

Pet Care Management System

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Abstract: The web-based Pet Care Management System is developed for Pet's Village, which currently uses a manual system to handle all customer reservations. The manual system results in wasting time and energy, data loss, and the possibility of an error occurring. Hence, the system aims to systematically process reservations and use the database for data storage. The prototype model is used in the development of the system. Besides that, the main language used in the developing process is HTML, CSS, and PHP. The system is used to automate the current reservation management process in Pet's Village by computerizing the manual system. Also, it should be able to implement a paperless environment concept in the filing system. Based on the testing result, all the module is passed from the test plan list, and this system is accepted by the user based on the user acceptance testing.

Keywords: Pet Care Management System, Web-based, Reservation, Pet's Village

1. Introduction

Pet's Village is a pet store that has been established since 2017. Pet's Village is a pet shop that provides non-medical services, including bathing, grooming, and boarding. This pet store accepts reservations from phone calls or customers' in-store inquiries. The company currently uses a manual system where staff must answer phone calls or check WhatsApp messages to accept customer bookings. Then, the staff needs to record the reservation in the book according to the service classification. It is undeniable that a manual management system will lead to numerous problems, such as data loss and even time waste. Besides that, there are often missed reservation messages or calls from the customer during the busy period, and in the long run, it may affect customers' impression of Pet's Village.

In order to address the issues stated above, the Pet Care Management System has been designed and developed. Several objectives are outlined to achieve the aim:

1. To design a pet care management system for Pet's Village using a structural-oriented approach
2. To develop the designed pet care management system for Pet's Village using a web-based approach
3. To test the developed Pet's Village pet care management system functionality and usability

Two users are involved in the system, including the administrator and the customer. This system includes several functional modules such as a login/logout module, register module, staff management module, user profile management module, services management module, system management module, service reservation module, and gallery management module.

This paper is organized as follows: Section 2 focuses on a literature review of the related works and existing applications related to the topic. Next, Section 3 describes the methodology used to develop the system. Lastly, the final section summarizes the current work and discusses future work.

2. Related Works

2.1 Current System for Pet's Village

In this project, Pet's Village is chosen as the real case study. Currently, Pet's Village staff must check WhatsApp messages and answer phone calls to accept customer reservations or appointments. The staff must then register the reservation by service category. Different services need different records. The boarding service must maintain track of the pet's check-in, check-out dates, and name to make finding its information easier. While for grooming service, the staff must note the type of service, such as full or basic grooming, booking time, and pet's name to estimate grooming time. During busy periods, consumers' calls or WhatsApp booking information are missed, leading them to give up. Some customers bring their pets to the door to enquire but return because the reservation is full.

2.2 Study of Existing Related Systems

Three existing systems' features are investigated; Talisay Pet Care Center System [1], Lovely Cuts Pet Grooming System Web-Based System [2], and Boo Pet Groomers System [3]. The differences between existing and developed systems are divided into several features and aspects. The feature comparison is tabulated in Table 1.

Table 1: Comparison between Existing Systems and the Developed System

Feature/System	Talisay Pet Care Center System [1]	Lovely Cuts Pet Grooming System Web-Based System [2]	Boo Pet Groomers System [3]	Proposed system
Easy to use	√	√	√	√
Easy to access	√	√	√	√
Provide booking history	√	X	X	√
Provide available time slots.	√	X	X	√
Provide available dates in the calendar.	√	X	X	√
An account is needed for booking.	√	X	X	√
Responsive design	X	√	X	√
Pet owner and pet's details saved in the system	√	X	X	√
Provide profile update function.	√	X	X	√
Provide a fast and simple booking process.	√	√	√	√

Compared to the three existing systems, all characteristics can be found in the developed system. The developed system has similar characteristics to Talisay Pet Care Center System, except there is an additional feature in the developed system which is responsive design.

3. Methodology/Framework

3.1 Prototyping Model

The methodology is a collection of concepts, tools, and procedures used for project planning, execution, and management [4]. In this project, the chosen methodology is the Prototyping model. A prototype is constructed, tested, and revised until it is deemed acceptable [5]. It also creates the foundation for the final system. In this methodology, a prototype is built and sent to the customer for evaluation. The evaluation feedback and suggestions are then used to modify the prototype until the user is satisfied. The final system is then constructed based on the customer-approved final prototype. Besides that, there are four main phases in this model which are the planning, analysis, design, and implementation phase. The system is initially planned by gathering information, conducting analysis and design, and constructing a system prototype. Once the prototype is complete and ready, the user will evaluate it and provide comments and feedback. The process will continue and repeat until the user is satisfied and the system is accepted.

In the planning phase, project development has started. A proposal is prepared, and a Gantt Chart is created with a list of activities in each phase with time duration to ensure the project can be done on time. The problem statements, objectives, and project scope are determined for developing the reservation management system. Besides that, the specific details related to the project title are collected via journal articles.

In the analysis phase, three similar existing systems were studied. Then, the comparison of the characteristic between the existing system and the management system was conducted to analyse the characteristic of a similar system. A face-to-face interview with the owner of Pet's Village was conducted at the Pet's Village Store to understand more about the service reservation process. During the interview session, Pet's Village owner explained the flow of the reservation process and provided the details of the service provided by Pet's Village, such as the service process, price range, estimated time needed for a service, and others. Besides that, the requirement of the management system has also been analysed and it is expected that the management system can computerize the reservation management process. Pet's Village owner prefers the system to have a reservation part for the customer to reserve services for their pet. Other than that, the owner also prefers to have a part to view the booking details from the customer, which can help them in handling every reservation efficiently. Lastly, the functional and non-functional requirements are also analysed in this phase to ensure that the objective of this project is achieved. The software and hardware requirement are also analysed and discussed.

In the design phase, a wireframe for the system user interface is created by using draw.io. Wireframes are mainly employed to translate abstractions into something tangible and to aid in product conception [6]. Besides that, a prototype of the system user interface is created using the Figma interface design tool. The prototype is an early design model of the final user interface of a website or application, complete with interactive user interfaces and animations [7]. Data Flow Diagram (DFD) and Entity Relationship Diagram (ERD) are also created in this phase. ERD is used to build a database system to store and manage data inserted by users into the system while DFD shows the information flow for each process or system.

In the implementation phase, the data acquired in the previous stage is used to develop the Pet's Village Pet Care Management System. This phase requires implementing and completing the connection of database and system modules. The XAMPP server connects to a MySQL database. The Pet's Village Pet Care Management System is built with several programming languages, including Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript on the front end, and Hypertext Preprocessor (PHP) server-side scripting on the back end. In addition to coding, system error detection is a component of the implementation phase. If a system error occurs, the developer must rectify the code before continuing to the following coding section. These two crucial steps will

continue until the system is completed. After the final system is completed, the system module is tested to ensure that the aim of the project has been met. The system is validated and tested. To ensure that the system meets the requirements, enhancements, and modifications have been made to fix the bugs and errors. Each project development phase has its task and deliverables, as illustrated in Table 2.

Table 2: Workflow for Pet’s Village Pet Care Management System Development

Phase	Task	Output						
Planning	<ul style="list-style-type: none"> ▪ Research the suitable project title ▪ Prepare a proposal for the project ▪ Create a Gantt Chart 	<ul style="list-style-type: none"> ✓ Project title confirmed ✓ Gantt chart ✓ Project proposal 						
	<ul style="list-style-type: none"> ▪ Determine the project problem statement, objectives, and the project scope ▪ Collect specific details related to the project title. ▪ Review other similar systems 							
	Analysis		<ul style="list-style-type: none"> ▪ Comparison between 3 similar existing systems and the proposed system ▪ Interview with the owner of Pet’s Village ▪ Analyse the result of the interview ▪ Analyse hardware and software requirement 	<ul style="list-style-type: none"> ✓ Literature review ✓ Functional and non-functional requirements ✓ Hardware and software requirements 				
			Design		<ul style="list-style-type: none"> ▪ Create wireframe ▪ Design prototype ▪ Design database ▪ Illustrate Entity Relationship Diagram (ERD) and Data Flow Diagram (DFD) 	<ul style="list-style-type: none"> ✓ Wireframe ✓ User interface design ✓ Database design ✓ Entity Relationship Diagram (ERD) ✓ Data Flow Diagram (DFD) 		
					Implementation		<ul style="list-style-type: none"> ▪ Develop system module ▪ Integrate system module ▪ Connect system with database ▪ Testing ▪ Evaluate by user 	<ul style="list-style-type: none"> ✓ Test result ✓ Evaluation result ✓ Completed system

3.2 System Analysis and Design

This section discusses the analysis and design of the system development. The functional and non-functional requirements of the developed system are explained and obtained in detail. In addition, diagrams such as Context Diagram, Data Flow Diagram (DFD) Level 0, Entity Relationship Diagram (ERD) and wireframe will be illustrated to identify the performance of the developed system.

Functional requirements defined the features and functionalities of a product [8]. Table 3 shows the functional requirements of Pet’s Village Pet Care Management System.

Table 3: Functional Requirement of the Pet’s Village Pet Care Management System

Module	Functionalities
User login	<ul style="list-style-type: none"> ▪ Users need to enter the correct username and password ▪ An error message is displayed when the wrong username or password is entered.

Table 3: (cont)

Module	Functionalities
User logout	<ul style="list-style-type: none"> Users can log out of their account
User register	<ul style="list-style-type: none"> Customers can create a new account An error message will display when the input format is incorrect
Service Reservation	<ul style="list-style-type: none"> Customers can make an appointment for a service by selecting an available time.
User profile management	<ul style="list-style-type: none"> Customers can manage their profiles by editing their personal information. Customers can manage their pet details by adding new pet details, updating existing pet details, and deleting the pet from the list.
Gallery management	<ul style="list-style-type: none"> Administrator can manage the content of the gallery by uploading the media type and deleting the video and photo.
System management	<ul style="list-style-type: none"> Administrator can manage the system by updating the site information.
Staff management	<ul style="list-style-type: none"> Administrator can manage the staff list by adding new staff details, updating the existing staff details, and deleting the staff from the list.
Service management	<ul style="list-style-type: none"> Administrator can manage the service information by updating the current service information.

Besides that, non-functional requirements are a description of the general attributes of a system. So, these are the minimum requirements for system quality that the project contract mandates. Table 4 shows the non-functional requirement of Pet’s Village Pet Care Management System.

Table 4: Non-Functional Requirement of the Pet’s Village Pet Care Management System

Requirement	Description
Security	<ul style="list-style-type: none"> Encrypt the password entered by the user Encrypt the password saved in the database The user can only log into the system when the username and password are correct
Usability	<ul style="list-style-type: none"> Provide a user-friendly interface for the user This system should be easy to use and understand.
Availability	<ul style="list-style-type: none"> This system should be available and accessible 24 hours a day

A context diagram illustrates the interactions between external entities and an internal software system. Its primary purpose is to help businesses comprehend the system's scope. Figure 1 shows the context diagram of Pet’s Village Pet Care Management System.

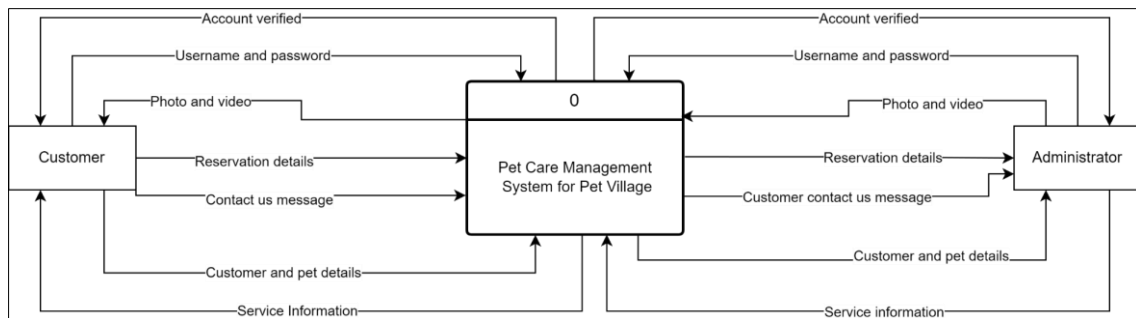


Figure 1: Context Diagram of Pet’s Village Pet Care Management System

There is a diagram in every business process called a Level 0 Data Flow Diagram (Level 0 DFD) that outlines the order of the steps in the process based on their level. The purpose of this diagram is to clearly display the connections between all of the primary operations taking place within the system, as well as the information flowing between them. There are a total of six processes in the DFD level 0 diagram, which are login (process 1.0), register (process 2.0), manage user and pet details (process 3.0), manage service (process 4.0), manage staff (process 5.0), and manage gallery (process 6.0). Figure 2 shows the DFD level 0 of the Pet’s Village Pet Care Management System.

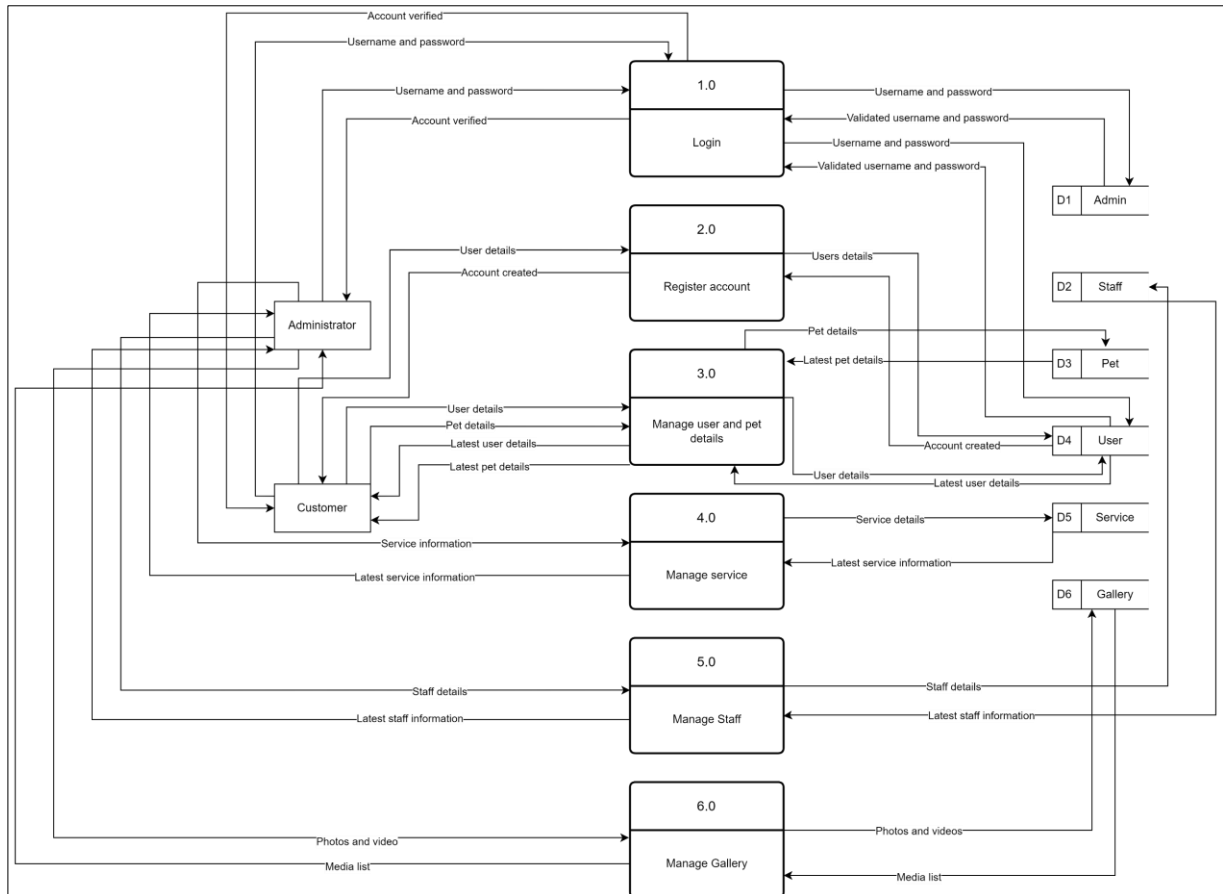


Figure 2: DFD Level 0 of Pet’s Village Pet Care Management System

Entity Relationship (ER) Diagrams are flowcharts that depict the relationships between entities within a system. ER Diagrams are typically used to build or troubleshoot relational databases in business information systems, education, and software engineering. Figure 3 shows the ERD of the Pet’s Village Pet Care Management System.

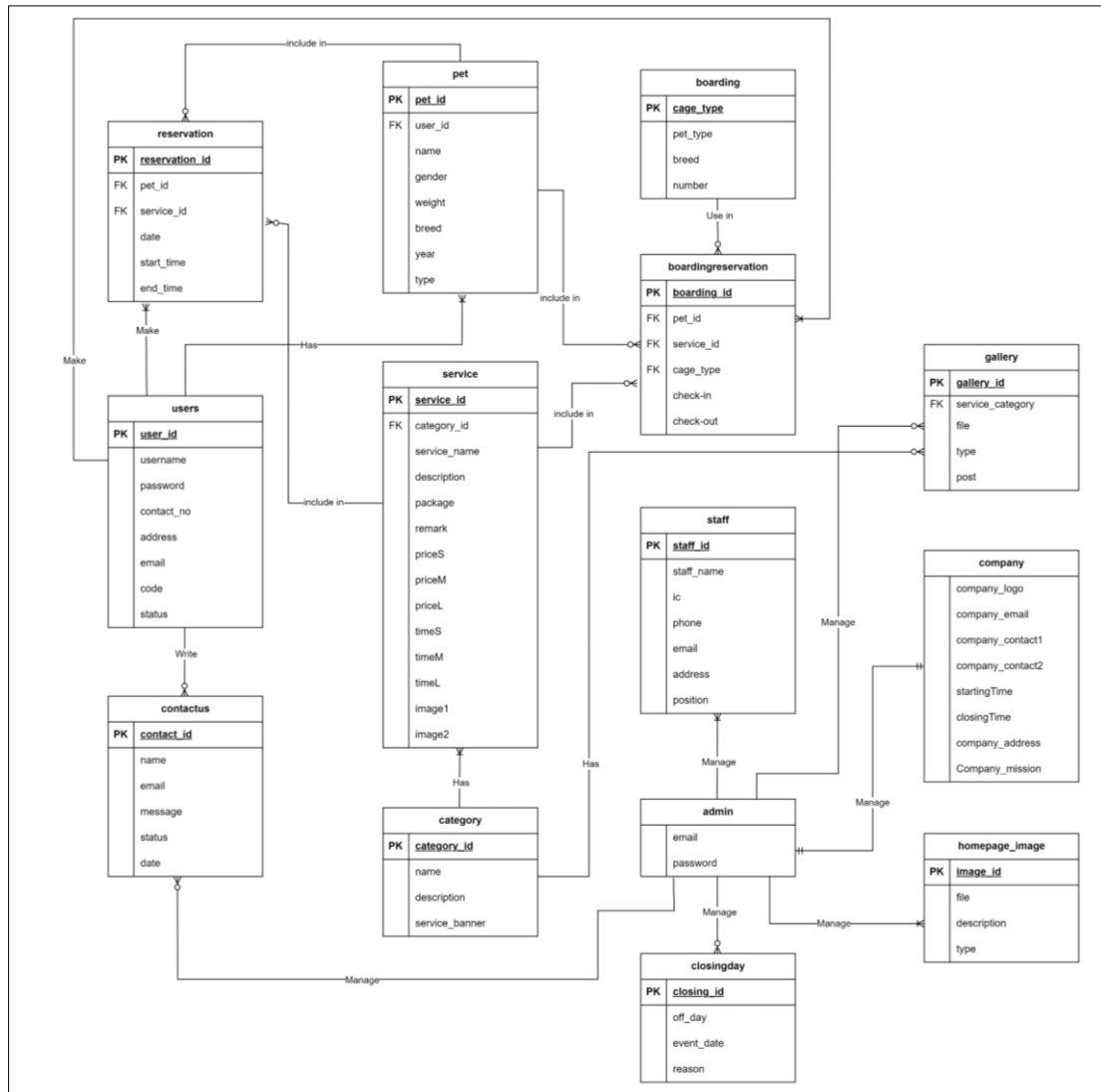


Figure 3: ERD of Pet's Village Pet Care Management System

4. Result and Discussion

Pet Care Management System for Pet's Village is developed using programming languages such as PHP, JavaScript, HTML, and CSS. HTML, CSS, and JavaScript are used to create the front end of the developed system. JavaScript works with HTML and CSS to optimize the system with dynamic behaviour and some special effects, while PHP is used in the back end of the system. Besides that, MySQL is used as the database in this system to store the data from both the user and admin sites.

4.1 System Implementation

The login module allows the admin and customer to log in to their account. To log in successfully, the admin and customer require to provide the correct email and password. If the email or password provided by the users is wrong, they will fail to access their profile and reserve service, and the message "Incorrect email or password!" will be displayed. However, if the email provided by the user can be found in the database but the user has not verified their email when they create an account, a message "It looks like you haven't still verified your email" will display to notify the user to verify their email is a must. While, if the email input by the user cannot be found in the database, the message "It looks like you're not yet a member! Click on the bottom link to sign up." will display. Lastly, when the email and password input by the user is correct, they can access their profile and can make a reservation for service. Figure 4 shows the login interface.

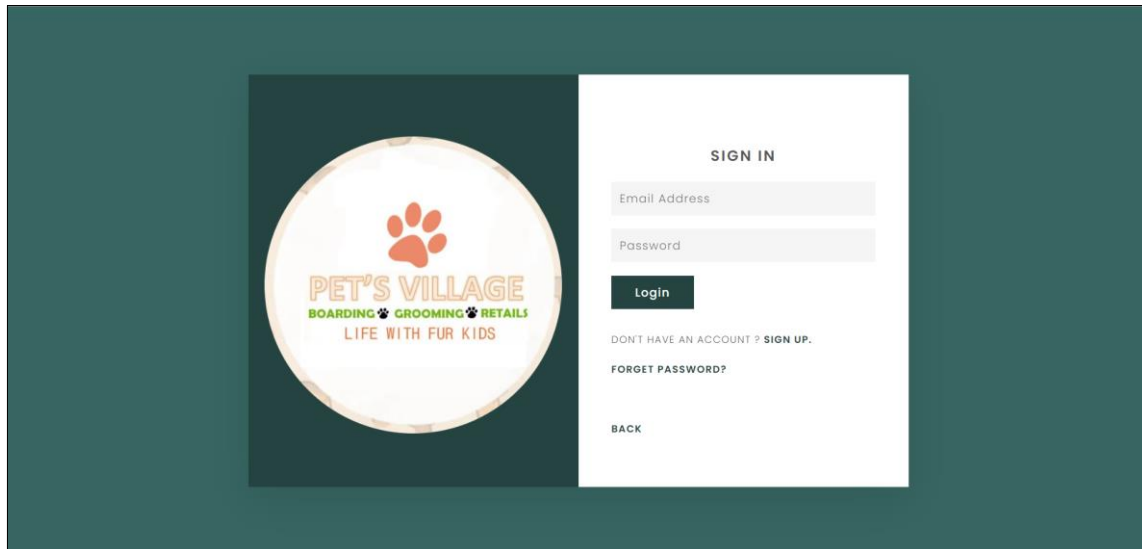


Figure 4: Login Interface

The register module allows a new customer to create an account. In order to create a new account, the customer is required to provide their username, email, and password, and tick the “I’m not a robot” captcha. Client-side form validation will be conducted after the sign-up button is clicked to make sure that the input has match the requirement such as the username field can only accept the alphabet, the email required to match the email format, the password must contain at least one number, uppercase, and lowercase and at least 8 or more character, the confirm password must match with the password input and the captcha must be ticked. If one of the input fields does not match the requirement, the form fails to submit and the error message will be displayed. If the inputs match the requirement, a verification code will be sent to the email that the customer registered and the user will be redirected to the code verification page to enter the 6-digit number that they have received in the email. If the verification code that the user enters is correct, the account is created successfully but if the user enters the wrong verification code or skips this process, their account will be failed to create. Figure 5 shows the interface of sign-up interface.

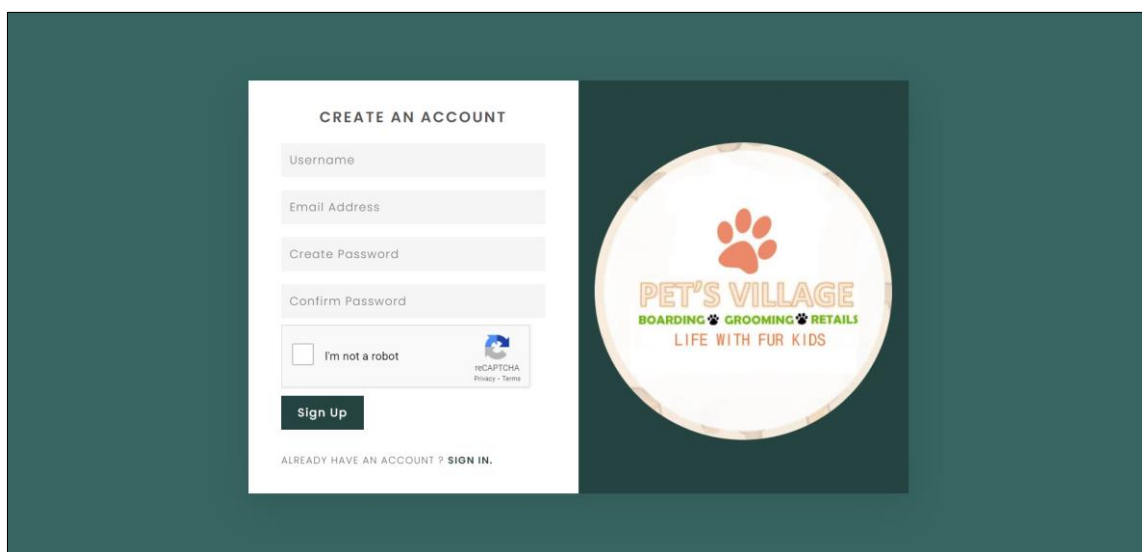


Figure 5: Sign-Up Interface

The staff management module allows the admin to manage the staff list by Create, Read, Update, and Delete operations. The admin is allowed to add new staff by entering the staff details such as name, card identity number, contact, email, address, and the position of the staff. Besides that, on the staff page, there is a table showing all the staff information, and at the last column of each row, an action button is provided for the admin to view, edit the staff information and delete the staff from the list. The action of adding, editing, and viewing the staff details is carried out on the modal. When the delete action button is clicked, a confirmation message will be displayed to the admin, if 'OK' is clicked, the staff will be deleted from the list and database but if the 'Cancel' button is clicked, the details of the staff will remain unchanged in the list. Figure 6 shows the Add Staff Page.

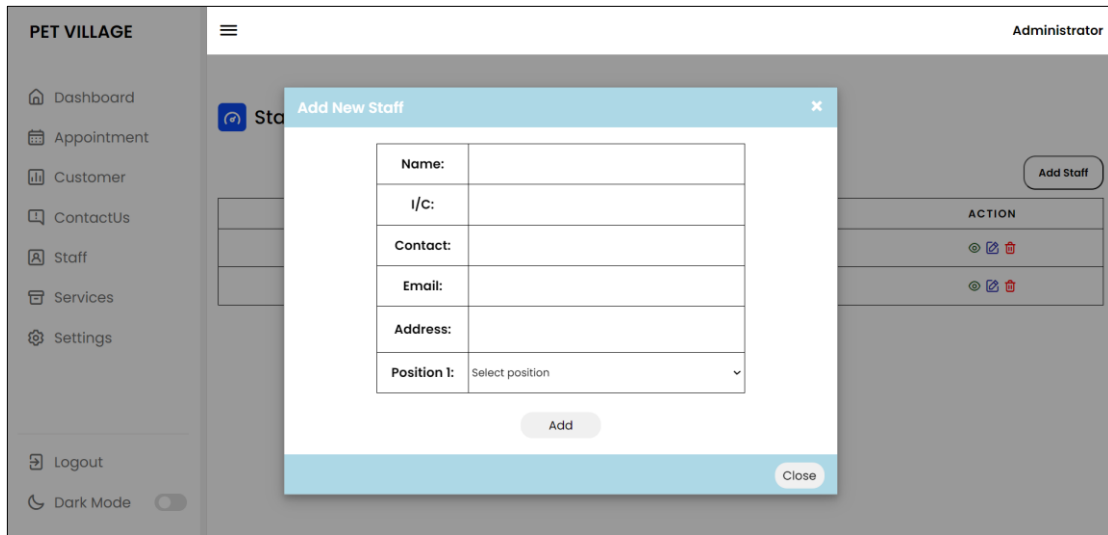


Figure 6: Add staff page

The service management module allows the admin to manage the information of services. The admin can view and update the service information through this page. There is a list of services displayed in a table form and an action button is provided at the last column of each row. The action button includes the view and edit buttons. When the view button is clicked, the admin can only view the information of the service display in the modal but if the edit button is clicked, the admin is allowed to edit the service details by inserting the new details and clicking the save button to update the service details in the database. Figure 7 shows the Edit Service Page.

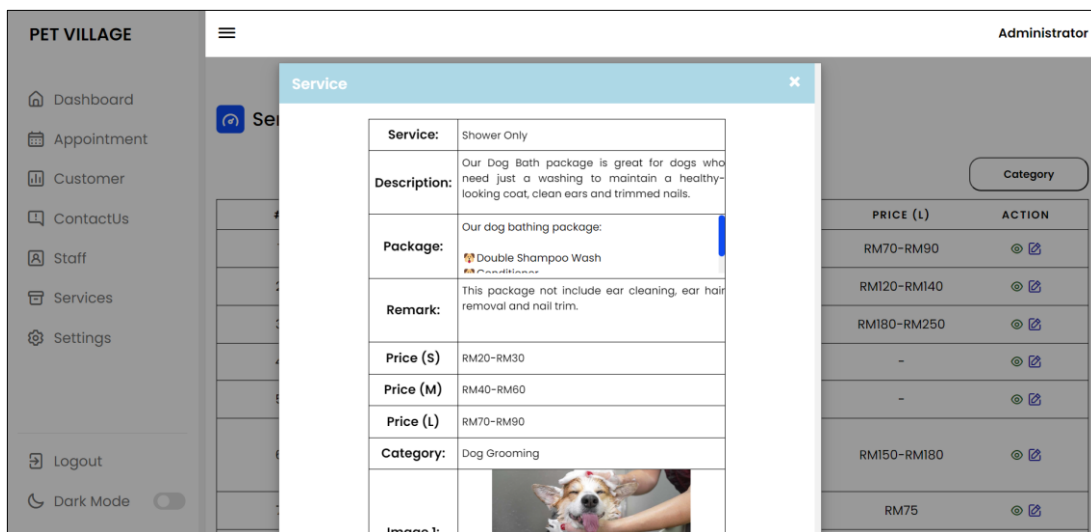


Figure 7: Add staff page

The system management module allows the admin to manage the information of the system by CRUD operations. The system information includes the company details, the banners, and the images used in the system. There are three pages included in system management which are the company page, homepage setting page, and other setting pages. The company page is used to manage the details of the company such as the company logo, contact number, operating hours, address, company off day, and also holiday date. The homepage setting page is used to manage the banners and images used on the system homepage and the other setting page is used to manage the banner displayed on other pages in the system. Figure 8 shows the interface of the company page, Figure 9 shows the interface of the homepage setting page and Figure 10 shows the interface of the other setting page.

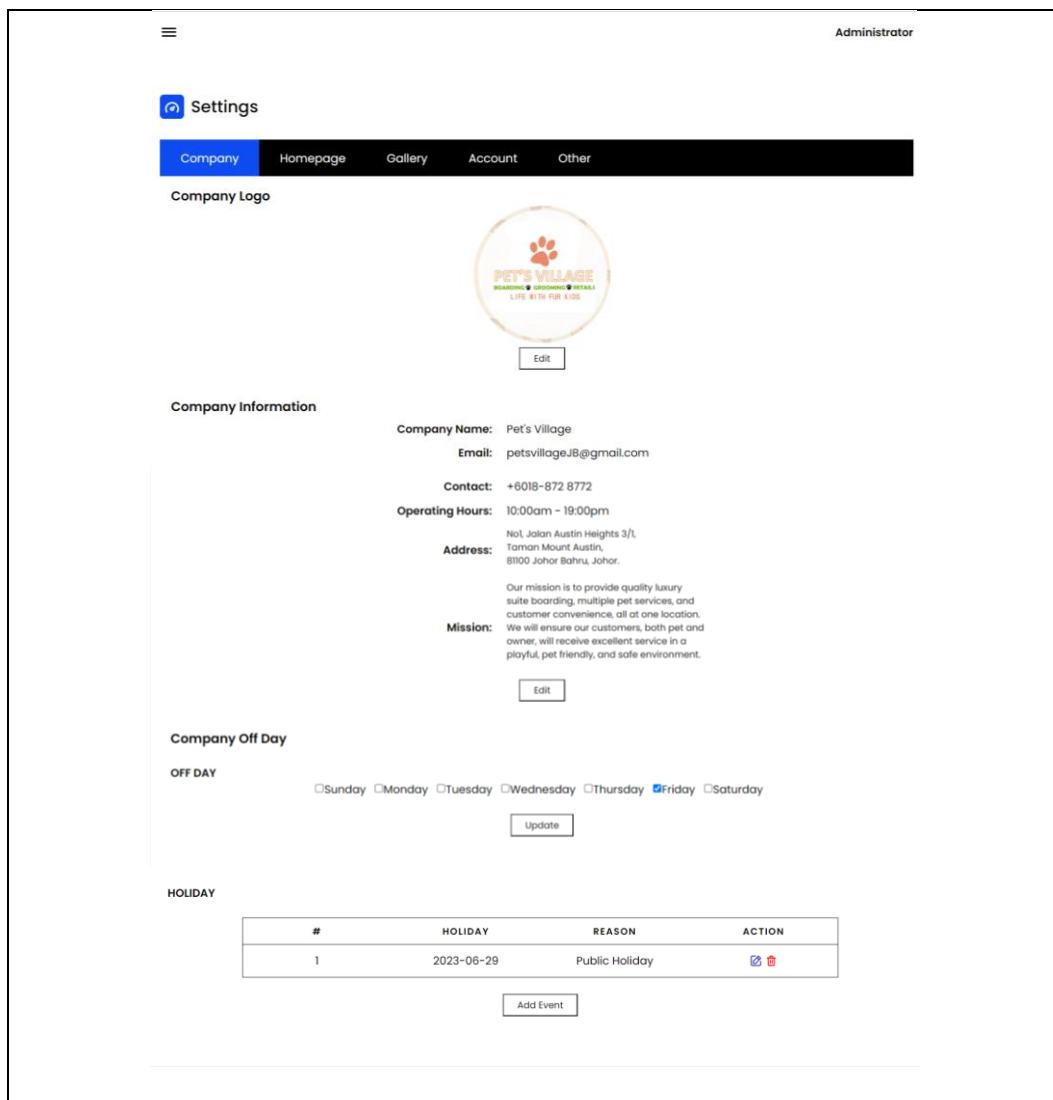


Figure 8: Interface of the company page

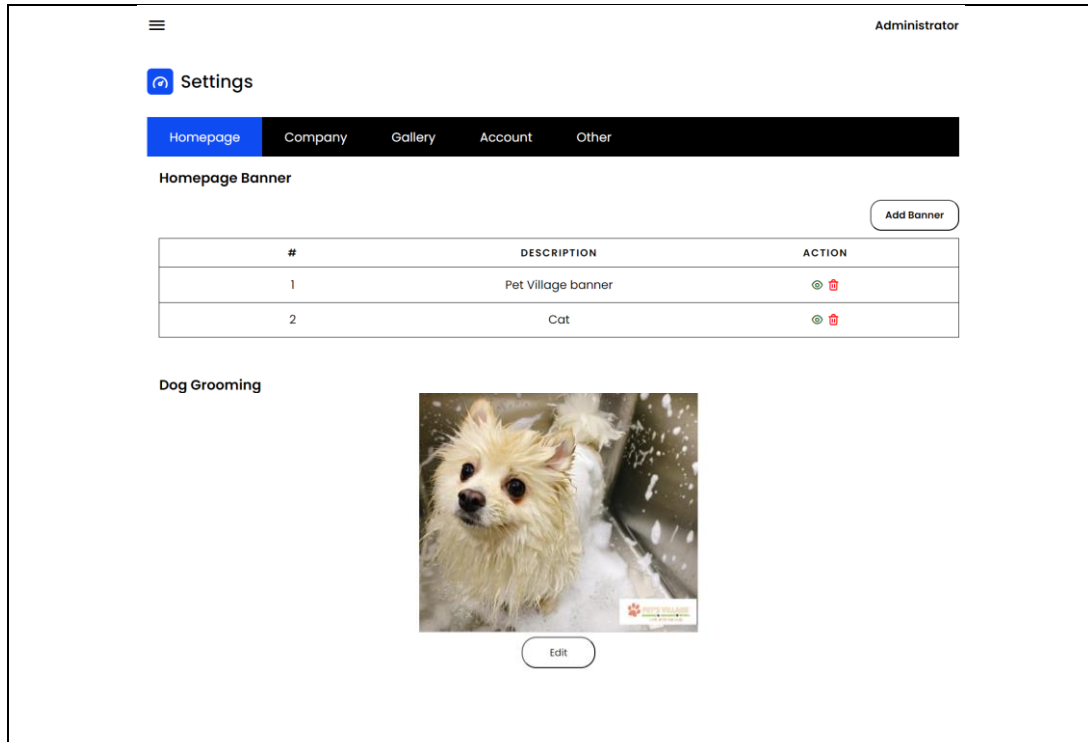


Figure 9: Interface of homepage setting page

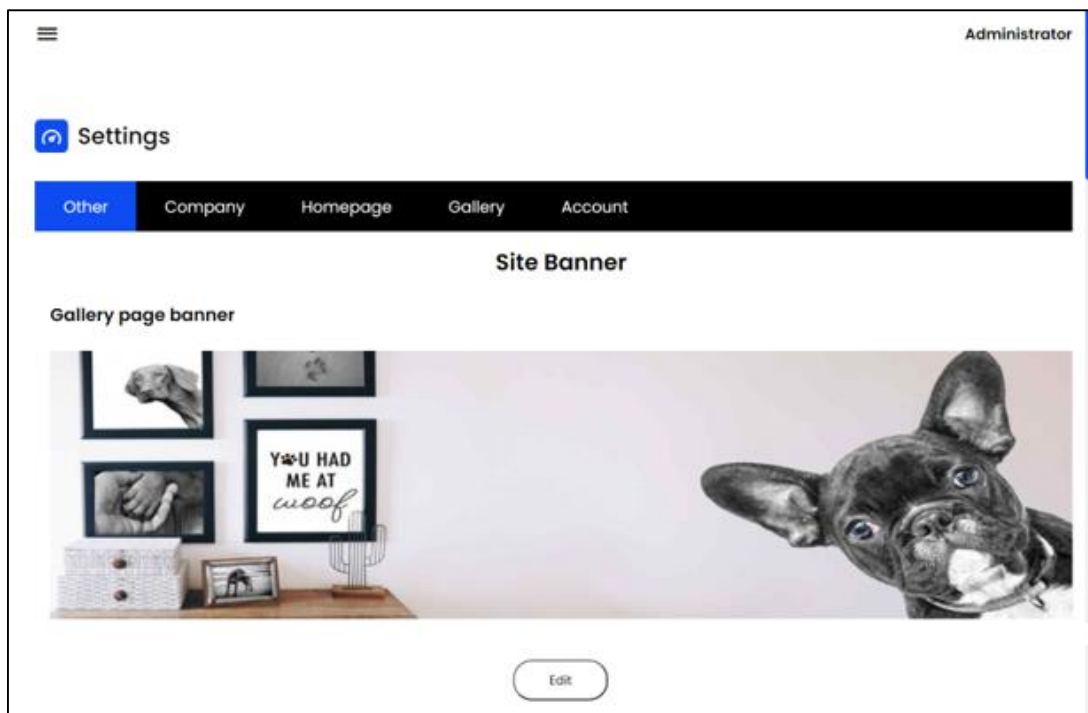


Figure 10: Interface of other setting page

The gallery management module allows the admin to manage the gallery by uploading, viewing, and deleting the media type. Media types included are photo and video. The admin can upload the file and select the category of the media and click the ‘Save’ button to upload new media. In order to post the media on the homepage, the admin needs to tick the ‘post’ checkbox before clicking the “Save” button. Figure 11 shows the interface of the gallery management page.

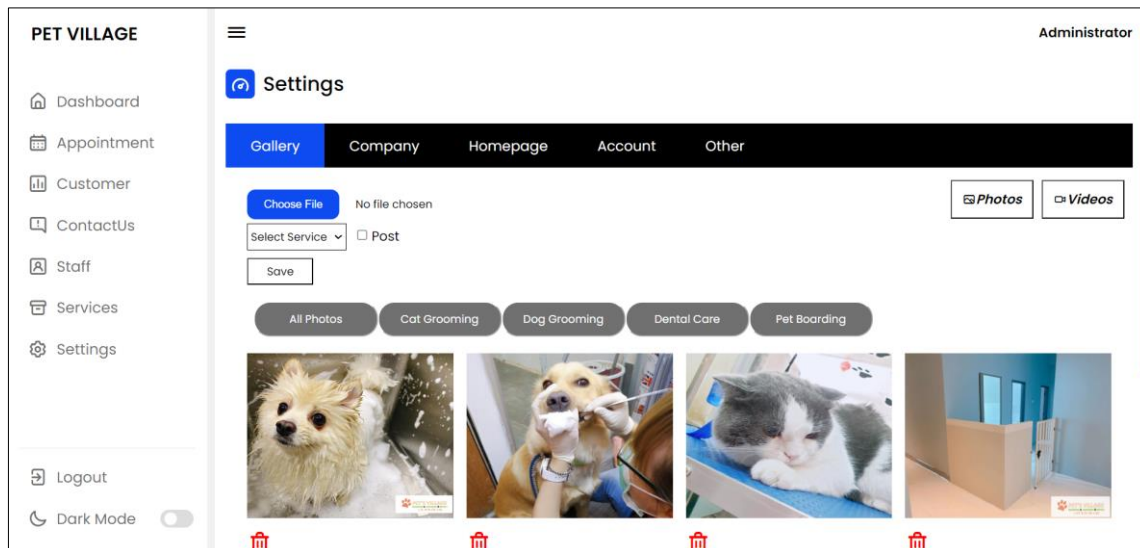


Figure 11: Interface of gallery management page

The user profile management module allows user to manage their profile by editing their personal information and fur kid details. The user’s personal information includes username, contact number, and address. The user can edit their information by clicking the edit button that displays when hover on the user profile card. When the user clicks on the edit button, a modal will display for the user to edit their information. In order to manage the fur kid detail, the user can visit the fur kid page. Through this page, the user is able to add, view, edit, and delete the fur kid details. There is a table showing all the pet information, and at the last column of each row, an action button is provided for the user to view, edit the pet information and delete the pet from the list. The action of adding, editing, and viewing the staff details is carried out on the modal. When the delete action button is clicked, a confirmation message will be displayed to the admin, if ‘OK’ is clicked, the pet will be deleted from the list and database but if the ‘Cancel’ button is clicked, the details of the pet will remain unchanged in the list. Figure 12 shows the user profile edit page and Figure 13 shows the pet-adding page.

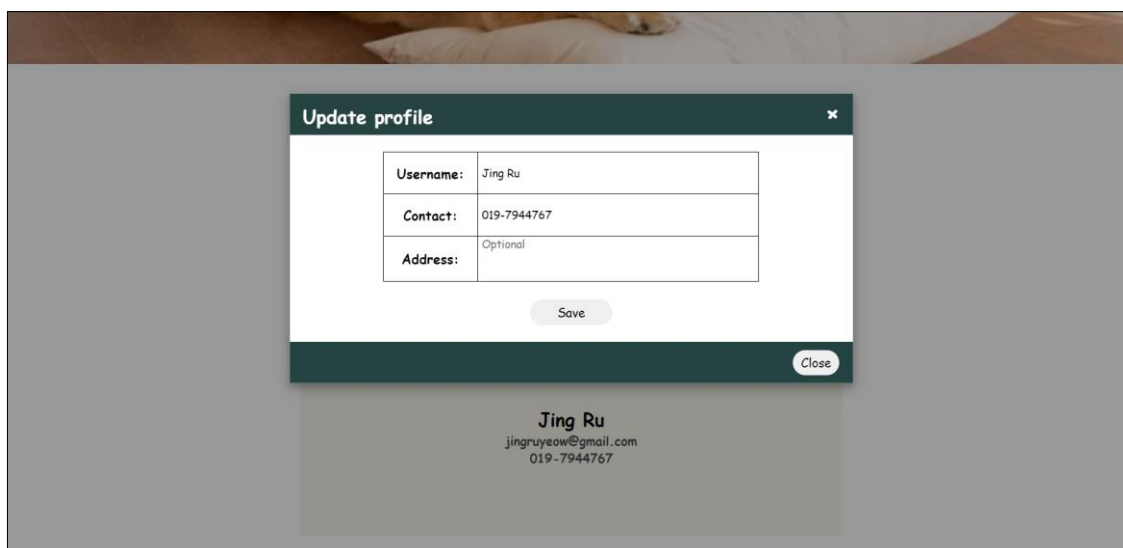


Figure 12: Edit user profile page

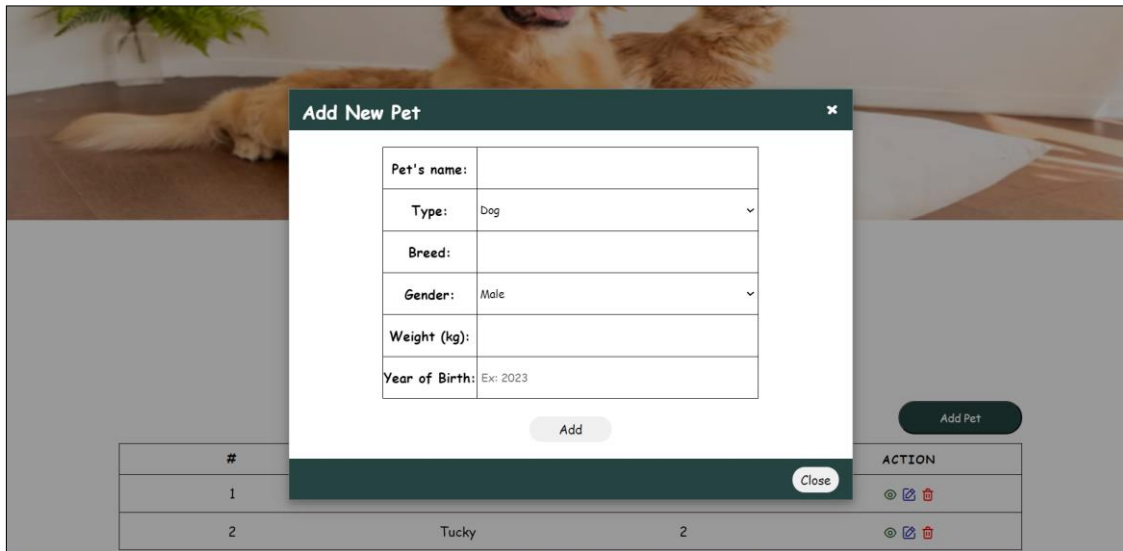


Figure 13: Add pet page

The service reservation module allows users to make a reservation on a service. In order to book a service, the user is required to select their pet in a dropdown list and pick an available date and time. The service name and service category in the reservation form will auto-display according to the service that the user selects. For the grooming and dental care service reservation, the time slot will display for the user to pick only if it is not fully booked. The duration of the service will be calculated according to the pet selected. So, for the last time slot which is the last hour before closing, it is not available for the service that required more than 1 hour, if there is a pet selected by the user that requires more than 1 hour of service duration, an error message “The time slot is unavailable for your fur kid since this service required more than 1 hour and the next hour of the time slot is unavailable. Kindly pick another time slot that matches the service duration.” will be displayed. Besides that, for the boarding service, the calendar will only display the available date for booking, if the date is fully booked by other users, the date will auto-disable to prevent users to select. Figure 14 shows the interface of the pet grooming and dental care service reservation form and Figure 15 shows the interface of the boarding service reservation form.

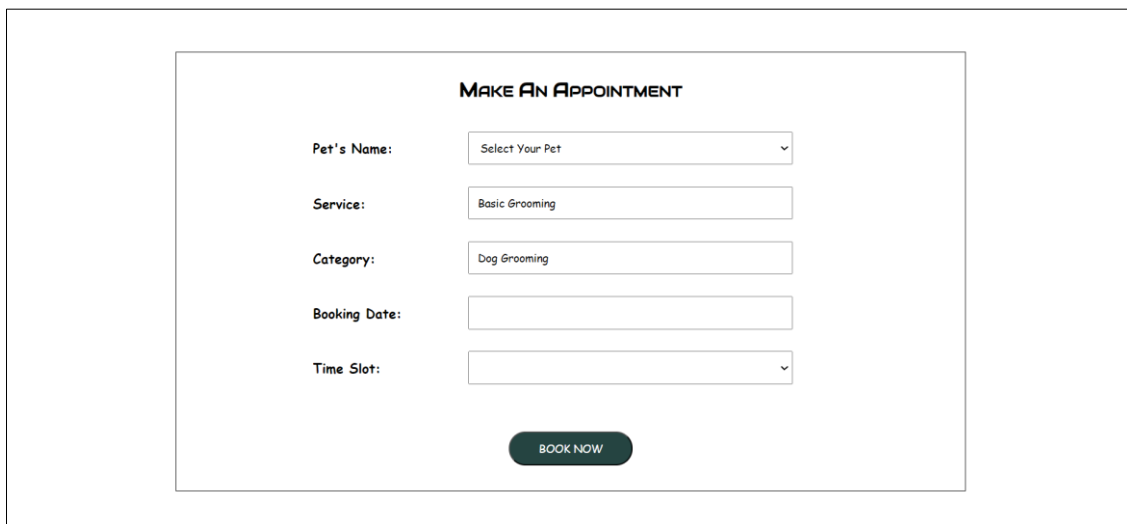


Figure 14: Grooming and dental care service reservation form

MAKE AN APPOINTMENT

Pet's Name:

Service:

Category:

Check-in:

Check-out:

BOOK NOW

Figure 15: Boarding service reservation form

4.2 System Testing

System testing aims to evaluate the overall performance and functionality of a comprehensive and completely integrated software solution. This testing is performed after integration testing and before user acceptance testing. Besides that, it determines whether the system fulfills the specified requirements and is fit for distribution to end users. Therefore, testing is included in the project's objectives and scope from the outset.

4.2.1 Test Plan

A Test Plan is a comprehensive document that lists the test methodologies, objectives, timelines, estimates, and deadlines necessary to execute the project [9]. The test plan guarantees the developer delivers a high-quality system to the customer. Table 5 shows the test category of the Pet's Village Pet Care Management System whereas Table 6 shows the test plan result of the Pet's Village Pet Care Management System.

Table 5: Test Category of Pet's Village Pet Care Management System

Test Category	Description
1	The functionality of the system that tests by the administrator
2	The functionality of the system that tests by the customer.

Table 6: Test Plan of Pet's Village Pet Care Management System

Modules	Test Category	Description	Expected Result	Actual Result
Login/Login	1,2	Log in to the system: - Insert email - Insert password - Click the login button	1. User can only log in to the account if the input is valid	Pass
		Logout from the system: - Click the logout button	1. Users can logout from their account when they click on the logout button	Pass

Table 6: (cont)

Modules	Test Category	Description	Expected Result	Actual Result
Register	2	Register as a new user: - Fill in the register form	1. Data is stored in the database after clicking the register button and a new account is created successfully.	Pass
Staff management	1	Manage staff list by: - Add new staff - View staff details - Update staff details - Delete staff	1. New staff details are stored in the database after clicking on the add button and update in the staff list. 2. The staff details can be viewed. 3. The existing staff details can update by inserting new details and update in the database. 4. Confirmation message will pop up after clicking the delete button. 5. The staff details are deleted from the list after the 'OK' option in the confirmation message is clicked.	Pass
Service management	1	Manage service list by: - Update the service details - View service details	1. The existing service details can update by inserting new details and update in the database 2. The service details can be clearly viewed.	Pass

Table 6: (cont)

Modules	Test Category	Description	Expected Result	Actual Result
User profile management	2	Manage the user profile by: - update user personal information - Add a new pet - Update pet details - View pet details - Delete pet	<ol style="list-style-type: none"> 1. User can update their personal information by inserting the new details and the database will be updated after the save button is clicked. 2. New pet details are stored in the database after clicking on the add button and update in the pet list. 3. The pet details can be clearly viewed. 4. The existing pet details can update by inserting new details and update in the database. 5. Confirmation message will pop up after clicking the delete button. 6. The pet details are deleted from the list after the 'OK' option in the confirmation message is clicked 	Pass
Service Reservation	2	Reserve service: - Select a service - Select a pet - Pick an available date and time - Confirm booking	<ol style="list-style-type: none"> 1. Show pet list for customer to select 2. The service name and service category can auto-display according to user selection. 3. Available dates and times are displayed to select. 4. The duration of service is calculated correctly according to the selected pet. 5. Reservation details are stored in the database after customers confirm the booking. 	Pass
Booking record	1,2	View the booking record	<ol style="list-style-type: none"> 1. The administrator is able to view all the customer's booking record 2. Customer is able to view their booking record 	Pass

Table 6: (cont)

Modules	Test Category	Description	Expected Result	Actual Result
Gallery management	1	Manage gallery content by: - Upload new media - Delete media from the list	<ol style="list-style-type: none"> The media list is displayed New media file name is stored in the database after clicking on the add button and update in the media list. Confirmation message will pop up after clicking the delete button The media is deleted from the list after clicking the 'OK' option in the confirmation message. 	Pass
Contact Us module	1	View customer message	<ol style="list-style-type: none"> Display the message list sent by the customer Can write an email directly when clicking the sender's email address. 	Pass
	2	Write feedback message	<ol style="list-style-type: none"> The message is stored in the database after send button is clicked. 	Pass
System management	1	Manage the system by: - Update company details - Update system image and banner	<ol style="list-style-type: none"> Company details can update by inserting new details and update in the database after the save button is clicked. The system image and banner can be updated by uploading a new media file name and stored in the database. 	Pass

4.2.2 User Acceptance Test

User acceptance testing (UAT), also known as application testing or end-user testing, is a process that is carried out before the product is released to the market to be evaluated by its intended audience in the actual world. The objective of UAT is to ensure that software is capable of handling real-world duties and meets development specifications. Table 7 shows the ranking of the questionnaire, Table 8 shows the user acceptance test result for an administrator and Table 9 shows the user acceptance test result for customers.

Table 7: Ranking of the questionnaire

Rank	For
1	Very Unsatisfied
2	Unsatisfied
3	Good
4	Satisfied
5	Strongly Satisfied

Table 8: User Acceptance Test Result for Administrator

No	Feature	Ranking				
		1	2	3	4	5
1	Login module					1
2	Logout module					1
3	Staff module					1
4	Service module					1
5	Manage service category					1
6	View grooming and dental care service reservation					1
7	View boarding reservation					1
8	Manage the number of boarding cages					1
9	View and manage contact us message				1	
10	Manage company details					1
11	Manage system image				1	
12	Manage gallery				1	
13	View customer and pet details				1	
14	Easy to use and understand					1
15	Navigation					1
16	Layout (Background, Colour)					1
17	Interface Design					1
18	Text (Font Design)					1

According to the survey, the administrator is satisfied with the features of managing to contact us messages, managing system images, managing the gallery, and viewing customer and pet details and is very satisfied with other of the features listed in Table 7.

Table 9: User Acceptance Test Result for Customer

No	Feature	Ranking				
		1	2	3	4	5
1	Login module				4	11
2	Logout module				4	11
3	Register module				5	10
4	Manage user profile				7	8
5	View service details				4	11
6	Reserve grooming service				4	11
7	Reserve dental care service				4	11
8	Reserve boarding service				3	12
9	View gallery				6	9
10	Write the contact us form				5	10
11	View booking records				6	9
12	Easy to use and understand				4	11
13	Navigation				6	9
14	Layout (Background, Colour)				5	10
15	Interface Design				5	10
16	Text (Font Design)				6	9

According to the survey of 15 respondents, there is 26.67% of the respondents satisfied, and 73.33% of respondents very satisfied with the login, logout, view service details, reserve grooming service, and reserve dental care service module and easy-to-use and understand features. Besides that, a total of 33.33% of respondents were satisfied, and 66.67% of respondents were very satisfied with the register

and write the contact us form module and feature of layout and interface design. 46.67% of respondents were satisfied, and 53.33% of respondents were very satisfied with the manage user profile feature. In addition, there is 20% of respondents satisfied, and 80% of respondents very satisfied with the reserve boarding service feature. 40% of respondents were satisfied and 60% of respondents were very satisfied with the feature of the view gallery, view booking records, navigation, and font design.

5. Conclusion

The Pet Care Management System has successfully computerized the traditional paper-based record. The system reduces the workload of the staff in managing the reservation made by the customer as they do not need to record the reservation details anymore as this system allows the customer to make a reservation themselves. Furthermore, in order to search for the reservation record, the staff can do it with one click on the system which can help in reducing time wasted in searching. Other than that, through this system, the customer can use the system to reserve a service easily. They do not need to wait for a response from the staff or inquiry at the door anymore. They can register their pets in the system and book a service for them. The booking process can be done with a few clicks, the customer just needs to select what kind of service their pet needs and pick an available date and time, the booking process can be done in almost 5 minutes.

Besides that, the security aspect is also considered in this system. The password is hashed and saved in the database when the customer creates a new account. In order to prevent a user from using a fake email address to register a new account, an email verification is carried out which a 6-digit verification code will send to the email registered. The account will only create successfully when the verification code provided by the user is correct. Furthermore, there is an 'I'm not a robot' captcha provided on the sign-up page and the contact us page, the purpose of using the captcha is to prevent spam and bot attack. Last but not least, the objective of this Pet's Village Pet Care Management System is achieved.

There are some modifications and improvements are needed in the future. Firstly, the notification function can be added to the system. This notification function can be used in a few aspects, for example, the reservation date is reached, the promotion held by Pet's Village, and some other important messages to notify customers. Besides that, another improvement that could be done in the future is to add a chat box function. So that, the administrator and customer can communicate anytime without the need of waiting for a reply email from the administrator. Since all the messages send are through the contact us form, there will have a chance for the administrator to miss the message that customers leave. In order to provide convenience to customers, a chat box is important.

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