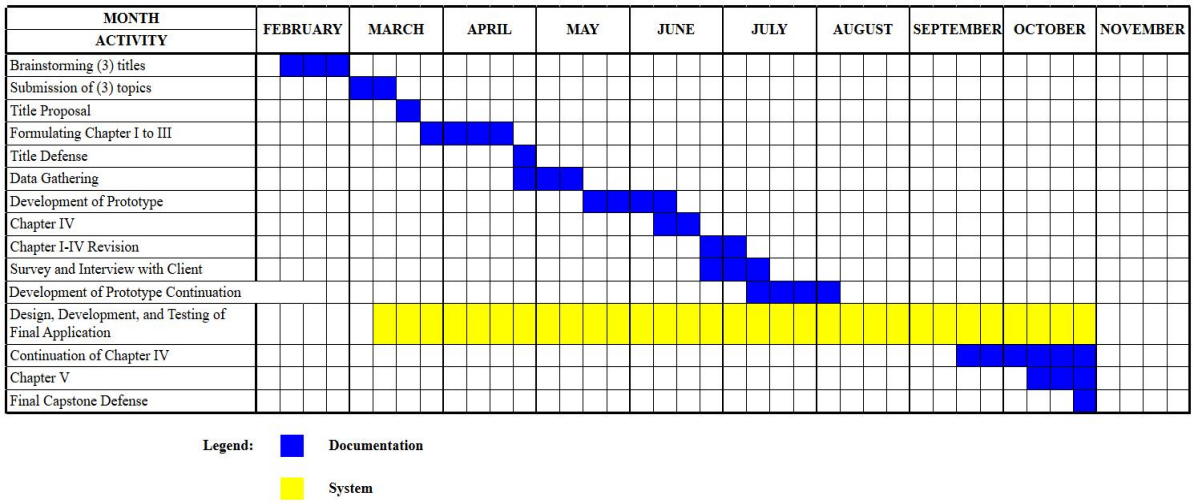


Table 1. Gantt Chart of Activities.

Table 1 shows the Gantt Chart outlining the timeline of activities for the development of the Furever care system and mobile application. It presents the sequence and duration of each project phase, including planning, analysis, design, development, testing, and documentation, ensuring systematic and timely completion of the study.

Resources

- **Development Computers:** High-performance laptops designed for web development, testing, and execution, equipped with at least an i5 processor and solid-state storage for faster performance.

- **8 GB Memory:** A minimum of 8 GB RAM is necessary to support short-term data storage, ensuring smooth multitasking and the efficient operation of software applications.
- **Networking Equipment:** Reliable internet and networking devices to support access to the pet clinic's web-based application and ensure stable connectivity during development and testing.

Software

- **Visual Studio Code:** A free, lightweight source code editor created by Microsoft. It is highly extensible and widely used in software development, offering support for a broad range of programming languages.

- **Prototyping Tools:** Canva will be used to design and prototype the application's user interface, providing an easy-to-use platform for visual development.

Requirements Analysis

The system, "Furever Care: A Web- and Mobile-Based Application for Managing Pet Health Records, Appointments, and Reminders" is created to help both pet owners and veterinarians manage pet health more easily. To better understand their needs and provide a reliable solution, we talked to pet owners and clinic staff along in Naga City through surveys and interviews. Pet owners conclude that they often forget their pets' schedules, vaccinations and sometimes lose paper records. Veterinary clinics shared that keeping track of appointments and medical treatments manually/by hand is time-consuming and can lead to mistakes.

The system Bark and Cuddles Pet Clinic will support the people who use it especially pet owners who want to keep their pets healthy and veterinarians who need a better way to organize, manage, and store the data of their client. It will help with activities like setting appointments, keeping digital records of pets' health, and sending reminders for vaccinations or check-ups. The system is made for use in veterinary clinics and by pet owners in Naga City. Since it is web-based and application system, users can access it anytime and anywhere using their phones or computers. The system is meant to be used both during vet visits and in between visits, especially when reminders for follow-ups or treatments are needed. Right now, many clinics still use paper logs, which can be hard to manage and easy to lose. This system replaces that with a simple, easy-to-use online tool that helps both clinics and pet owners stay organized and informed about pet care.

Functional requirements

Include modules for online medical record storage, appointment scheduling, real-time notification and reminder systems, and secure profile management for pets and owners. Veterinary clinics can update patient records and send automatic appointment reminders, while pet owners can view their pets' health histories, upcoming appointments, and vaccination schedules.

Non-functional requirements

Focus on system usability, performance, and security. The platform must be user-friendly with an intuitive interface, responsive across different devices (desktop, tablet, mobile), and protected through a simple account-based login system (username and password). Although it offers reliable performance, scalability for heavy traffic and

extensive records will be addressed in future upgrades.

Requirements Documentation

The “Furever Care” project outlines the critical features and technical specifications required to enhance veterinary healthcare management at small animal clinics and among pet owners, particularly along Naga City. The project aims to automate pet healthcare record management, streamline appointment tracking, and facilitate timely reminders for vaccinations, treatments, and check-ups for both veterinary staff and pet owners. Technical requirements specify the need for a browser-based system using HTML5, JavaScript, Firebase, and, developed in Visual Studio Code. It must support modern browsers and be accessible via stable internet connections. Constraints include the system’s current limitation to a local area (Naga City), dependency on internet connectivity, lack of integration with third-party veterinary software or payment gateways, and the use of basic security measures, with advanced security protocols planned for future system versions.

The study utilized two sampling frames. First, veterinary clinics in Naga City (n = 10) were selected through convenience sampling, with inclusion criteria requiring active operations, willingness to, and the absence of a full electronic medical record (EMR) system. Second, clinic clients and pet owners were sampled purposively. For the initial needs assessment, 30 respondents were surveyed, while 46 respondents participated in user testing.

Questions Asked to Clients	Response
Can you describe how you currently manage pet medical records and appointments?	We use paper-based records and a physical logbook for appointments.
What are the most common challenges you face with record- keeping and scheduling?	Misplaced files and difficulty tracking past treatments.
How often do missed appointments or forgotten treatments occur in your clinic?	Quite often maybe 2 to 3 times a week.
Do you currently use any digital tools or systems for managing pet health records? If yes, which ones?	No, we don't use any dedicated system.
How do you communicate upcoming appointments or vaccination schedules to pet owners?	Mostly through phone calls or text messages. Sometimes we remind them during their visit.
What features would you find most helpful in a digital system for managing pet care?	Online appointment booking, automated reminders, and easy access to pet medical history.
The system will include medical records There any other types of records you think should be included?	Calendars for scheduled should also be included.
How do you think a system like Furever Current Care could improve your clinic's operations and client satisfaction?	It would make scheduling easier, reduce missed appointments, and improve communication with clients.
How do you handle pet owners with multiple pets and their individual health needs?	We create separate paper records for each pet, but it's time-consuming and prone to errors.
Would you be open to integrating a website and mobile app into your clinic's workflow? Why or why not?	Yes, as long as it's easy to use and doesn't require too much technical knowledge

Table 2. Client response

The table above illustrates the set of interview questions administered to the client during the preliminary phase of data gathering, along with their corresponding responses. This initial interview aimed to obtain comprehensive insights into the client's current 26 STI College Naga operational procedures, challenges encountered, and expectations for the proposed.

Flowcharts

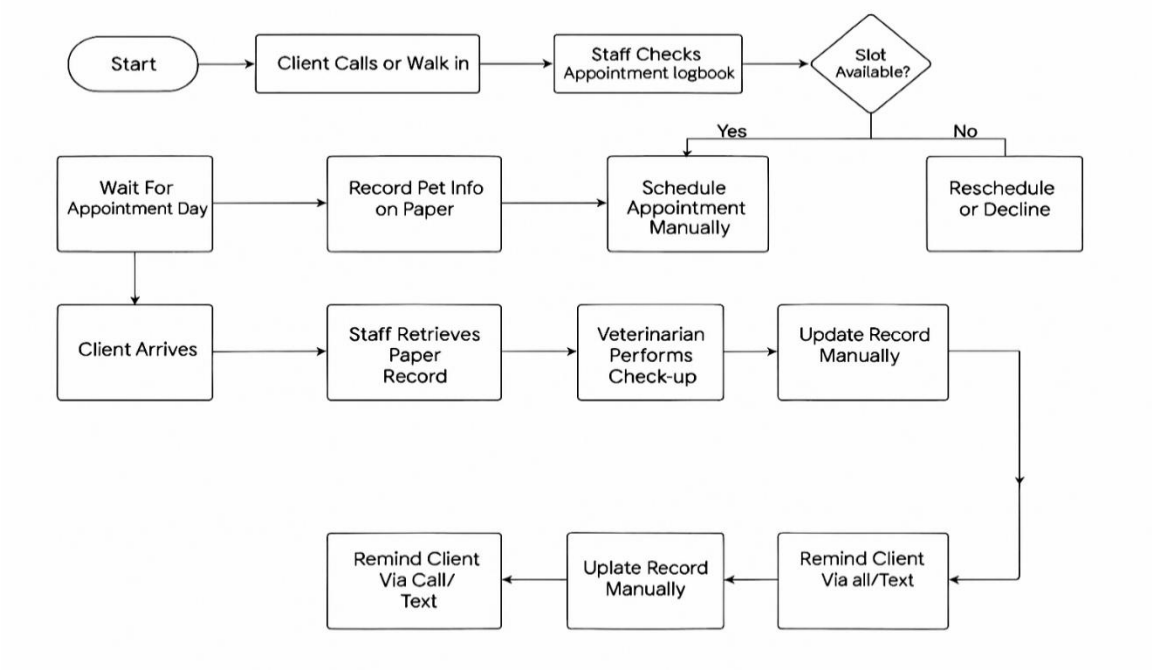


Figure 1. Barks and Cuddles Old Process of their operation

Figure 1 presents the manual workflow of the Barks and Cuddles before the implementation of the Furever Care System. The process begins when a client calls or walks into the clinic to request an appointment. The staff checks the appointment logbook to verify slot availability. If a slot is available, the appointment is scheduled manually and pet details are recorded on paper; otherwise, the client is asked to reschedule or the request is declined. After scheduling, the clinic waits for the appointment day.

On the day of the appointment, the client arrives, and staff retrieves the pet's paper record from the filing system. The veterinarian performs the check-up, and the staff updates the record manually. Finally, reminders for future visits are sent via call or text. This manual process often leads to inefficiencies such as missed appointments, misplaced records, and delays in communication.

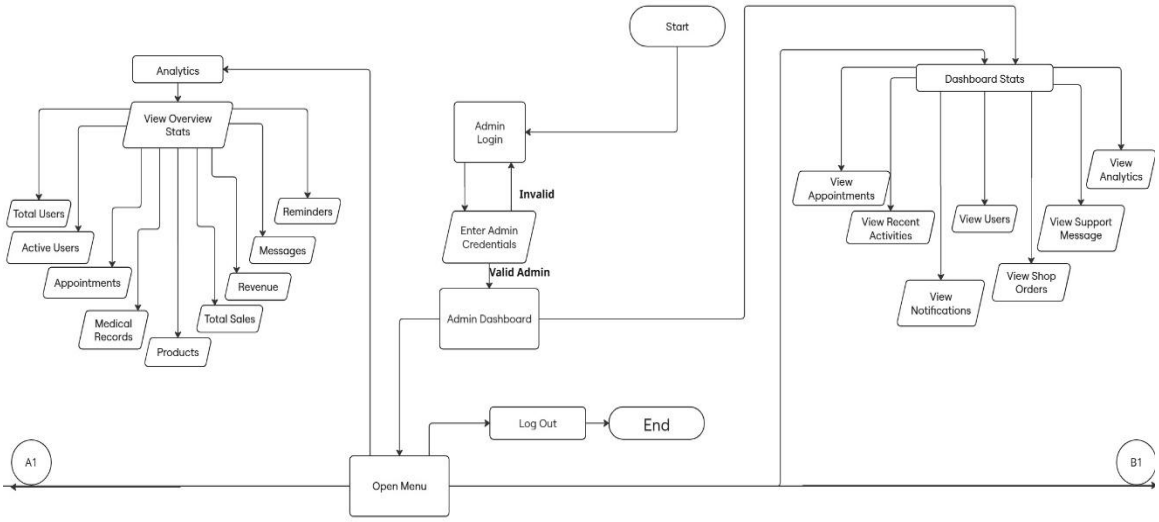


Figure 2. Admin Flowchart

The figure 2 Flowchart representing the navigation structure of an admin dashboard for a pet care management system. It starts with an Admin Login process, where credentials are entered to access the Admin Dashboard. From the dashboard, the admin can view overview statistics such as total users, active users, appointments, medical records, products, revenue, and total sales, as well as manage reminders and messages. Another section, Dashboard Stats, allows the admin to view appointments, recent activities, notifications, users, shop orders, support messages, and analytics. The flow ends with an option to log out, completing the admin's interaction with the system.

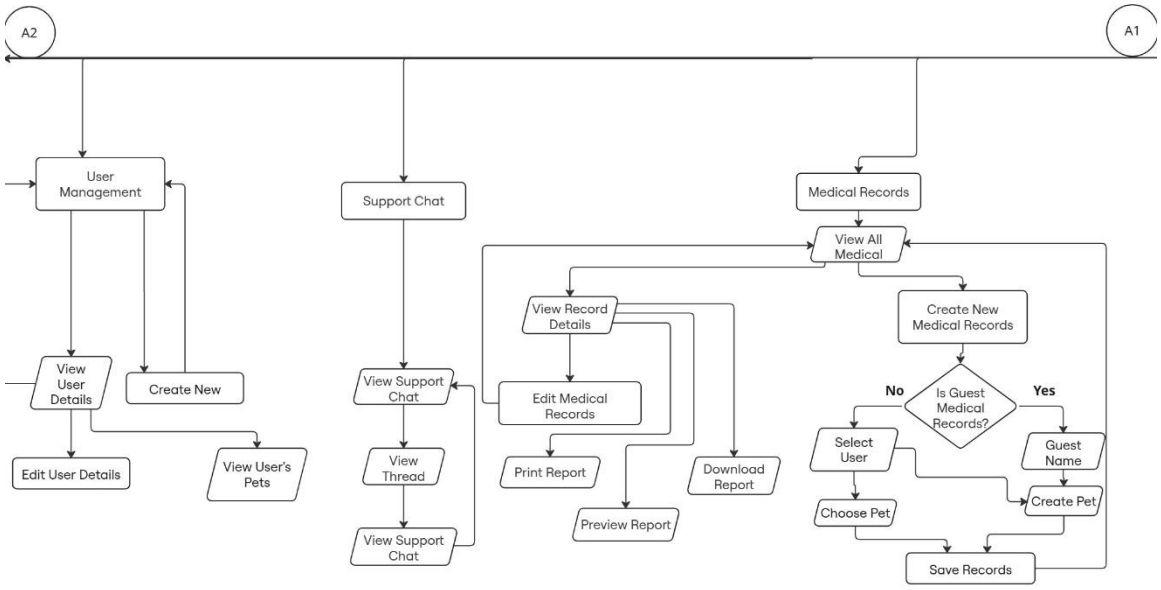


Figure 2.1 Admin Flowchart

Figure 2.1 illustrates the process flow for Admin management, support chat, and medical records within the Furever Care web-based and mobile application system. The flow begins with User Management, where admins can view user details, edit information, create new users, and access pet profiles. The Support Chat section enables viewing chat messages, opening threads, and managing client communication efficiently. The Medical Records section allows admins to view all records, edit details, print or download reports, and create new records by selecting a user or guest, choosing a pet, and saving the information. This structured workflow ensures accurate record-keeping, streamlined communication, and organized user management for clinic operations.

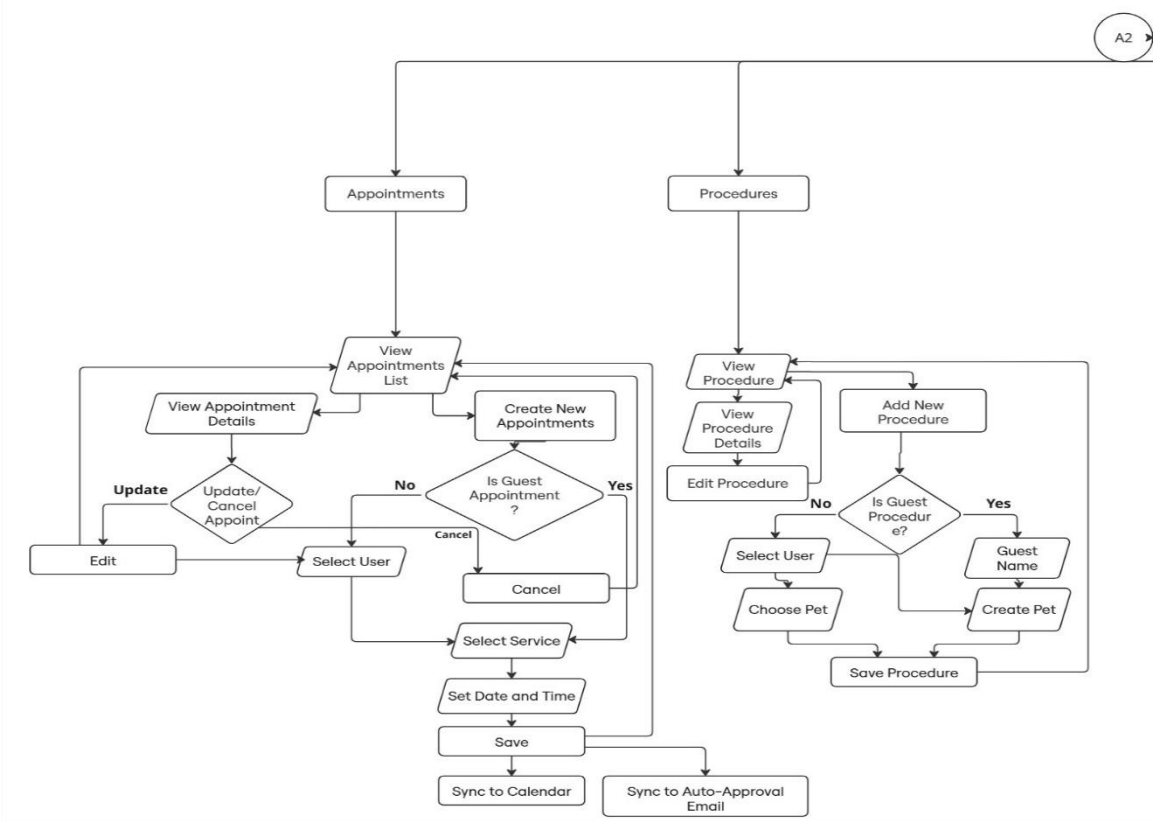


Figure 2.2 Admin Flowchart

Figure 2.2 illustrates the process flow for managing appointments and procedures within the Furever Care web-based and mobile application system. The flow begins with two main sections: Appointments and Procedures, each offering options to view lists or create new entries. For appointments, admins can update or cancel existing bookings or create new ones by selecting a user, choosing a service, and setting the date and time before saving and syncing to the calendar. For procedures, admins can edit existing records or add new ones by selecting a user, choosing a pet, and entering details before saving and syncing to auto-approval email notifications. This structured workflow ensures accurate scheduling, streamlined updates, and efficient management of clinic operations.

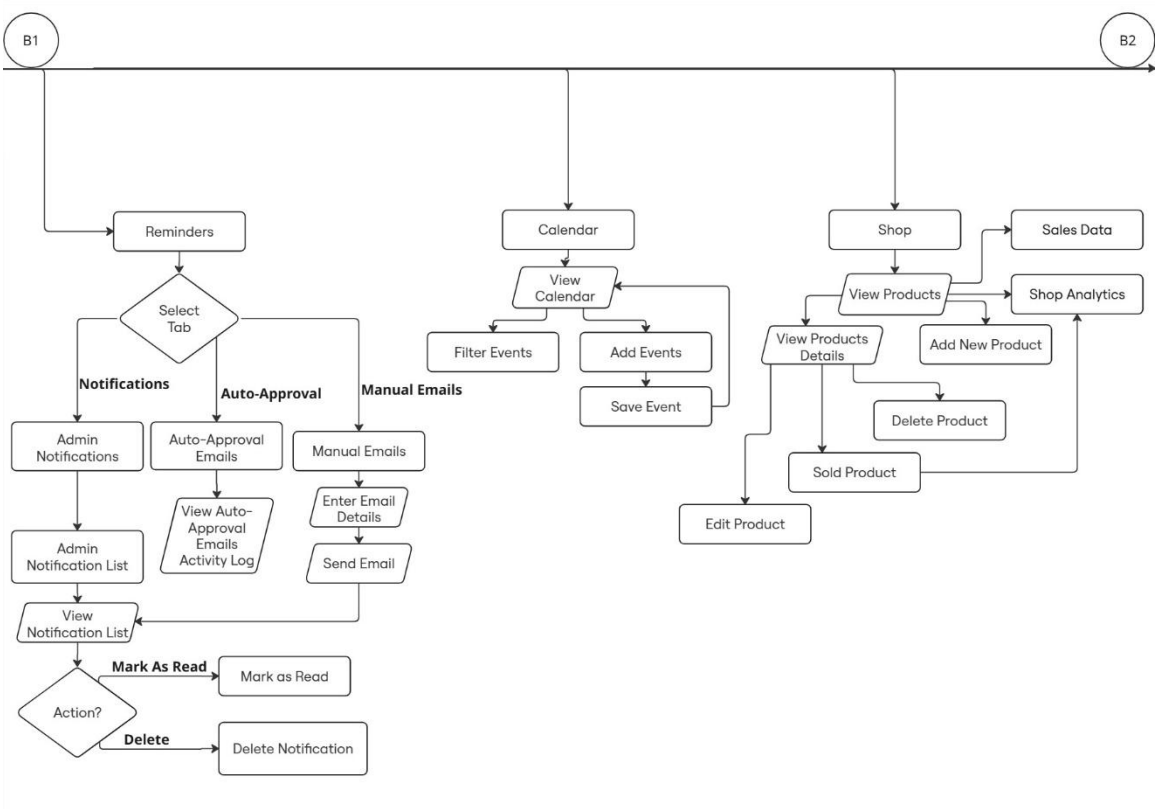


Figure 2.3 Admin Flowchart

Figure 2.3 illustrates the process flow for managing reminders, calendar events, and shop operations within the Furever Care web-based and mobile application system. The Reminders section allows admins to select tabs for notifications, auto-approval emails, or manual emails, enabling actions such as viewing notifications, marking them as read, deleting, and sending email updates. The Calendar section provides options to view the calendar, filter events, add new events, and save them for scheduling purposes. The Shop section enables admins to view products, add new items, edit or delete products, and track sales data, which is then reflected in shop analytics for performance monitoring. This structured workflow ensures efficient communication, organized scheduling, and streamlined inventory management for the clinic.

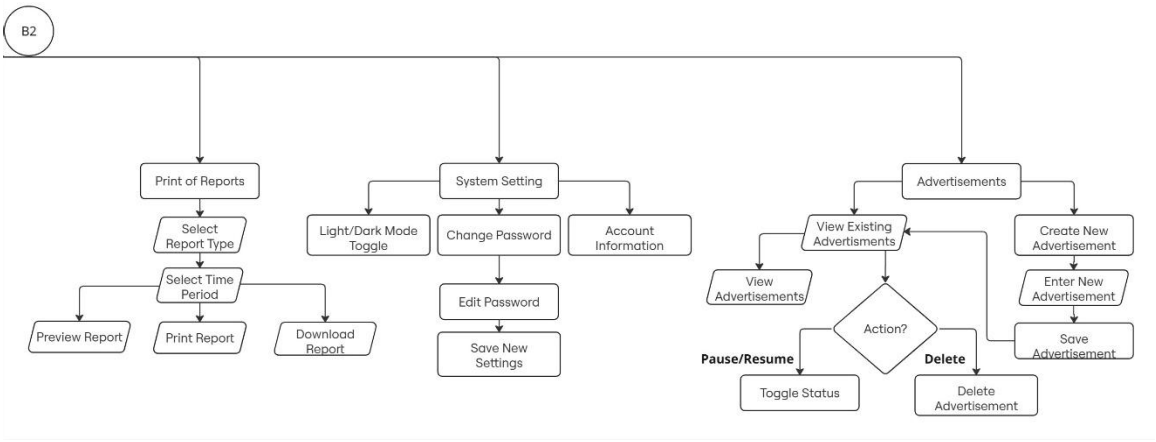


Figure 2.4 Admin Flowchart

Figure 2.4 illustrates the process flow for managing reports, system settings, and advertisements within the Furever Care web-based and mobile application system. The Print Reports section allows admins to select the report type and time period, then preview, print, or download the report for documentation purposes. The System Settings section provides options to toggle light/dark mode, change passwords, update account information, and save new settings for security and customization. The Advertisements section enables viewing existing ads, creating new advertisements, and performing actions such as pausing, resuming, or deleting ads to maintain promotional content. This workflow ensures streamlined reporting, secure system configuration, and effective advertisement management for clinic operations.

Figures 2.1 to 2.4 illustrate the comprehensive process flow for administrators within the Furever Care web-based and mobile application system. Figure 2.1 focuses on user management, support chat, and medical records, allowing admins to view and edit user details, manage pet profiles, handle client communication, and create or update medical records with options to print or download reports. Figure 2.2 presents the workflow for

appointments and procedures, enabling admins to view lists, update or cancel bookings, create new appointments by selecting services and setting schedules, and manage procedures by adding or editing details, all synced to calendars and email notifications. Figure 2.3 covers reminders, calendar events, and shop operations, where admins can manage notifications and emails, schedule events, and oversee product listings, including adding, editing, deleting items, and tracking sales analytics. Finally, generating and downloading reports, updating account settings, and creating or modifying advertisements with options to pause, resume, or delete. Collectively, these workflows ensure streamlined administrative tasks, secure data handling, and efficient clinic operations through an organized and user-friendly digital platform.

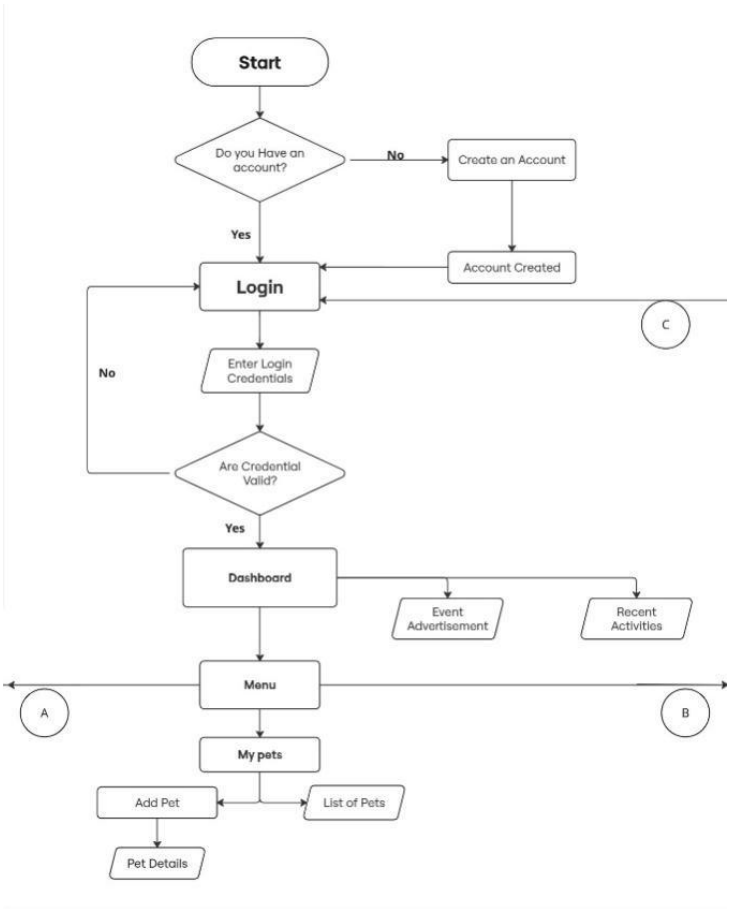


Figure 3. User Flowchart

Figure 3 illustrates the process flow for user interactions within the Furever Care web-based and mobile application system. The flow begins by checking if the user has an account; if not, the system directs them to create one before proceeding. Once an account exists, the user enters login credentials, which are validated before granting access to the dashboard. From the dashboard, users can navigate to the menu to manage their pets, including adding new pets, viewing a list of pets, and accessing detailed pet information. Additional options such as viewing event advertisements and recent activities are also available, ensuring a streamlined and user-friendly experience for managing pet care.

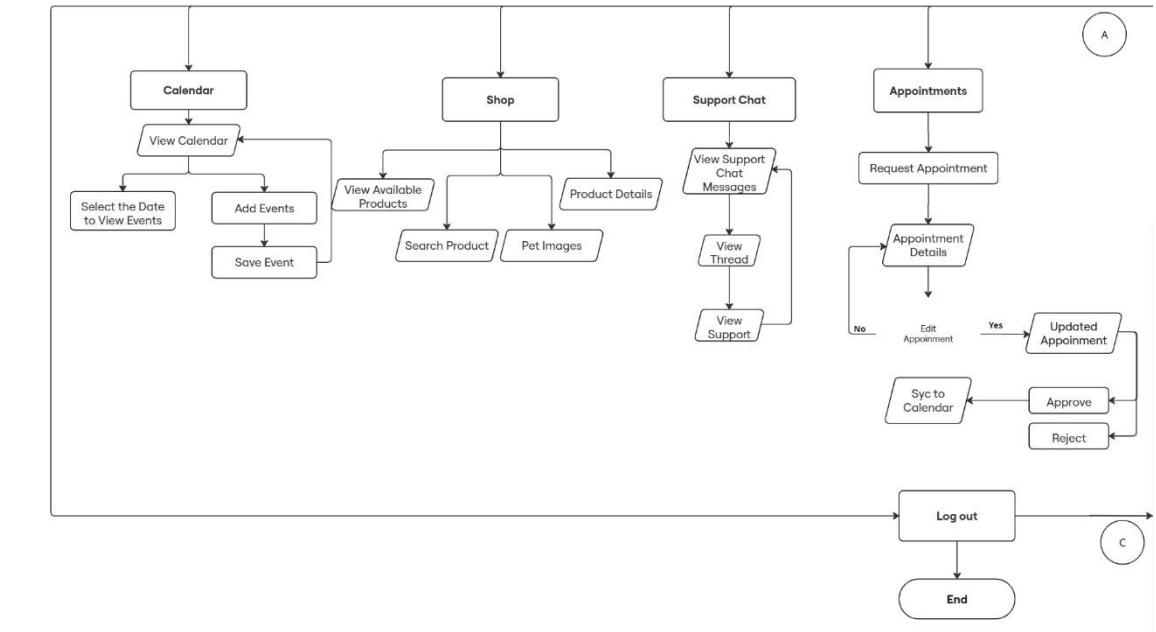


Figure 3.1. User Flowchart

Figure 3.1 illustrates the process flow for user activities within the Furever Care web-based and mobile application system. The flow begins with the Calendar section, where users can view the calendar, select dates, add events, and save them for scheduling purposes. The Shop section allows users to view available products, search for items, check

product details, and browse pet images. The Support Chat section enables users to view chat messages, open threads, and access support for inquiries or assistance. Finally, the Appointments section provides options to request appointments, review details, edit or update schedules, and sync them to the calendar, followed by approval or rejection, before logging out to end the session. This workflow ensures a seamless experience for managing pet care, shopping, communication, and scheduling in one integrated platform.

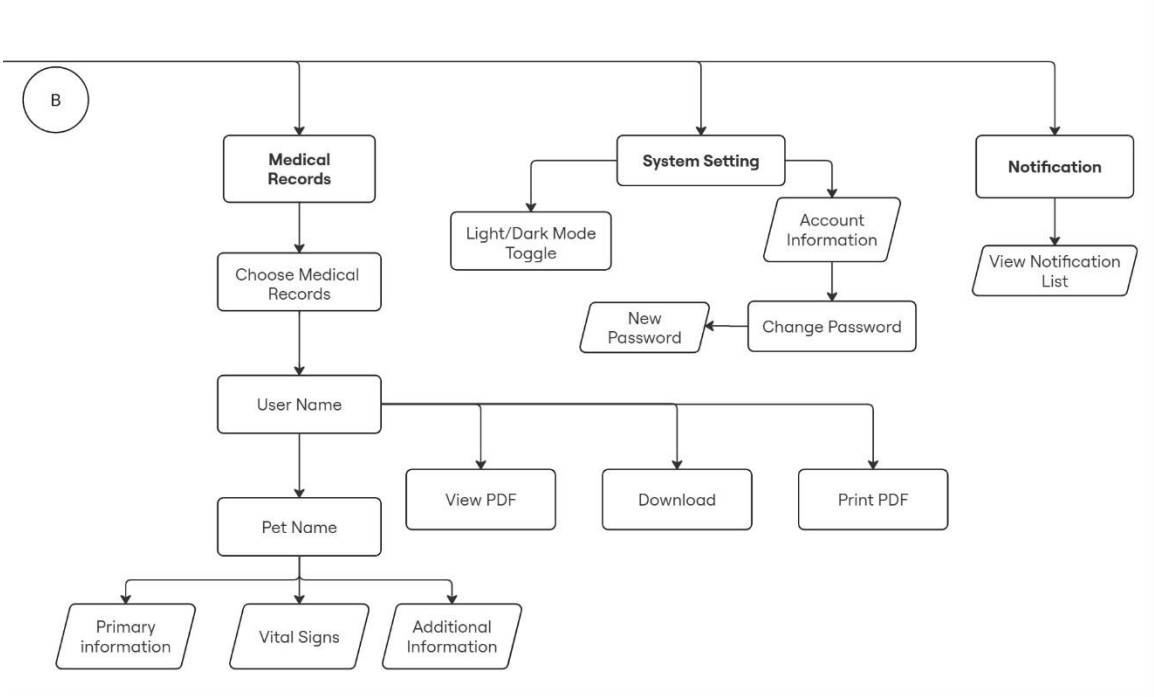


Figure 3.2. User Flowchart

Figure 3.2 illustrates the process flow for managing medical records, system settings, and notifications within the Furever Care web-based and mobile application system. The Medical Records section allows users to choose records by username and pet name, then view primary information, vital signs, and additional details, with options to preview, download, or print as PDF. The System Settings section provides features such as toggling light/dark mode, updating account information, and changing passwords for

security and personalization. The Notification section enables users to view the notification list for updates and reminders, ensuring timely communication. This workflow ensures that users can securely access health data, customize system preferences, and stay informed through notifications, creating a comprehensive and user-friendly experience.

Figures 3 to 3.2 illustrate the complete process flow for user interactions within the Furever Care web-based and mobile application system. Figure 3 begins with account access, where users create an account if needed, log in with valid credentials, and proceed to the dashboard to manage pets, view event advertisements, and check recent activities. Figure 3.1 expands on user functionalities, including viewing and adding calendar events, browsing products in the shop, accessing product details and pet images, engaging in support chat through messages and threads, and requesting appointments with options to edit, update, and sync schedules to the calendar before approval or rejection. Figure 3.2 focuses on medical records, allowing users to select records by username and pet name, view primary information, vital signs, and additional details, and download or print reports in PDF format. It also includes system settings for toggling light/dark mode, updating account information, and changing passwords, along with a notification feature for viewing updates and reminders. Collectively, these workflows provide a streamlined, user-friendly experience for managing pet health, scheduling, communication, and personalization within a single integrated platform.

Entity Relationship Diagram

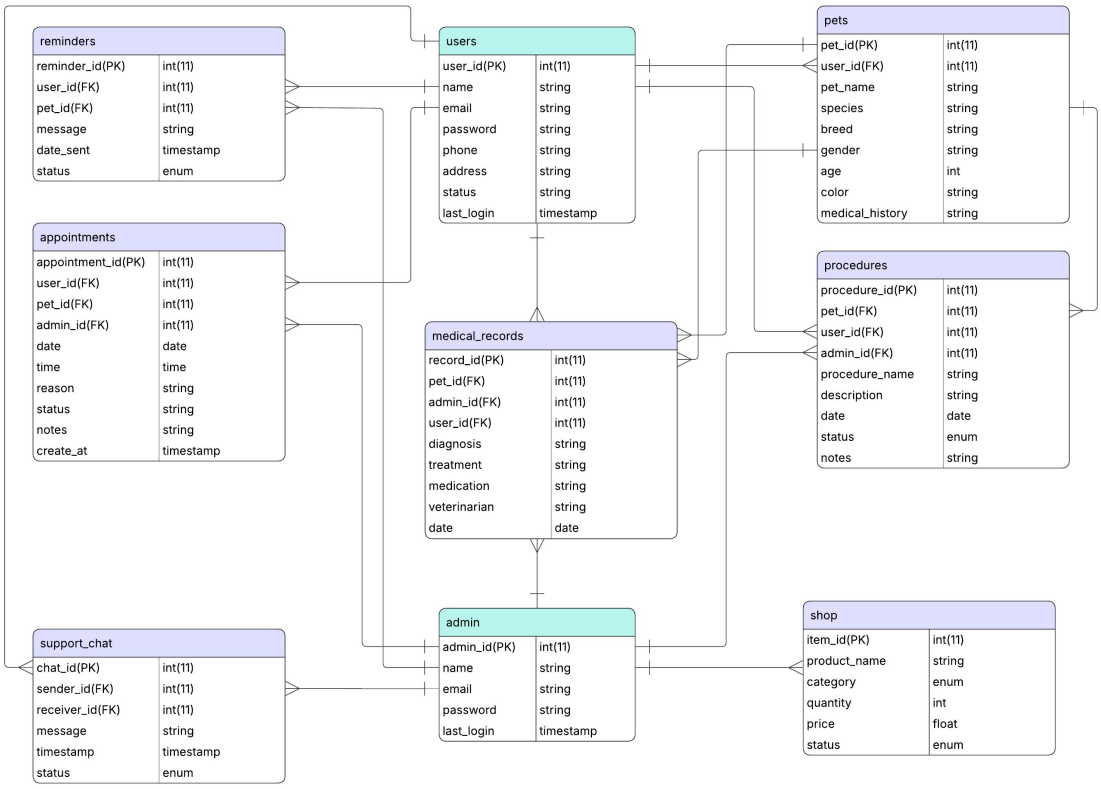


Figure 4. Entity Relationship Diagram

Figure 4 presents the Entity Relationship Diagram (ERD) of the proposed Furever Care Web-based and Application System. The ERD illustrates the logical structure of the database by showing the relationships between entities such as Users, Pets, Appointments, Medical Records, Procedures, Shop, Admin, Reminders, and Support Chat. Each entity contains attributes that define its role in the system, and foreign keys establish connections to maintain data integrity.

This structure ensures that users can manage multiple pets, schedule appointments, and access medical records, while administrators oversee user accounts, inventory, and

notifications. The relationships between entities allow accurate tracking of appointments, health records, and transactions, providing a secure and organized framework for efficient clinic operations.

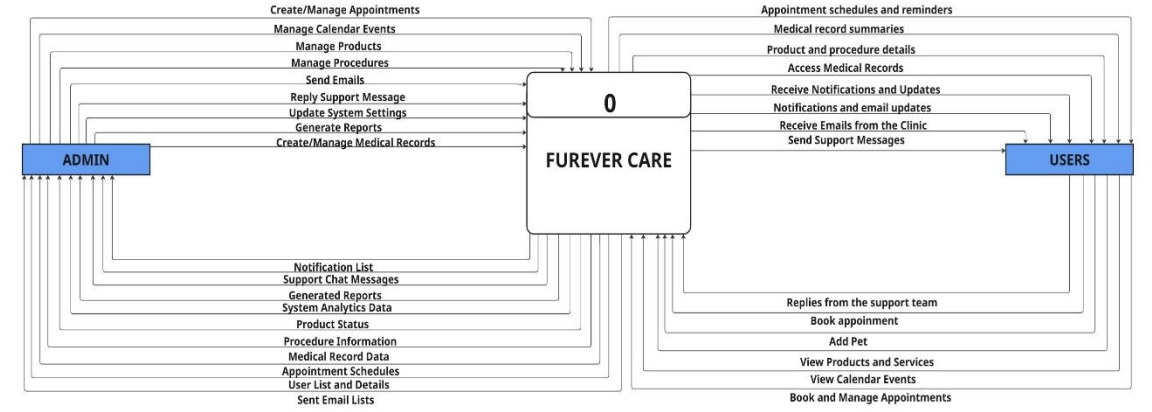


Figure 5. Data Flow Diagram level 0

Figure 5 presents the Data Flow Diagram (DFD) of the proposed Furever Care web-based and Application System. The DFD illustrates how data moves through the system, identifying the key processes, data stores, and external entities that interact within the system environment. The diagram shows two main actors: Admin and Users, both interacting with the central Furever Care system. Admin processes include managing appointments, calendar events, products, procedures, medical records, notifications, and generating reports. Admin also handles system settings, email communication, and support chat responses. On the user side, the system supports booking and managing appointments, adding pets, viewing medical records, accessing product and procedure details, and sending support messages. Users also receive notifications, reminders, and email updates from the clinic. All data exchanges between the actors and the system are securely processed and stored, ensuring accuracy, traceability, and efficient operations for both administrators and pet owners.

Figures 6 and 6.1 present the Level 1 Data Flow Diagrams (DFDs) of the Furever Care System, detailing the major processes and data interactions across its two primary user roles. Figure 6 illustrates the Admin Module, showing how the admin manages system operations such as user accounts, appointment scheduling, medical records, inventory, notifications, and reporting. This module ensures that clinic staff can configure settings, update records, and maintain smooth clinic workflows. Figure 6.1 depicts the User Module, highlighting how pet owners interact with the system by booking appointments, managing pet profiles, viewing medical records, browsing veterinary-approved products, and receiving reminders and notifications. This module focuses on providing convenience and transparency for pet owners while ensuring secure access to their pet's health information.

Together, these diagrams demonstrate how the Furever Care system integrates administrative and user-facing processes to deliver efficient, secure, and role-based management of veterinary services and pet care.

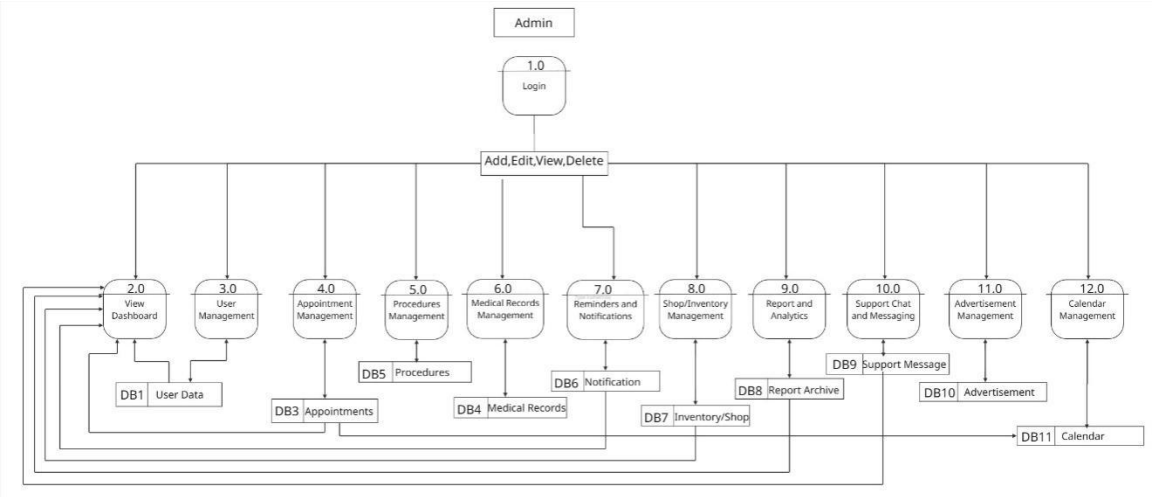


Figure 6. Data Flow Diagram Level 1 (Admin)

Figure 6 represents the Furever Care, an administrative platform designed to centralize and digitize veterinary clinic operations. The core function is to allow an Admin to manage 12 key processes, including Appointment Scheduling (4.0), Medical Records (5.0), and Billing & Payment (12.0), to streamline the entire service workflow.

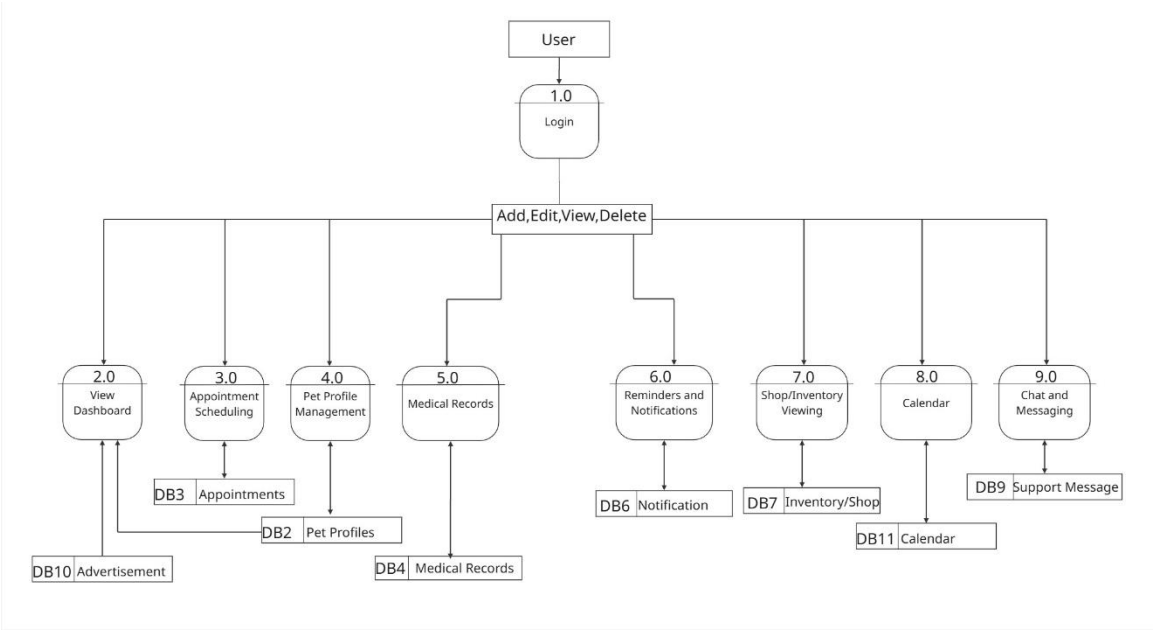


Figure 6.1. Data Flow Diagram Level 1 (User)

Figure 6.1 shows the functions accessible to a standard User (pet owner) of the Furever Care after the initial Login (1.0). The User can access nine key processes, including Appointment Scheduling (3.0), Pet Profile Management (4.0), and viewing their Medical Records (5.0), allowing them to manage their pet's care directly. Data flows connect these processes to dedicated data stores like DB3 Appointments and DB4 Medical Records, empowering the User to maintain their profile and actively participate in their pet's health management.

Design of Software, System, Product, and/or Processes

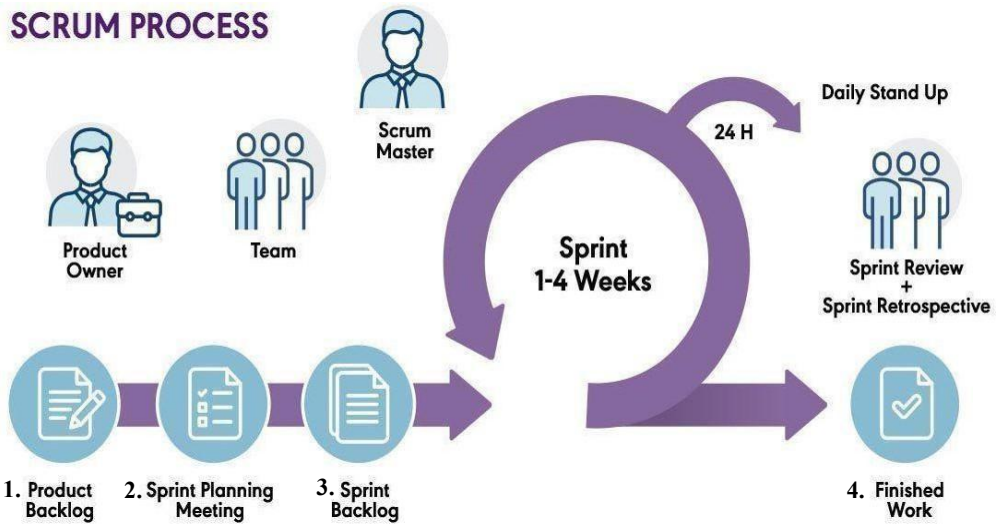


Figure 7. Scrum Development Methodology

The figure 7 shown above represents the use of Scrum, an agile software development approach, in the Furever Care: Web-Based and Application for Pet Services Management in Naga City project. Scrum will be used to guide the development of the web-based application, focusing on continuous improvement and flexibility. This method divides the development process into short, time-boxed iterations called sprints, which typically last from one to four weeks. Each sprint targets the delivery of specific features or updates, allowing the team to make ongoing adjustments based on feedback from users and stakeholders. Scrum promotes an agile and collaborative development culture. It includes regular ceremonies such as daily stand-ups, sprint planning meetings, sprint reviews, and retrospectives. These practices encourage team alignment, early identification of potential issues, and timely adaptation to changes.

With the adoption of Scrum, the Furever Care project benefits from an open and iterative development cycle that supports adaptive planning and frequent progress evaluation. This approach ensures that the application evolves according to the unique needs of pet owners and service providers. The collaborative nature of the agile framework, with its emphasis on continuous delivery and feedback, will result in an easy-to-use and effective platform for managing pet care services in Naga City.

The following are the several key phase that guide the development of Furever Care:

1. Product Backlog

The Product Backlog is the single, ordered list of all work needed for the Furever Care system, constantly evolving throughout the project. Key high-priority features include User Authentication, Pet Profile Management, and Appointment Scheduling for both web and mobile access. The backlog also contains important items such as enabling Digital Medical Records, sending Automated Notifications for reminders, and providing an Admin Dashboard for clinic staff. Lower priority items involve Inventory Management, a Support Chat feature, and the ability to generate Analytics & Reporting on client visits.

2. Sprint Planning Meeting

Sprint Planning Meeting results in a commitment to three distinct Sprints, each with a defined goal based on the project's development schedule. Sprint 1 focuses on establishing the core foundation: Project Setup and Core Functionality, including setting up the environment and implementing basic login and pet profile features. Sprint 2 aims to build out the transactional core of the system by focusing on Service Management and

scheduling. Finally, Sprint 3 is dedicated to ensuring product quality through Final Testing and Deployment, covering all required testing types and optimization.

3. Sprint Backlog

The Sprint Backlog consists of the specific, detailed tasks selected from the Product Backlog for the current development iteration. Sprint 1 tasks include technical setup (Firebase, Dart), implementing secure user registration, and designing the initial interfaces for booking and pet profile management. Sprint 2 tasks center on developing service listing tools, integrating the scheduling calendar, and enabling real-time appointment status tracking and updating. Sprint 3 tasks finalize the system through comprehensive testing (Usability, Compatibility), security optimization, preparation of user documentation, and final deployment of the application.

4. Finish Work

The Definition of "Done" (DoD) sets the quality standards required for any feature to be considered complete and releasable for the Furever Care project. A feature is "Done" when the code is fully implemented, has passed a peer review, and operates as intended, ensuring high Code Quality and Functionality. The system must demonstrate stable performance, Reliability, and a user-friendly experience, passing all required Usability Testing. Crucially, the finished feature must function identically across both the web and mobile applications (Cross-Platform Consistency) and comply with all security and legal provisions, including the Data Privacy Act of 2012.

Development

Sprint 1: Project Setup and Core Functionality

Goal: Establish development environments and core features for both platforms.
Tasks:

- Set up development tools and framework (Firebase, Dart).
- Implement user registration and login systems for pet owners and service providers.
- Design booking interface and pet profile management (responsive for web and mobile). Create a basic notification system for appointment updates and service reminders.

Deliverables: Functional registration and login systems.

- Working booking system and pet profiles.
- Notification system.

Sprint 2: Service Management and Scheduling

Goal: Build service listing, scheduling, and appointment management features.

Tasks:

- Develop service listing and customization tools for providers.
- Integrate calendar for scheduling.
- Enable appointment status tracking and updates.

Deliverables:

- Dynamic service listing and scheduling modules.
- Integrated calendar with appointment management features.

Sprint 3: Final Testing and Deployment

Goal: Conduct system testing, ensure security and performance optimization, and deploy the application.

Tasks:

- Conduct testing (web, mobile).
- Tested web and mobile apps.

Deliverables:

- Deployment on web and mobile to owner.
- Live, production-ready deployed

Sprint 4: User Onboarding and Feedback Gathering

Goal: Educate users and gather feedback for improvements.

Tasks:

- Conduct onboarding sessions and walkthroughs for pet owners and providers.
- Create user manuals and guides.
- Collect user feedback through surveys and interviews.

Deliverables:

- Informed and trained users and providers.
- Trained users across platformed.

RESULTS AND DISCUSSION

Testing

The Furever Care system underwent multiple testing phases to ensure Functional Suitability, Reliability, and Usability in alignment with the ISO/IEC 25010 Quality Model:

Unit Testing

- Verified individual modules such as appointment scheduling, pet health records management, client enrollment, and role-based access control to ensure they operate correctly.
- Ensured the secure login and authentication mechanism correctly validated user credentials and handled different user roles (clinic administrators, veterinarians, and pet owners) with proper, restricted access permissions.

Integration Testing

- Assessed the seamless flow of data between the appointment scheduling module, the pet health records module, and the central database.
- Verified that updates to pet health records (e.g., vaccine administration) reflected in real-time across the clinic administrator and veterinarian dashboards.
- Confirmed that new appointment bookings made by pet owners automatically updated the centralized clinic schedule and were accessible to authorized staff without delay.

User Acceptance Testing (UAT)

- Conducted trials with clinic administrators, veterinarians, and a pool of selected pet owners.
- Collected feedback on navigation and usability; incorporated improvements such as clearer menu labels for records and simplified appointment booking workflows to accommodate users with varying levels of technical expertise.

Performance Testing

- Simulated peak operational periods (high concurrent scheduling and record access) to evaluate system response time and performance under heavy load, testing the Time Behavior sub-characteristic of Performance Efficiency.
- A load test will be conducted to assess how the system performs under typical and peak usage scenarios once the system is deployed. The simulation will involve 10 to 100 concurrent users (representing clinic staff and active pet owners), reflecting real-world conditions during peak appointment or record-update times.
- To determine system resilience beyond expected operational limits, a stress test will be carried out once the system is deployed.
- A functionality test was conducted to verify the accuracy of real-time data retrieval during tasks such as generating appointment reminders and accessing a pet's complete medical history.

Fallback and Continuity Procedures

In case of system errors, the platform will display a user-friendly message, disable auto-retry for non-idempotent operations, and provide support contact information. During downtime, a maintenance banner will be enabled, and the system will switch to read-only mode if a partial outage occurs. For missed notifications, the system will run a daily reconciliation job, resend any pending reminders, and display in-app alerts upon user login. These measures ensure transparency, maintain data integrity, and provide users with timely updates and assistance during unexpected issues.

Description of Prototype System Requirements

The Furever Care system, a cross-platform solution, is designed for accessibility across both mobile and web interfaces. The core system relies on a cloud-based infrastructure and modern browser compatibility.

- Android smartphones for accessing the mobile app.
- Desktops or laptops for managing appointments and records via the web platform.
- Compatible with modern browsers, including Chrome, Firefox, and Edge, for optimal web app performance.
- Stable internet connection is required for both users (mobile data 3G/4G/5G) and clinic staff (Wi-Fi).
- Firebase cloud infrastructure serves as the centralized backend for data storage, authentication, and real-time updates

Preliminary Design

The Furever Care prototype is a digital platform designed to modernize the operations of Barks and Cuddles Pet Clinic by replacing their manual, paper-based processes. It offers identical features and functionality across both web and dedicated mobile applications to ensure cross-platform accessibility for its two main user types Clinic Administrators and Pet Owners.

Evaluation and Testing

Functionality testing ensured that all core features of the system worked as intended, including pet profile creation, appointment scheduling, and medical record viewing. Usability testing focused on evaluating the user interface for ease of navigation and accessibility, particularly for users with limited technical experience. Compatibility testing confirmed that the system operates smoothly on modern browsers such as Chrome, Firefox, and Edge, as well as on Android mobile devices. Performance testing assessed the system's responsiveness under typical usage conditions, emphasizing data retrieval speed and the timely delivery of notifications. These tests collectively validated the reliability, usability, and efficiency of the Furever Care platform across different environments and user scenarios.

Implementation Plan

The Furever Care system is designed to streamline pet health management and veterinary clinic operations through a web-based and mobile platform. It enables pet owners to manage pet profiles, appointments, and medical records, while clinic administrators oversee scheduling, reminders, and record updates. By integrating

Firebase for real-time data and secure access, the system ensures smooth and secure operations across all user roles.

Deployment Strategy

The deployment of the Furever Care system was designed to ensure secure, accessible, and continuous availability across both web and mobile platforms. The strategy included Firebase Hosting, which provides a custom subdomain, enforces HTTPS encryption for all traffic, and uses separate staging and production channels for safe, incremental updates. For mobile access, the final signed Android Package Kit (APK) was distributed to the veterinary clinic via a secure link. The application is optimized for Android v10 and above, featuring adaptive icons and battery optimization guidance to maintain reliable performance, especially for critical notifications. These measures collectively guarantee a secure, efficient, and user-friendly deployment process for the system.

Hardware

User Devices:

- Pet Owners: Android smartphones for accessing the mobile app.
- Clinic Staff: Desktops/laptops for managing appointments and records via the web platform. Devices must meet minimum system requirements to ensure optimal performance.
- Servers: Firebase cloud infrastructure serves as the centralized backend for data storage, authentication, and real-time updates. Scalable to handle increasing user traffic and data volume.

Network:

- Stable internet connection required for both users and clinic staff.
- Mobile data (3G/4G/5G) for pet owners and Wi-Fi for clinic operations.

Web Browsers:

- Compatible with modern browsers such as Chrome, Firefox, and Edge for optimal web app performance.

Security Tools:

- SSL/TLS encryption for secure data transmission.
- Firebase Authentication and Security Rules for role-based access control.

Database Setup: Firebase Real-time Database stores structured data for pets, users, appointments, and medical records. Indexed for fast lookups and designed for high availability.

Facilities

Clinic Workspaces: Veterinary clinics must be equipped with internet-connected computers or tablets for staff to manage appointments and records.

Power and Accessibility: Ensure consistent power supply and accessible workstations for staff and clients. Backup power solutions may be considered for uninterrupted service.

Personnel

User Support: A help section within the system provides contact options and email-based support. Future plans may include a dedicated support team for app navigation and issue resolution.

Findings Summary

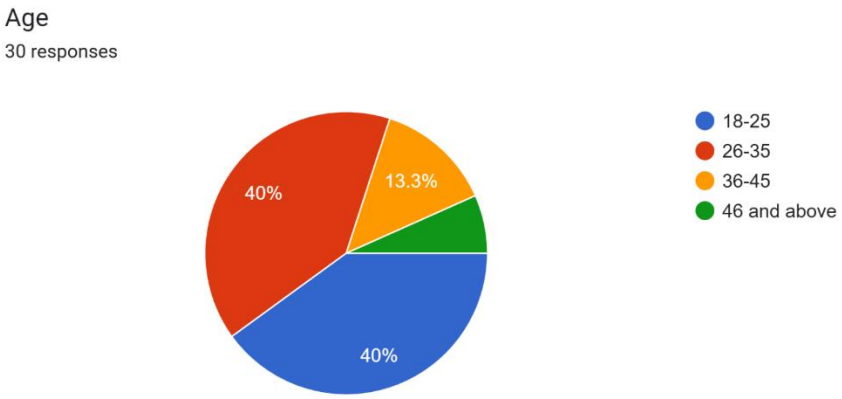


Figure 8. Age Distribution of Respondents

Figure 8 shows the age distribution of the 30 survey respondents. The two largest age groups, 18-25 and 26-35, each account for 40% of the responses. The remaining respondents are in the 36-45 age group (13.3%) and the 46 and above group (the remaining 6.7%).

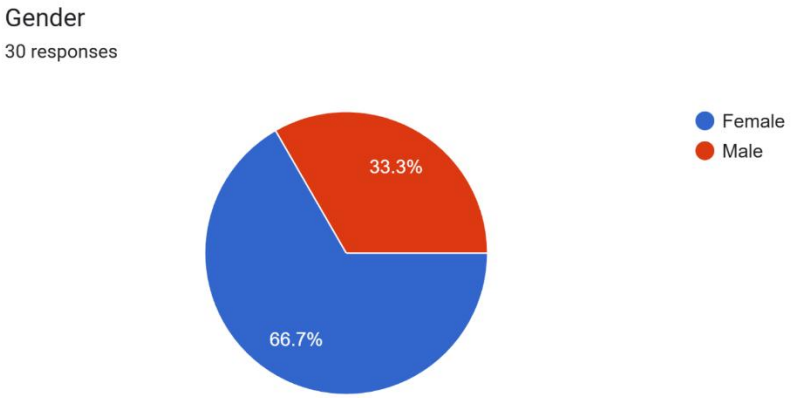


Figure 8.1 shows the gender distribution among the 30 respondents. The majority of respondents, 66.7%, are Female, while 33.3% are Male.

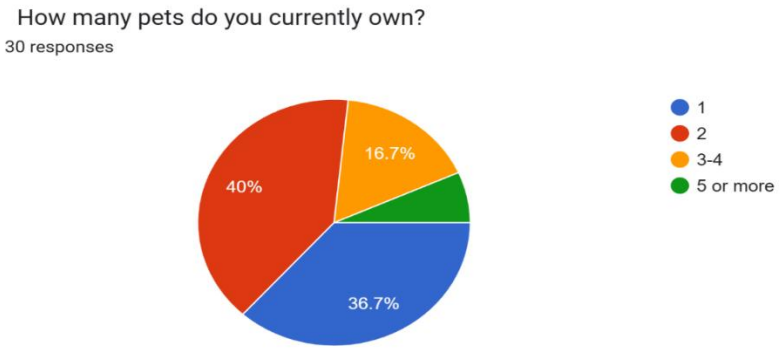


Figure 8.2. Current Pet Ownership Quantity

Figure 8.2 shows the number of pets currently owned by the 30 respondents. The largest proportion of respondents, 40%, own 2 pets. The next largest group, 36.7%, owns 1 pet. Smaller proportions own 3-4 pets (16.7%) or 5 or more pets (the remaining 6.6%).

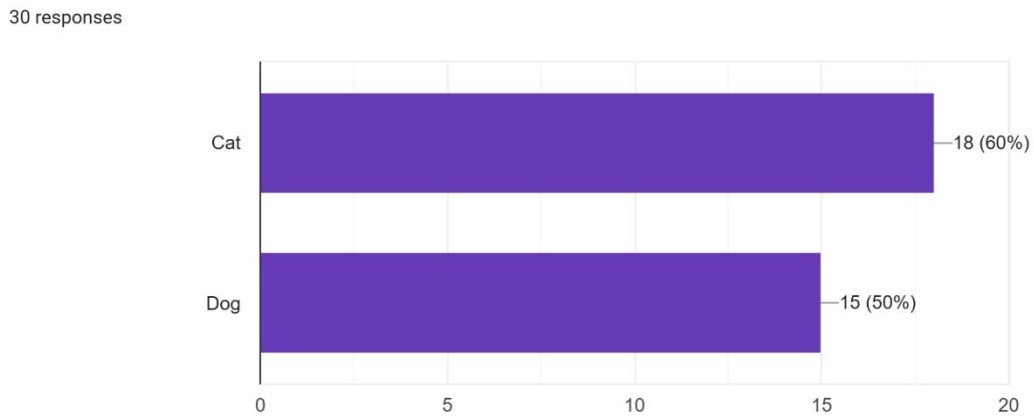


Figure 8.3. Type of Pet(s) Owned

Figure 8.3 shows the types of pets owned by the 30 respondents. Note that a single respondent could own more than one type of pet. Cats are the most common type of pet, owned by 18 respondents (60%). Dogs are the second most common, owned by 15 respondents (50%).

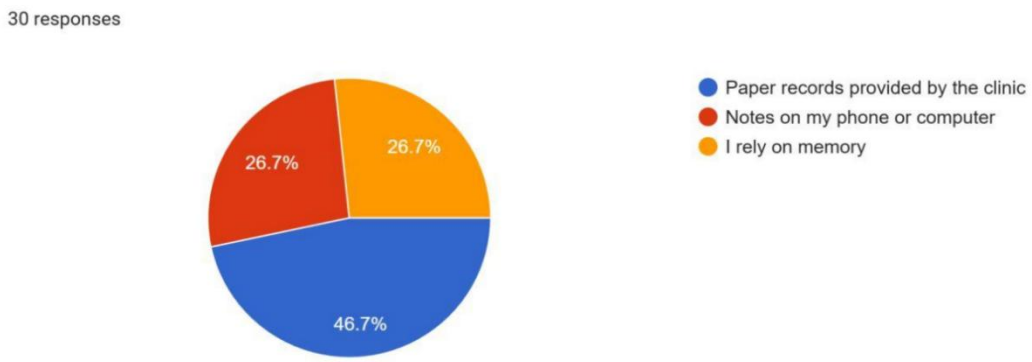


Figure 8.4 Methods for Tracking Pet Medical Records and Vaccination Schedules

Figure 8.4 shows that all respondents rely on paper records provided by the clinic at 46.7%, followed by those who use notes on their phone or computer and those who rely on memory, both tied at 26.7%.

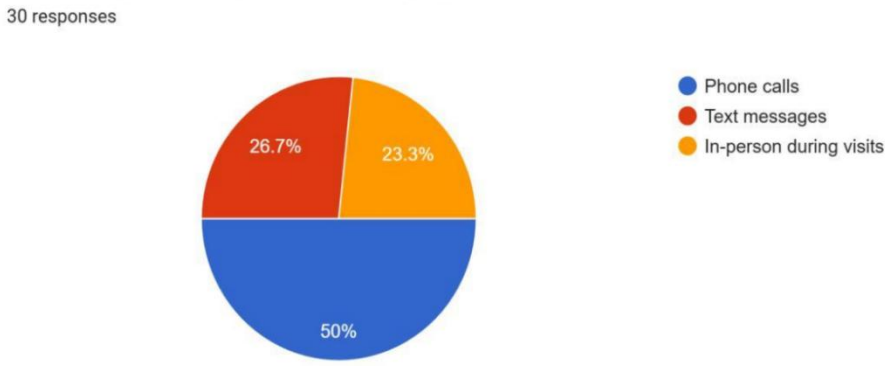


Figure 8.5 how people book veterinary appointments.

Figure 8.5 shows the results from the survey question, "How do you usually book veterinary appointments?" with 30 responses, revealing that 50% of respondents book appointments using Phone calls. The remaining methods are Text messages at 26.7% and In-person during visits at 23.3%.

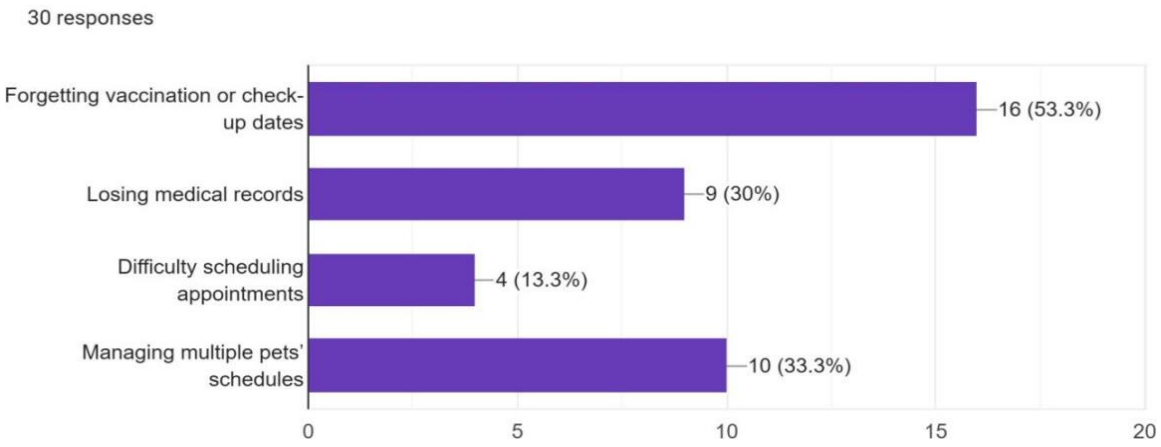
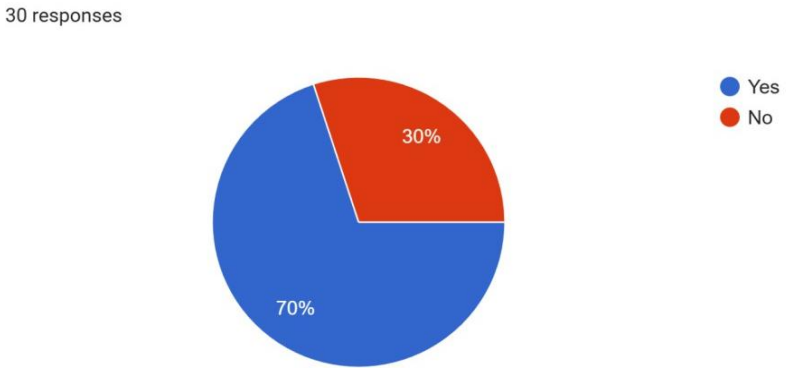


Figure 8.6 Challenges pet owners encounter when managing their pets' health care

Figure 8.6 indicate that forgetting vaccination or check-up dates at 53.3% (16 out of 30 respondents). Other challenges include Managing multiple pets' schedules at 33.3% (10 respondents), Losing medical records at 30% (9 respondents), and Difficulty scheduling appointments at 13.3%.



Figurer 8.7. Would you prefer a digital system to manage your pet's health records and appointments

Figure 8.7 show that the vast majority of participants, specifically 70%, expressed a preference for a digital management system. Conversely, only 30% of respondents indicated that they would not prefer a digital system for this purpose.

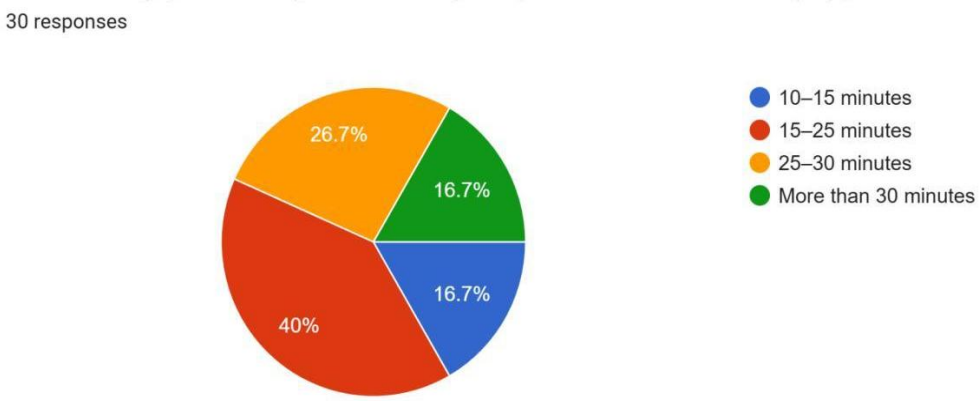


Figure 8.8. Time Spent Managing Records and Scheduling

Figure 8.8 shows 30 responses, illustrates the distribution of time spent on managing records and scheduling. The largest portion, 40%, of respondents spend 15–25 minutes. Following that, 26.7% spend 25–30 minutes. The remaining respondents are split equally between spending 10–15 minutes (16.7%) and more than 30 minutes (16.7%).

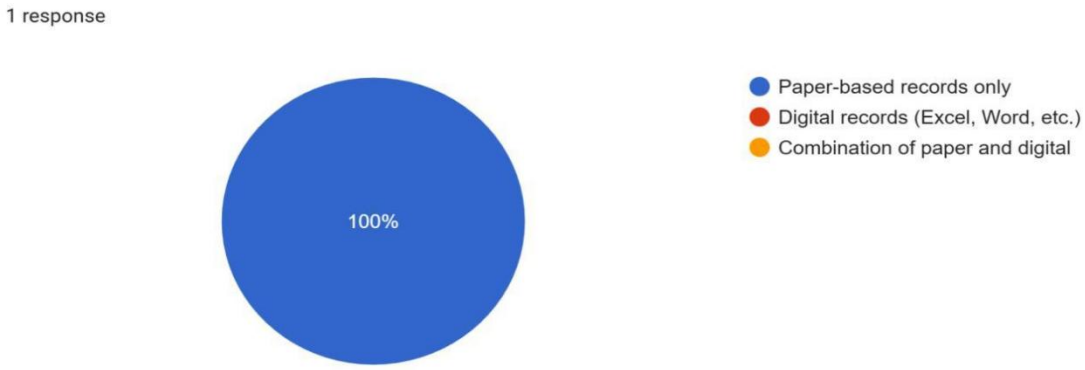


Figure 9. Pet Medical Records Management

Figure 9 shows that 100% of the respondent manages pet medical records clear and complete reliance on traditional methods. Specifically,100% of the respondents manage all pet medical records using paper-based records only.

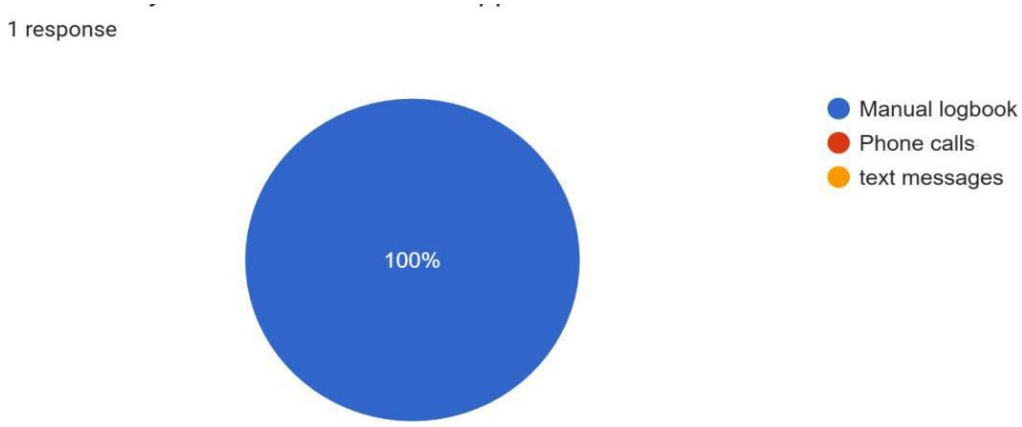


Figure 9.1 Appointment Scheduling and Tracking

Figure 9.1 indicates that 100% of the respondent schedules and tracks appointments using a Manual logbook exhibits a complete reliance on non-digital tools schedule and track appointments using a manual logbook.

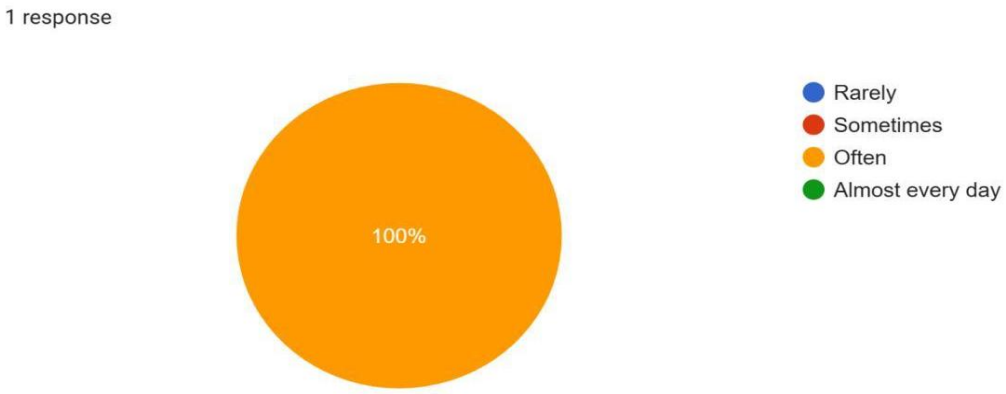


Figure 9.2. Missed Appointment

Figure 9.2. illustrates the frequency of missed appointments within the clinic, according to one respondent. The survey revealed that 100% of the respondent reports that missed appointments occur Often. This indicates a significant and regular issue with patient no-shows at the clinic.

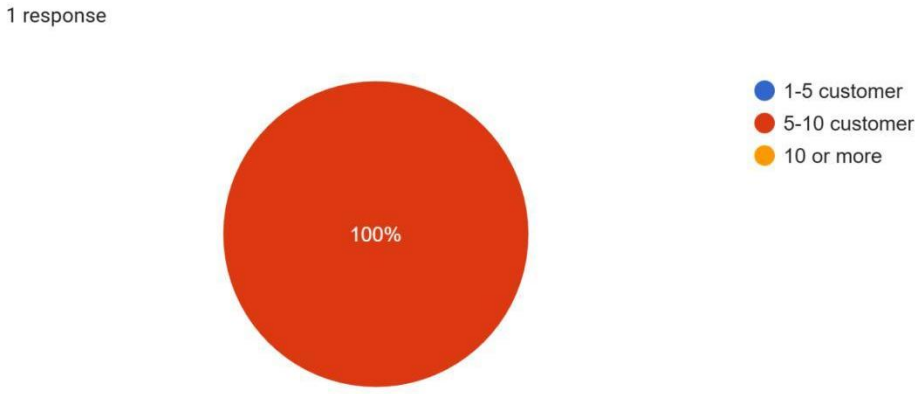


Figure 9.3. Average Customers Served Per Day

Figure 9.3 reveals a consistent, moderate daily workload for the clinic. The survey data supports this assessment, showing that 100% of the respondents (1 out of 1) reported serving a manageable volume of 5 to 10 customers per day. This consistent metric establishes a baseline for the clinic's operational demands.

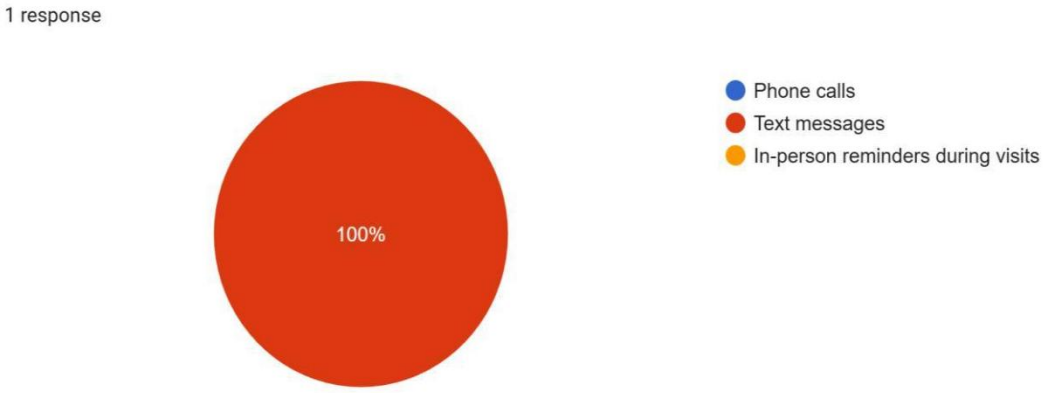


Figure 9.4 Communication Method for Appointments and Vaccinations

Figure 9.4 shows the method used to communicate upcoming appointments or vaccination schedules to pet owners. The respondent relies on one primary communication channel for these important reminders. 100% of the respondent uses Text messages to communicate with pet owners.

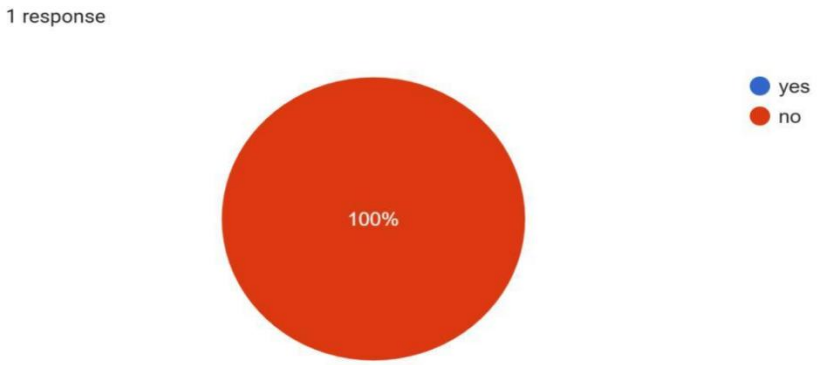


Figure 9.5. Current Use of Digital Tools

Figure 9.5 clearly reveals a complete lack of digital tool adoption for clinic operations among the respondents. Specifically, the data indicates that 100% of the respondent currently uses no digital tools whatsoever to manage the clinic's administrative or operational processes. This finding underscores a total reliance on non-digital or manual methods at the present time.

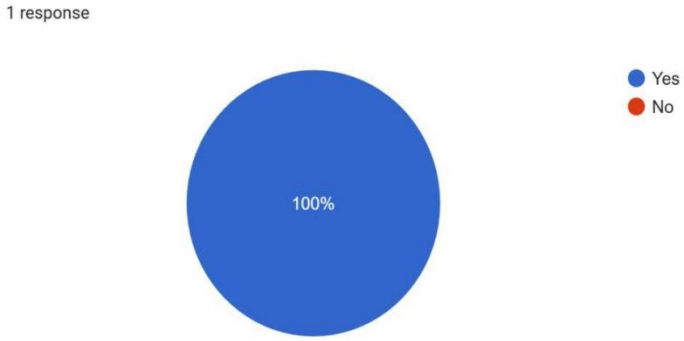
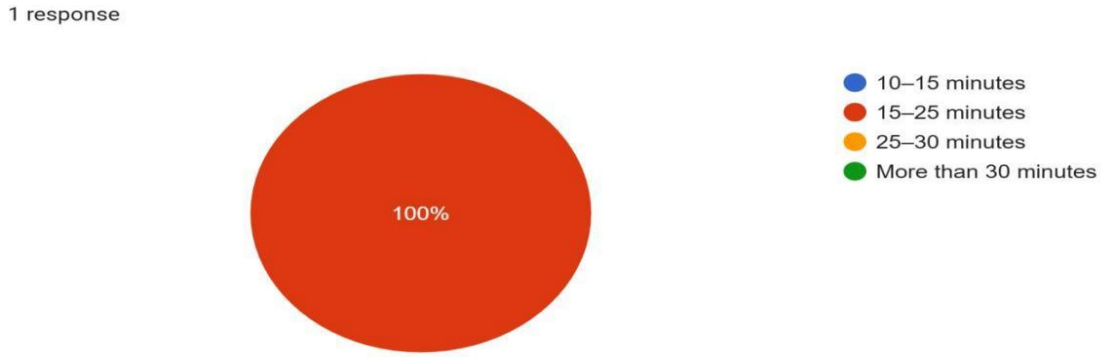


Figure 9.6. Openness to Digital Integration

Figure 9.6 shows that 100% of the respondent would be Yes open to integrating a web-based and mobile app into their work a unanimous willingness to modernize the would be open to integrating a web-based and mobile app into their workflow.



9.7 Time Spent Managing Records and Scheduling

Figure 9.7 highlights the significant time expenditure associated with administrative tasks. The results show that the largest group of respondents spends 15–25 minutes on the combined tasks and scheduling appointments. This range of time indicates that these core administrative activities consume a notable portion of the daily workflow.

User Testing Results

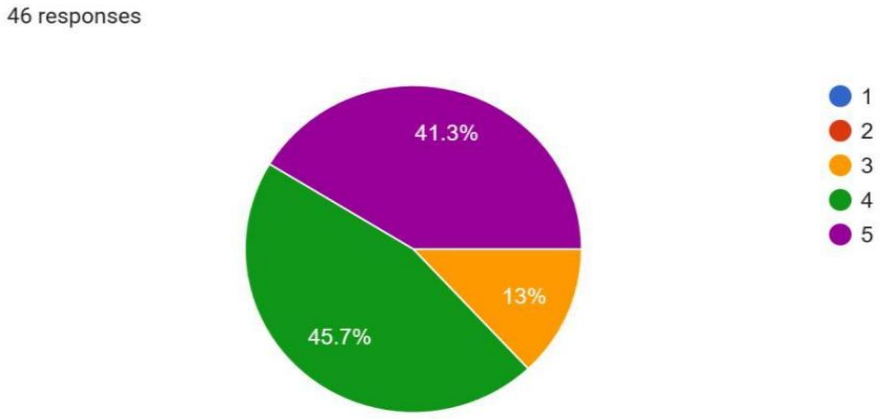


Figure 10. Account Access and Login

Figure 10 shows high satisfaction with the login and account access process. The majority of respondents rated this process positively (4 or 5 on the scale, where 5 is the highest): 45.7% gave a rating of 4, and 41.3% gave a rating of 5. shows that nearly half of

the respondents, 47.8% (22 respondents), gave the highest rating of 5, and 39.1% (18 respondents) gave a rating of 4, demonstrating that the large majority found the booking and rescheduling process simple. 13% (6 respondents).

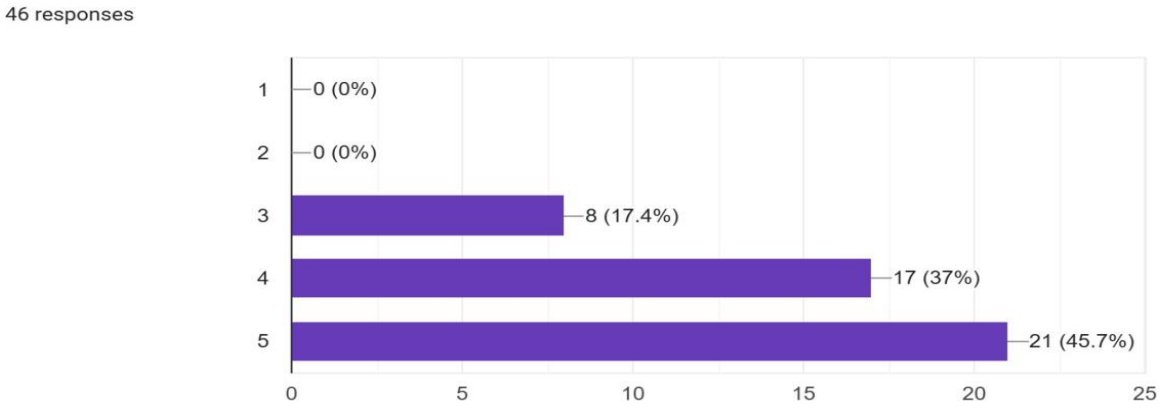


Figure 10.1 Booking/Rescheduling Process Simplicity

Figure 10.1 shows are heavily concentrated on the high-end of the scale, suggesting a very positive view of the process simplicity. The highest rating for simplicity, 5, was chosen by 21 respondents (45.7%). The second-highest rating, 4, was selected by 17 respondents (37%). A neutral or moderate simplicity rating of 3 was given by 8 respondents (17.4%).

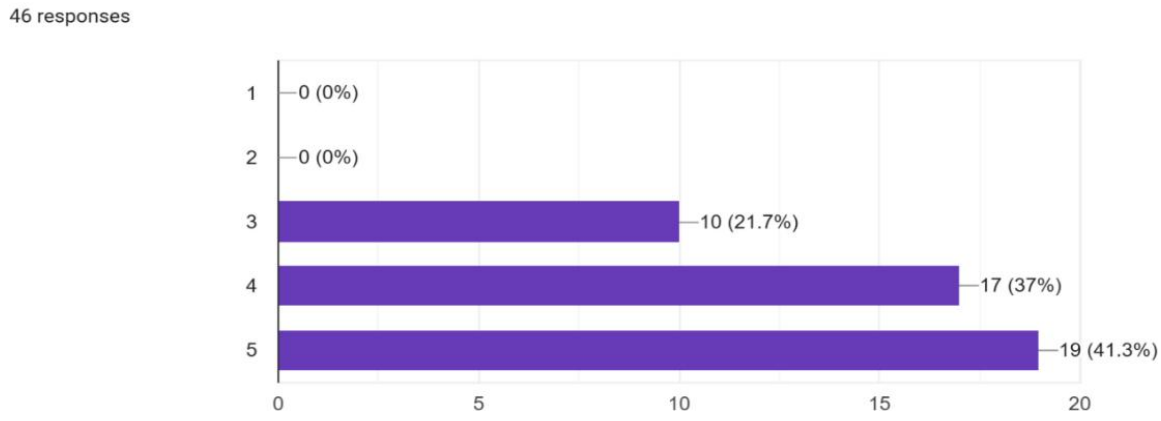


Figure 10.2. Pet's Medical Records Clarity

Figure 10.2 indicates that 37% (17 respondents) gave a rating of 4, and the largest group, 41.3% (19 respondents), gave a rating of 5, showing strong agreement that the medical records were clear and easy to understand. 21.7% (10 respondents) gave a neutral rating of 3.

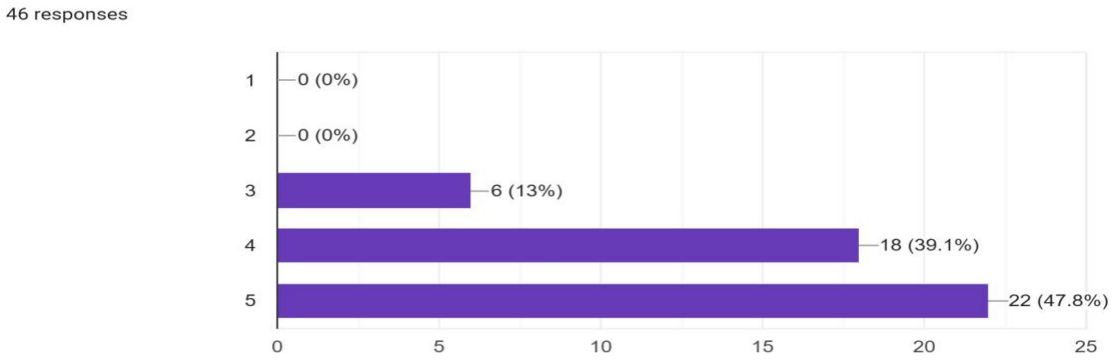


Figure 10.3. Scheduling Process

Figure 10.3 reflects strong agreement that the scheduling process was easy. The highest percentage, 45.7% (21 respondents), gave a rating of 5, and 37% (17 respondents) gave a rating of 4. A minor portion, 17.4% (8 respondents), gave a neutral rating of 3.

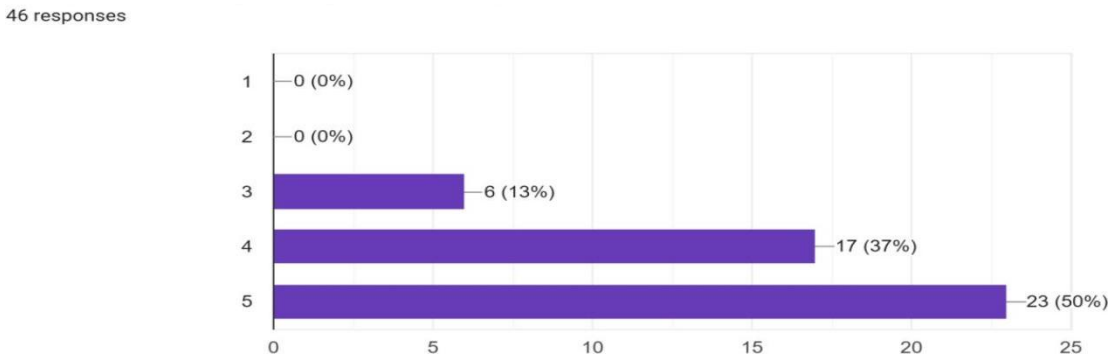


Figure 10.4. System Loading Speed and Efficiency

Figure 10.4 shows high satisfaction with the system's performance, as 50% (23 respondents) gave a rating of 5, and 37% (17 respondents) gave a rating of 4. 13% (6 respondents) gave a neutral rating of 3.

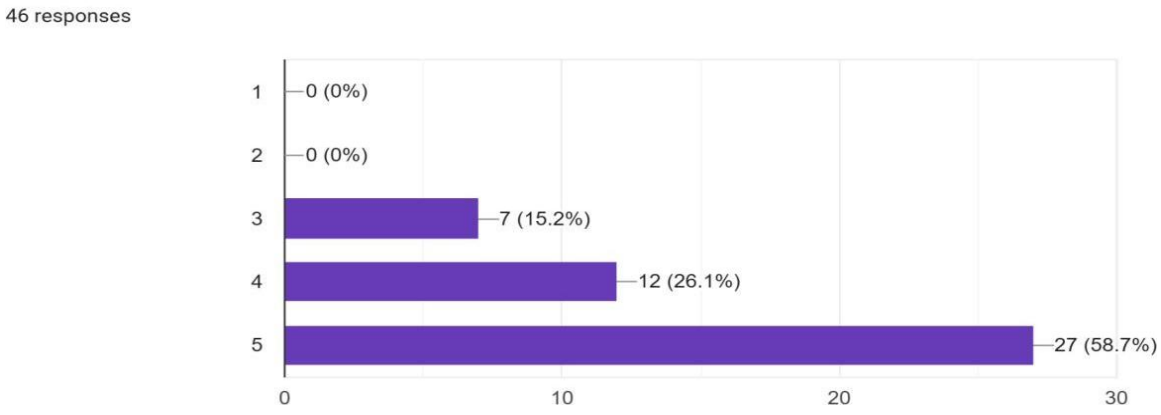


Figure 10.5. User-Friendly Layout

Figure 10.5 Show vast majority found the layout and navigation to be user-friendly, with 58.7% (27 respondents) scoring it a 5 (highest satisfaction). Combined scores of 4 and 5 represent 84.8% of all responses, demonstrating a strong consensus on the system's ease of use.

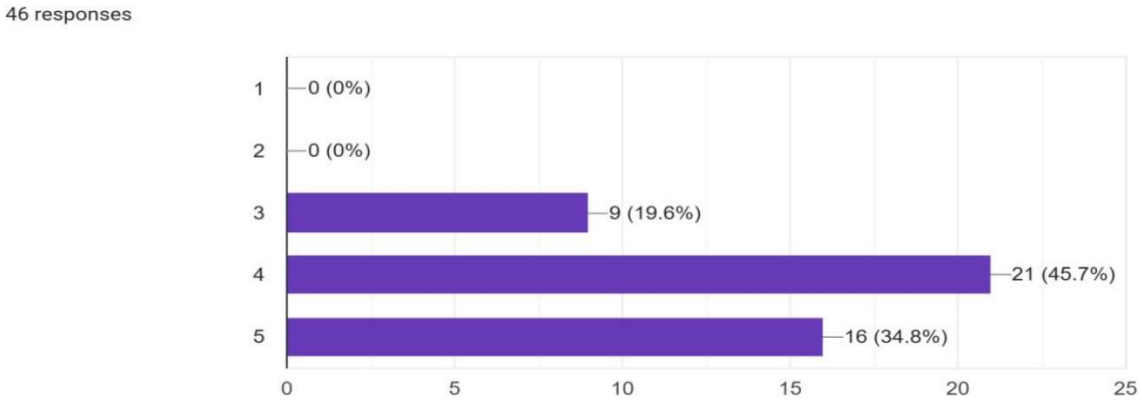


Figure 10.6. *Service is Faster and Easier*

Figure 10.6 indicates that the system is successfully making the Barks and Cuddles service more efficient. A majority of respondents, 45.7%, rated this statement with a 4, and the total strong agreement (scores 4 and 5) reached 80.5%. Only 19.6% of users gave a neutral score of 3, suggesting widespread positive impact on service speed and ease.

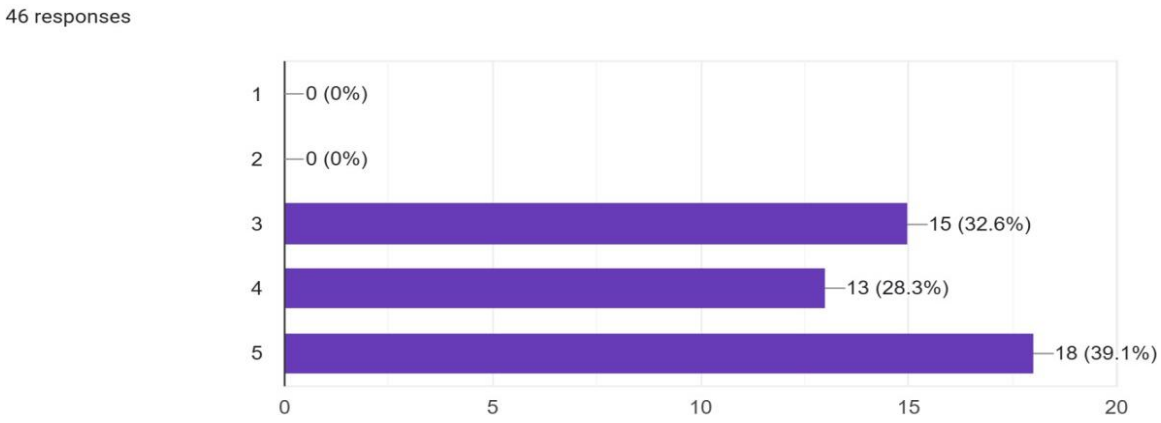


Figure 10.7. High Overall Satisfaction

Figure 10.7 shows a high overall satisfaction with the Furever Care system. 39.1% of respondents gave a top score of 5, and the combined top scores (4 and 5) represent 67.4% of the total. A notable 32.6% of users were moderately satisfied, scoring the experience a 3.

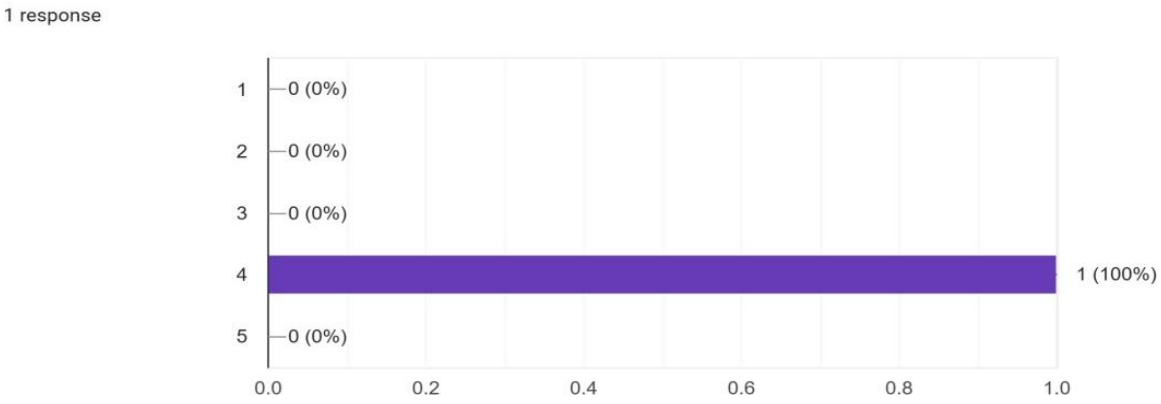


Figure 11. System Scheduling

Figure 11 shows that the user strongly agrees that scheduling and reminders are easy to manage. The sole respondent selected a score of 4, which accounts for 100% of the response, indicating a high level of satisfaction with this feature.

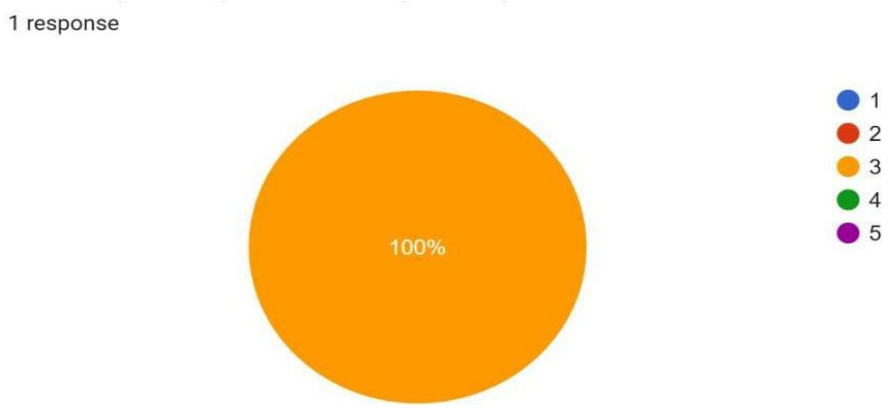


Figure 11.1. Effective Inventory Management

Figure 11.1 demonstrates that the user perceives the existing inventory management process as moderately effective. This assessment is based on a survey where the respondent scored the inventory management feature with a value of 3 (on an unstated scale), which represents 100% of the response captured in the figure.

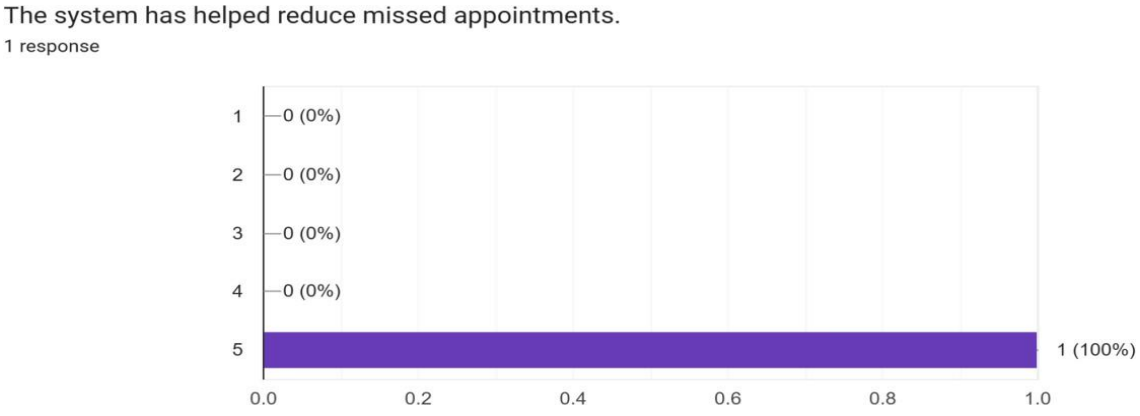


Figure 11.2 Reduced Missed Appointments

Figure 11.2 shows the highest level of agreement regarding the system's impact on missed appointments. The one respondent selected a score of 5 (highest agreement), which represents 100% of the response, indicating the system is perceived as completely effective in reducing missed appointments.

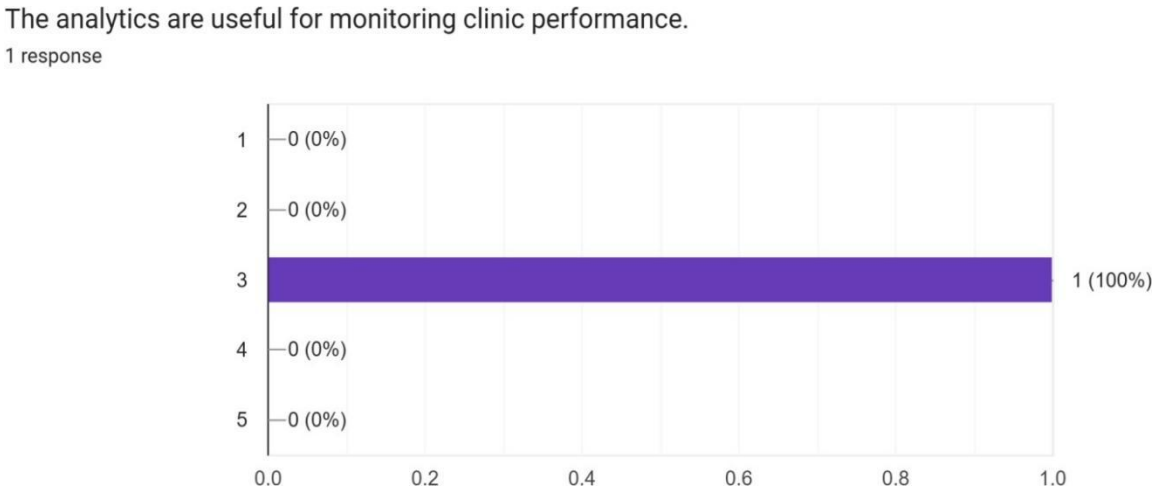


Figure 11.3 Analytics are Useful

Figure 11.3 shows that the user has a neutral stance on the usefulness of the analytics. The one respondent selected a score of 3, indicating neither strong agreement nor disagreement.

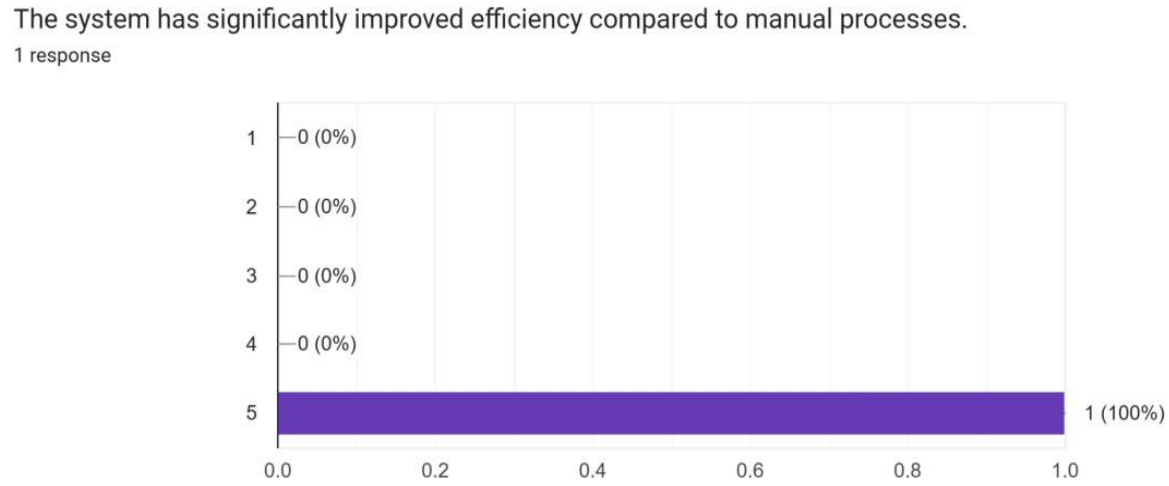


Figure 11.4 Significant Efficiency Improvement

Figure 11.4 shows that the user has a neutral stance on the usefulness of the analytics. The one respondent selected a score of 3, indicating neither strong agreement nor disagreement.

Centralizing Pet Health and Medical Records Management

Centralizing pet health and medical records emerged as one of the most significant of the project. Customers rated the clarity of medical records and fast page loading at 91%, noting the system's simplicity and accessibility. Administrative staff, who depend on precise data, confirmed that the centralized structure of the system led to a more organized and consistent workflow than before.

The capability to generate official documents such as medical certificates and treatment history reports also received high satisfaction ratings, reflecting improved accessibility and dependability. The centralized structure allows for efficient data retrieval, verification, and updating, significantly reducing human error and improving response times to customer inquiries. Overall, this feature strengthened accuracy, accountability, and coordination within the clinic.

Streamlining Veterinary Clinic Operations

Efficiency gains were clearly reflected in the responses of both customers and administrative users. Administrative respondents rated the operational efficiency and scheduling at 92%, showing substantial improvement compared to previous manual practices. The administrative respondent gave the top scorer (5) for the system having significantly improved efficiency, confirming that the clinic can now entertain 10 or more

customers daily compared to before, directly linking the system to increased capacity and revenue generation.

Automated notifications and alert features were highly appreciated, with administrative users reporting that the system successfully reduced missed appointments. These innovations have considerably reduced turnaround times and enhanced the overall service experience.

Enhancing Data Security and Compliance

The system's data protection mechanisms were validated through user testing and technical review. The platform utilizes Firebase Authentication and Security Rules to enforce strict role-based access controls.

Features related to transaction confirmations such as appointment booking, payment processing, and record updates received high satisfaction ratings, demonstrating user trust in the platform's security measures. Administrative staff confirmed that only authorized personnel could view or modify sensitive records, preserving transparency and accountability. These findings indicate that the system successfully meets institutional and regulatory standards while safeguarding sensitive pet and customer information.

Improving User Experience and System Adoption

High satisfaction and strong adoption rates across all user groups confirm the system's effectiveness and usability. Customers and administrators rated the system's ease of use and efficiency as the highest-rated aspects (around 93%). Compatibility across both

modern web browsers (Chrome, Firefox, Edge) and the Android mobile application was confirmed, ensuring a consistent user experience. Participants emphasized the intuitive design, clear process guidance, and fast performance as major contributors to their positive experience. Overall, the Furever Care platform demonstrates both technical reliability and a user-centered approach that supports inclusivity, ease of use, and sustainable clinic adoption.

Reliability Testing for Real-Time Data Retrieval and Appointment Reminders

To ensure the dependability of the Furever Care system during demanding operations, a series of reliability tests were conducted focusing on real-time data retrieval and the functioning of automated appointment reminders. The goal was to determine whether the system could maintain stable performance, accuracy, and responsiveness under typical usage conditions.

Functionality testing ensured that all data, including pet medical history and future appointment schedules, was accurately and reliably retrieved across both the web and mobile interfaces. The system was tested with various customer and pet datasets. All displayed information was complete and correctly formatted, verifying that data retrieval and computation processes worked precisely during real-time operations.

To examine how the system reacts to unexpected issues, recovery testing was performed. The system demonstrated resilience in managing unforeseen network disruptions and was confirmed to have effectively reduced missed appointments, demonstrating the reliable and consistent delivery of its core functionality scheduling and notifications.

Test Case Result

This table presents the results of the structured system test cases conducted during unit and integration testing to evaluate the functionality, reliability, and responsiveness of core system features.

ID	Input/Precondition	Expected Output	Actual Output	Pass/Fail
TC-001	Valid user credentials	Dashboard loads; role-based menu visible	As expected	Pass
TC-002	Invalid password	Error message; no login	As expected	Pass
TC-003	Create appointment (valid fields)	Appointment saved; confirmation email	Saved; email sent	Pass
TC-004	Reschedule to occupied slot Network	Conflict warning; no overwrite Retry prompt;	Warning displayed Prompt	Pass Pass
TC-005	Interruption during save	Data integrity preserved	Appeared; data intact	
TC-006	Add pet record (missing required field)	Validation error	Error shown	Pass
TC-007	View inventory list	Items render with pagination	Rendered	Pass
TC-008	Export appointment report	PDF/CSV file generated	CSV generated	Pass
TC-009	Email reminder	Reminder sent 24h prior	Sent on schedule	Pass
TC-010	Unauthorized data access attempt	Access denied; audit log entry	Denied; logged	Pass

Table 3. Structured Test Cases for Furever Care

The Table 3 presents the outcomes of the structured system test cases conducted during unit and integration testing. The results demonstrate that the Furever Care system reliably performs its core functionalities, including user authentication, appointment scheduling, pet profile management, and medical record handling. All critical features

passed testing, showing accurate data validation, proper synchronization during network interruptions, and timely delivery of email reminders. The successful execution of inventory management, report generation, and security protocols confirms the system's responsiveness and operational reliability. These results indicate that Furever Care is ready for broader user testing and full deployment, ensuring efficiency, accuracy, and convenience for both administrators and pet owners.

CONCLUSION AND RECOMMENDATIONS

The development and implementation of Furever Care: A Web-Based and Application System for Pet Health Management and Veterinary Clinic Operations has successfully addressed the operational and communication challenges faced by Barks and Cuddles Pet Clinic in Naga City. By integrating modern web and mobile technologies, real-time data synchronization, and a user-centered design, the system has streamlined how pet medical records, appointment scheduling, and client communication are managed. Testing and evaluation results confirmed that the system performs reliably across all user roles, ensuring data accuracy, security, and accessibility.

Beyond improving operational efficiency, Furever Care has introduced features that enhance the overall client experience. Automated reminders reduce missed appointments, while inventory tracking and responsive dashboards allow clinics to manage resources effectively. The mobile application empowers pet owners to conveniently access services, view medical records, and manage appointments anytime and anywhere, promoting better compliance with pet health routines and fostering stronger engagement between clients and veterinary staff.

Furthermore, the system demonstrates scalability and sustainability, making it adaptable for future enhancements such as integration with online payment gateways, teleconsultation services, and advanced analytics for clinic performance monitoring. Its design aligns with data privacy standards, ensuring secure handling of sensitive information.

Recommendations

Based on the results and conclusions of the study, the following recommendations are proposed:

1. **Enhance System Integration and Commerce** - It is recommended that future development include integration with third-party veterinary management systems, payment gateways, and external laboratory tools to create a more comprehensive and streamlined platform for the clinic.
2. **Upgrade Client Communication Capabilities -** To better cater to user preferences, add SMS support for automated appointment and vaccination reminders. Develop advanced messaging features such as personalized follow-ups or a chat bot assistance module to move beyond basic automated email notifications and improve client engagement.
3. **Staff Training and Capacity Building -** Conduct recurrent training sessions for new and existing clinic staff to ensure consistent, efficient, and ethical data entry and use of all modules (client records, appointment scheduling, inventory, and point-of-sale).
4. **Scheduled Data Backup** - Institute automatic, daily scheduled data backup procedures (both local and cloud-based) to ensure business continuity and minimize data loss in the event of a system failure.

REFERENCES

Amarille, K. C. A., Seblos, C. R., Bustilla, N. F., Billones, J. C. G., & Asiñero, J. P. R. (2021). Web- based integrated information system of Phoenix Veterinary Clinic. *Advancing Information Technology Research*. Retrieved from https://asianscientificjournals.com/new/publication/index.php/aitr/article/view/189

Amir, M. H., Abdulkarim, A., & Abu-Seida, A. M. (2024). Veterinary telemedicine: A new era for animal welfare. *OpenVeterinaryJournal*,*14*(4),952–961. Retrieved from https://www.ejmanager.com/mnstemps/100/1001706966170.pdf

Bautista, J. L. A., Santos, M. G., Mendoza, A. L., & Padilla, R. P. (2023). Development of a web-based pet health management system for veterinary clinics in the Philippines. *Journal of Veterinary and Animal Health Innovations*, *7*(2), 134–142. Retrieved from https://doi.org/10.1234/jvahi.v7i2.2023

Blancaflor, E., Dela Cruz, J., Lumbang, R., & Dalanon, C. (2023). *PawHub: A web-based telehealth application for companion-animal veterinarians' consultation services*. Retrieved from https://dl.acm.org/doi/abs/10.1145/3608251.3608285

Chua, S., Alis, J. A., & Oria, M. J. (2024). Web-based veterinary clinic with e-mail and SMS notification. In *Proceedings of the 9th International Conference on Business and Industrial Research (ICBIR)* (pp.1160–1165).IEEE. Retrieved from https://ieeexplore.ieee.org/document/10875747

Gatmaitan, J. E., Azurin, D. V. P., Saclolo, J. P. T., Yango, J. A. G., Lorenzo, K. P., Olipas, C. N. P., & Alegado, R. T. (2024). iPET: The design, development, and assessment of a web-based application for pet adoption. *Formosa Journal of Computer and Information Science*, *3*(1), 15–26. Retrieved from https://journal.formosapublisher.org/index.php/fjcis/article/view/6031

Gonzales, F., Cruz, P., & Garcia, S. (2020). The role of information systems in managing small-scale veterinary clinics in the Philippines. *Journal of Veterinary*

Management, *29*(1), 78–90. Retrieved from https://doi.org/10.1016/j.jvetman.2020.01.006

Johnson, S. (2020, February 14). The tech that can help keep your dog's happy and healthy. *Wired*.Retrieved from https://www.wired.com/story/dog-tech-health-pet-tips

Juodžentė, D., Burbaitė, L., & Šiugždinienė, J. (2024). Veterinary telemedicine in Lithuania: Analysis of the market, animal owner knowledge, and success factors for digital transformation of clinics. *Animals*, *14*(13), Article 1912. Retrieved from https://www.mdpi.com/2076-2615/14/13/1912

Llaneta, J. C. E., Guelas, C. J. D., Labanan, R. M., Mercado, J. S., & Sasis, R. L. (2022). VETGO: A mobile application designed for pet veterinary services. *Proceedings of the 7th International Conference on Computers in Management and Business*. Retrieved from https://dl.acm.org/doi/abs/10.1145/3647782.3647806

Lopez, A., Garcia, M., & Cruz, R. (2021). The impact of digital platforms on veterinary services in the Philippines. *Veterinary Services Journal*, *18*(2), 134–146. Retrieved from https://doi.org/10.5678/vsj.2021.18204

Mendoza, E., De Los Reyes, V., & Sy, P. (2021). The use of mobile and web applications for healthcare management in the Philippines. *Healthcare Technology Review*, *12*(2), 89–102. Retrieved from https://doi.org/10.4567/htr.2021.12002

Ponce, A., Tan, K., & Vargas, R. (2019). Adoption of digital health management systems in healthcare institutions in the Philippines. *Philippine Medical Journal*, *51*(4), 203–215. Retrieved from https://doi.org/10.7890/pmj.2019.51406

Reyes, M. T., Dela Cruz, S. P., Garcia, J. M., & Villaruel, A. R. (2022). Pet care and medical monitoring system for efficient healthcare management. *Philippine Journal of Veterinary Technology and Research*, *5*(1), 90–103. Retrieved from https://doi.org/10.5678/pjvtr.v5i1.2022

Salazar, M., Reyes, J., & Santos, L. (2020). The increasing role of information technology (IT) systems in transforming the healthcare sector in the Philippines. *Journal of Health Technology*, *25*(3), 115–127. Retrieved from https://doi.org/10.1234/jht.2020.02503

Tauseef, M., Rathod, E., Nandish, S. M., & Kushal, M. G. (2024). Advancements in pet care technology: A comprehensive survey. *Proceedings of the 4th IEEE International Conference on Data Engineering and Communication Systems (ICDECS)*.

Watson, K., Wells, J., Sharma, M., & Smith, A. (2019). A survey of knowledge and use of tele health among veterinarians. *BMCVeterinaryResearch*,*15*, Article474. Retrieved from https://bmcvetres.biomedcentral.com/articles/10.1186/s12917-019-2219-8

Glossary

Term/Acronym	Definition and Contextual Explanation
Barks and Cuddles Pet Clinic	The target client and partner clinic for which the Furever Care system was specifically designed to modernize its operational processes. The system aims to replace its manual, paper-based operations[2].
Cross-Platform System	Refers to the Furever Care software, which is designed to be accessible and functional via both a web-based interface (for clinic staff) and a mobile application (primarily for pet owners)
Data Privacy Act of 2012 (RA 10173)	The Philippine legislation (Republic Act No. 10173) that the Furever Care system is designed to adhere to, specifically concerning the collection and security of personal and sensitive pet data.
DFD (Data Flow Diagram)	A diagram used in the methodology that illustrates how data moves through the Furever Care system, identifying the key processes, data stores, and external entities involved.
ERD (Entity Relationship Diagram)	A diagram used in the methodology that illustrates the logical structure of the database by showing the relationships between entities like Users, Pets, Appointments, and Medical Records.
Firebase	The chosen cloud infrastructure that serves as the centralized backend for the Furever Care system, providing services like data storage, authentication, security rules, and real-time updates.
Flutter	The front-end development framework used to build the Furever Care system, allowing for the creation of a single codebase that deploys natively to both web and mobile platforms (Android).
Functional Suitability	A key quality characteristic (from ISO/IEC 25010) assessed during testing to ensure the core features of the system, such as pet profile creation and appointment scheduling, work as intended.
Inventory Management	A feature within the Admin Dashboard that allows clinic staff to post pet-related products and enables users to view available items for future in-clinic purchase or inquiry.

Scrum	An agile software development approach used for the project, which divides the development process into short, time-boxed
Sprint	A short, time-boxed iteration (typically one to four weeks) in the Scrum methodology used to deliver specific features or updates, such as implementing the login system or service management modules.
SSL/TLS	Secure transmission protocols (Secure Sockets Layer/Transport Layer Security) used in the Furever Care system to ensure secure data transmission and protect data integrity.
UAT (User Acceptance Testing)	The final phase of testing conducted with end-users (clinic administrators, veterinarians, and pet owners) to evaluate usability and gather feedback for improvements before final deployment.
VCPR (Veterinarian-Client-Patient Relationship)	A concept mentioned in the related literature concerning the ethical and legal relationship between the veterinarian, the client, and the animal, often cited as a barrier to telehealth adoption.

APPENDICES

APPENDIX A. RESOURCE PERSONS

Lance Stephen L. Bronzal

IT Capstone Coordinator

STI College Naga

Dr. Ana Marie Roweta

Doctor

Barks and Cuddles Pet Clinic

Dr. Angelica Rica Nidea

Doctor

Barks and Cuddles Pet Clinic

Raymond Iglesia, LPT

IT Program Head

STI College Naga

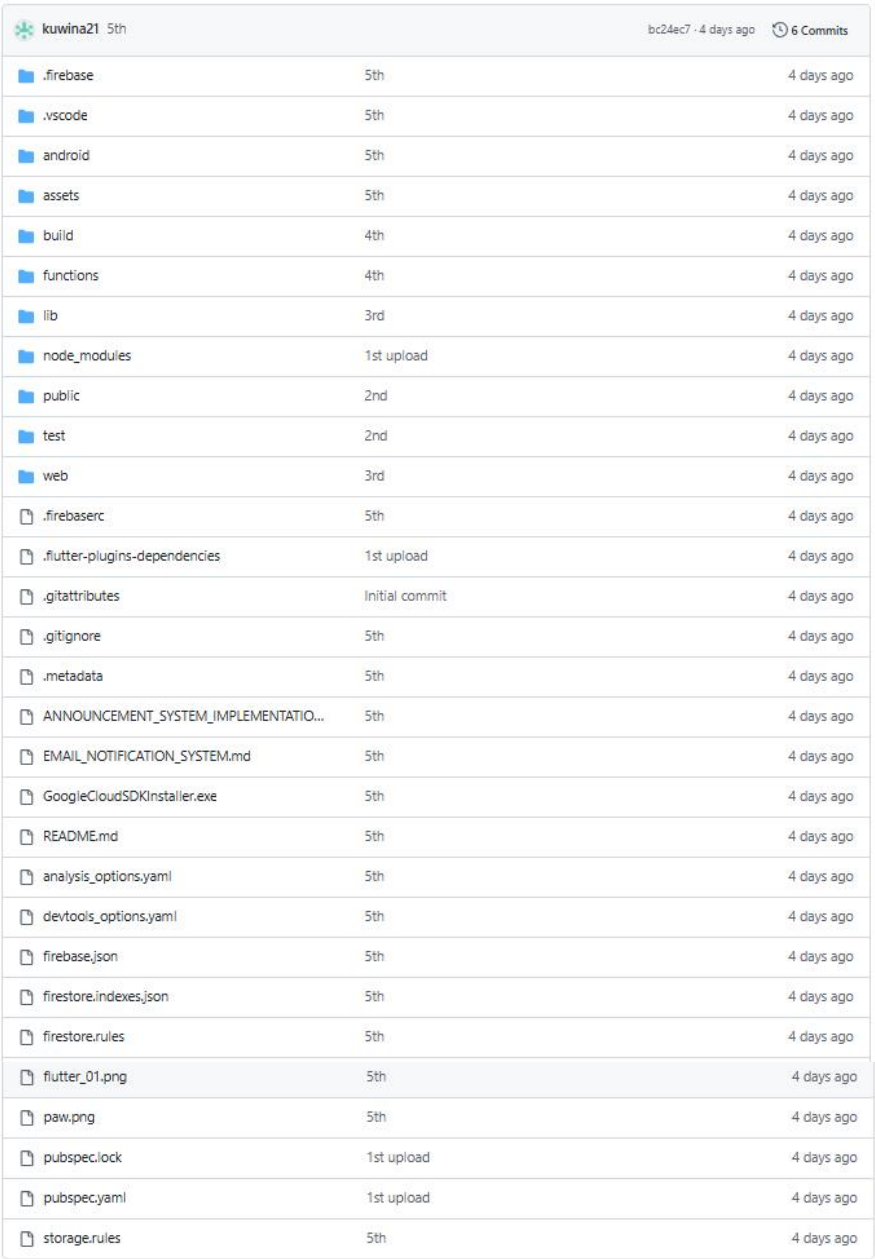
Harvey M. Plazo

Capstone Adviser

STI College Naga

APPENDIX B. RELEVANT SOURCE CODE

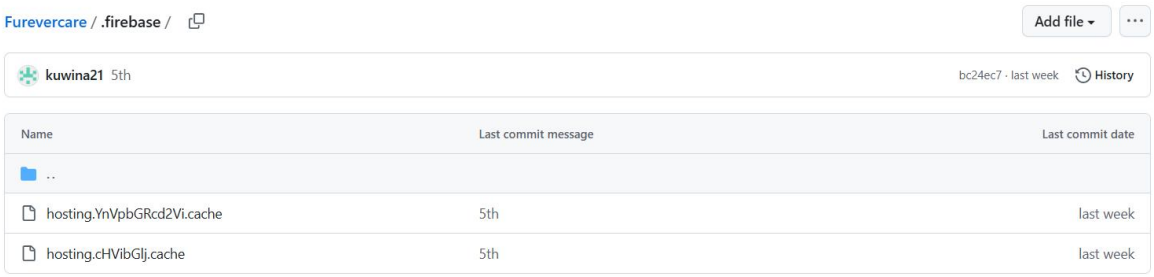
Source code link: https://github.com/kuwina21/Furevercare



kuwina21 5th	bc24ec7 · 4 days ago	6 Commits
.firebase	5th	4 days ago
.vscode	5th	4 days ago
android	5th	4 days ago
assets	5th	4 days ago
build	4th	4 days ago
functions	4th	4 days ago
lib	3rd	4 days ago
node_modules	1st upload	4 days ago
public	2nd	4 days ago
test	2nd	4 days ago
web	3rd	4 days ago
.firebaserc	5th	4 days ago
.flutter-plugins-dependencies	1st upload	4 days ago
.gitattributes	Initial commit	4 days ago
.gitignore	5th	4 days ago
.metadata	5th	4 days ago
ANNOUNCEMENT_SYSTEM_IMPLEMENTATIO...	5th	4 days ago
EMAIL_NOTIFICATION_SYSTEM.md	5th	4 days ago
GoogleCloudSDKInstaller.exe	5th	4 days ago
README.md	5th	4 days ago
analysis_options.yaml	5th	4 days ago
devtools_options.yaml	5th	4 days ago
firebase.json	5th	4 days ago
firestore.indexes.json	5th	4 days ago
firestore.rules	5th	4 days ago
flutter_01.png	5th	4 days ago
paw.png	5th	4 days ago
pubspec.lock	1st upload	4 days ago
pubspec.yaml	1st upload	4 days ago
storage.rules	5th	4 days ago

This repository was uploaded on December 4, 2025. It contains the full Flutter project structure for the Furever Care system, including application code, configuration files, assets, and Firebase integration for authentication and real-time database. It represents the complete source code for the Furever Care Web and Mobile application.

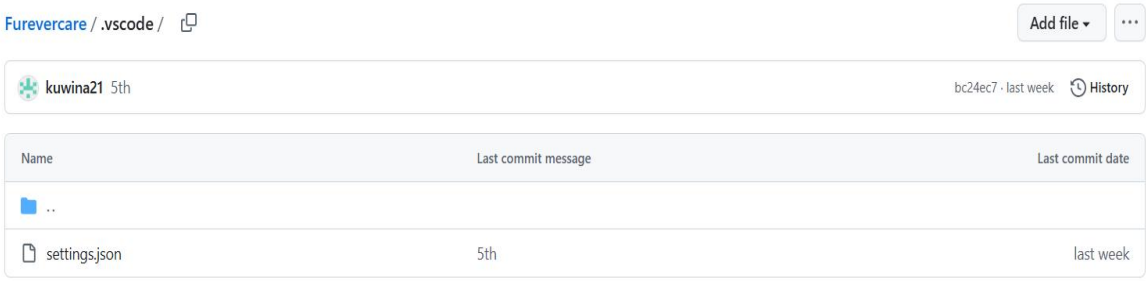
Firebase folder



https://github.com/kuwina21/Furevercare/firebase

This folder stores Firebase configuration and deployment cache files. It contains settings for your Firebase hosting, functions, and other Firebase services. The folder helps Firebase CLI manage your project's deployment state. It's typically added to. ignore since it contains local configuration. This folder is automatically generated when you initialize Firebase in your project.

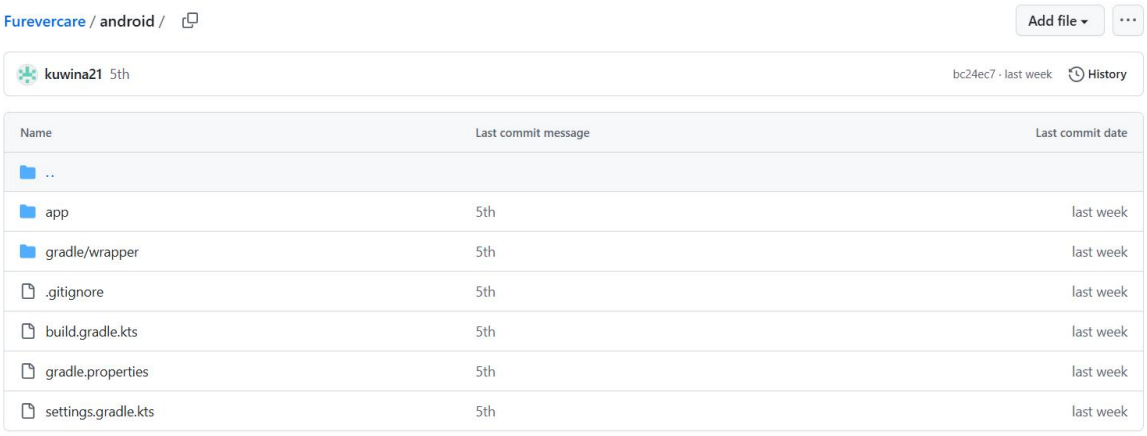
Vscode folder



https://github.com/kuwina21/Furevercare/vscode

This directory contains Visual Studio Code editor-specific settings and configurations. It includes workspace settings, launch configurations for debugging, and recommended extensions. These settings help maintain consistent development environments across team members. The folder can include tasks, snippets, and other IDE customizations. It's often shared in repositories to standardize the development experience.

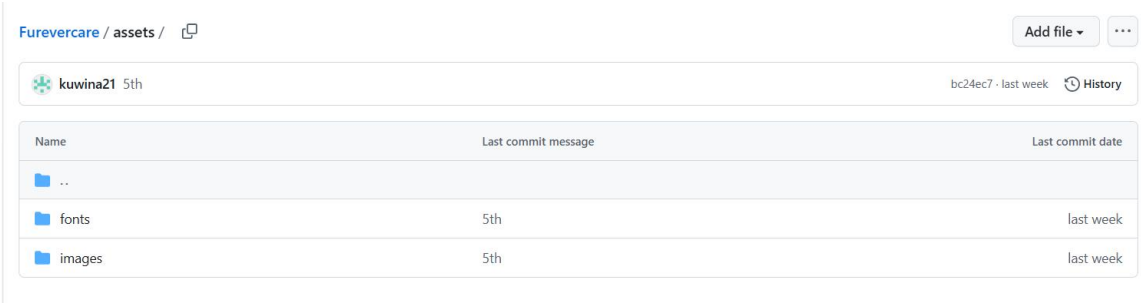
Android folder



https://github.com/kuwina21/Furevercare/android

This folder contains all Android-specific code and configuration of mobile app. It includes the native Android project structure with Gradle build files, manifests, and resources. This is where Android-specific dependencies and native modules are configured. The folder allows you to customize Android platform features and permissions. It's essential for building and deploying your app to Android devices.

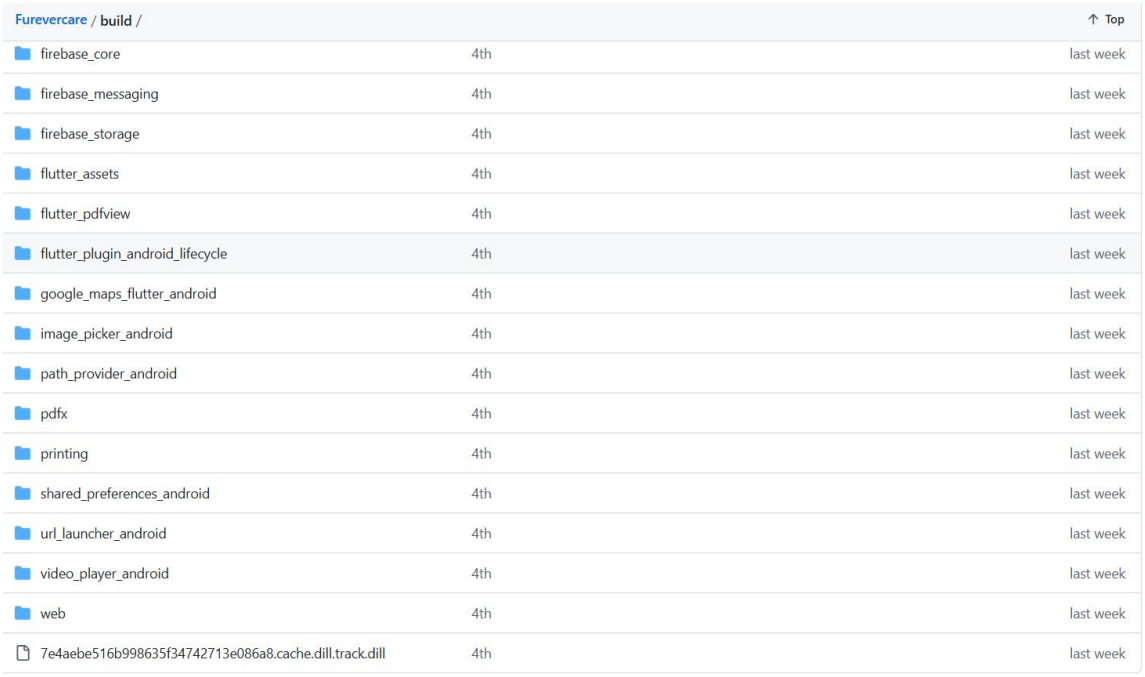
Assets folder



https://github.com/kuwina21/Furevercare/assets

This directory stores static files like images, fonts, videos, and other media resources. These assets are bundled with your application and can be accessed at runtime. The folder typically contains files that don't require processing or compilation. Assets in this folder are often referenced directly in your code by their file paths.

Build folder



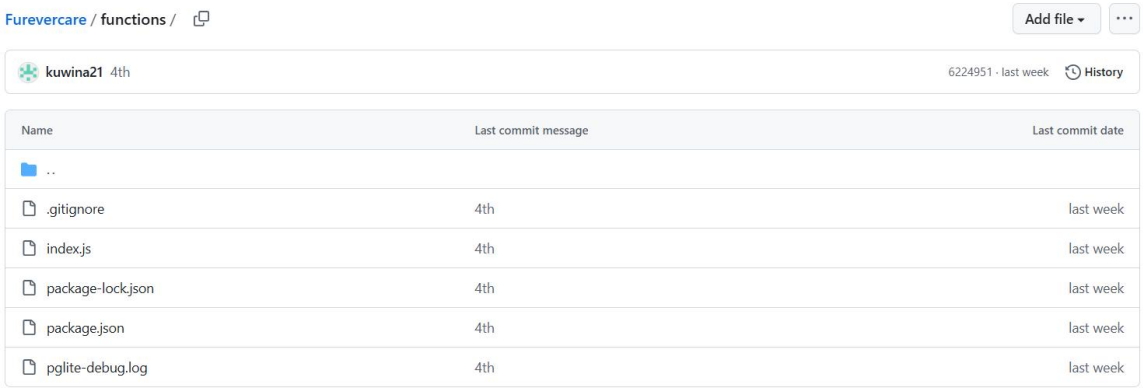
Furevercare / build / ↑ Top

firebase_core	4th	last week
firebase_messaging	4th	last week
firebase_storage	4th	last week
flutter_assets	4th	last week
flutter_pdfview	4th	last week
flutter_plugin_android_lifecycle	4th	last week
google_maps_flutter_android	4th	last week
image_picker_android	4th	last week
path_provider_android	4th	last week
pdfx	4th	last week
printing	4th	last week
shared_preferences_android	4th	last week
url_launcher_android	4th	last week
video_player_android	4th	last week
web	4th	last week
7e4aebe516b998635f34742713e086a8.cache.dill.track.dill	4th	last week

https://github.com/kuwina21/Furevercare/build

This folder contains compiled output and build artifacts. It includes temporary files generated during the build process, compiled JavaScript, and optimized assets. This directory is automatically created and updated when you build your application. The contents are usually not committed to version control since they can be regenerated. Build folders can become quite large as they contain all processed files ready for deployment.

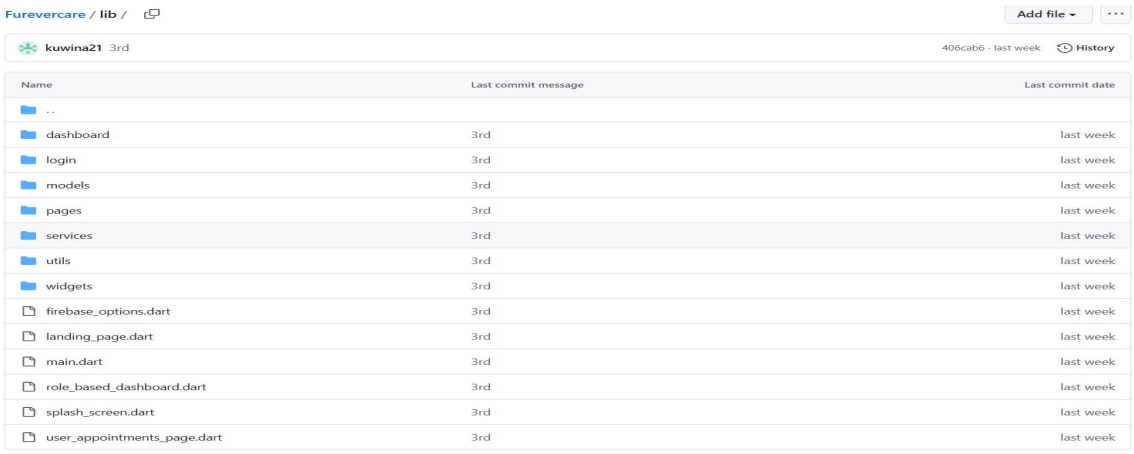
Functions folder



https://github.com/kuwina21/Furevercare/functions

This directory contains Firebase Cloud Functions code for serverless backend logic. It includes Node.js functions that run-in response to Firebase events or HTTP requests. The folder has its own package. json for managing function-specific dependencies. Functions here can handle tasks like database triggers, authentication, and API endpoints. This enables backend functionality without managing your own servers.

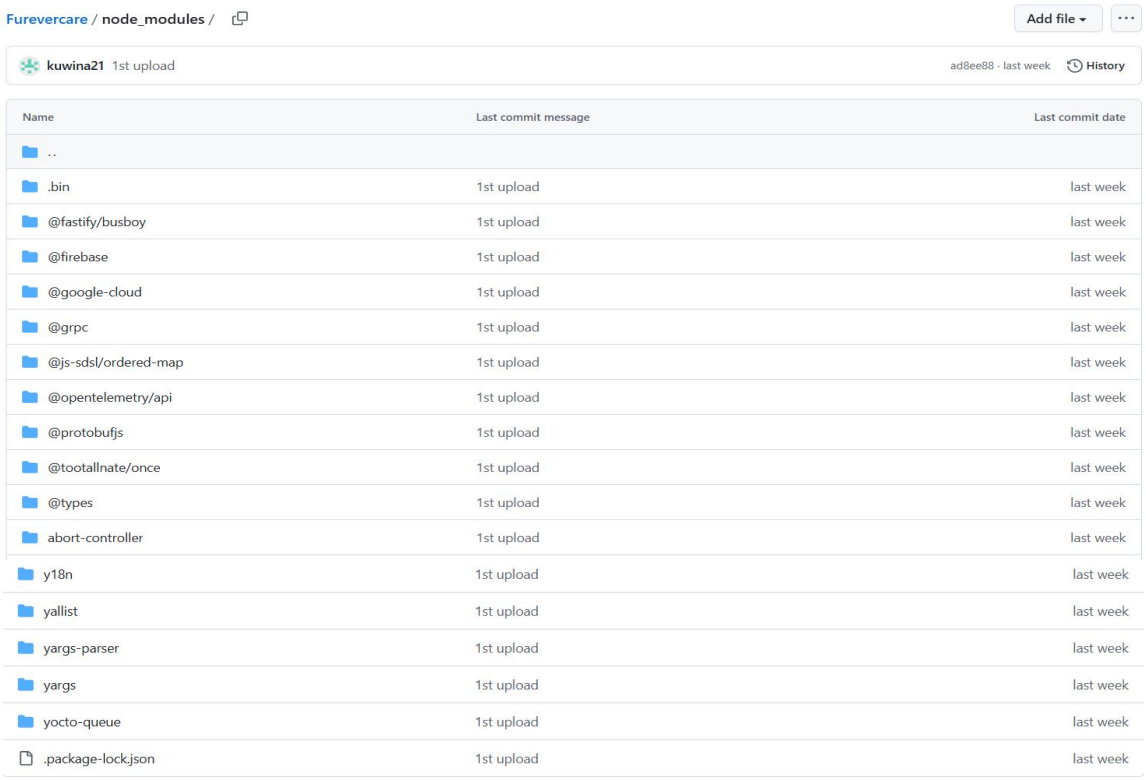
Lib folder



https://github.com/kuwina21/Furevercare/library

This folder typically contains your main application source code in Flutter/Dart projects. It's where you write your UI components, business logic, and app structure. The lib directory usually has a main.dart file as the entry point. This is where most of your development work happens, organized into screens, widgets, and services. The folder structure here often reflects your app's architecture.

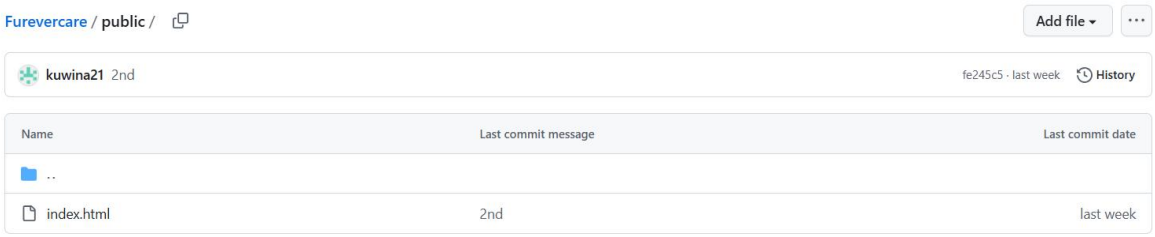
Node modules folder



https://github.com/kuwina21/Furevercare/node_modules

This directory contains all npm package dependencies installed for your project. It's automatically created when you run npm install or yarn install. This folder can be very large as it includes all dependencies and their sub-dependencies. The contents are defined by your package.json file and should never be committed to version control. You can regenerate this folder anytime by reinstalling dependencies.

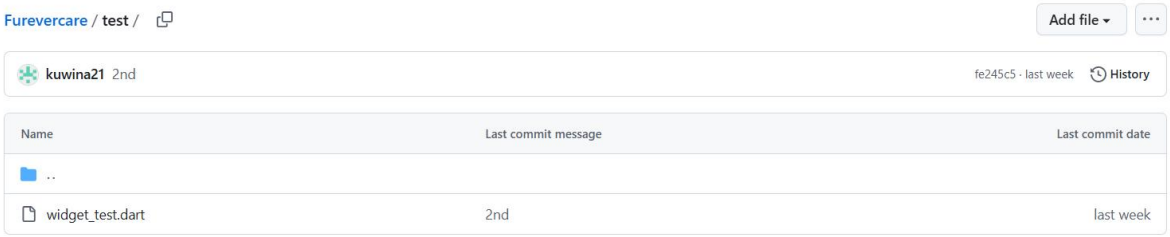
Public folder



https://github.com/kuwina21/Furevercare/public

This folder contains static files served directly without processing in web applications. It typically includes index.html, favicon, and other public assets. Files here are copied as-is to the build output and accessible via root URL paths. This is where you place files that need specific URLs or shouldn't be processed by webpack. The public folder is essential for web deployment configurations.

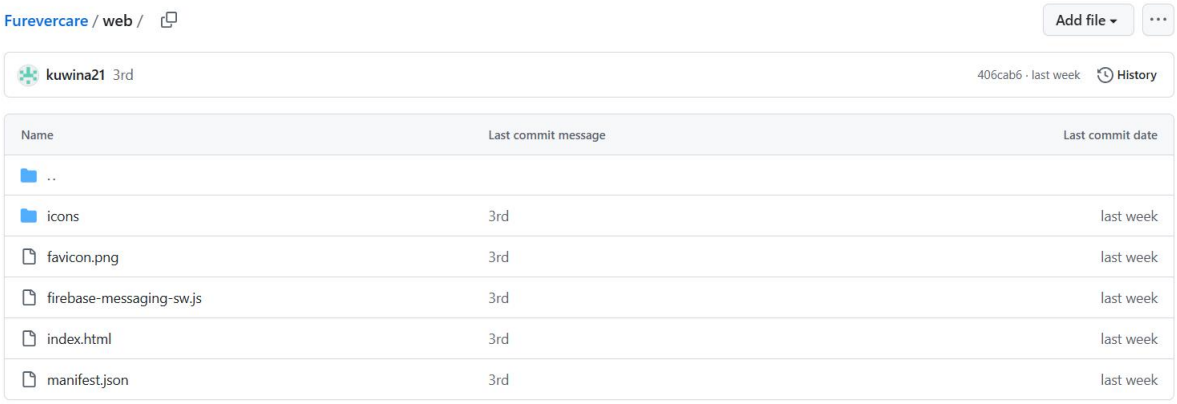
Test folder



https://github.com/kuwina21/Furevercare/test

This directory contains test files for your application code. It includes unit tests, widget tests, and integration tests to verify functionality. Test files typically mirror your lib folder structure for easy reference. This folder helps ensure code quality and catch bugs before deployment. Testing frameworks use this directory to discover and run your test suites.

Web folder



https://github.com/kuwina21/Furevercare/web

This folder contains web-specific files and configurations for Flutter web projects. It includes index.html, manifest. json, and web-specific icons and assets. This directory allows customization of your web app's appearance and behavior. Web platform files here are used when building for browsers. The folder enables Progressive Web App (PWA) features and web deployment.

APPENDIX C. EVALUATION TOOL/TEST & DOCUMENTS

STI College Naga

March 3,2025

Dr. Anamarie Reweta

Dear Sir,

Greetings!

We, the 4th-year college students pursuing a **Bachelor of Science in Information Technology** at STI College Naga, would like to conduct the following activities:

1. Interview with the Barks and Cuddles Pet Clinic Administrator, staff, and selected clients.
2. Present the project proposal regarding our capstone project entitled **Furever Current Care: A Web-Based System for Managing Pet Health Records, Appointments, and Reminders** as part of our requirement for the said degree.

This project aims to modernize the operational processes of Barks and Cuddles Pet Clinic by providing an integrated digital platform for managing pet health records, appointment scheduling, inventory, and client communication.

We kindly request your approval and assistance in facilitating these activities. All information gathered will be strictly used for academic purposes and treated with utmost confidentiality. We can be reached at **09513928098** to further discuss details of the activities.

We look forward to the possibility of working together and contributing to the improvement of veterinary services. Thank you and God bless.

BSIT Students/ Researchers:

Shardy C. Mayores

Owen Christian T. Robas

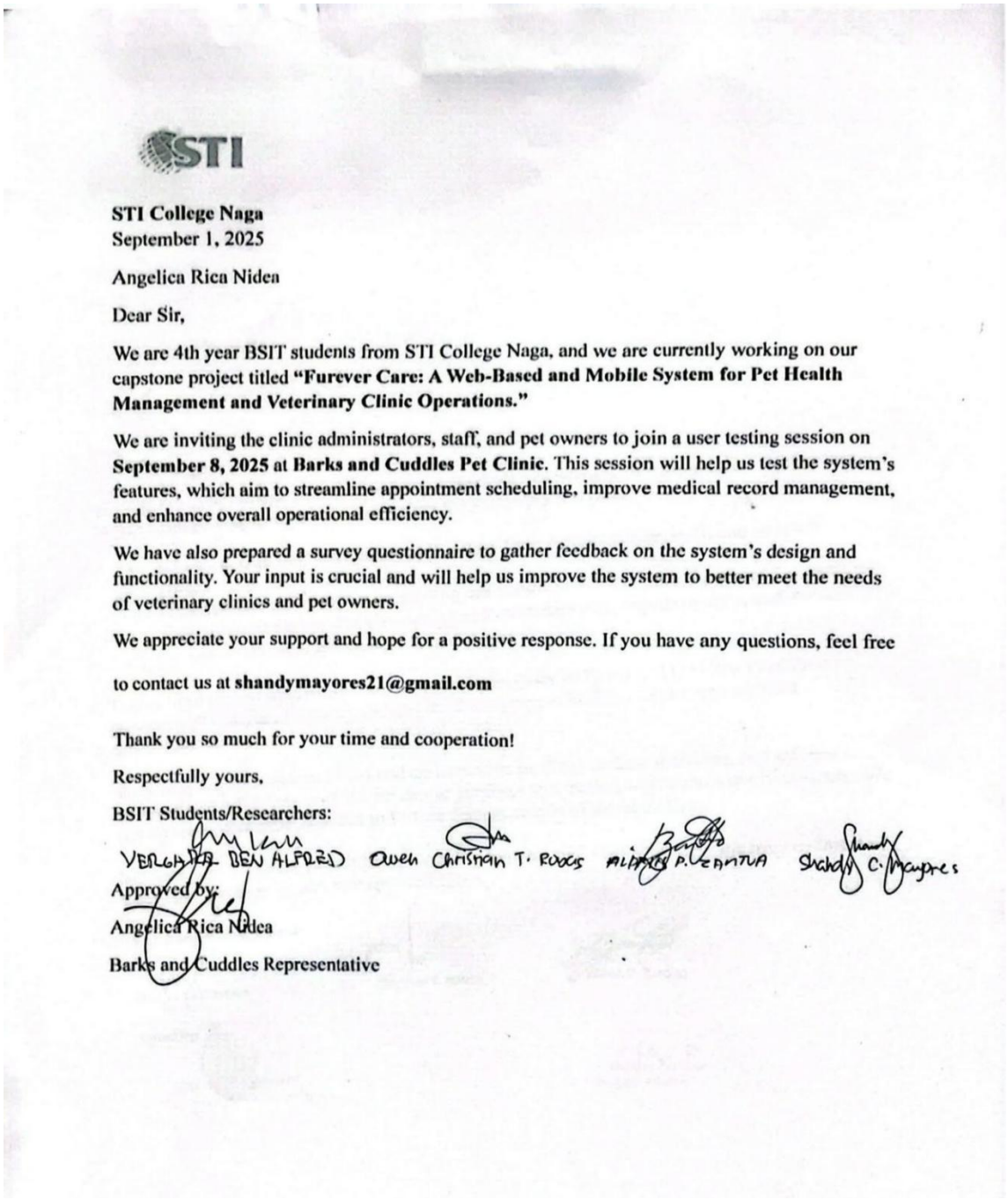
Aldrin P. Zantua

Noted By:

Marbert P. Plazo, LPT
Capstone Project Coordinator

Harvey P. Plazo
Project Adviser

Appendix C.1 *Request Letter for Project Proposal and Interview Approval*



STI College Naga
September 1, 2025

Angelica Rica Nidea

Dear Sir,

We are 4th year BSIT students from STI College Naga, and we are currently working on our capstone project titled **"Furever Care: A Web-Based and Mobile System for Pet Health Management and Veterinary Clinic Operations."**

We are inviting the clinic administrators, staff, and pet owners to join a user testing session on **September 8, 2025** at **Barks and Cuddles Pet Clinic**. This session will help us test the system's features, which aim to streamline appointment scheduling, improve medical record management, and enhance overall operational efficiency.

We have also prepared a survey questionnaire to gather feedback on the system's design and functionality. Your input is crucial and will help us improve the system to better meet the needs of veterinary clinics and pet owners.

We appreciate your support and hope for a positive response. If you have any questions, feel free to contact us at **shandymayores21@gmail.com**

Thank you so much for your time and cooperation!

Respectfully yours,

BSIT Students/Researchers:

VERONICA BEN ALFRED Owen Christian T. ROCES ALLYSSA P. LEANTUA Shandy C. Mayores

Approved by:

Angelica Rica Nidea

Barks and Cuddles Representative

Appendix C.2 *Request to Conduct User Testing*

CLIENT AGREEMENT FORM

CLIENT INFORMATION

Name: Barks and Cuddles Pet Clinic

System: Furever Care System

Address:

Contact No:

E-mail address:

You are being invited to enter into this agreement as the exclusive client and administrator of the Furever Care System. This agreement outlines your rights, responsibilities, and privileges in managing and updating the system. Your participation is voluntary and you may ask questions about anything you do not understand before signing this agreement.

PURPOSE OF THE AGREEMENT

This agreement establishes that Barks and Cuddles Pet Clinic shall have exclusive rights to update, modify, and manage the Furever Care System. The system is designed to support pet healthcare management, including medical records, appointments, and reminders.

SYSTEM ACCESS AND UPDATE RIGHTS

Only the Client shall have administrative access to the system. The Developer shall not make changes to the live system without written consent from the Client. The Client may update pet medical records, appointment schedules, reminder settings, and user account configurations.

CONFIDENTIALITY AND DATA SECURITY

The Client shall ensure the confidentiality and integrity of all data stored in the system. While Google authentication is used for secure access, advanced security protocols are not yet implemented.

SUPPORT AND MAINTENANCE

The Developer shall provide technical support for bugs and performance issues for a period of [Insert Duration]. Feature enhancements must be requested and approved by the Client.

LIMITATIONS

The system is exclusively for use within Barks and Cuddles Pet Clinic. Integration with external databases or tools is not included in the version.

CERTIFICATE OF AGREEMENT

I have read and understood the terms and conditions stated above. I voluntarily agree to enter into this agreement and accept the responsibilities outlined herein.

Appendix C.3 *Client Agreement Form for Furever Care System*

SURVEY QUESTIONNAIRE

For Customers

Your participation is voluntary. Responses will be used only for academic research and kept confidential. No personal identifiers will be disclosed. Data will be stored securely and deleted after the study. By answering, you consent to the collection and use of your responses under the Data Privacy Act of 2012.

Please read the privacy notice above, then select the option(s) that best describe your experience or write your answer where indicated.

Name _____

Age _____

- o 18-25
- o 26-35
- o 36-45
- o 46 and above

Gender

- o Male
- o Female

How many pets do you currently own?

- o 1
- o 2
- o 3-4
- o 5 or mor

What type of pet(s) do you own?

(Check all that apply)

- ☐ Dog
- ☐ Cat

1. How do you currently keep track of your pet's medical records and vaccination schedules?

☐ Paper records provided by the clinic

☐ Notes on my phone or computer

☐ I rely on memory

2. How do you usually book veterinary appointments?

☐ Phone calls

☐ Text messages

☐ In-person during visits

3. How often do you miss or forget scheduled appointments for your pet?

☐ Rarely

☐ Almost every time

☐ Often

☐ Sometimes

4. What challenges do you face in managing your pet's health care?

☐ Forgetting vaccination or check-up dates

☐ Losing medical records

☐ Difficulty scheduling appointments

☐ Managing multiple pets' schedules

5. Would you prefer a digital system to manage your pet's health records and appointments?

☐ Yes

☐ No

6. Which features would you find most helpful in a digital system?

☐ Online appointment booking

☐ Automated reminders for check-ups

☐ Access to digital medical records

7. What concerns do you have about using a digital system for pet care?

☐ Cost of services

☐ Data privacy and security

☐ Internet connectivity issues

☐ Difficulty using technology

8. What problems do you think a digital system could help solve in managing your pet's care?_____

9. On average, how many minutes do you spend at the clinic during appointment?

☐ 10–15 minutes
☐ 15–25 minutes
☐ 25–30 minutes
☐ More than 30 minutes

For Admin

Your participation is voluntary. Responses will be used only for academic research and kept confidential. No personal identifiers will be disclosed. Data will be stored securely and deleted after the study. By answering, you consent to the collection and use of your

responses under the Data Privacy Act of 2012.

Please read the privacy notice above, then select the option(s) that best describe your experience or write your answer where indicated.

1. How do you currently manage pet medical records in your clinic?

☐ Paper-based records only
☐ Digital records (Excel, Word, etc.)
☐ Combination of paper and digital

2. How do you schedule and track appointments?

☐ Manual logbook

☐ Phone calls

☐ text messages

3. How often do missed appointments occur in your clinic?

☐ Rarely

☐ Sometimes

☐ Often

☐ Almost every day

4. What challenges do you face with your current operation?

☐ Misplaced or lost records

☐ Scheduling conflicts

☐ Lack of timely reminders for clients

☐ Difficulty managing multiple pets per client

5. do you communicate upcoming appointments or vaccination schedules to pet owners?

☐ Phone calls

☐ Text messages

☐ In-person reminders during visits

6. Do you currently use any digital tools for clinic operations?

☐ yes

☐ no

7. Which features would be most helpful in a digital system for your clinic?

☐ Online appointment scheduling

☐ Automated reminders for clients

☐ Inventory management

☐ Digital medical record access

8. Would you be open to integrating a web-based and mobile app into your workflow?

☐ Yes

☐ No

9. On average, how many minutes does the clinic spend per customer during appointments?

☐ 10–15 minutes

☐ 15–25 minutes

☐ 25–30 minutes
☐ More than 30 minutes

10. On average, how many customers does the clinic serve per day?
☐ 1-5 customer
☐ 5-10 customer
☐ 10 or more

SURVEY QUESTIONNAIRE FOR USER TESTING

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Please read the privacy notice above, then select the option(s) that best describe your experience or write your answer where indicated.

Scale
5 - **StronglyAgree**
4 - Agree
3 - Neutral
2 - Disagree
1 - Strongly Disagree

For Customers

#	Statement	1	2	3	4
1	**I was able to log in and access my account without issues.**				
2	**It was easy to schedule an appointment using the system.**				
3	**My pet's medical records were clear and easy to understand.**				
4	**The process of booking or rescheduling an appointment was simple.**				
5	**I received confirmation after submitting my appointment request.**				

6	**The system loaded pages quickly and responded efficiently.**					
7	**The layout and navigation were user-friendly.**					
8	**I encountered no errors or confusion while using the system.**					
9	**The system helps make Barks and Cuddles service faster and easier.**					
10	**Overall, I am satisfied with my experience using the Furever Care system.**					

For Admin

Your participation is voluntary. Responses will be used only for academic research and kept confidential. No personal identifiers will be disclosed. Data will be stored securely and deleted after the study. By answering, you consent to the collection and use of your responses under the Data Privacy Act of 2012.

Please read the privacy notice above, then select the option(s) that best describe your experience or write your answer where indicated.

#	Statement	1	2	3	4	5
1	The Furever Care system meets my clinic's operational needs.					
2	The system has significantly improved efficiency compared to manual processes.					
3	Scheduling and reminders are easy to manage.					
4	Inventory management through the					

	system is effective.					
5	The system has helped reduce missed appointments.					
6	The analytics are useful for monitoring clinic performance.					

7. Since implementing Furever Care, the number of new customers has increased.

_____

8. After using the system, we can entertain more customers daily compared to before.

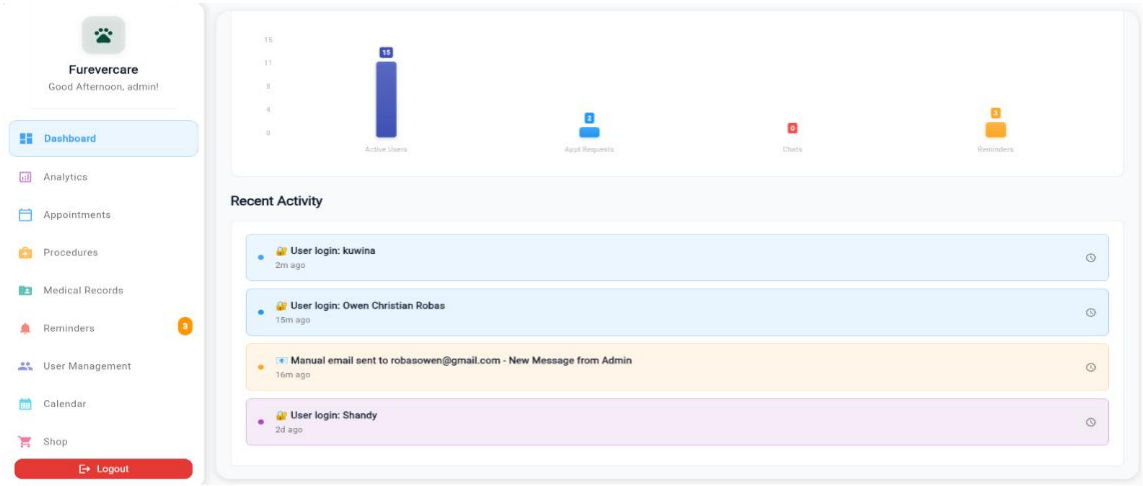
_____

9. How long does your appointment usually take to finish?

_____

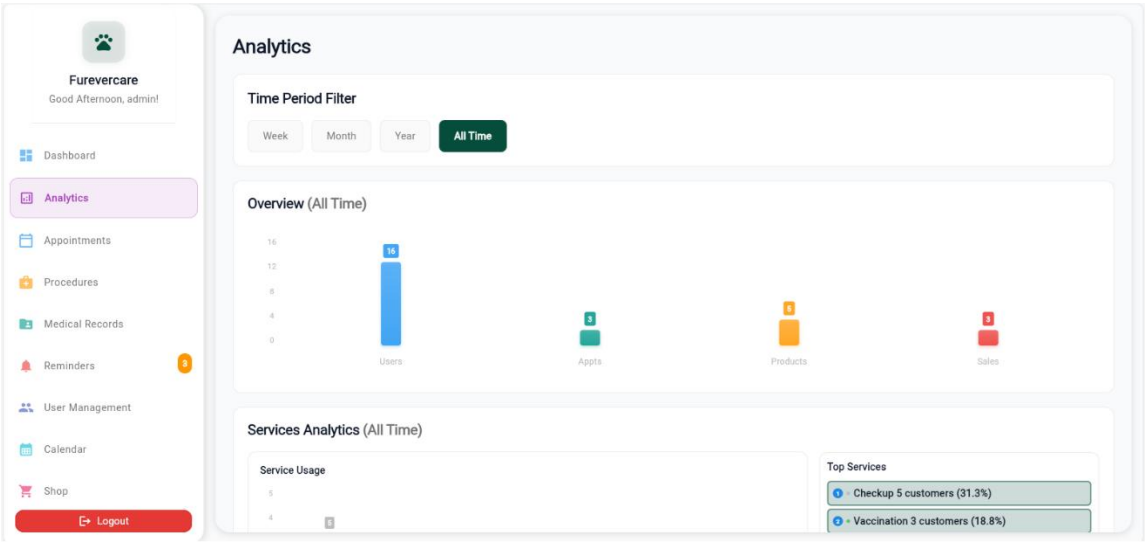
APPENDIX D. SAMPLE INPUT/OUTPUT/REPORT

Admin Web User Interface



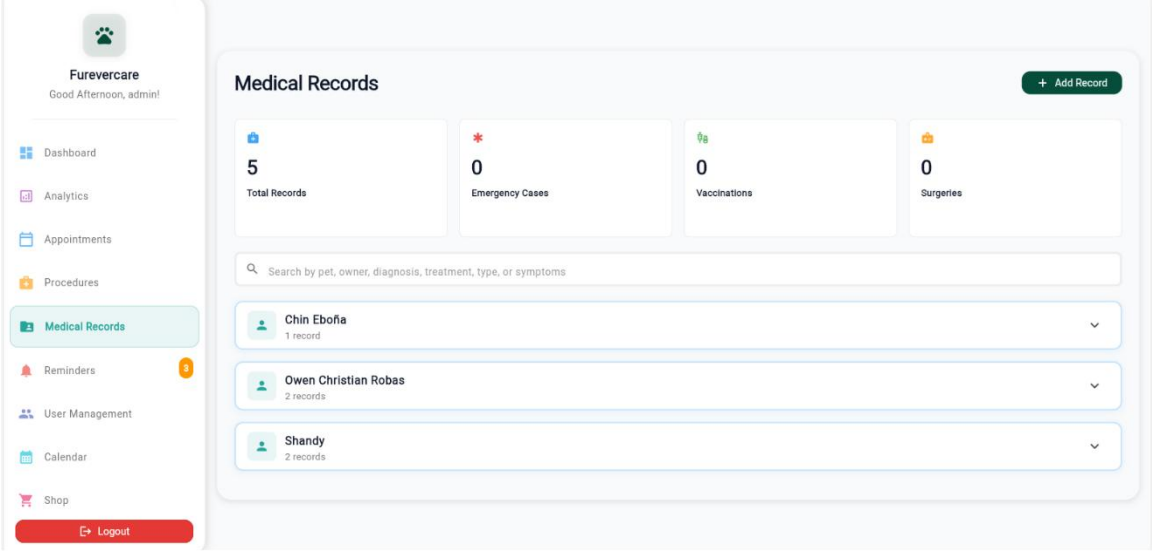
Dashboard

Provides real-time insights into clinic operations with visual charts tracking active users, appointment requests, reminders, and business metrics.



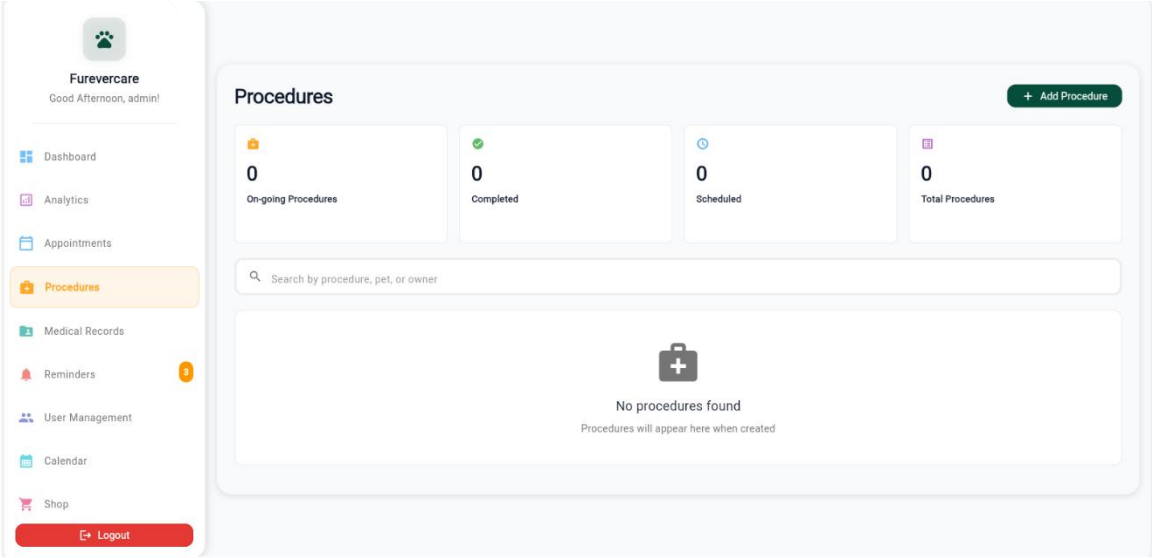
Analytics

The analytics module offers detailed breakdowns of service usage, revenue, and sales trends with customizable time period filters.



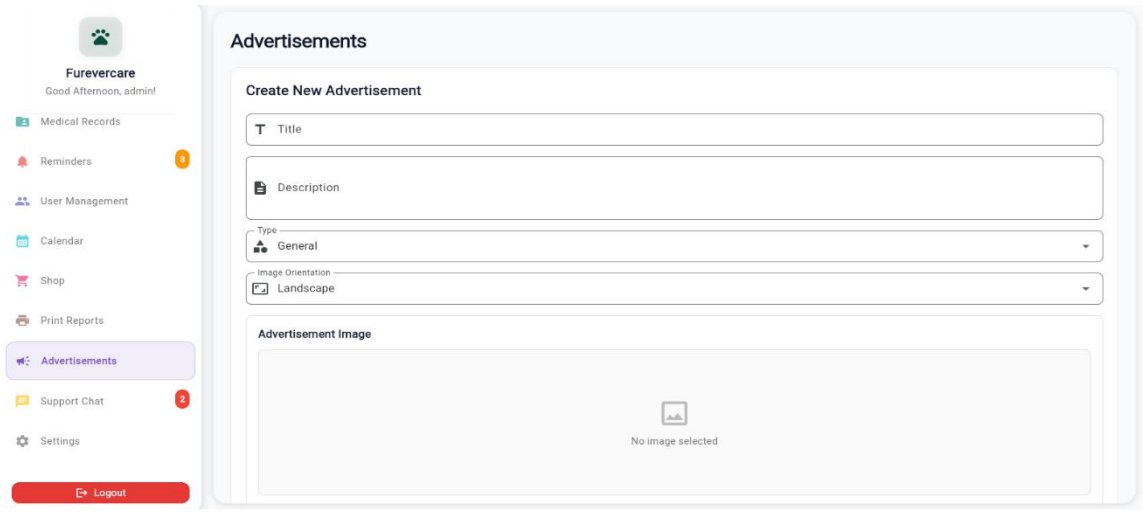
Medical Records

Maintains comprehensive health documentation for each pet, including diagnoses, treatments, severity levels, and visit dates.



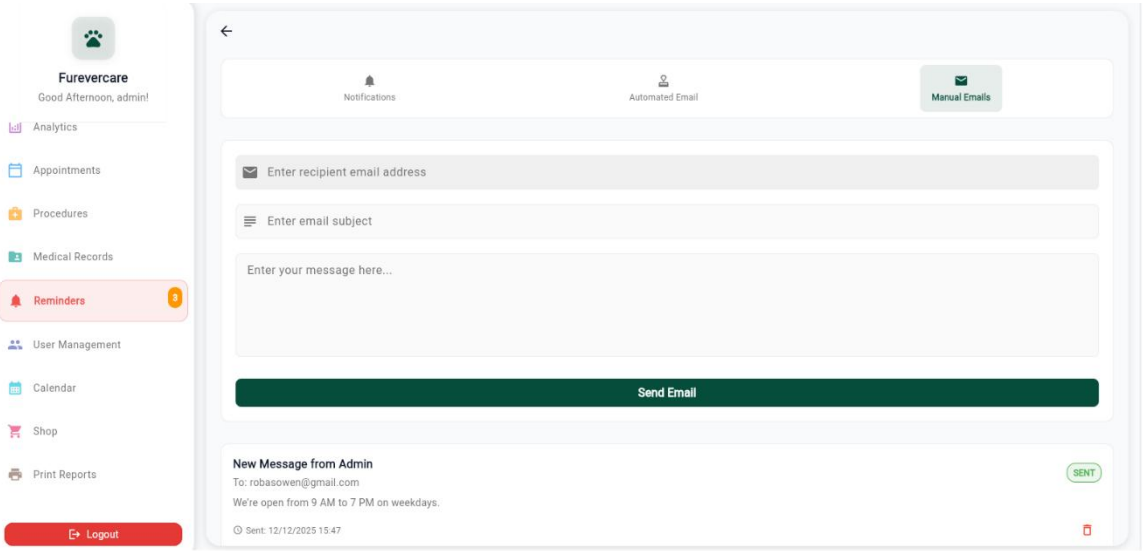
Procedures Tracking

Monitors ongoing and completed veterinary procedures, linking them to specific pets and owners with real-time status updates.



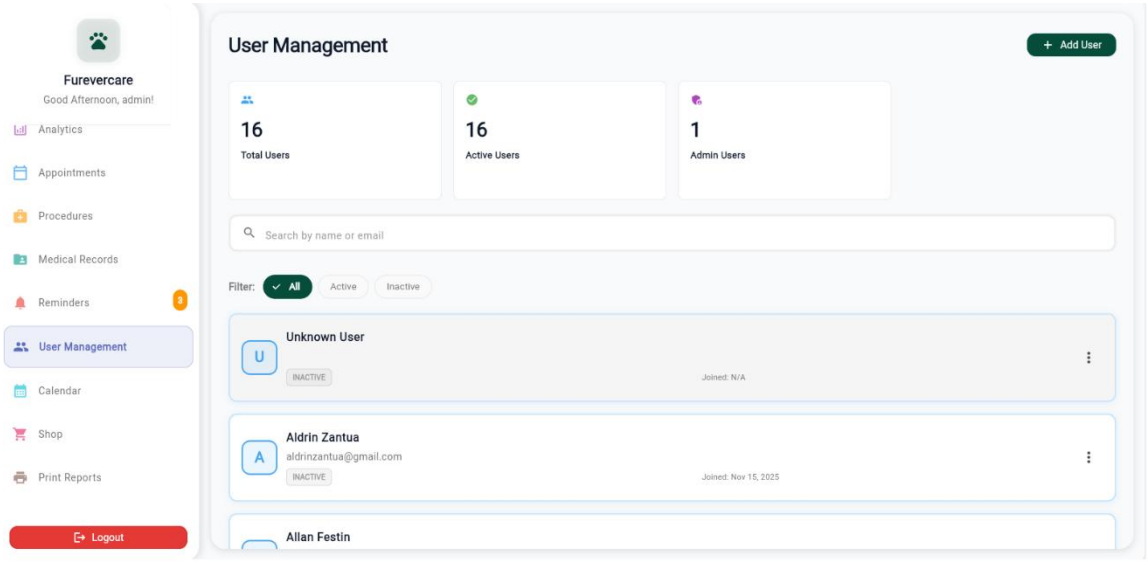
Advertisement Management

Marketing tool for promoting products and services with customizable ads, date ranges, and status controls (active/inactive).



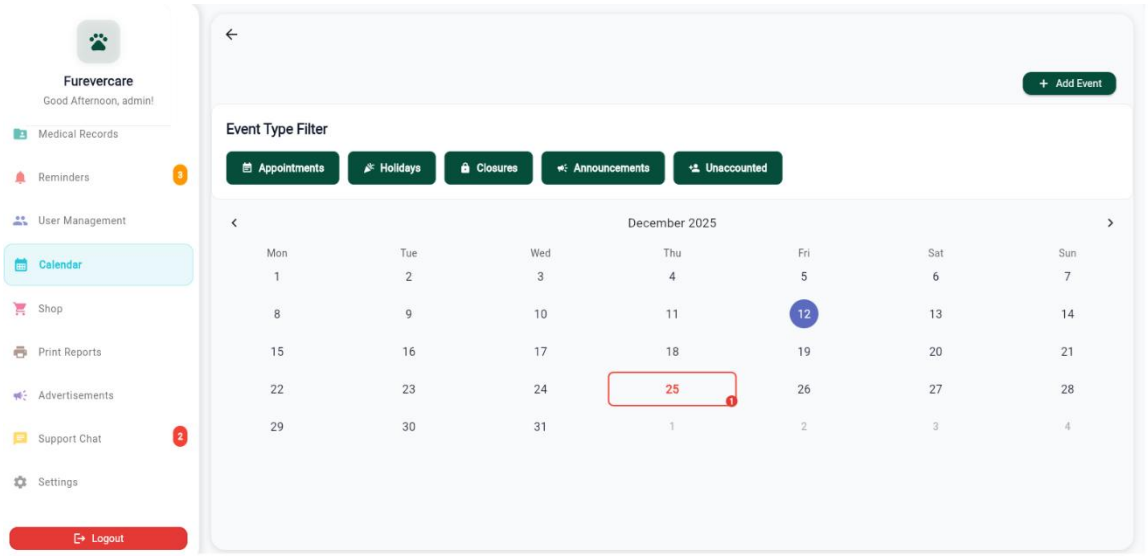
Notifications

Notifications/Auto-Approval/Manual Emails for managing communications. Shows appointment requests, holiday alerts, and low stock warnings.



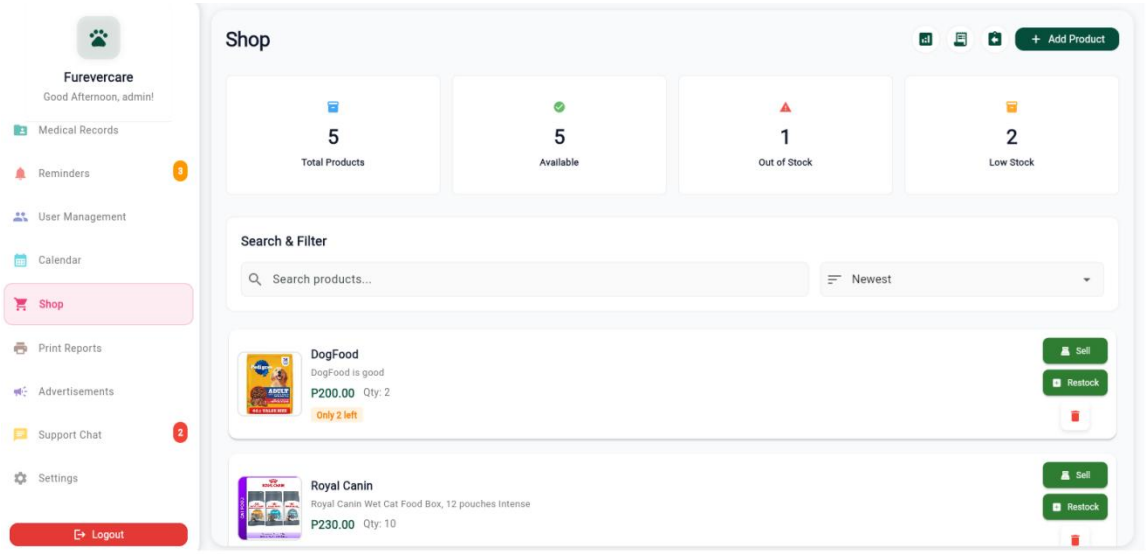
User Management chat

Administrative controls for managing clinic staff and user accounts with role-based access.



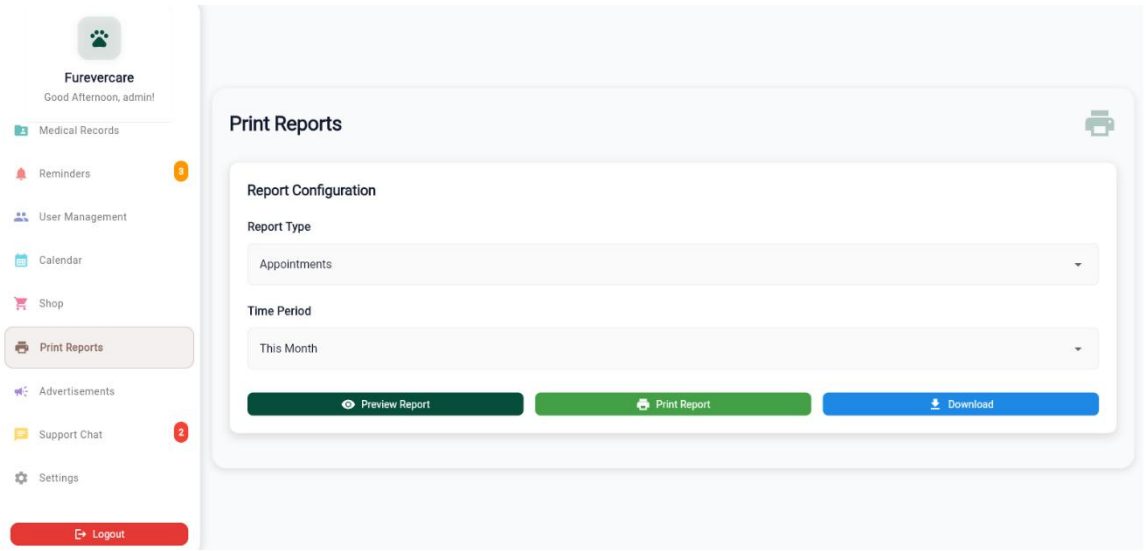
Calendar & Scheduling

Visual event management system for tracking appointments, holidays, clinic closures, and announcements with filtering options.



Shop & Inventory

E-commerce functionality for letting the users view pet products, including inventory management, low stock alerts, sales tracking, and revenue reporting. Supports transaction management with refund capabilities



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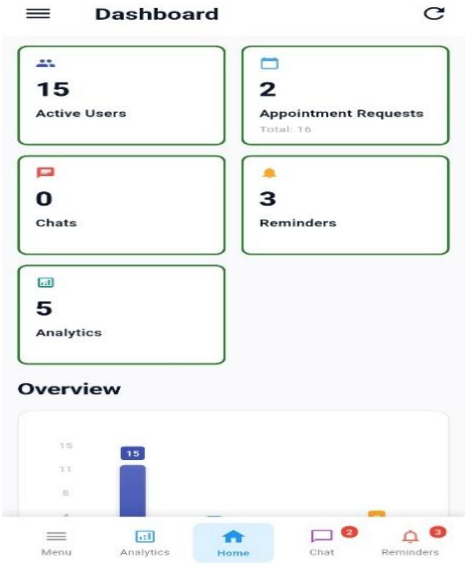
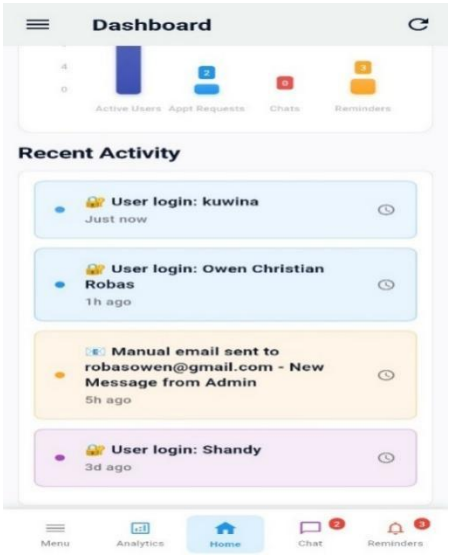
Admin Mobile User Interface





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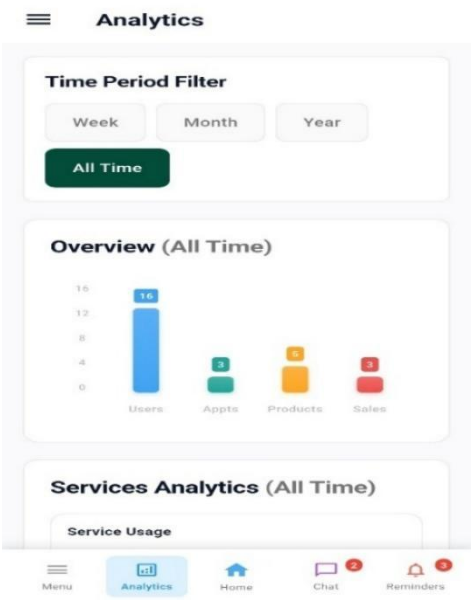

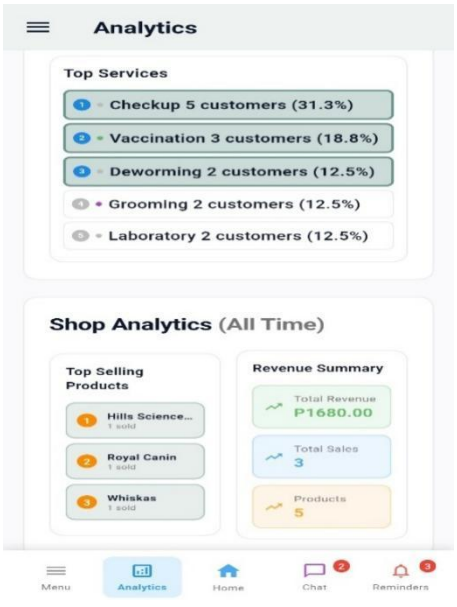

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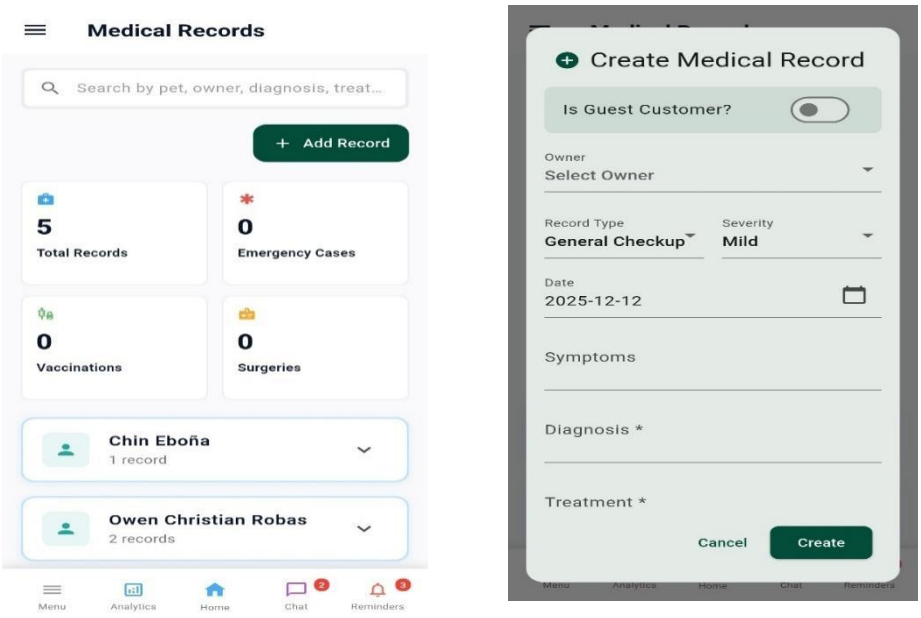

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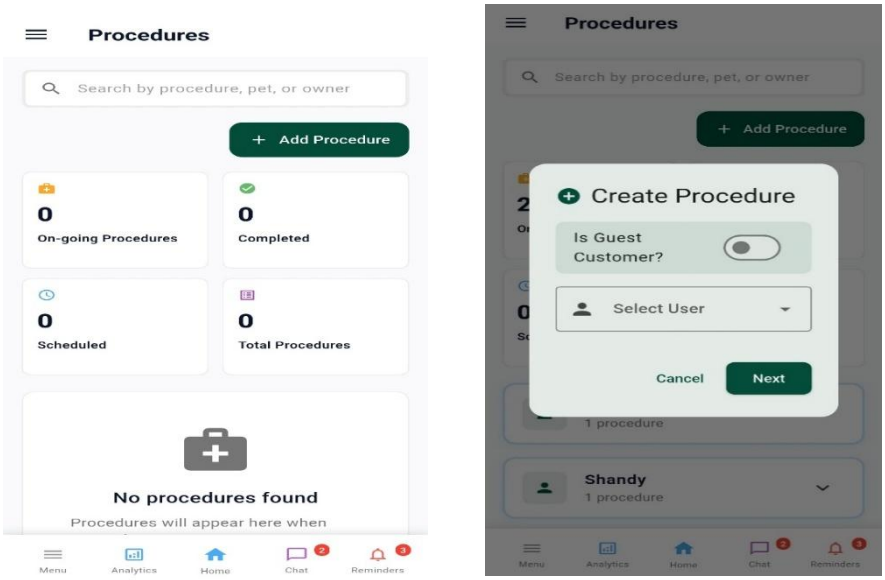

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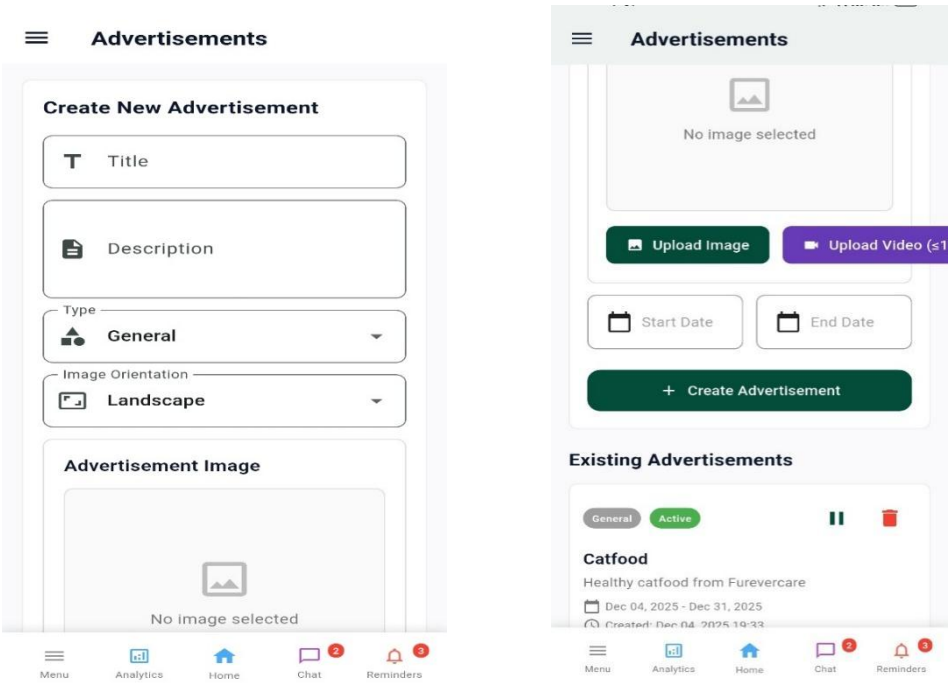

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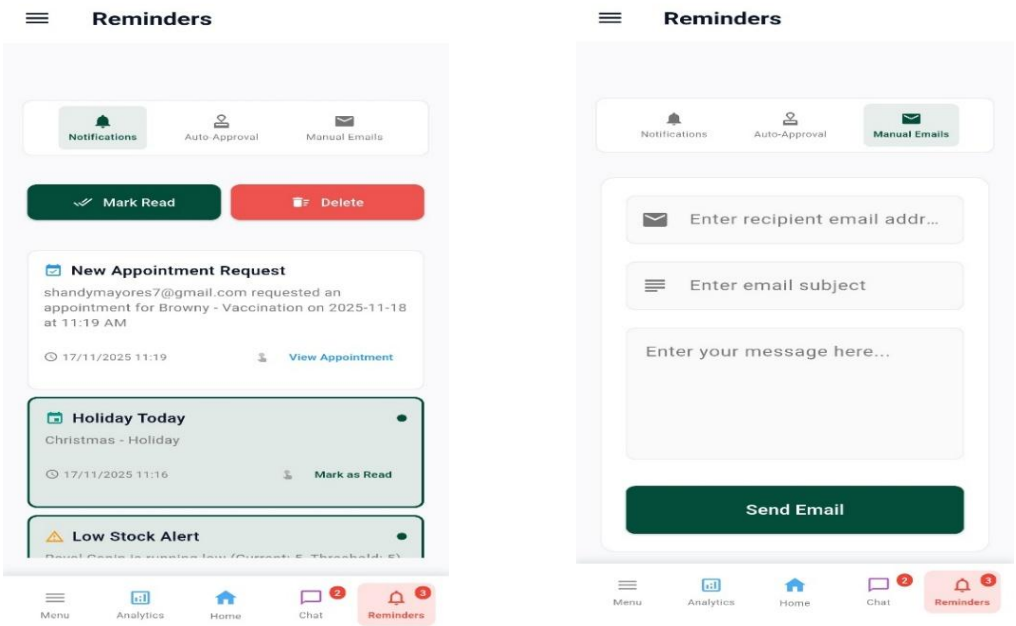

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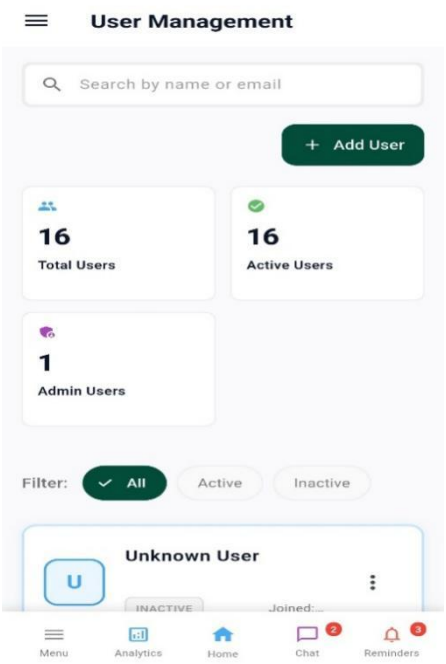

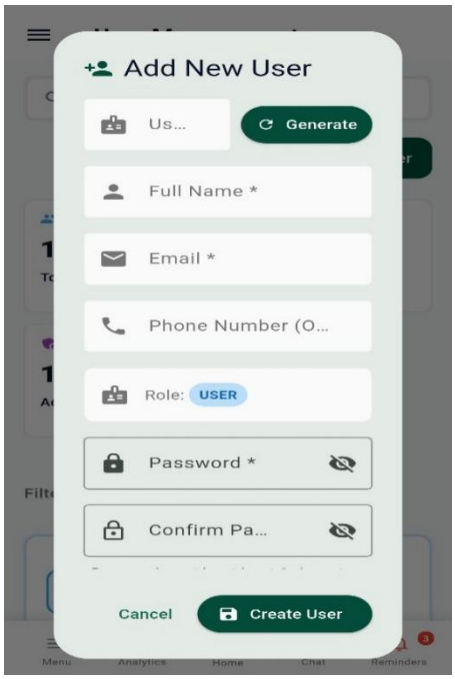

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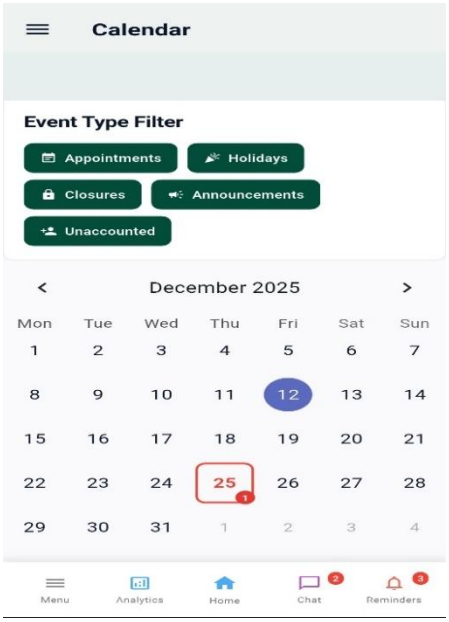

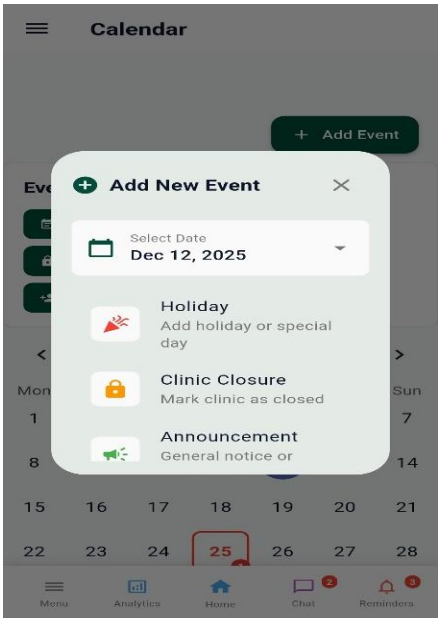

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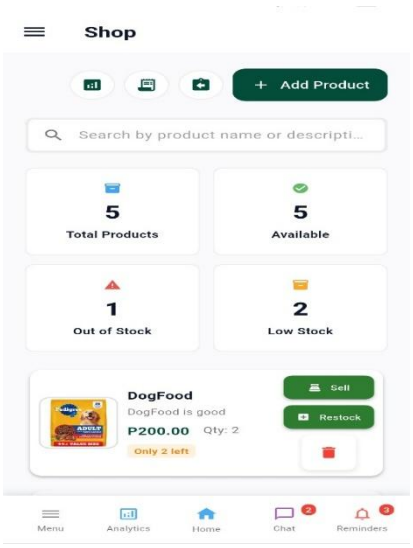

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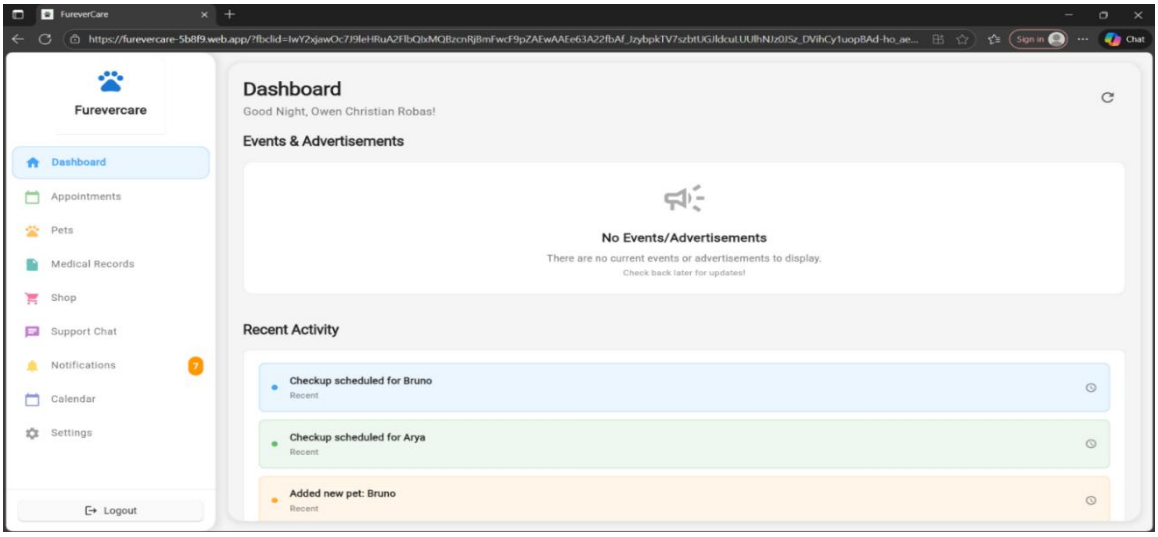
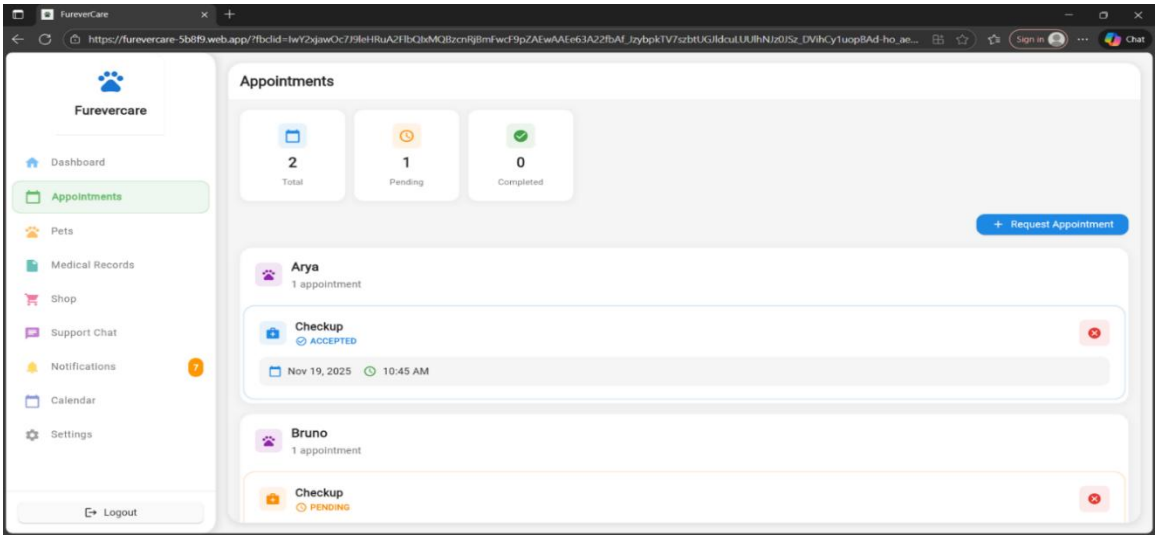


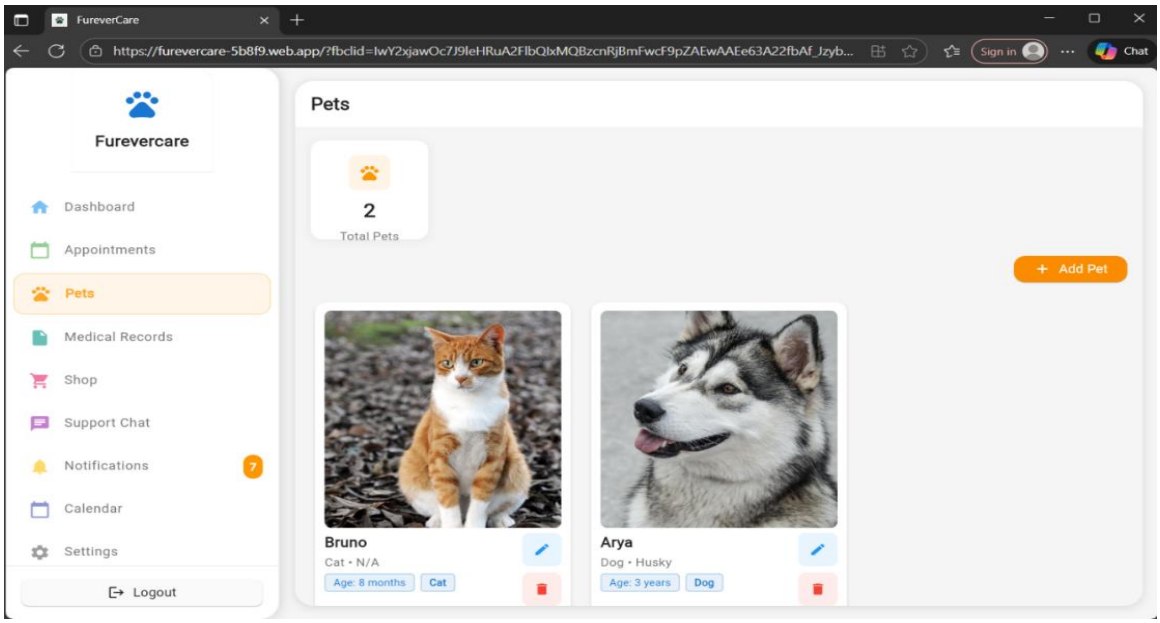
Personal Dashboard

Greets users with personalized welcome messages and displays a curated feed of recent activities, including scheduled checkups, newly added pets, and important updates.



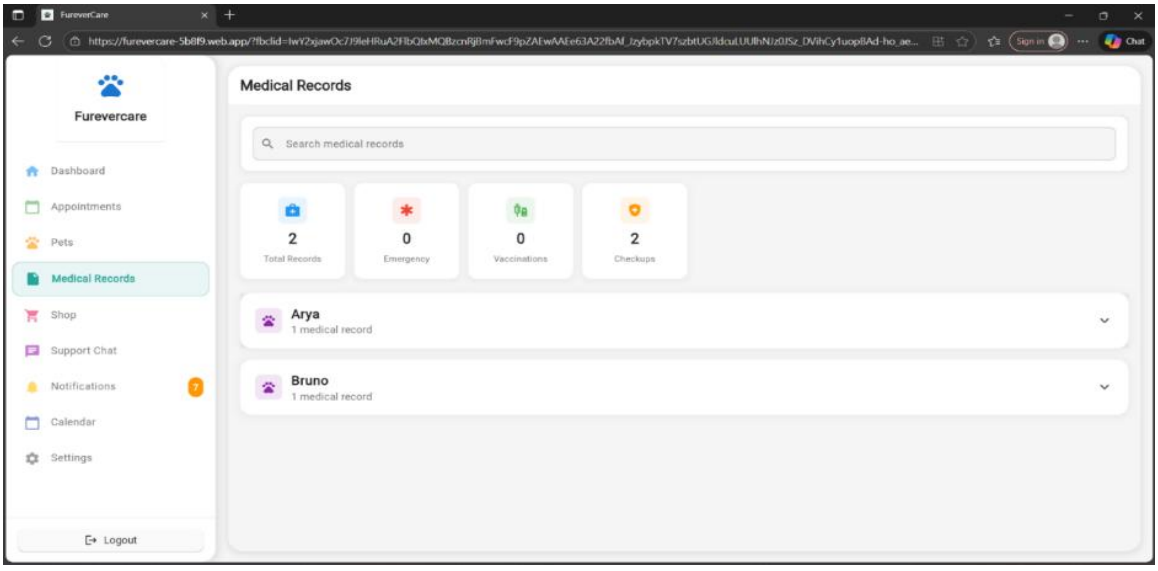
Appointment

Self-service appointment booking with real-time status tracking (pending, accepted, completed). Displays upcoming appointments organized by pet with date, time, and service type.



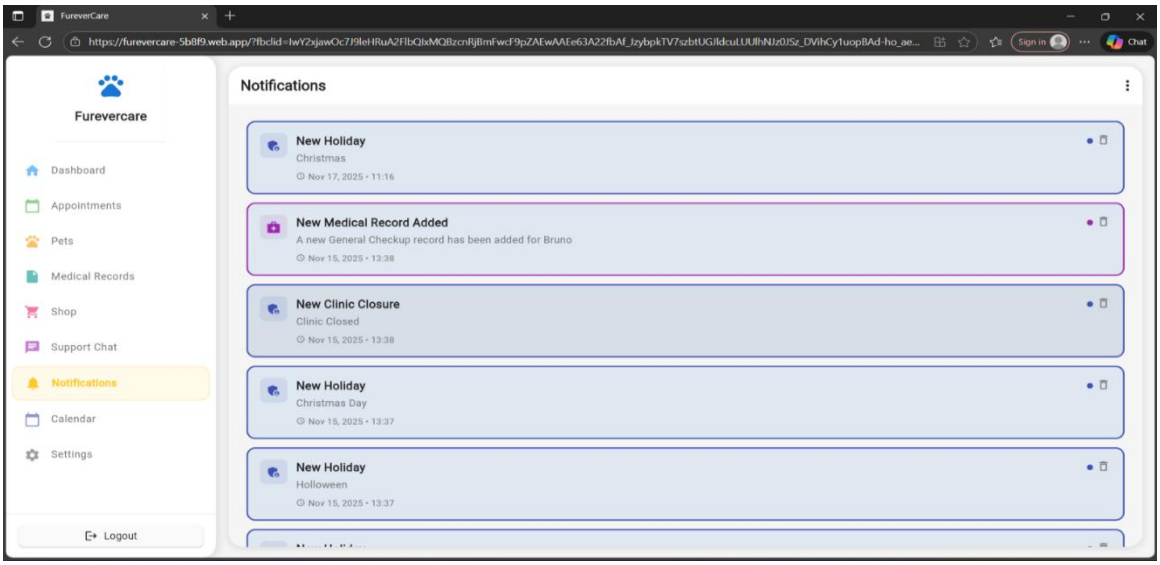
Pet Profile Management

Visual card-based interface for managing multiple pets with photos, species, breed, and age information.



Medical Records Access

Complete transparency into each pet's medical history with searchable records categorized by type (checkups, emergencies, vaccinations).



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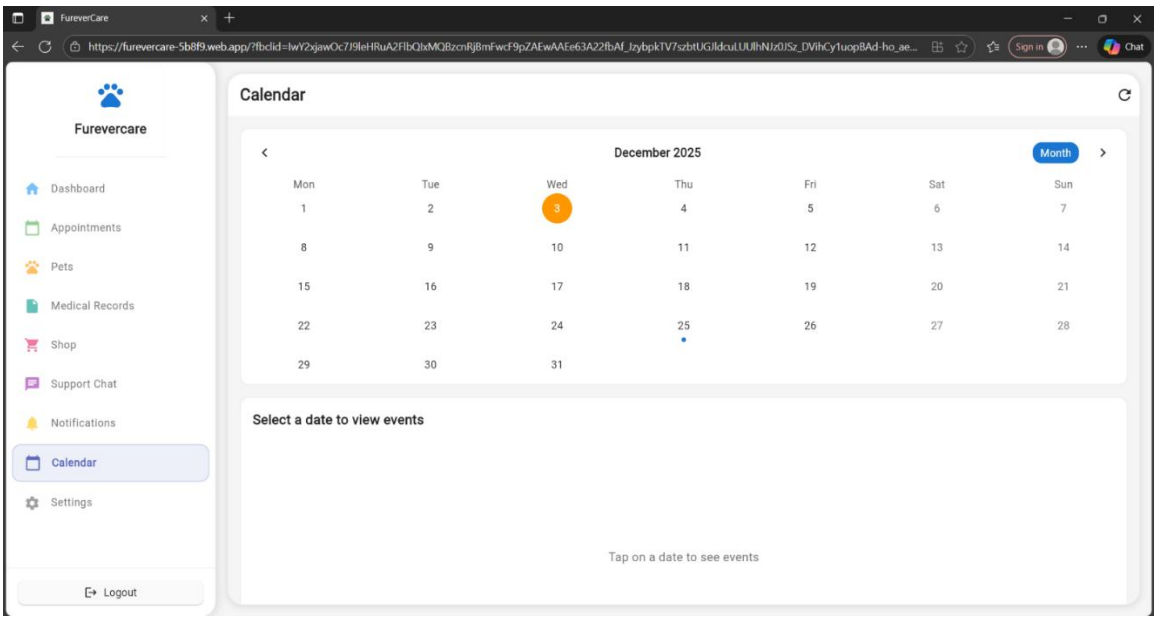
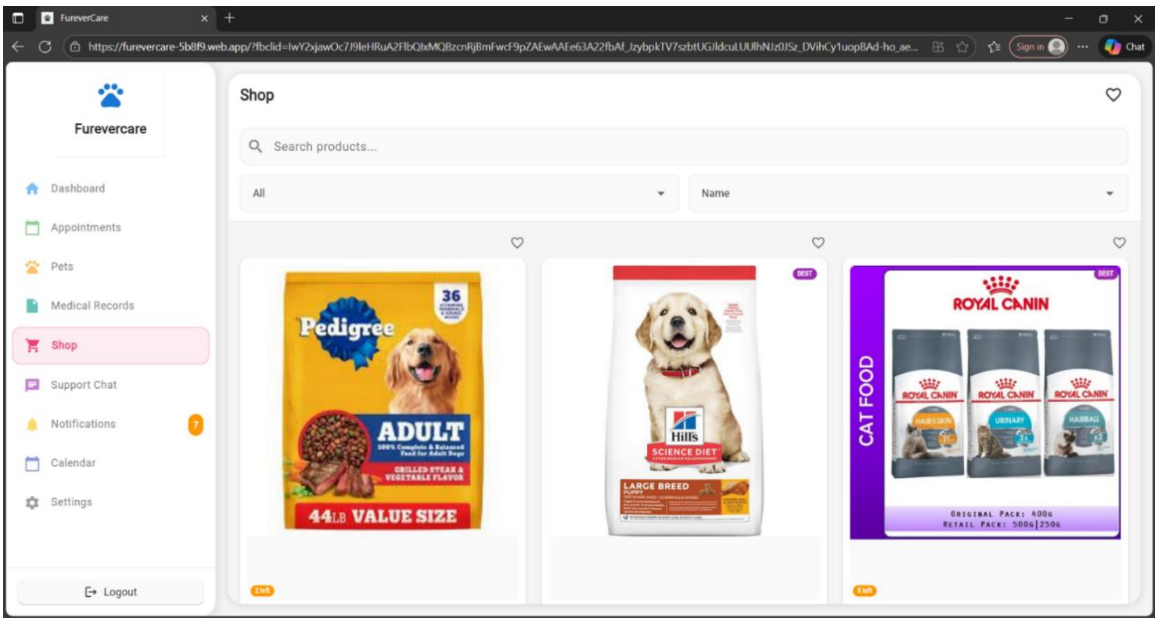


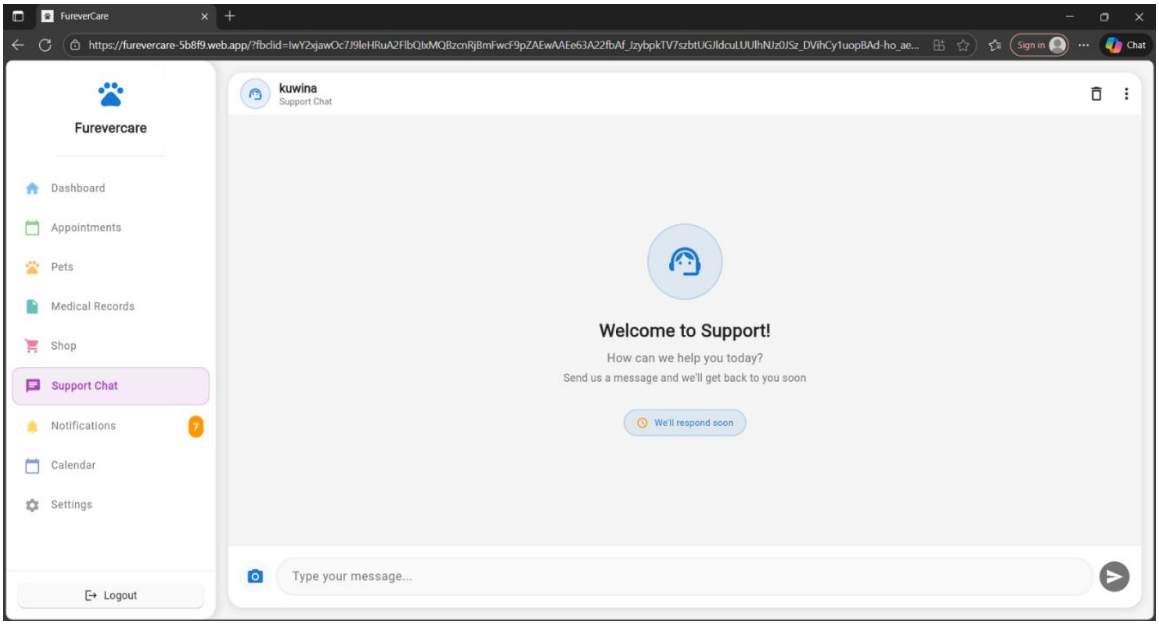
Calendar & Events

Visual calendar showing clinic holidays, closures, and special events.



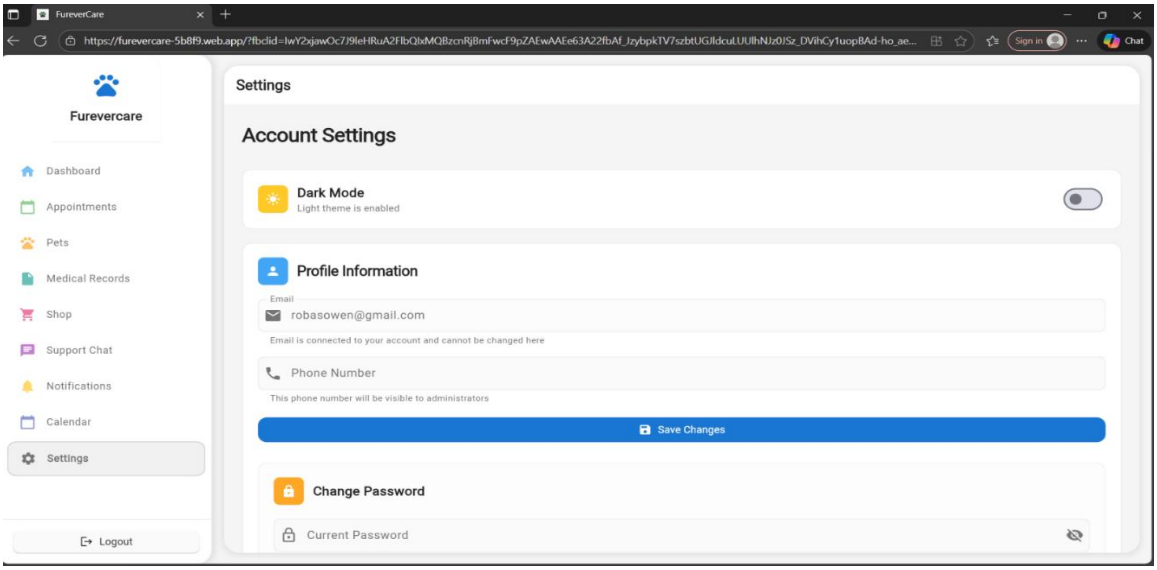
Integrated Shop

Browse Veterinary approved products directly through the app with product images, descriptions, and pricing.



Live Chat Support

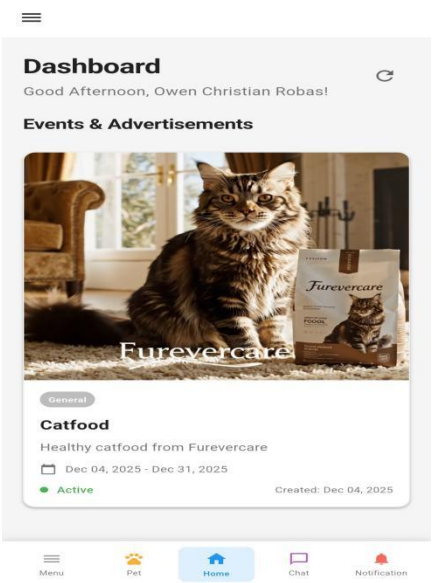
Real-time messaging interface connecting owners directly with clinic staff.

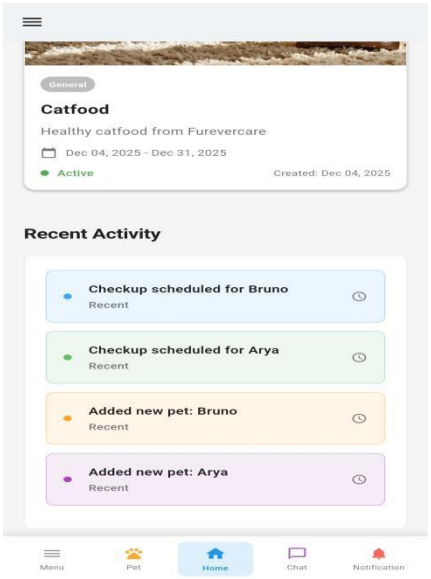


Account Settings

Profile customization with dark mode toggle, email and phone number management, and secure password changes.

User Mobile User Interface





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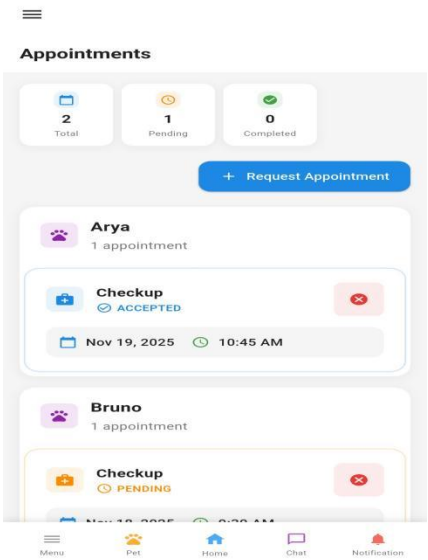

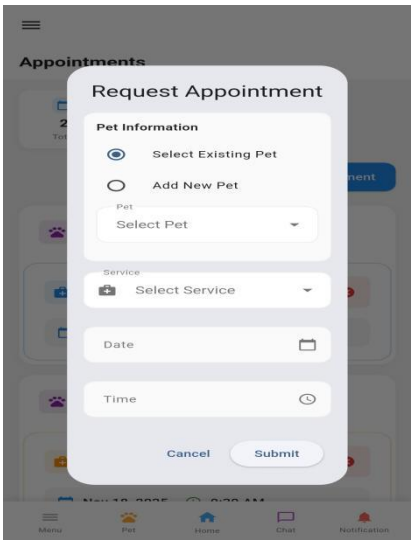

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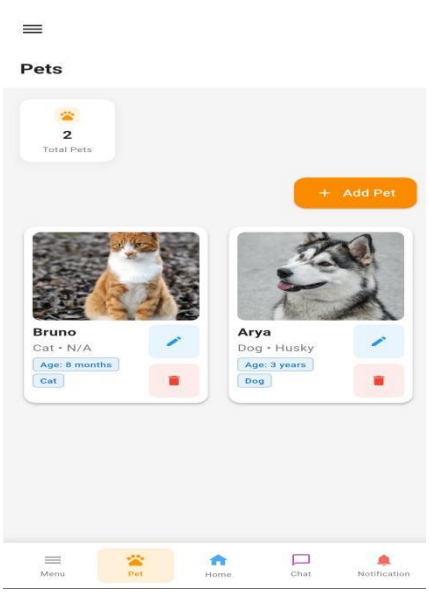

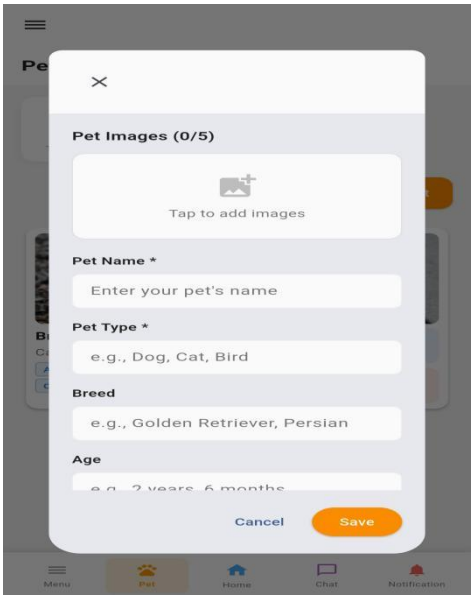

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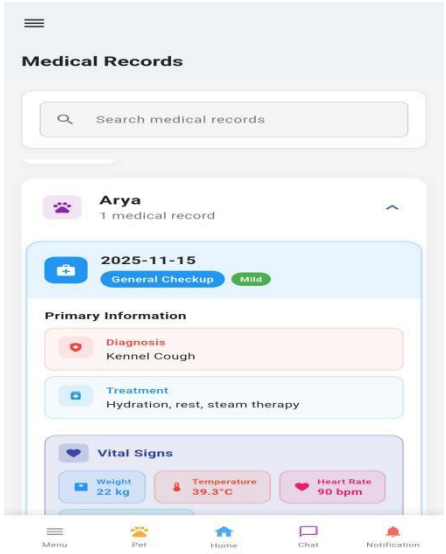

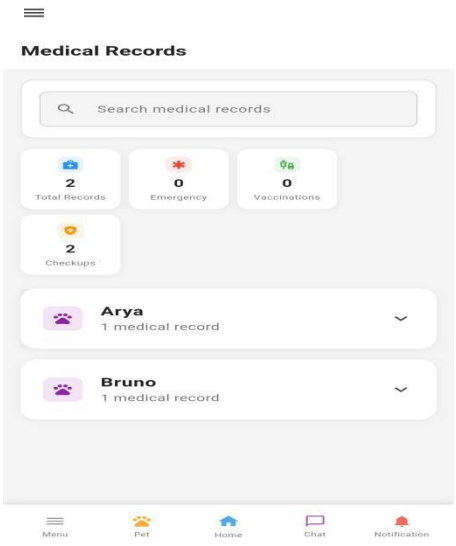

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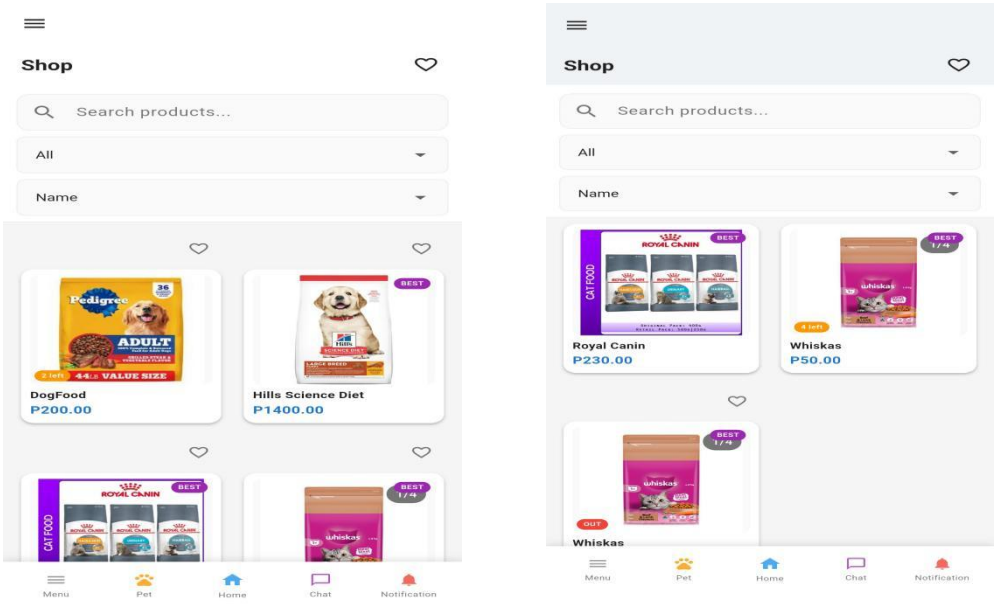

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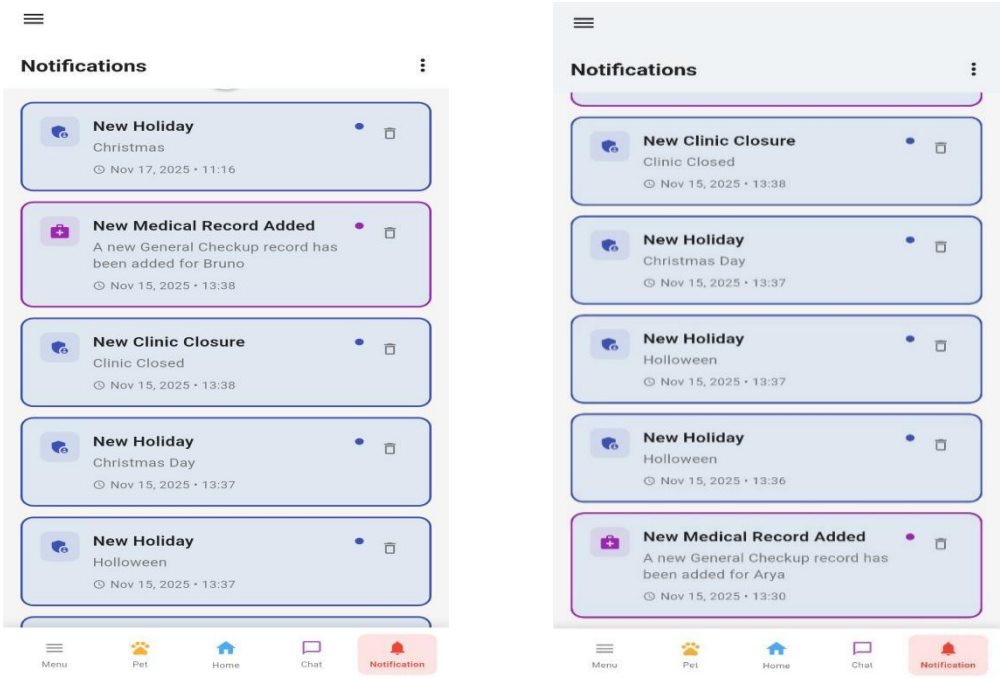

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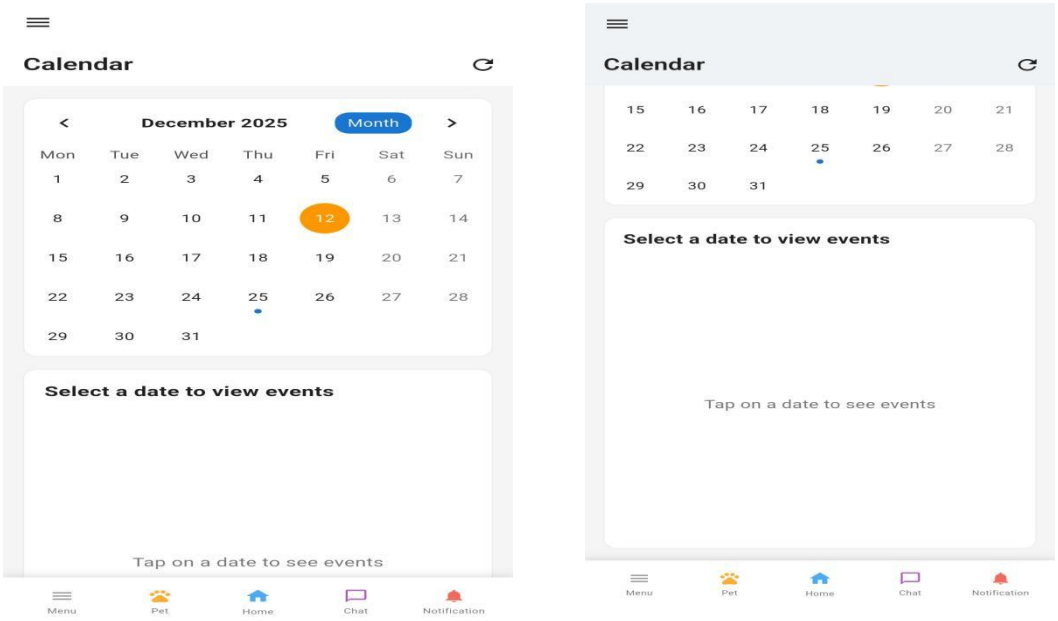

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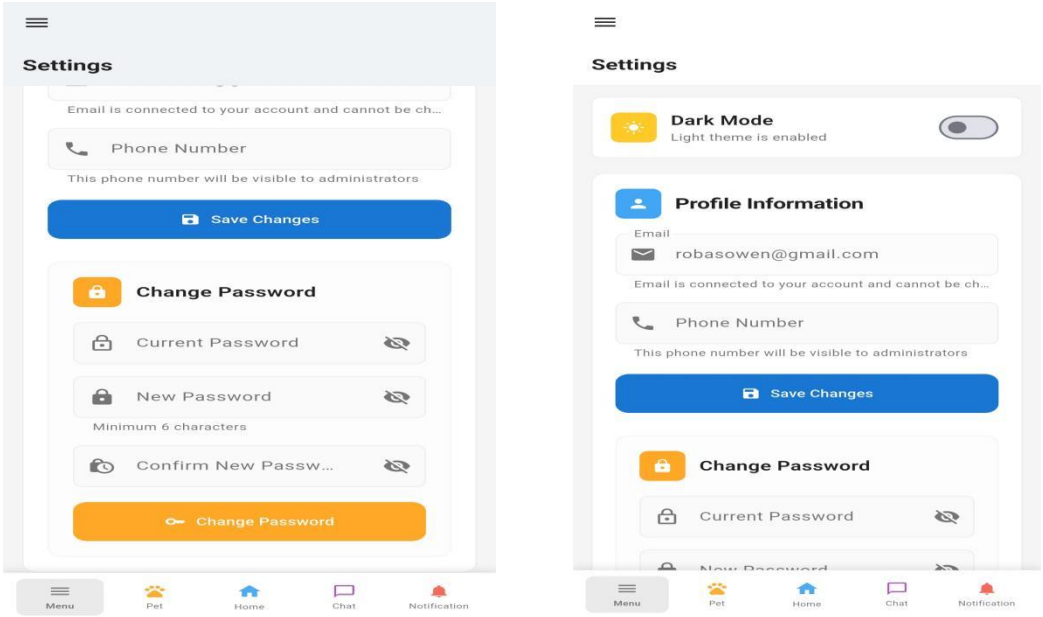

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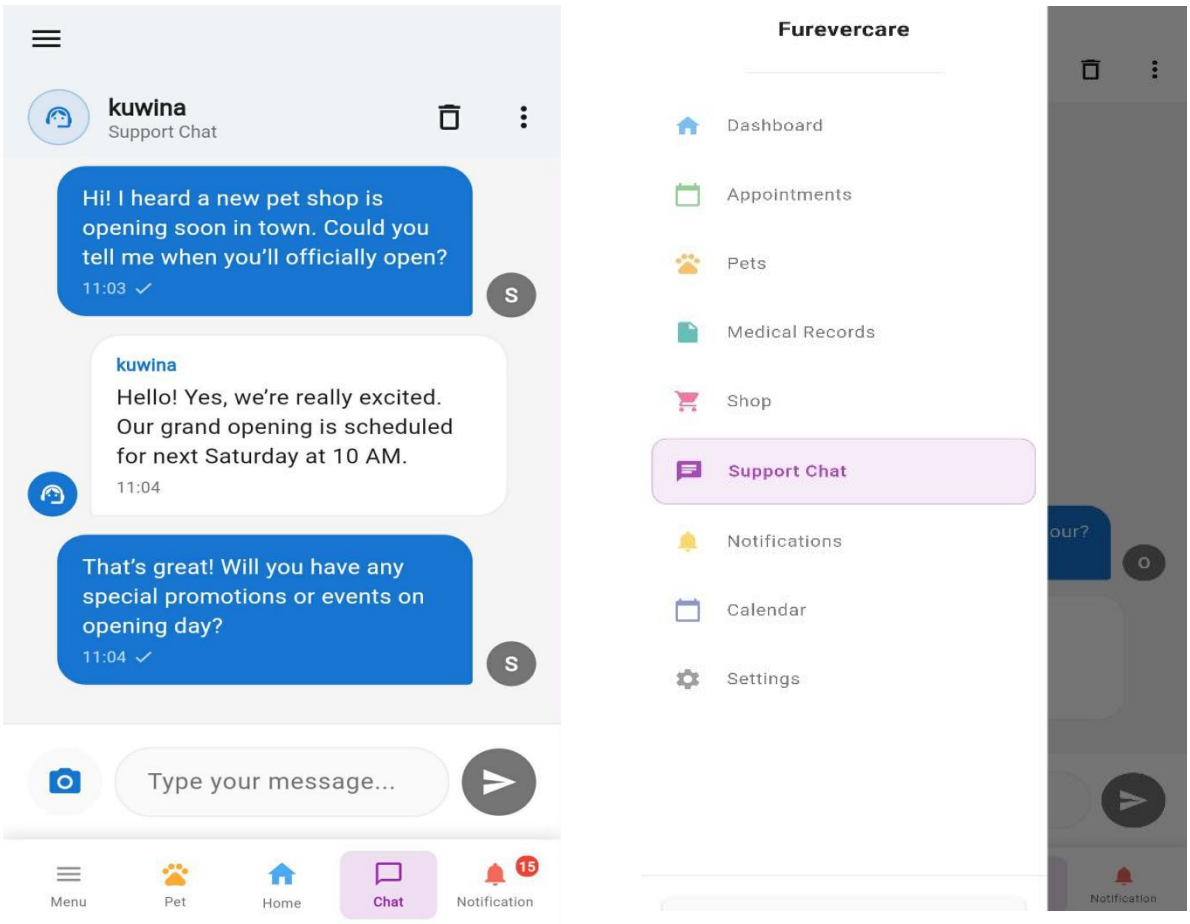

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User Guide for Furever Care System

System Overview

Furever Care is a user-friendly web and mobile system created for Barks and Cuddles Pet Clinic. It allows pet owners to easily manage their pets' health information, appointments, and records through a digital platform.

Main Features for Pet Owners

- Pet Profile Management – Save and view your pet's information such as breed, age, vaccinations, and medical history.
- Online Appointment Scheduling – Request appointments and receive updates when approved, rescheduled, or denied.
- Email Reminders – Automatic reminders for appointments and vaccination due dates.
- Digital Medical Records – View diagnosis, vitals, treatment notes, prescriptions, and past procedures.
- Shop Viewing – Browse clinic products such as medicines and pet supplies.
- Support Chat – Send inquiries to the clinic through real-time messaging.
- Calendar & Notifications – View upcoming schedules and receive alerts.

Step 1: Creating an Account (Mobile/Web)

1. Open the Furever Care mobile app or website.
2. Tap Register user account.
3. Enter the following information:

- Full Name

- Email Address
- Password

4. Tap Create Account.
5. Check your email for a verification link and confirm your account.

Step 2: Logging In

1. Open the app or website.
2. Enter your email and password.
3. Tap Login to access your dashboard.

Step 3: Adding a Pet

1.Go to the Pets section on the dashboard.

2.Tap Add Pet.

3.Fill in your pet's details:

- Name
- Pet Type
- Species (Dog/Cat)
- Breed
- Age
- Medical Notes (optional)
- Upload a Photo

4. Tap Save.

Your pet will now appear in your registered pet list.

Step 4: Viewing Pet Information

1. Open the Pets tab.
2. Select your pet from the list.
3. You will be able to view:

- Pet profile
- Medical records
- Vaccination history
- Procedures history
- Past appointments

Step 5: Requesting an Appointment

1. Go to the Appointments section.
2. Tap Request Appointment.
3. Select the following:

- Pet
- Service type (Check-up, Vaccination, Grooming, etc.)
- Preferred date and time

4. Tap Submit.

You will receive updates through:

- Email notifications
- In-app notifications

Once the clinic approves, reschedules, or denies your request.

Step 6: Calendar and Notifications

1. Open the Calendar module to view upcoming appointments.
2. All scheduled appointments will automatically appear in the calendar.
3. You will receive:

- Email reminders
- In-app alerts
- Notifications for vaccination due dates or follow-ups

Step 7: Viewing Medical Records

1. Go to the Medical Records section.
2. Select your pet.
3. You can view:

- Basic Information
- Diagnosis
- Vitals (Temperature, Weight, Heart Rate, etc.)
- Treatment notes
- Completed procedures
- Prescriptions

4. You may download or print records as a PDF, depending on system availability.

Step 8: Using Support Chat

1. Tap Support Chat in the menu.
2. Type your message or inquiry.

3. Wait for the clinic staff to respond.

Support chat allows fast and direct communication for concerns or questions.

Step 9: Shop (Viewing Clinic Products)

1.Go to the Shop module.

2.Browse products such as medicines, vitamins, and pet supplies.

3.Tap a product to view:

- Price
- Description
- Stock availability

Note: Purchases are completed in the clinic, not in the app.

Troubleshooting Guide (For Users)

1. Cannot Log In

- Ensure your internet is connected.
- Double-check your email and password.
- Use the Forgot Password option if needed.

2. Appointments Not Updating

- Refresh the page.
- Check your internet connection.
- Wait a few seconds for syncing.

3. Missing Notifications

- Check your Spam/Junk email folder.
- Make sure notifications are enabled on your device/browser.
- Ensure your registered email is active.

4. Slow App or Website

- Clear your browser/app cache.
- Restart the app or browser.
- Use a stable Wi-Fi connection.

5. Medical Records Not Showing

- Refresh the Medical Records page.
- Make sure the chosen pet has existing records.
- Contact support via chat if the issue continues.

6. App Crashes (Mobile)

- Update the app to the latest version.
- Restart your device.

APPENDIX F. CERTIFICATE OF PROOFREADING

C E R T I F I C A T I O N

This is to certify that the capstone project entitled **"FureverCare: A Web-Based and Mobile Application Pet Health Management and Veterinary Clinic Operations for Barks and Cuddles Pet Clinic"** submitted by **SHANDY C. MAYORES, OWEN CHRISTIAN T. ROBAS, BEN ALFRED L. VERGARA, & ALDRIN P. ZANTUA** has been reviewed and proofread by the undersigned. The document has been thoroughly checked for content clarity, grammatical accuracy, and adherence to the required formatting standards.

MARY CLAIRE A. REONDANGA, LPT
Administrative Officer II – Sagñay District
Department of Education - Camarines Sur

APPENDIX F. PERSONAL TECHNICAL VITAE

Curriculum Vitae of

OWEN CHRISTIAN T. ROBAS

Zone 5, Bagumbayan Sur,
Naga City, Camarines Sur
robasowen@gmail.com
09102972392

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	June 2022-2026	STI College Naga
Senior High School	July 2018-2020	Mariners Polytechnic Colleges Foundation
High School	April 2014-2018	Ateneo de Naga University
Elementary	2007-2014	Naga Parochial School

SKILLS

SKILLS	Level of Competency	Date Acquired

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
October 2024	Advancing Open Ran in ASIA – Artificial Intelligence/MachineLearning
October 2024	Advancing Open Ran in ASIA – AI Ethics and Governance
June 2024	SAP University Alliances- Introduction to S/4HANA using Global Bikes
February 2024	VibeShift: Find Your Meaning
June 2023	Oracle Academy - Java Fundamentals

Curriculum Vitae of

ALDRIN P. ZANTUA

Zone 6, Carolina, Naga City,
Camarines Sur
aldrinzantua@gmail.com
09514292846

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	June 2022-2026	STI College Naga
Senior High School	July 2018-2020	Carolina National High School
High School	April 2014-2018	Carolina National High Schol
Elementary	2007-2014	Carolina Elementary School

SKILLS

SKILLS	Level of Competency	Date Acquired

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
October 2024	Advancing Open Ran in ASIA – Artificial Intelligence/MachineLearning
October 2024	Advancing Open Ran in ASIA – AI Ethics and Governance
June 2024	SAP University Alliances- Introduction to S/4HANA using Global Bikes
February 2024	Vibe Shift: Find Your Meaning
June 2023	Oracle Academy - Java Fundamentals

Curriculum Vitae of

SHANDY C. MAYORES

Zone 6, Cararayan,Naga
Camarines Sur
Shandymayores21@gmail.com
09556343326

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	June 2022-2026	STI College Naga
Senior High School	July 2018-2020	Naga City School of Arts and Trades
High School	April 2014-2018	Naga City School of Arts and Trades
Elementary	2007-2014	Sabang Elementary school

SKILLS

SKILLS	Level of Competency	Date Acquired

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
October 2024	Advancing Open Ran in ASIA – Artificial Intelligence/MachineLearning
October 2024	Advancing Open Ran in ASIA – AI Ethics and Governance
June 2024	SAP University Alliances- Introduction to S/4HANA using Global Bikes
February 2024	VibeShift: Find Your Meaning
June 2023	Oracle Academy - Java Fundamentals

Curriculum Vitae of

BEN ALFRED L. VERGARA

Zone 6, Caroyroyan, Pili
Camarines Sur
balfredvergara@gmail.com
095142978646

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	June 2022-2026	STI College Naga
Senior High School	July 2018-2020	Rodriguez National High School
High School	April 2014-2018	Rodriguez National High Schol
Elementary	2007-2014	Mama Mary Learning Center Inc.

SKILLS

SKILLS	Level of Competency	Date Acquired

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
October 2024	Advancing Open Ran in ASIA – Artificial Intelligence/Machine Learning
October 2024	Advancing Open Ran in ASIA – AI Ethics and Governance
June 2024	SAP University Alliances- Introduction to S/4HANA using Global Bikes
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