Polytechnic University of the Philippines

COLLEGE OF COMPUTER AND INFORMATION SCIENCES

A. Mabini Campus, Sta. Mesa, Manila

VETERINARY CLINIC MANAGEMENT SYSTEM

In partial fulfillment of the requirements for the subject:

INFORMATION MANAGEMENT

Billano, John-Loyd G.

Camayudo, Cattleya Marie V.

Chua, Alwyn N.

Laurente, Elyza Denise A.

Proponents

July 26, 2022

Abstract

In a business operation, efficiency is needed to complete a task successfully and consistently. Generally, businesses have a disciplined practice to store all their business records, one of which is a management system. The Veterinary Clinic Management System intends to assist the staff of veterinary clinics in managing their day-to-day operations and providing an excellent quality health service. It can store and manage information useful for generating patient electronic medical records, e-prescriptions, inventory of the clinic supplies, and receipts. The system also supports appointment scheduling for clients who wish to avail themselves of veterinarian services.

The management system will be developed for veterinary clinics to have centralized data storage and generate reports for their business operations. It will be designed according to the recommended user interface and have key features of booking an appointment for availing medical or non-medical related services, registration of owner and patient information for consultation, generating e-prescription and digital medical records, inventory management for clinic supplies, and issuing sales, order fulfillment, and receipts for the clients.

With the proposed system, it will reduce the time spent on registration to the process of generating an invoice, have organized and securing patient records and appointments, effortlessly issuing receipts, and producing operational reports useful for making business decisions. Furthermore, using a management system can minimize errors in encoding details or even in having duplicate data.

Table of Contents

Introduction

Veterinary clinics serve as a workplace for veterinarians in practice, wherein animals are taken care of. According to an article by Roberts (2022), numerous veterinary clinics worldwide experience a high volume of workload due to the COVID-19 pandemic, and primarily, shortages in staff. Many clinics offer various services for pets including, but not limited to, diagnosing current health conditions, providing vaccine shots, and prescribing medicine (St. George's University, 2021). As long as there are services available, people are inclined to take care of their pets. From the perspective of the veterinarian, more people equate to more clients. Since not all veterinary clinics have transitioned to digital recordkeeping, this makes it difficult to update existing client records, leading to more paperwork to finish.

However, with the current situation of technology development, it is possible to implement a management system that will boost the performance of a business, and most of all, a veterinary clinic in need. Management systems are a set of related frameworks that are designed to enhance the processes within an organization (The British Standards Institution, 2022). According to Zwass, an information system is a set of components that can help in storing, organizing, and retrieving information, which can then be performed in a business function such as a veterinary clinic. In relation to this, once a technology is implemented, information management systems can be designed to expand an existing management system to improve its quality and efficiency.

A database management system then takes advantage of different information systems from varying programming languages that will assist in the creation of one unifying database (Oracle Philippines, n.d.). When it comes to implementing coded instruction, information can be stored reliably and accessed easily through a database. Databases serve as a solution for taking off workload in places that have many customers such as a veterinary clinics.

The proponents are tasked to implement a database management system (DBMS) that seeks to address the concerns of a clinic called the Sahagun Veterinary Clinic. Specifically, the system is based on object-oriented programming which includes Java as the front end and back end and utilizes the open source administration tool phpMyAdmin for MySQL for the DBMS. The key features allow for the booking of an appointment, client and pet registration, employee management, and a record of transactions. Furthermore, the project is programmed through Java programming language which requires an integrated development environment.

CHAPTER 1 – ORGANIZATION ANALYSIS

1.1. Company Background

1.1.1. Vision Statement

Take charge of the veterinary services of Caloocan City to ensure the health of the public through food and meat safety and healthy animals free from veterinary-related diseases.

1.1.2. Mission Statement

- To conduct all the veterinary measures in keeping healthy domestic animals through responsible pet ownership and prevention of cruelty to animals and;
- To be in the frontline of veterinary-related activities in the prevention and control of disease outbreaks in animals.

1.1.3. Strategic Plan

Ensuring the quality of life for pets and pet owners in the area by providing them top-quality care, assistance, and services. Providing pet owners knowledge about diseases, prohibited food, and how to take care of their pets via free barangay seminars along with barangay officials, posters, and infographics in the clinic. Using years of practice in veterinary medicine to treat pets with quality and expertise. Making a pet disease-free community with quality health care for pets.

1.1.4. Organizational Chart

The chosen clinic chose not to disclose any names of its employees. The organizational chart uses job positions inside the clinic.

The organizational chart of the chosen clinic starts with the owner, who is the veterinarian of the clinic as well. There are two veterinarians, one is the owner. Each veterinarian has two assistant veterinarians making four assistants. Overall, they only have six people who manage the veterinary clinic.

- Veterinarian 1, who is the owner of the clinic.
- Veterinarian 2, the other veterinarian in the clinic.
- Assistant Veterinarians, help to assist the veterinarians in their services or operations, they as well become the groomers, cleaners, receptionists, and sellers all over the clinic.

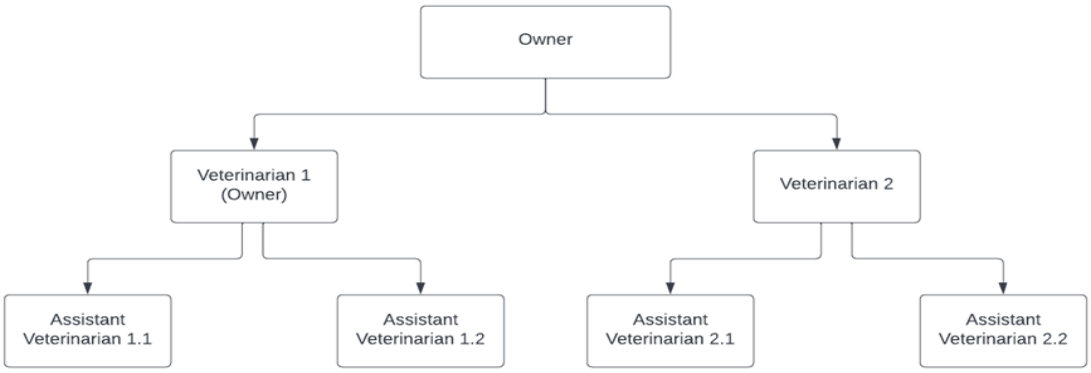


Figure 1. Veterinary Organizational Chart

1.2. Present ICT Situation

The chosen veterinary clinic still sticks with manual paper-based work with their records, forms, and others. The level of computerization of the said clinic is still paper-based as per the owner.

The ICT situation of the chosen veterinary clinic in terms of:

Frontline Service

The registration of the patients still uses index cards for keeping records of their patients. The inventory of supplies, accessories, and pharmacies is still handwritten on paper records such as logbooks.

Office Automation

The clinic previously utilized software that has the functionality of recordkeeping, an appointment system, and online registration. However, operations of the system ceased due to the lack of staff who will manage and maintain it. As of now, paper-based documentation is being used because it is easy to manage as per the owner.

Web Presence

The social media page of the clinic does not do promotions of itself, due to few veterinary clinics around the area. The clinic sticks with text messages and phone calls rather than online chatbots such as Messenger, WhatsApp, and others due to fewer staff that can facilitate their social media pages and email. The owner or veterinarian oversees all the messages and calls for the clinic.

Overall, the veterinary clinic has various problems when it comes to inquiries, appointments, recordkeeping, and customer response. Nonetheless,

their offered services are in good condition including their operations, market of their supplies, accessories, and pharmacy.

1.3. Strategic Concern for ICT Use

The Veterinary Clinic Management System aims to provide a functioning database that allows authorized users within the clinic to access the different systems within the database. This system covers different uses such as the following:

Employee Management System

The employees of the clinic include two veterinarians, while one is the owner, with two assistants each. The identification of the different employees will be accessed readily, wherein an Employee Management System is implemented. This section includes information about the veterinary clinic staff and provides basic information about the employees which can be utilized by the appointment scheduling and electronic medical record tables. To fill in these details, previous records through manual means must be accessed and then transferred to the system.

Client Management System

Each client must fill in a form with personal information for recordkeeping. The clinic then handles these forms to identify which owner owns a specific pet. Such forms may be torn or contain smudges over time, hence why the Client Management System is made to enhance this recordkeeping process. This system is reliant on input which concerns itself with presenting data of the clients. The clinic must make sure to collect all relevant data before utilizing this system.

Pet Information System

For each filled-up form, a pet is associated with an owner. In this way, pet information must be directly associated with each owner. The Pet Information System will prepare this information immediately, as the system contains all the information that identifies a pet. The system must be updated frequently to maintain accuracy, which then will be made easy by editing an existing record.

Veterinary Services

Each client, upon filling in the form, may bring up a concern to the veterinary clinic staff. The clinic provides different veterinary services that a client may need for the pet involved. The Veterinary Services system provides

which services are available. These services are limited to medical and nonmedical, which will have their prices.

Appointment Scheduling

The receptionist provides the clients with a way to book an appointment. With the Appointment Scheduling system, the client will be given their schedule depending on the time available provided by the receptionist. This system will determine the appointment date and its current status. When a client finishes, cancels or is on the waiting list for an appointment, the record will be updated accordingly.

Electronic Medical Record

This section is dedicated to collecting, storing, and maintaining data on pets. It is used for adding new data, updating previous inputs, and managing each profile. It will list the medical history of the pet, with each record showing the complaint or request of the client about the pet, the diagnosis given by the veterinarian, and the recommended medication. This system can be utilized for providing an efficient way of organizing an existing record, in any case, the client wishes to review its contents and have the pet referred to another clinic, or for other purposes.

e-Prescription System

This system provides a secure electronic copy of the prescriptions given to each patient. The data is stored within the system and can be accessed by the clinic staff and be given upon the request of the client and as per the instructions of the veterinarian.

Inventory Management

The Inventory Management system provides a list of all items with their respective descriptions inside the clinic. This system divides the inventory into different categories, which are medical and non-medical items. All medical items are within the Pharmacy, while all nonmedical items are within the Pet Shop.

Pharmacy

Each item has its category that will be identified with its details such as its item category, number, name, and quantity. The item supplier and manufacturer will be included in this inventory.

Pet Shop

A client may choose to purchase a Pet Shop item. Along with the item details and description are its own sale price.

CHAPTER 2 – INFORMATION SYSTEMS STRATEGY

2.1. Description of Database

The database system is intended to be used by a veterinary clinic with the main goal of improving its operational effectiveness, efficiency, and customer service. With the system, the clinic will be able to store, update, and search for information about all employees and clients for future transactions; quickly managed all appointments made by clients; easily track the inventory of supplies and equipment for both pharmacy and pet shop; generate an e-prescription for every consultation; generate medical records of pet patients and to issue an invoice for every transaction.

The data stored in the system will be updated regularly by the authorized personnel to keep the records up-to-date and easily retrieve and issue a copy of records, prescriptions, and receipts if needed by the clinic or as requested by the clients.

2.2. List of Forms and Reports

FORMS

Form Name	Descriptions	User
Login	Contains login details such as username and password	Admin, Receptionist, Veterinarian
Employee Records	Contains the record of each employee working in the clinic	Admin
Client Records	Contains basic information about the clients, contact details, and their pets	Receptionist
Pet Records	Contains all the descriptions of the pet that is associated with the owner	Receptionist
Appointment Schedule	Contains the visitation schedules and slots of each client	Receptionist
Medical Record	Contains all the electronic medical records of the pets, including services availed	Veterinarian

Prescription	Contains the information needed to create the prescription.	Veterinarian
Inventory	Contains all medical and non-medical items in the clinic and their available stock	Admin

REPORTS

Report Name	Descriptions	User
Prescription	Issue a copy of the prescription for the pet patient to the client.	Veterinarian
Inventory	Contains the updated list of medical and non-medical items in the clinic and their available stock.	Admin
Invoice	Includes customer information and invoice totals	Receptionist

2.3. Business Rules

The following business rules and constraints are in place to ensure the database's efficacy and accuracy:

1) Every employee in the veterinary clinic must only have one account.
2) Certain records can be accessed by all employees, but only the admin can access every record.
3) Each client can own multiple pets, but each pet can only be owned by one client.
4) Each electronic medical record must have at least one veterinary service.
5) One client can have one appointment scheduled in a day.
6) One veterinarian can only accommodate one pet at a time.
7) Many employees can manage many appointment schedules.
8) There can be only one electrical medical record per e-Prescription.
9) An employee can monitor all items in the clinic.
10) An invoice system must have access to the veterinary services system.
11) An invoice must display at least one transaction, and every transaction per client can only have one invoice.

2.4. Conceptual Framework

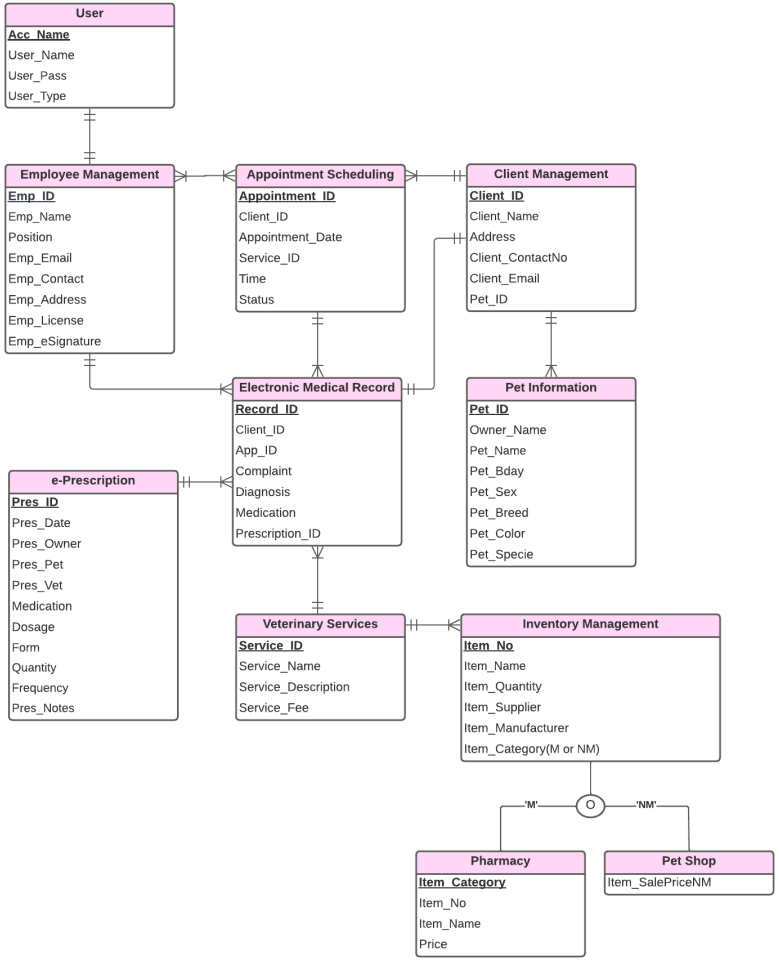


Figure 2. Conceptual Framework of the System

CHAPTER 3 – PROTOTYPE

3.1. Table Design

3.1.1. Relational Schema (3NF)

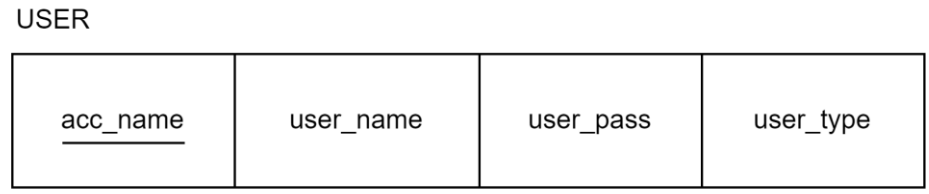


Figure x. User Account Schema

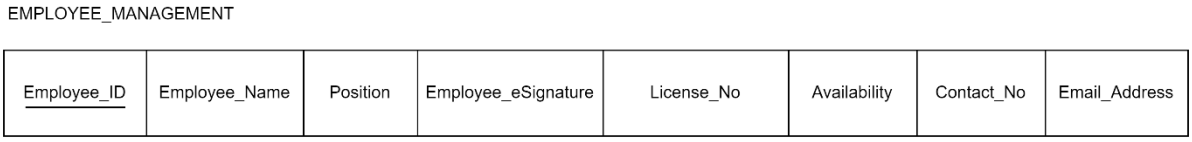


Figure 3. Employee Management Schema

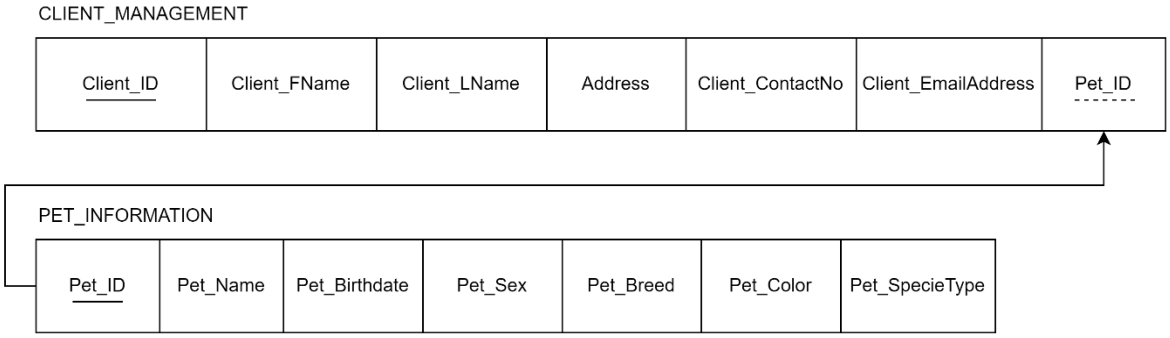


Figure 4. Client Management and Pet Information Schema

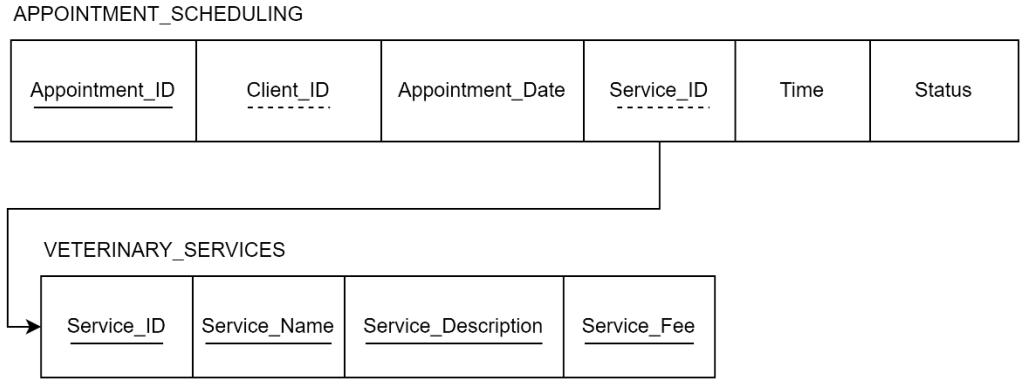


Figure 5. Appointment Scheduling and Veterinary Services Schema

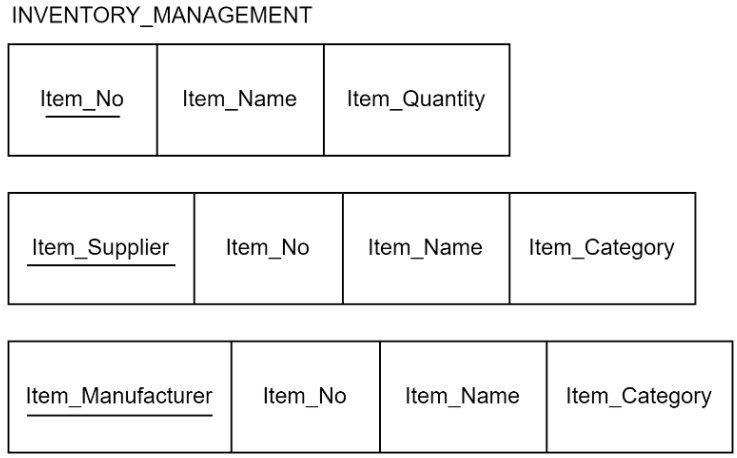


Figure 6. Inventory Management Schema

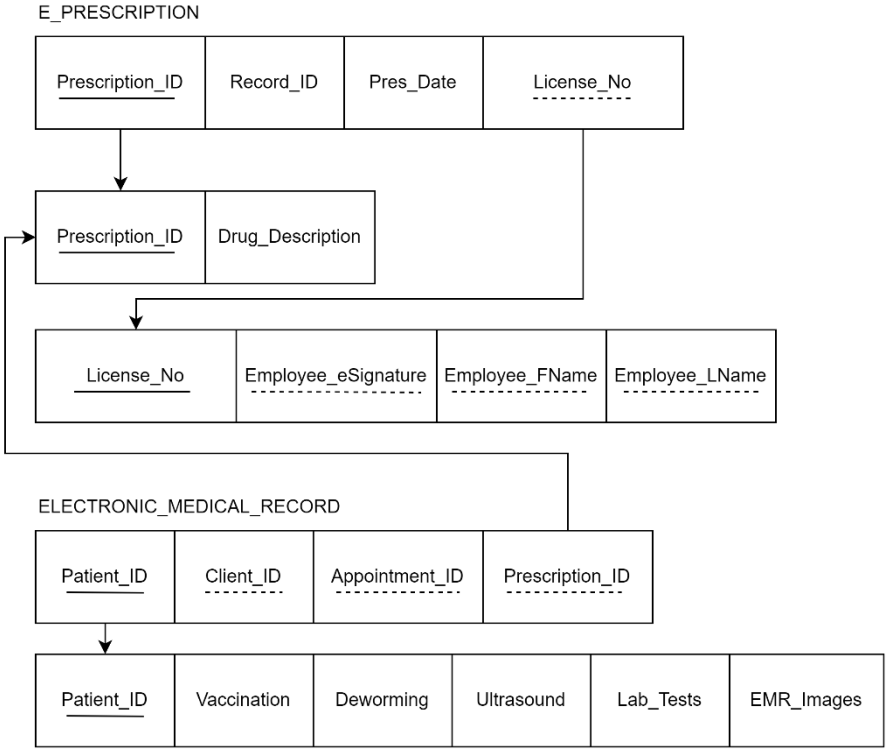


Figure 7. E-Prescription and E-Medical Record Schema

3.1.2. Table Definition/Data Dictionary

Table 1. User Credentials

Table Name: User Credentials
Table Description: This table contains user login credentials who can access the database
Related Table: N/A

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data

	acc_name	Account user's name	Varchar	255	Not Null	Alexamara Mariano
	user_name	Account user's preferred username	Varchar	50	Not Null	alex
	user_pass	Account user's encrypted password	Varchar	50	Not Null	****
	user_type	Account user's access level to database	Varchar	20	Not Null	Admin

Table 2. Employee Management

Table Name: Employee Management
Table Description: This table contains information of veterinary clinic staff
Related Table: Appointment Scheduling and Electronic Medical Record

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	empID	Employee's unique identifier	Int	9	Not Null	1
	empFName	Employee's first name	Varchar	255	Not Null	Sebastian
	empLName	Employee's last name	Varchar	255	Not Null	Stan
	empPos	Employee's position	Text		Not Null	Veterinarian
	empEmail	Employee's email address	Varchar	255	Null	sebstan@gmail.com
	empContact	Employee's contact number	Varchar	11	Not Null	09291234567
	empAdd	Employee's address	Varchar	255	Not Null	123 ABC St. Makati City
	empLicense	Employee's license number	Varchar	10	Null	0123467
	empSign	Employee's signature	Text		Null	SGD. Sebastian Stan

Table 3. Client Management

Table Name: Client Management
Table Description: This table contains information about the clients
Related Table: Appointment Scheduling and Electronic Medical Record

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	Client_ID	Client's unique identifier	Int	9	Not Null	1
	Client_Name	Client's name	Varchar	50	Not Null	Sam Parker
	Address	Client's position	Varchar	100	Not Null	123 ABC Street, Manila City
	Client_ContactNo	Client's contact number	Varchar	11	Not Null	09291234567
	Client_Email	Client's email address	Varchar	50	Null	whitewolf@outlook.com
	Pet_ID	Client's pet unique identifier	Int	9	Not Null	01

Table 4. Pet Information

Table Name: Pet Information
Table Description: This table contains information about each client's pet
Related Table: Client Management and Electronic Medical Record

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	petID	Pet's unique identifier	Int	9	Not Null	1
	OwnerName	Pet's owner's name	Varchar	255	Not Null	Yelena
	petName	Pet's name	Varchar	255	Not Null	Natasha
	petBday	Pet's birthdate	Date		Not Null	2012-07-06
	petSex	Pet's sex	Text		Not Null	Female
	petBreed	Pet's type of breed	Varchar	255	Not Null	Siberian Husky
	petColor	Pet's skin color	Varchar	255	Not Null	Wolf-Grey
	petSpecie	Pet's type of specie	Varchar	255	Not Null	Dog

Table 5. Veterinary Services

Table Name: Veterinary Services
Table Description: This table contains the list of services and their corresponding fee
Related Table: Electronic Medical Record and Invoicing System

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data

*	Service_ID	Service unique identifier	Int	9	Not Null	1
	Service_Name	Service name	Text	225	Not Null	Physical Consultation
	Service_Description	Service brief description	LongText	1000	Null	Checking symptoms based on the observation of the Veterinarian
	Service_Fee	Service charged fee	Float	24	Not Null	500.00

Table 6. Appointment Scheduling

Table Name: Appointment Scheduling
Table Description: This table contains the appointment details of each client
Related Table: Client Management and Electronic Medical Record

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	App_ID	Appointment unique identifier	Int	9	Not Null	1
	Client_ID	Client's unique identifier	Int	9	Not Null	1
	App_Date	Appointment date	Date		Not Null	2022-06-23
	Service_ID	Service unique identifier	Int	9	Not Null	1
	Time	Appointment time	Time	6	Not Null	10:30 AM
	Status	Appointment status	Char	8	Not Null	Approved

Table 7. Electronic Medical Record

Table Name: Electronic Medical Record
Table Description: This table contains all medical-related records of the pet patient
Related Table: Electronic Medical Record

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	Record_ID	Record's unique identifier	Int	9	Not Null	1
	Client_ID	Client's unique identifier	Int	9	Not Null	1
	Appointment_ID	Appointment unique identifier	Int	9	Not Null	1
	Complaint	Pet owner's statement about	Longtext	3000	Null	Pooping Blood Loss of Appetite

		their pet's symptoms				
	Diagnosis	Veterinarian's Diagnosis for the pet	Longtext	3000	Null	Canine Parvovirus (CPV) Diagnosed by: Oscar
	Medication	Veterinarian's Issued Medication for the pet	Longtext	3000	Null	IV Fluid Electrolytes Rest Administered by: Oscar
	Prescription_ID	Prescription's unique identifier	Int	9	Null	1

Table 8. E-Prescription

Table Name: e-Prescription
Table Description: This table contains the prescription information for the pet patients
Related Table: Electronic Medical Record

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	presID	Prescription's unique identifier	Int	9	Not Null	1
	presDate	Prescription's issued date	Date		Not Null	2022-06-23
	presOwner	Prescription's client name	Varchar	255	Not Null	Yelena Belanova
	presPet	Prescription's pet name	Varchar	255	Not Null	Natasha
	presVet	Prescription's veterinarian name	Varchar	255	Not Null	Sebastian Stan
	medication	Prescription's prescribed medicine/s	Varchar	255	Not Null	Hydroxyzing
	dosage	Prescription's medicines dosage	Varchar	255	Not Null	250 mg
	form	Prescription's medicine form	Varchar	255	Not Null	tablets
	quantity	Prescription's medicine quantity	Int	11	Not Null	28
	frequency	Prescription's medicine frequency	Varchar	255	Not Null	2x a day

	presNotes	Prescription's veterinarian notes	Varchar	255	Null	Intake for 2 days

Table 9. Inventory Management

Table Name: Inventory Management
Table Description: This table contains the records of medical and non-medical supplies in the clinic
Related Table:

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
*	Item_No	Item's unique identifier	Int	9	Not Null	1
	Item_Name	Item's name	Varchar	225	Not Null	Carprofen
	Item_Quantity	Item's number of stocks	Int	4	Null	50
	Item_Supplier	Item's name of the supplier	Varchar	225	Null	Unilab
	Item_Manufacturer	Item's name of manufacturer	Varchar	225	Null	Unilab
	Item_Category	Item's category (M or NM)	Char	5	Not Null	M

Table 10. Inventory – Item Price

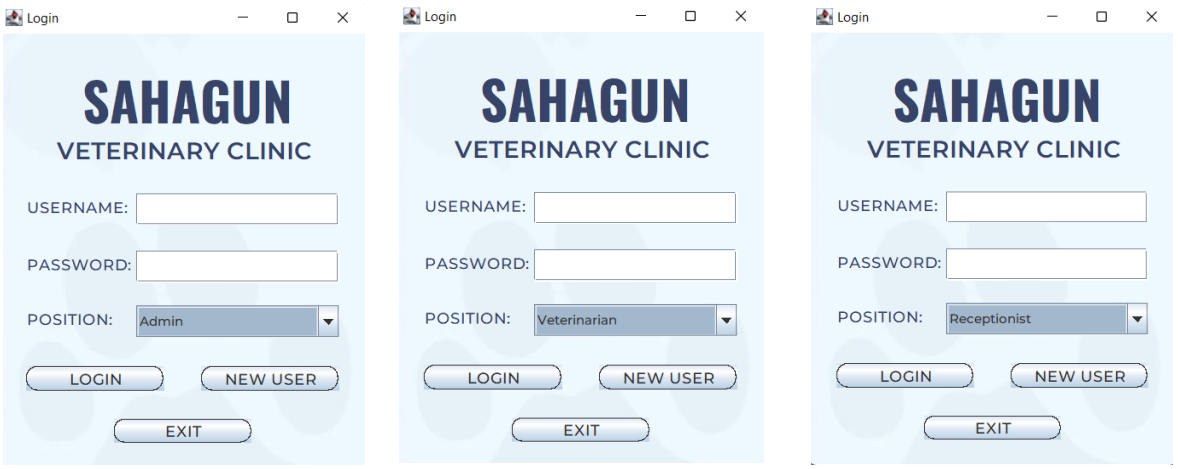
Table Name: Inventory Price (M)
Table Description: This table contains items from the inventory with their corresponding price
Related Table:

Id	Field	Description	Data Type	Length	Allowed Null	Sample Data
	Item_Category	Item's catergory (M or NM)	Varchar	50	Not Null	M
	Item_No	Item's unique identifier	Int	50	Not Null	1
	Item_Name	Item's name	Varchar	100	Not Null	Carprofen
	price	Item's sale price	Int	50	Not Null	150.00

3.2. System Design

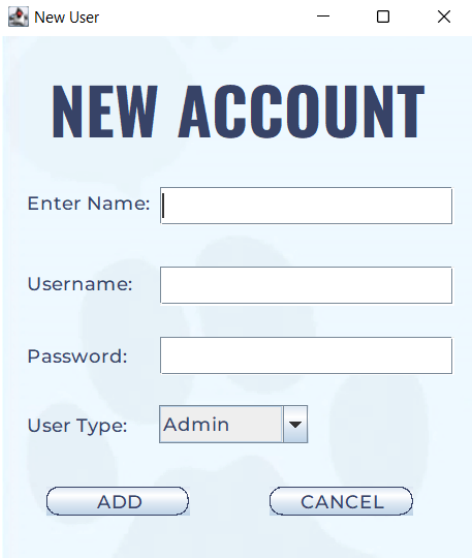
3.2.1. Screen Designs

The interface design is the structure of a system interface. The Veterinary Management System is made up of four modules: a receptionist module, a veterinarian module, and an administration module.



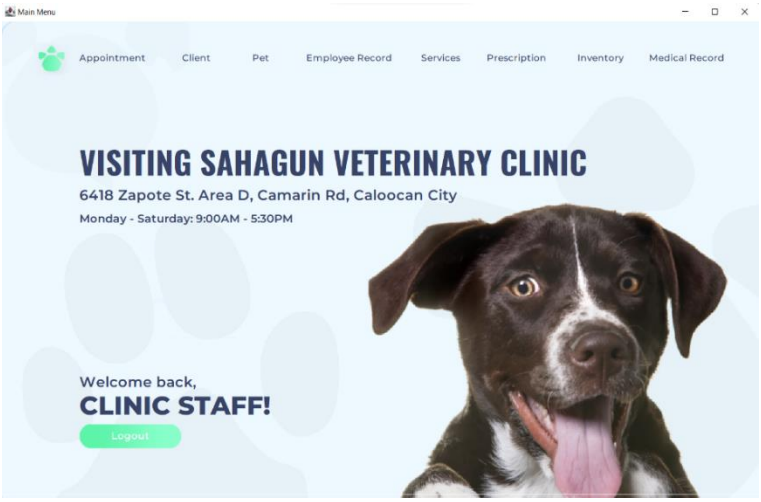
This is the first screen that the user will see. USERNAME, PASSWORD, and the respective POSITION must be inputted to login.

Figure 8. Login Screens for Veterinary Staff



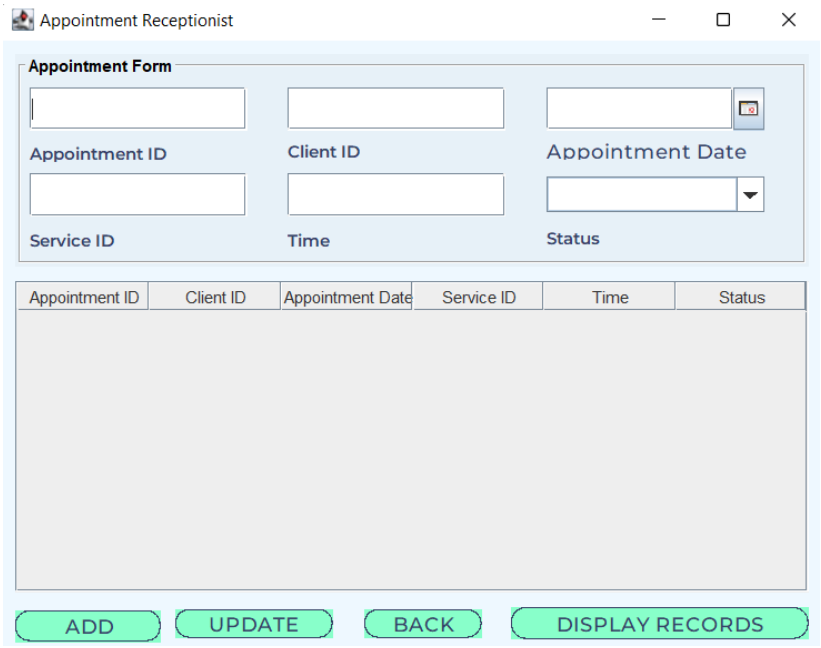
If the user wishes
To create a new account, the user must enter a name, a NAME, USERNAME, and PASSWORD. The POSITION must be entered as well.

Figure 9. Creating New Account



After logging in, the MAIN MENU will be displayed which can access different screens such as: APPOINTMENT, CLIENT, PET, EMPLOYEE RECORD, SERVICES, PRESCRIPTION, INVENTORY, and MEDICAL RECORD.

Figure 10. Main Menu



Upon clicking APPOINTMENT, the user can fill up the form with the respective details.

ADD button for adding a new record, UPDATE button for editing an existing record, and DISPLAY RECORDS button for showing all existing records.

The BACK button will redirect to the main menu.

Figure 11. Appointment Window

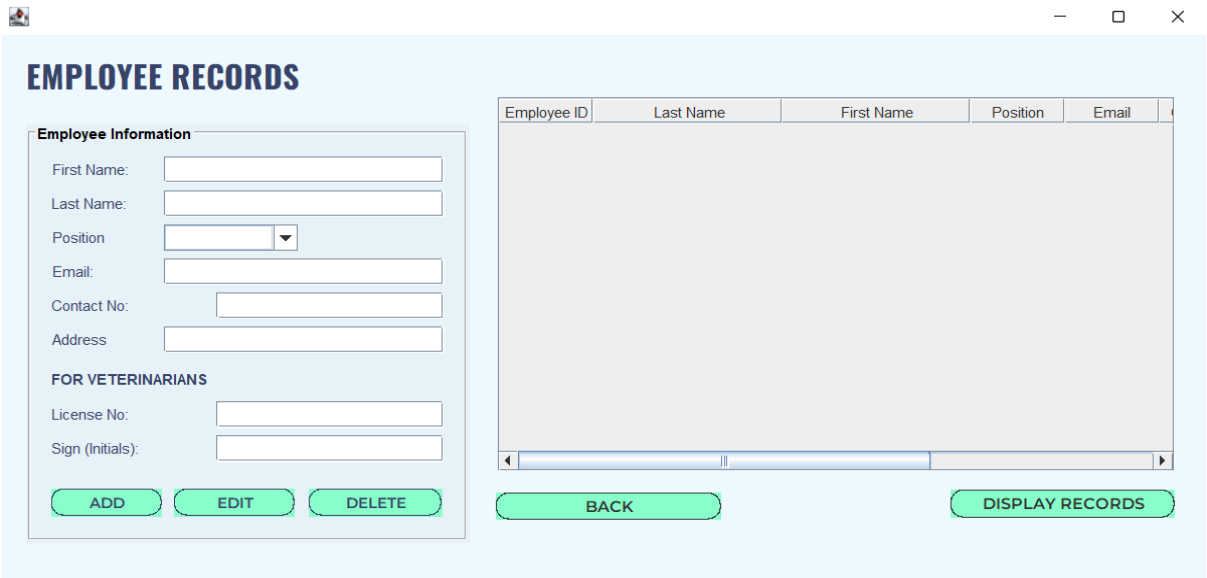
Upon clicking PET, the user can fill up the pet information with the respective details.

ADD button for adding a new record, UPDATE button for editing an existing record, and DELETE button for removing an existing record.

The DISPLAY RECORDS button will display all existing records.

The BACK button will redirect to the main menu.

Figure 12. Pet Records Window



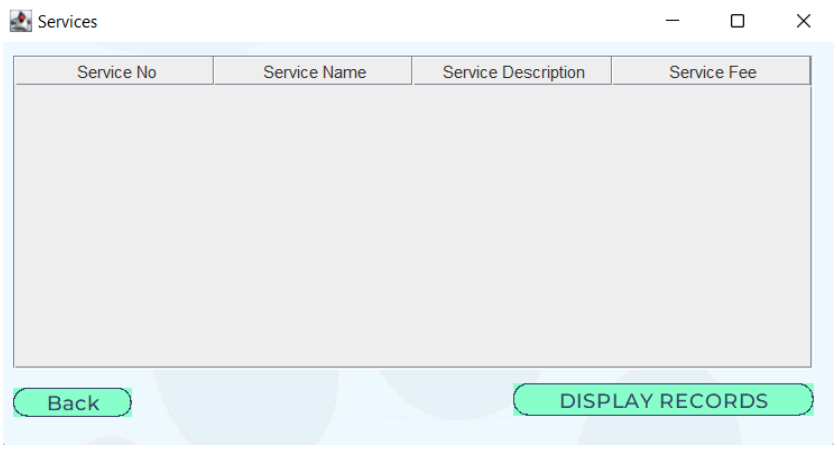
Upon clicking EMPLOYEE, the user can choose to fill in their own employee information. Only Veterinarians are required to input license number and signature (initials).

ADD button for adding a new record, UPDATE button for editing an existing record, and DELETE button for removing an existing record.

The BACK button will redirect to the main menu.

The DISPLAY RECORDS button will display all existing records.

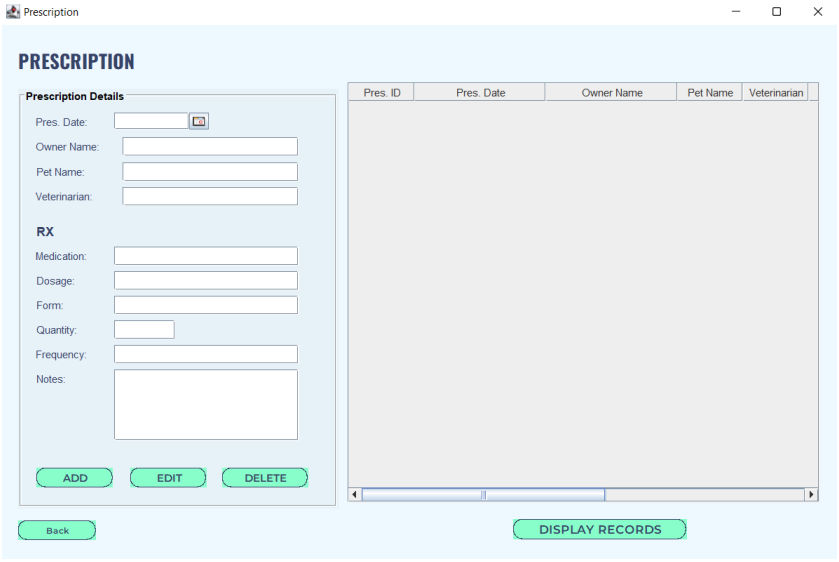
Figure 13. Employee Records Window



Upon clicking SERVICES, the user can choose to DISPLAY RECORDS of all services with its respective details.

The BACK button will redirect to the main menu.

Figure 14. Vet Services Window



Upon clicking PRESCRIPTION, the user (veterinarian) can fill up the prescription details and the RX.

ADD button for adding a new record, UPDATE button for editing an existing record, and DELETE button for removing an existing record.

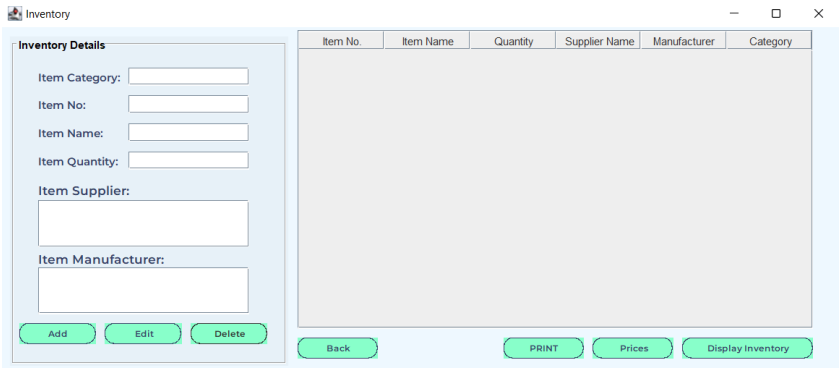
The DISPLAY RECORDS button will display all existing prescriptions.

The BACK button will redirect to the main menu.

Figure 15. Prescription Window

Upon clicking INVENTORY, the user can fill up the inventory details, including the supplier and manufacturer of the item.

ADD button for adding a new record, UPDATE button for editing an existing record, and DELETE button for removing an existing record.



The PRINT button will print the inventory records.

The PRICE button will redirect to the INVENTORY PRICES screen.

The DISPLAY INVENTORY button will display all existing items in the inventory.

Figure 16. Inventory Window

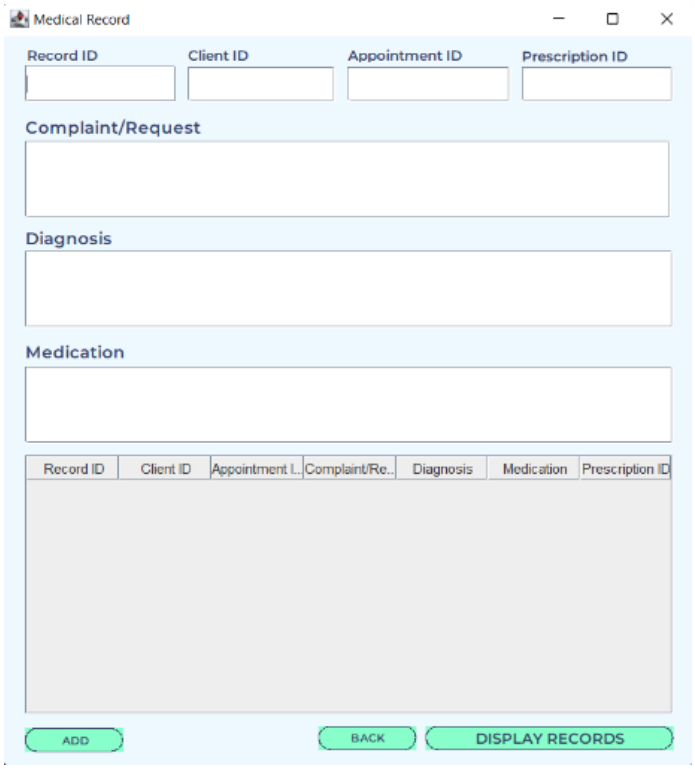
Upon clicking the PRICES button, the user can add a new item by clicking the ADD button or update an existing item by clicking the UPDATE button.

The BACK button will redirect to the Inventory screen.

The PRINT button will print the items.

The DISPLAY INVENTORY button will display all existing items and prices according to the category.

Figure 17. Inventory Prices Window



Upon clicking MEDICAL RECORD, the user (veterinarian) can fill up the medical record details, including the client's complaint or request, diagnosis, and medication.

The ADD button will add a new medical record.

The BACK button will redirect to the main menu.

The DISPLAY RECORDS button will display all existing medical record.

Figure 18. Medical Record Window

3.2.2. Screen Inventory

Table 11. Receptionist Module

No.	Name of Screen	Description
1	Sign Up	This is the sign-up page. To gain access to the system, the new user must first register their information.
2	Login	This is the login page for the user. To access the Vet Management System as a user, the user must enter their username and password.
3	User accounts	On this page, the user can update a new user profile and change some information that was previously recorded in the system.
4	Pet Information	A user can add one or more pets to the system and enter information about them such as owner name, pet name, birthdate, sex, breed, color, and specie. This then displays a list of registered pets, which can be updated or deleted as needed.
5	Appointment	This is the page for scheduling appointments. The user can schedule appointments for their pet to be checked out in the system by selecting which pet, date, and time. The administrator can accept or reject the appointment, which the user can view.
6	Electronic Medical Record	This page displays the client's pet record history, including the date, diagnosis, treatment, prescription, and veterinarian in charge.
7	Services Offered	This page contains a list of the services provided by the veterinary clinic.

Table 12. Veterinarian Module

No.	Name of Screen	Description
1	Sign Up	This is the sign-up page. To gain access to the system, the new veterinarian must first register their information.
2	Login	This is the login page for the veterinarian. To access the Vet Management System as a veterinarian, they must enter their username and password.
3	User accounts	On this page, the veterinarian can update a new user profile and change updated information that was previously recorded in the system.
4	Prescription	This is the page with the prescription. The veterinarian can enter prescriptions such as the medicine, the amount of medicine, and the price, which is determined by the pet's diagnosis.
5	Electronic Medical Record	This page displays the Veterinarian’s process for the pet, including the date, diagnosis, treatment, prescription, and veterinarian in charge.
6	Pet Information	A Veterinarian can view pet information recorded in the system such as owner name, pet name, birthdate, sex, breed, color, and specie.
7	Clinic Referral	This page enables the veterinarian to view a list of clinics in the surrounding area and refer the pet to them if the treatment cannot be completed at the veterinary clinic.

Table 13. Administrator Module

No.	Name of Screen	Description
1	Sign Up	This is the sign-up page. To gain access to the system, the admin must first register their information.
2	Login	This is the login page for the veterinarian. To access the Vet Management System as an admin, they must enter their username and password.

3	User accounts	On this page, the admin can update a new user profile and change updated information that was previously recorded in the system.
4	Manage Employees	On this page, the admin can add, update and delete employee records, user details, and information.
5	Manage Appointment	This is the page for scheduling appointments. The user can schedule appointments for their pet to be checked out in the system by selecting which pet, date, and time. The administrator can accept or reject the appointment, which the user can view.

3.2.3. List of Intelligent Queries

For Customers or Clients

QUERY	QUESTIONS (SENTENCE FORMAT)
Client	List the client number, name, address, contact number, and pet id of every client.
Pet Information	List the pet number, picture, name, birth date, sex, breed, color, and specie of every pet.
Medical Records	List the record number, client number, appointment number, vaccination, deworming, ultrasound, lab test, medical record images, and medical record notes of every pet.
Prescription	List the prescription number, record number, prescription date, drug description, and the employee responsible for providing the prescription.
Service	List the service number, service name, description, and fee of each service.

QUERY	SQL STATEMENT
Client	SELECT * FROM Client_Management ORDER BY Client_ID;
Pet Information	SELECT * FROM Pet Information ORDER BY Pet_ID
Medical Records	SELECT Record_ID, Client_ID, Appointment_ID, Vaccination, Deworming, Ultrasound, Lab_Test, EMR_Images, EMR_Notes

	FROM Electronic_Medical_Record, Appointment ORDER BY Record_ID;
Prescription	SELECT * FROM e-Prescription, Employee Management ORDER BY Prescription_ID;
Service	SELECT * FROM Veterinary_Service ORDER BY Service_ID;

For Admin and Staff

QUERY	QUESTIONS (SENTENCE FORMAT)
Price	For every item, list the item number, item name, and sale price.
Supplies	For every item, list the item number, item name, quantity, and sale price.

QUERY	SQL STATEMENT
Price	SELECT m.Item_No, m.Item_Name, o.price from inventory_mgmt m JOIN inventory_price o ON m.Item_No = o.Item_No;
Supplies	SELECT Item_No, Item_Name, Item_Quantity, Item_Catergory, Pharmacy.Item_SalePriceM, Pet_Shop.Item_SalePriceNM FROM Inventory_Management, Pharmacy, Pet_Shop ORDER BY Item_No WHERE Item_Category=M;

3.2.4. List of Reports

SAHAGUN

Veterinary Clinic

e-Prescription

Date: **7/9/22, 12:00 AM** Owner Name: **Catt Camayudo**

Pet Name: **Marie Rosas**

Nicomed **5ml/Syrup** **#1**

3x a day. For one week.

Follow-up after 2 weeks of consultation.

VALDEZ TAGLE
VETERINARIAN
Lic. No. 123456

Tampering with this document is against the law.
For verification, contact Sahagun Vet Clinic.

Figure 18. e-Prescription Report

Sahagun Vet Clinic

Item No.	Item Name	Quantity	Supplier Name	Manufacturer	Category
1	Nexgard	5	Maxi-VetSuppli...	UniversalRobin...	M
3	Vest	10	Jllibee	Canbury	NM
7	Catnip	20	CATternips	Imlodes	NM
8	Dog Bone	100	dasd	fsddsad	M
9	Carbocistine	500	Mercury	UniLab	M
10	Paracetamol	100	Store	UniLab	M
11	Collar	10	Marketing	Management	NM
12	Hammock	5	Street Weaver	Manila City Hall	NM
13	Dog Bowl	50	IanMarketing	Yam Bakalan	NM
14	Litter Box	5	Joy Platican	Mira Plastics	NM

Figure 19. Inventory Records Report

Sahagun Vet Clinic

ItemCategory	Item_No	ItemName	Price
M	1	Nexgard	800
M	9	Carbocistine	500
M	10	Paracetamol	125
NM	3	Vest	250
NM	7	Catnip	100
NM	8	Dog Bone	200
NM	11	Collar	70
NM	12	Hammock	600
NM	13	Dog Bowl	300
NM	14	Litter Box	550

Figure 20. Product Price List Report

CHAPTER 4 – FINDINGS, CONCLUSION, & RECOMMENDATIONS

4.1. Findings

The convenience and accessibility a system provides are comparably advantageous compared to manually writing down information. The information is being stored in program-based applications electronically linked to the database system proposed. Admin, Staff, and Receptionist can add, update, and edit information efficiently due to easy access to the data recorded. The implementation of this system can help to record pet and client information undergoing the services of the clinic. The system helps the management to store records for their client, pets, inventory, and transactions, and inspect the total quantity of their current available supply and prices in a more accessible manner.

4.2. Conclusion

The Veterinary Clinic Management System is developed in Java and runs on the MySQL environment. It is a desktop-based system with functionalities of making an appointment, recording owner and pet information, generating pet medical records, ready to fill the prescription template, list of services provided by the clinic and their corresponding fee, and inventory. The system can save both clients and clinic staff effort and time in accomplishing many paper-based forms. Moreover, several tests run, and input validations have been executed to ensure that the system is functioning properly and doing its task of collecting, storing, and maintaining information in a structured and easy-to-understand manner.

4.3. Recommendations

The Veterinary Management System facilitates a more efficient and systematic management process. Several functions can be performed in this system in the future. The following are possible future projects:

- Make use of Front-End Web Development tools and Database system applications that are simple to connect and collaborate to provide a better user interface.
- Future researchers must be familiar with and proficient in web development languages such as HTML, CSS, PHP, and others.
- To integrate a plugin in the backend of the database such as JasperForm and BIRT that can easily create and customize reports according to the needs of the clinic.
- To create a clinic referral form for them to use when referring to a pet that they are unable to treat due to a lack of equipment.

- To make a process to automatically deduct the stock from inventory depending on the number of items bought by a client.
- To create an invoicing system in the database functionality which generates receipts and can serve as a basis for creating sales reports for the clinic.
- To create a login system where admin can access the whole system, while other staff can only access limited functions of the proposed system.

APPENDICES

LIST OF FIGURES

LIST OF TABLES

REFERENCES

MySQL. (2022). *MySQL 8.0 Reference Manual*. Retrieved from MySQL.com: https://dev.mysql.com/doc/refman/8.0/en/

Oracle Philippines. (n.d.). *What Is a Database?.* Retrieved from: https://www.oracle.com/ph/database/what-is-database/.

Roberts, Elissa. (2022). *Why is my vet so busy?*. Retrieved from: https://drvet.com.au/articles/2022/03/07/why-is-my-vet-so-busy/.

St. George's University. (2021). *What Is a Veterinarian? Uncovering the Role of Animal Doctors*. Retrieved from: https://www.sgu.edu/blog/veterinary/what-is-a-veterinarian/.

The British Standards Institution. (2022). *What is a Management System?*. Retrieved from: https://www.bsigroup.com/en-AU/About-BSI/FAQs/What-is-a-Management-System/.

Zwass, V. (n.d.). *information system*. Encyclopedia Britannica. Retrieved from: https://www.britannica.com/topic/information-system.

Entity Relationship Diagram created in Lucidchart, Retrieved from: www.lucidchart.com

Relational Schema Diagram created in https://app.diagrams.net/.

ABOUT THE AUTHOR

PHOTO	NAME	CONTACT NO.	WEBMAIL
	John-Loyd G. Billano	+639774663439	john-loydgbillano@iskolarngbayan.pup.edu.ph
	Cattleya Marie V. Camayudo	+639292026205	cattleyamarievcamayudo@iskolarngbayan.pup.edu.ph
	Alwyn N. Chua	+639053735889	alwynnchua@iskolarngbayan.pup.edu.ph
	Elyza Denise A. Laurente	+639959461682	elyzadenisealaurente@iskolarngbayan.pup.edu.ph