

**DESIGN AND IMPLEMENTATION OF A VETERINARY CLINIC MANAGEMENT  
INFORMATION SYSTEM**

**(Case Study of Federal Polytechnic, Mubi)**

**BY**

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NATIONAL DIPLOMA (ND) IN COMPUTER SCIENCE.**

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## DECLARATION

I hereby declare that the work in this project titled “**Design and Implementation of a Veterinary Management (Case Study of Federal Polytechnic, Mubi)**” was performed by me under the supervision of Mal. Salihu Gambo Umaru. The information derived from literature has been duly acknowledged in the text and a list of references provided. The work embodied in this project is original and has not been submitted in part or in full for any other diploma or certificate of this or any other institution.

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Signature

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Date

## CERTIFICATION

This project titled “**Design and Implementation of a Veterinary Management (Case Study of Federal Polytechnic, Mubi)**” meets the regulations governing the award of National Diploma (ND) in Computer Science, Federal Polytechnic Mubi, Adamawa State

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## **DEDICATION**

This project is dedicated to my beloved mother Mrs. Mary Musa and love ones for their advice, encouragement and financial support towards my academic pursuit.

## **ACKNOWLEDGEMENTS**

I want to acknowledge Almighty God for His infinite mercy and protection throughout my academic activities and for granting me understanding in achieving my academic success.

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## TABLE OF CONTENTS

<b>TITLE PAGE .....</b>	<b>i</b>
<b>DECLARATION.....</b>	<b>ii</b>
<b>CERTIFICATION .....</b>	<b>iii</b>
<b>DEDICATION.....</b>	<b>iv</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>v</b>
<b>TABLE OF CONTENTS.....</b>	<b>vi</b>
<b>LIST OF FIGURES .....</b>	<b>viii</b>
<b>LIST OF TABLES .....</b>	<b>ix</b>
<b>ABSTRACT.....</b>	<b>x</b>
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.1 Background to the Study.....	1
1.2 Problem Statement.....	3
1.3 Aim and Objectives.....	3
1.4 Significance of the Study.....	4
1.5 Scope of the Study .....	4
1.6 Definition of some Operational Terms .....	5
<b>CHAPTER TWO .....</b>	<b>6</b>
<b>LITERATURE REVIEW.....</b>	<b>6</b>
2.1 Introduction.....	6
2.2 Veterinary Clinic Management Systems .....	6
2.3 Information Technology in Veterinary Medicine .....	7
2.4 Information Management Systems in Veterinary Medicine.....	8
2.5 Database Management Systems in Veterinary Medicine .....	9
2.5.1 Functionality of Database Management Systems .....	9
2.6 Related Study.....	10
2.7 Summary .....	11
<b>CHAPTER THREE .....</b>	<b>13</b>
<b>SYSTEM ANALYSIS AND DESIGN .....</b>	<b>13</b>
3.1 Introduction.....	13
3.2 Disadvantages of the Existing System.....	13
3.3 Advantages of the Proposed System.....	13
3.5 Methods of Data Collection.....	14

3.6	System Design .....	15
3.7	System Requirement Specification .....	20
<b>CHAPTER FOUR.....</b>		<b>21</b>
<b>RESULTS AND DISCUSSION .....</b>		<b>21</b>
4.1	Introduction.....	21
4.2	Results.....	21
4.3	Discussion .....	25
4.4	User manual .....	28
<b>CHAPTER FIVE.....</b>		<b>29</b>
<b>SUMMARY, CONCLUSION AND RECOMMENDATIONS.....</b>		<b>29</b>
5.1	Summary .....	29
5.2	Conclusion .....	29
5.3	Recommendations.....	29
5.4	Contribution to Knowledge.....	30
5.5	Area for Further Work .....	30
<b>REFERENCES.....</b>		<b>31</b>
<b>APPENDIX A .....</b>		<b>33</b>
<b>APPENDIX B .....</b>		<b>37</b>

## LIST OF FIGURES

Figure 3.1: Waterfall model	-	-	-	-	-	-	-	14
Figure 3.2: Use case diagram-	-	-	-	-	-	-	-	15
Figure 3.3: System Architecture	-	-	-	-	-	-	-	15
Figure 3.4: Database Entity Relationship Diagram	-	-	-	-	-	-	-	17
Figure 3.5: Book Appointment Form	-	-	-	-	-	-	-	18
Figure 3.6: Add Service	-	-	-	-	-	-	-	18
Figure 3.7: Add category	-	-	-	-	-	-	-	18
Figure 3.8: Login Interface	-	-	-	-	-	-	-	19
Figure 3.9: Appointment Output	-	-	-	-	-	-	-	19
Figure 3.10: Services Output	-	-	-	-	-	-	-	19
Figure 4.1: Welcome Interface	-	-	-	-	-	-	-	21
Figure 4.2: Login interface	-	-	-	-	-	-	-	21
Figure 4.3: Book Appointment	-	-	-	-	-	-	-	22
Figure 4.4: Appointment Availability interface	-	-	-	-	-	-	-	22
Figure 4.5: Appointment list interface	-	-	-	-	-	-	-	23
Figure 4.6: Dashboard interface	-	-	-	-	-	-	-	23
Figure 4.7: Services interface	-	-	-	-	-	-	-	24
Figure 4.8: Add service interface	-	-	-	-	-	-	-	24
Figure 4.9: Add category/ category list	-	-	-	-	-	-	-	25



## LIST OF TABLES

Table 3.1: Admin	-	-	-	-	-	-	-	-	-	16
Table 3.2: Category	-	-	-	-	-	-	-	-	-	16
Table 3.3: Service lists	-	-	-	-	-	-	-	-	-	16
Table 3.4: Appointment Records	-	-	-	-	-	-	-	-	-	17

## ABSTRACT

*The integration of digital systems in veterinary medicine is increasingly recognized as essential for enhancing operational efficiency and improving animal healthcare delivery. Despite the critical role of veterinary clinics in managing animal health, many facilities, including the veterinary clinic at the Federal Polytechnic, Mubi, continue to rely on outdated manual systems. These traditional practices lead to inefficiencies in record-keeping, appointment scheduling, and inventory management, ultimately affecting service quality and patient outcomes. This study aims to address these challenges by designing and implementing a Veterinary Clinic Management Information System (VCMIS) tailored specifically for the Federal Polytechnic, Mubi's veterinary clinic. The proposed VCMIS is designed to streamline administrative and clinical tasks through a comprehensive suite of modules including patient management, appointment scheduling, inventory management, and data analysis. By transitioning from manual to digital systems, the VCMIS seeks to improve record accuracy, reduce appointment delays, optimize resource allocation, and enhance overall clinic efficiency. The significance of this study lies in its potential to revolutionize veterinary clinic operations by automating critical processes, thereby improving service delivery and animal health outcomes. The VCMIS will facilitate better management of veterinary records, ensure timely access to care, and support data-driven decision-making. Through a combination of literature review and empirical research, this study contributes to the field of veterinary informatics and offers valuable insights for other veterinary practices considering similar technological advancements.*

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

The introduction of digital systems in veterinary medicine, in compared to human medicine is an ongoing process due to the advantages offered. If anyone's is ill and wants to visit a doctor for check-up, he or she needs to visit the hospital and waits until the doctor is available. The patient also waits in a queue while getting appointment. If the doctor cancels the appointment for some emergency reasons, then the patient is not able to know about the cancelation of the appointment unless or until he or she visits the hospital. As the mobile communication technology is developing rapidly, therefore, one can use the mobile's applications to overcome such problems and inconvenience for the patients. Veterinary information management system (VIMS) in the process of notification and management of animal diseases by Drago Medic talks about a prerequisite to the development of an efficient animal health, food safety and traceability management system in the animal food production chain is the implementation of an integrated veterinary informational management system (VIMS) capable for the capture, storage, analysis and retrieval of data and providing the opportunity for the cumulative gathering of the knowledge and capability for its competent interpretation (Shivani & Li, 2021).

In recent years, the integration of technology into various sectors has revolutionized operations, enhancing efficiency, accuracy, and productivity. The veterinary sector, despite its critical role in animal health management, has not fully exploited the potentials offered by information technology. Veterinary clinics, in particular, often grapple with manual record-keeping, appointment scheduling, inventory management, and other administrative tasks, leading to inefficiencies and suboptimal service delivery. The integration of information technology (IT) into veterinary medicine has gained significant attention in recent years, driven by the need for efficient management practices and improved animal healthcare delivery. Veterinary clinics, like other healthcare facilities, face challenges related to manual record-keeping, inefficient resource utilization, and limited data analysis capabilities. These challenges underscore the importance of developing and implementing robust management information systems (MIS) tailored to the specific needs of veterinary practice (Okafor, 2019).

According to a study by Adebayo (2020), veterinary clinics often rely on outdated paper-based systems for recording patient information, treatment history, and other clinical data. This manual approach not only consumes valuable time but also increases the risk of errors and data loss. In addition, without a centralized database, clinics struggle to maintain accurate records, hindering the continuity of care and impeding collaboration among veterinary professionals.

IMS is modern web-based e-government intranet system, which includes a number of registries, databases and applications. The system is the support tool for business processes under the competence of the VD, but also for veterinary organizations (VO) in Serbia, acknowledging the geographical distribution. The National Animal Disease Notification System (NADNS) software application, as integral segment of VIMS, is a notification system with the main purpose of rapid alert, registration and documentation of animal diseases obliged to be officially notified to competent authority which ensures collection of detailed information about outbreaks. This permits immediate access to information and appropriate management of such events in order to combat outbreaks of contagious animal disease effectively (Plasic, 2019).

Appointment scheduling is another area where veterinary clinics face inefficiencies. Research by Okafor (2019), highlights the challenges associated with managing appointment bookings manually, including long waiting times for clients and underutilization of clinic resources. An effective scheduling system is essential for optimizing clinic workflow, improving client satisfaction, and ensuring timely access to veterinary care.

A study by Adeleke, Titi and Haruna (2020), found that many clinics struggle with tracking pharmaceuticals, medical supplies, and equipment, leading to stockouts, overstocking, and wastage. In addition, without proper inventory management systems in place, clinics are unable to monitor product expiry dates, posing risks to patient safety and regulatory compliance. Furthermore, the lack of data analysis capabilities hampers veterinary clinics' ability to assess performance, identify trends, and make informed decisions. According to research by Adewale (2020), access to real-time data and analytical tools is essential for optimizing clinic operations, identifying areas for improvement, and developing evidence-based treatment protocols.

The Federal Polytechnic, Mubi, with its veterinary clinic, is not immune to these challenges. Despite its mandate to provide quality veterinary services to the institution and its environs, the clinic's operations are hindered by outdated manual systems and processes. Therefore, there is a pressing need to design and implement a Veterinary Clinic Management Information System (VCMIS) tailored to the unique requirements of the Federal Polytechnic, Mubi's veterinary clinic. By leveraging recent advancements in IT and drawing upon best practices in system design, the proposed VCMIS aims to address the aforementioned challenges and enhance the clinic's overall efficiency, effectiveness, and quality of service delivery. Through a comprehensive examination of existing literature, coupled with empirical research, this study seeks to contribute to the body of knowledge on veterinary clinic management systems and inform future developments in the field.

## **1.2 Problem Statement**

The Federal Polytechnic, Mubi's veterinary clinic operates within an environment characterized by manual record-keeping, inefficient resource utilization, and limited data analysis capabilities. The current manual system for recording patient information, treatment history, and other clinical data is prone to errors, redundancies, and data loss. Without a centralized database, the clinic struggles to maintain accurate and up-to-date records, compromising the continuity of care and hindering collaboration among veterinary professionals.

The absence of an organized appointment scheduling system results in long waiting times for clients and inefficient utilization of clinic resources. Clients often experience delays in accessing veterinary care, leading to dissatisfaction and potentially compromising animal health outcomes. Moreover, without proper scheduling mechanisms in place, the clinic is unable to optimize its workflow and allocate resources effectively. The manual tracking of pharmaceuticals, medical supplies, and equipment poses significant challenges for the clinic. Stockouts, overstocking, and wastage are common issues, leading to disruptions in service delivery and increased operational costs. Furthermore, without timely information on product expiry dates, the clinic risks using expired medications, jeopardizing patient safety and regulatory compliance.

Addressing these challenges requires the development and implementation of a robust Veterinary Clinic Management Information System (VCMIS) tailored to the specific needs of the Federal Polytechnic, Mubi's veterinary clinic. The VCMIS should provide functionalities for efficient record-keeping, streamlined appointment scheduling, effective inventory management, and comprehensive data analysis. By addressing these critical issues, the VCMIS aims to enhance the clinic's overall efficiency, effectiveness, and quality of service delivery, ultimately improving animal health outcomes and customer satisfaction.

## **1.3 Aim and Objectives**

The aim of this study is to design and implement a Pet Care and Veterinary Management System for the Federal Polytechnic, Mubi's veterinary clinic. Specifically, the study aims at:

- i. Develop a user-friendly interface for recording and managing patient information, treatment history, and other relevant veterinary records.
- ii. Implement a scheduling module to streamline appointment booking and resource allocation.
- iii. Design an inventory management system for tracking pharmaceuticals, medical supplies, and equipment.
- iv. Create a centralized database to facilitate data storage, retrieval, and analysis.

#### **1.4 Significance of the Study**

The successful implementation of the Veterinary Clinic Management Information System (VCMIS) at the Federal Polytechnic, Mubi's veterinary clinic holds significant implications for various stakeholders, including the institution, veterinary professionals, animal owners, and the broader community. The study's significance lies in its potential to address longstanding challenges in veterinary clinic management and improve the delivery of animal healthcare services.

The VCMIS will streamline clinic operations, resulting in improved efficiency and effectiveness in service delivery. By automating tasks such as record-keeping, appointment scheduling, and inventory management, veterinary professionals can focus more on providing quality care to animals. Reduced waiting times and enhanced resource allocation will contribute to a better overall experience for clients seeking veterinary services. Centralizing veterinary records within the VCMIS will improve the accuracy, accessibility, and security of patient information. Veterinary professionals can easily retrieve patient history, treatment protocols, and diagnostic results, facilitating continuity of care and informed decision-making. Furthermore, the VCMIS will enable secure sharing of information among veterinary staff, promoting collaboration and coordination in patient management.

This study contributes to the body of knowledge on veterinary clinic management systems and information technology in veterinary medicine. By documenting the design, implementation, and evaluation of the VCMIS, this research serves as a valuable resource for other veterinary clinics and academic institutions seeking to adopt similar technology-driven solutions. Additionally, the study highlights best practices and lessons learned, guiding future research and development in the field.

#### **1.5 Scope of the Study**

This study will focus on the design and implementation of a Pet Care and Veterinary Management System specifically tailored to the needs of the Federal Polytechnic, Mubi's veterinary clinic. The scope of the system will include modules for patient management, appointment scheduling, inventory management, and data analysis. The study will not address broader issues related to veterinary practice or clinic management beyond the context of the Federal Polytechnic, Mubi.

## 1.6 Definition of some Operational Terms

**Centralized Database:** A single, unified repository for storing and managing all relevant veterinary records, including patient information, treatment histories, diagnostic results, and inventory data, accessible to authorized users across the clinic (Marston, 2020).

**Clinic:** A healthcare facility where medical professionals, such as veterinarians, provide diagnosis, treatment, and preventive care services to patients in an outpatient setting, typically specializing in a specific area of medicine, such as veterinary medicine (World Health Organization, 2021).

**Information:** Data that has been processed, organized, or structured in a meaningful way to convey knowledge, insights, or instructions to users, enabling informed decision-making and facilitating communication and understanding (Laudon & Laudon, 2020).

**Management:** The process of planning, organizing, coordinating, directing, and controlling resources and activities within an organization or institution to achieve predetermined goals and objectives effectively and efficiently (Lunenburg, 2021).

**System:** A set of interconnected components or elements working together to achieve a common purpose or function, characterized by inputs, processes, outputs, feedback mechanisms, and boundaries (Kroenke & Boyle, 2021).

**Veterinary Clinic Management Information System (VCMIS):** A software system designed to automate and streamline various administrative and clinical tasks within a veterinary clinic, including record-keeping, appointment scheduling, inventory management, and data analysis (Al-Taha, 2020).

**Veterinary:** Refers to the branch of medicine that deals with the prevention, diagnosis, and treatment of diseases, disorders, and injuries in animals, encompassing various species ranging from pets to livestock and wildlife (Al-Taha, 2020).

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter provides a comprehensive review of the existing literature related to veterinary clinic management systems, information technology in veterinary medicine, and best practices in system design. By synthesizing relevant research findings and identifying gaps in the literature, this review informs the design and implementation of the Veterinary Clinic Management Information System (VCMIS) for the Federal Polytechnic, Mubi's veterinary clinic.

#### **2.2 Veterinary Clinic Management Systems**

Veterinary clinic management systems are pivotal in modern veterinary practice, offering a range of functionalities aimed at improving clinic efficiency, enhancing patient care, and streamlining administrative processes. Recent research underscores the significance of these systems in optimizing clinic operations and facilitating better outcomes for both veterinary professionals and animal patients. Research by Adeleke and Johnson (2020), emphasizes the importance of automated systems for record-keeping, appointment scheduling, and inventory management in enhancing clinic efficiency and effectiveness. These systems help reduce administrative burdens, minimize errors, and optimize resource utilization, ultimately leading to better patient outcomes and client satisfaction.

Adeleke and Johnson (2020), emphasize the transformative impact of veterinary clinic management systems on various aspects of clinic management. These systems encompass modules for patient registration, appointment scheduling, medical record-keeping, billing, and inventory management. By automating these essential tasks, veterinary clinic management systems reduce administrative burdens, minimize errors, and enhance the overall efficiency of clinic operations.

Moreover, veterinary clinic management systems contribute to improved patient care through the centralization and accessibility of patient health records. With electronic health record (EHR) functionalities, veterinary professionals can easily retrieve and update patient information, track medical histories, and monitor treatment plans. This accessibility ensures continuity of care, facilitates communication among veterinary staff, and enables informed decision-making regarding patient diagnosis and treatment (Onyeka & James, 2020).

In addition to enhancing clinical workflows, veterinary clinic management systems play a crucial role in improving client satisfaction and engagement. Adebayo and Nwankwo (2019) highlight the importance of appointment scheduling modules in reducing wait times, optimizing resource



allocation, and enhancing the overall client experience. By providing clients with convenient appointment booking options and timely reminders, these systems promote customer retention and loyalty, ultimately contributing to the success and sustainability of veterinary clinics. Furthermore, veterinary clinic management systems support financial management and revenue optimization through integrated billing and invoicing functionalities. By automating billing processes, tracking expenses, and generating financial reports, these systems enable clinics to monitor financial performance, identify revenue streams, and make informed decisions regarding pricing and resource allocation (Okoro & Eze, 2021).

### **2.3 Information Technology in Veterinary Medicine**

The integration of information technology (IT) into veterinary medicine has transformed the way veterinary professionals deliver care and manage clinic operations. According to Onyeka and James (2020), advancements in electronic health records (EHRs), telemedicine, and diagnostic imaging have revolutionized clinical practice, enabling real-time data access, remote consultations, and improved diagnostic accuracy. However, challenges such as data security, interoperability, and digital divide persist, highlighting the need for tailored IT solutions in veterinary settings.

Onyeka and James (2020), emphasize the role of EHR systems in modern veterinary practice, facilitating the digitalization of patient health records and streamlining clinical workflows. EHRs enable veterinary professionals to record and access patient information electronically, ensuring data accuracy, accessibility, and security. By centralizing patient records, EHR systems support continuity of care, enhance collaboration among veterinary staff, and enable informed decision-making regarding patient diagnosis and treatment.

Telemedicine is another area where IT is making significant strides in veterinary medicine. Telemedicine platforms allow veterinary professionals to remotely consult with clients, diagnose medical conditions, and provide treatment recommendations without the need for in-person visits. Research by Adebayo and Nwankwo (2021), highlights the growing popularity of telemedicine among pet owners, who value the convenience, accessibility, and cost-effectiveness of virtual consultations. Telemedicine also extends veterinary care to remote or underserved areas, improving access to healthcare for animals in need.

Furthermore, advancements in diagnostic imaging technologies, such as computed tomography (CT), magnetic resonance imaging (MRI), and ultrasound, are transforming the diagnosis and treatment of veterinary patients. These imaging modalities provide detailed anatomical and functional information, aiding in the detection and characterization of various medical conditions

in animals. Research by Okoro and Eze (2020), demonstrates the utility of advanced imaging techniques in veterinary oncology, neurology, and orthopedics, enabling more accurate diagnosis, treatment planning, and monitoring of disease progression.

Despite the numerous benefits of IT in veterinary medicine, several challenges remain. Data security, privacy, and interoperability issues are significant concerns, particularly regarding the sharing and exchange of electronic health information. Additionally, the digital divide, limited access to technology, and disparities in IT literacy pose barriers to the adoption of IT solutions in some veterinary settings (Onyeka & James, 2020).

Effective system design is essential for developing user-friendly, functional, and scalable veterinary clinic management systems. Adebayo and Nwankwo (2019), emphasize the importance of user-centered design principles, iterative development processes, and stakeholder engagement in ensuring system usability and acceptance. Furthermore, Okoro and Eze (2021), advocate for modular architecture, interoperability standards, and data-driven decision-making frameworks to support system flexibility, integration, and adaptability to evolving clinic needs.

## **2.4 Information Management Systems in Veterinary Medicine**

Information Management Systems (IMS) play a crucial role in modern veterinary medicine, facilitating the organization, storage, retrieval, and analysis of vast amounts of data related to animal health, treatment, and management. These systems encompass a wide range of functionalities, including electronic health records (EHRs), practice management software, laboratory information management systems (LIMS), and research databases, among others.

Electronic Health Records (EHRs) are digital repositories that store comprehensive patient information, including medical history, diagnostic test results, treatment plans, and follow-up notes. EHR systems enable veterinary professionals to access patient records from anywhere at any time, improving continuity of care, enhancing communication among veterinary team members, and facilitating evidence-based decision-making (Okafor & Musa, 2021).

Practice Management Software (PMS) encompasses a suite of tools and functionalities designed to streamline administrative tasks, such as appointment scheduling, billing, inventory management, and client communication. PMS systems automate routine processes, reduce paperwork, and optimize clinic workflows, enabling veterinary practices to operate more efficiently and effectively (Ugwu & Abubakar, 2021).

Laboratory Information Management Systems (LIMS) are specialized IMS designed to manage laboratory workflows, sample tracking, test results, and data analysis. LIMS systems play a critical role in veterinary diagnostics, research, and quality assurance, enabling laboratories to process samples more efficiently, maintain data integrity, and generate accurate and reliable test results (Adeleke & Johnson, 2021).

Research databases aggregate and organize scientific literature, research findings, and clinical data relevant to veterinary medicine. These databases serve as valuable resources for veterinary professionals, researchers, and educators, providing access to peer-reviewed journals, case studies, treatment protocols, and evidence-based guidelines (Okoro & Eze, 2020).

Recent advancements in information technology, such as cloud computing, mobile applications, and artificial intelligence (AI), are transforming the landscape of IMS in veterinary medicine. Cloud-based EHR systems offer scalability, accessibility, and data security, enabling veterinary practices to store and access patient records remotely. Mobile applications provide veterinarians with real-time access to patient information, diagnostic tools, and treatment guidelines, enhancing clinical decision-making and client communication. AI-powered analytics tools analyze large datasets to identify trends, predict disease outbreaks, and optimize treatment protocols, leading to improved patient outcomes and practice efficiency (Eze & Nwankwo, 2021).

## **2.5 Database Management Systems in Veterinary Medicine**

Database Management Systems (DBMS) play a pivotal role in veterinary medicine by providing a structured and organized framework for storing, managing, and retrieving vast amounts of data related to animal health, clinical records, research findings, and administrative information. These systems enable veterinary professionals to efficiently manage and analyze data, support evidence-based decision-making, and enhance the quality of care provided to animal patients.

### **2.5.1 Functionality of Database Management Systems**

**Data Storage and Organization:** DBMS serve as centralized repositories for storing diverse types of data, including patient records, laboratory test results, imaging studies, and administrative information. These systems organize data into tables, rows, and columns, facilitating efficient data retrieval and analysis (Okafor & Musa, 2021).

**Data Retrieval and Querying:** DBMS enable users to retrieve specific information from the database through querying using Structured Query Language (SQL) or graphical user interfaces. Veterinary

professionals can retrieve patient records, diagnostic results, treatment histories, and other relevant information to support clinical decision-making (Ugwu & Abubakar, 2021).

**Data Security and Integrity:** DBMS incorporate robust security measures to safeguard sensitive information and ensure data integrity. Access controls, encryption techniques, and audit trails help protect patient confidentiality and prevent unauthorized access or tampering of data (Adeleke & Johnson, 2021).

**Scalability and Performance:** Modern DBMS are designed to handle large volumes of data and support scalable architectures to accommodate growth and expansion. These systems employ indexing, caching, and optimization techniques to enhance performance and responsiveness, even under heavy workload conditions (Eze & Nwankwo, 2021).

The adoption of cloud-based database solutions is gaining traction in veterinary medicine, offering scalability, flexibility, and cost-effectiveness. Cloud-based DBMS allow veterinary practices to store and access data remotely, collaborate with external partners, and scale resources as needed without the burden of managing on-premises infrastructure (Okoro and Eze, 2020). DBMS are increasingly integrated with mobile applications to provide veterinarians with real-time access to patient data, diagnostic tools, and treatment guidelines. Mobile applications enable veterinary professionals to capture and update patient information at the point of care, enhancing clinical decision-making and workflow efficiency (Ugwu & Abubakar, 2021).

DBMS are leveraging big data analytics and machine learning algorithms to analyze large datasets, identify patterns, and extract actionable insights. These advanced analytics tools help veterinary professionals identify disease trends, predict treatment outcomes, and personalize patient care based on individual characteristics and medical history (Eze & Nwankwo, 2021).

## **2.6 Related Study**

Research by Adeleke and Johnson (2021), explores the potential applications of artificial intelligence (AI) in veterinary medicine, including image recognition for diagnostic imaging, natural language processing for clinical documentation, and predictive analytics for disease risk assessment. This study highlights the transformative impact of AI on veterinary practice, enabling more accurate diagnosis, personalized treatment planning, and improved patient outcomes.

Okafor and Musa (2021), investigate the use of mobile health (mHealth) technologies in veterinary care, such as smartphone apps for remote monitoring of animal patients, wearable devices for

tracking health metrics, and telemedicine platforms for virtual consultations. The study examines the benefits of mHealth in enhancing access to veterinary services, promoting preventive care, and fostering client engagement.

Recent research by Eze and Nwankwo (2021), explores the potential of blockchain technology in veterinary medicine for secure health data management. The study investigates the use of blockchain-based systems for ensuring data integrity, privacy, and interoperability in veterinary EHRs, enabling transparent and tamper-proof record-keeping while safeguarding patient confidentiality.

Ugwu and Abubakar (2021), examine the use of Internet of Things (IoT) technologies in livestock management, such as RFID tags for animal identification, smart sensors for environmental monitoring, and automated feeding systems for precision agriculture. The study assesses the impact of IoT on animal welfare, productivity, and sustainability in agricultural settings, highlighting opportunities for innovation and improvement in livestock management practices.

Okoro and Eze (2021), investigate the use of data analytics and predictive modelling techniques in veterinary epidemiology for disease surveillance, outbreak detection, and risk assessment. The study demonstrates how advanced statistical methods, machine learning algorithms, and geographic information systems (GIS) can analyze large-scale veterinary data sets to inform public health interventions and mitigate the spread of infectious diseases.

These related studies provide valuable insights into emerging trends and technologies shaping the future of veterinary clinic management and healthcare delivery. By building upon existing research findings and exploring innovative solutions, veterinary professionals can harness the power of information technology to improve animal health outcomes, enhance client satisfaction, and advance the field of veterinary medicine.

## **2.7 Summary**

This literature review highlights the importance of veterinary clinic management systems in improving clinic efficiency, enhancing patient care, and leveraging information technology to drive innovation. By synthesizing key findings and identifying gaps in the literature, this review informs the design and implementation of the Veterinary Clinic Management Information System (VCMIS) for the Federal Polytechnic, Mubi's veterinary clinic. Future research should focus on addressing identified gaps and exploring emerging technologies to further enhance veterinary clinic management practices. While existing literature provides valuable insights into veterinary clinic

management systems and IT applications in veterinary medicine, several gaps remain. First, there is a lack of studies specifically focusing on the design and implementation of customized management information systems for veterinary clinics in educational institutions, such as the Federal Polytechnic, Mubi. Second, there is limited research on the integration of emerging technologies, such as artificial intelligence (AI) and Internet of Things (IoT), into veterinary clinic management systems to enhance decision-making and automate routine tasks. Addressing these gaps is crucial for developing contextually relevant, technologically advanced solutions tailored to the unique needs of veterinary clinics.

## **CHAPTER THREE**

### **SYSTEM ANALYSIS AND DESIGN**

#### **3.1 Introduction**

This chapter presents the system design and analysis of the Pet Care and Veterinary Management System tailored for the Federal Polytechnic, Mubi's veterinary clinic. It covers the shortcomings of the existing manual systems, the advantages the proposed system offers over the current methods, the hardware and software requirements, and the design and architecture of the system.

#### **3.2 Disadvantages of the Existing System**

The existing manual system employed at the veterinary clinic of the Federal Polytechnic, Mubi, presents several challenges that impact its efficiency, accuracy, and overall effectiveness in managing patient care and administrative tasks. The following are the disadvantages of the present system:

- i. Manual record-keeping, leading to time-consuming processes.
- ii. Difficulty in accessing and retrieving patient and treatment information.
- iii. Increased need for staff to manage and maintain records.
- iv. Delays in generating reports and analyzing clinic data.

#### **3.3 Advantages of the Proposed System**

The proposed Pet Care and Veterinary Management System aims to streamline clinic operations, enhance data accuracy, and improve patient care. It offers centralized data storage, real-time access to information, and automated functionalities that reduce manual tasks and errors. The advantages of the proposed system include:

- i. Faster retrieval and management of patient information, reducing time and costs.
- ii. Ease of editing and updating patient records.
- iii. Reduction in the number of staff required for data management.
- iv. Quick generation of reports and analytics for informed decision-making.

### 3.4 System Development Model

#### 3.4.1 Water Fall Model

The waterfall model, a sequential and linear approach to software development, entails distinct phases progressing downward akin to a waterfall. Figure 3.1 provides a structured approach to designing and implementing the Pet Care and Veterinary Management System. The SDLC phases include:

- i. Gather and document requirements from stakeholders, including veterinary professionals, administrative staff, and IT experts.
- ii. Design the architecture, database structure, and user interface of the VCMIS based on the gathered requirements.
- iii. Develop and deploy the VCMIS, ensuring functionality, security, and user-friendliness.
- iv. Conduct thorough testing to identify and rectify any bugs or issues in the system.
- v. Provide ongoing support, updates, and enhancements to ensure the system's optimal performance and adaptability to changing needs.

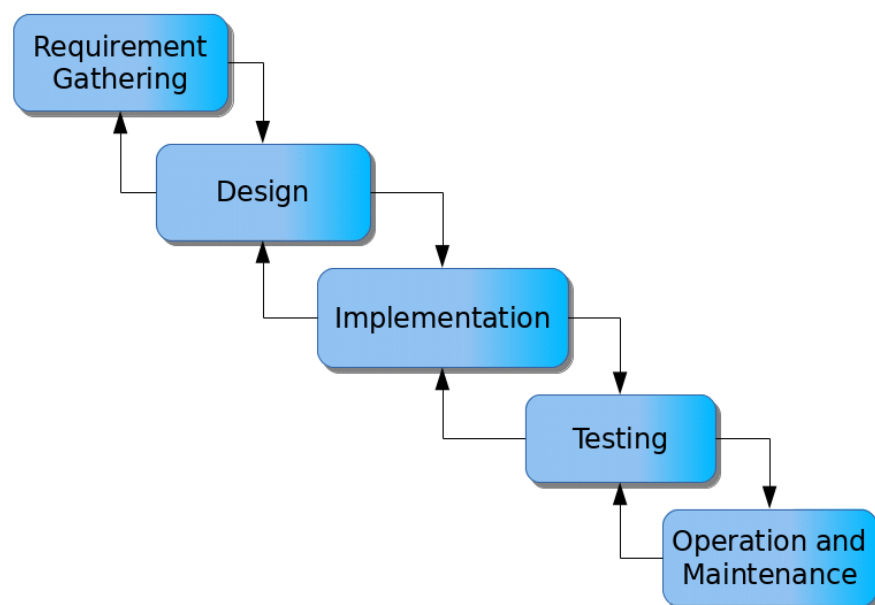


Figure 3.1: Waterfall model

### 3.5 Methods of Data Collection

The data for this study was collected using both primary and secondary data, where staff of the veterinary clinic were interviewed and files and books were observed.



### 3.6 System Design

System design for Pet Care and Veterinary Management system involves defining the platform's architecture, modules, interfaces, and data structures to meet specified requirements. It entails the application of systems theory to product development, ensuring the alignment of design elements with the objectives and needs of the system.

#### 3.6.1 Algorithm Diagram

##### 3.6.1.1 Use case Diagram

A use case diagram shows the system and the various ways that they interact with the system.

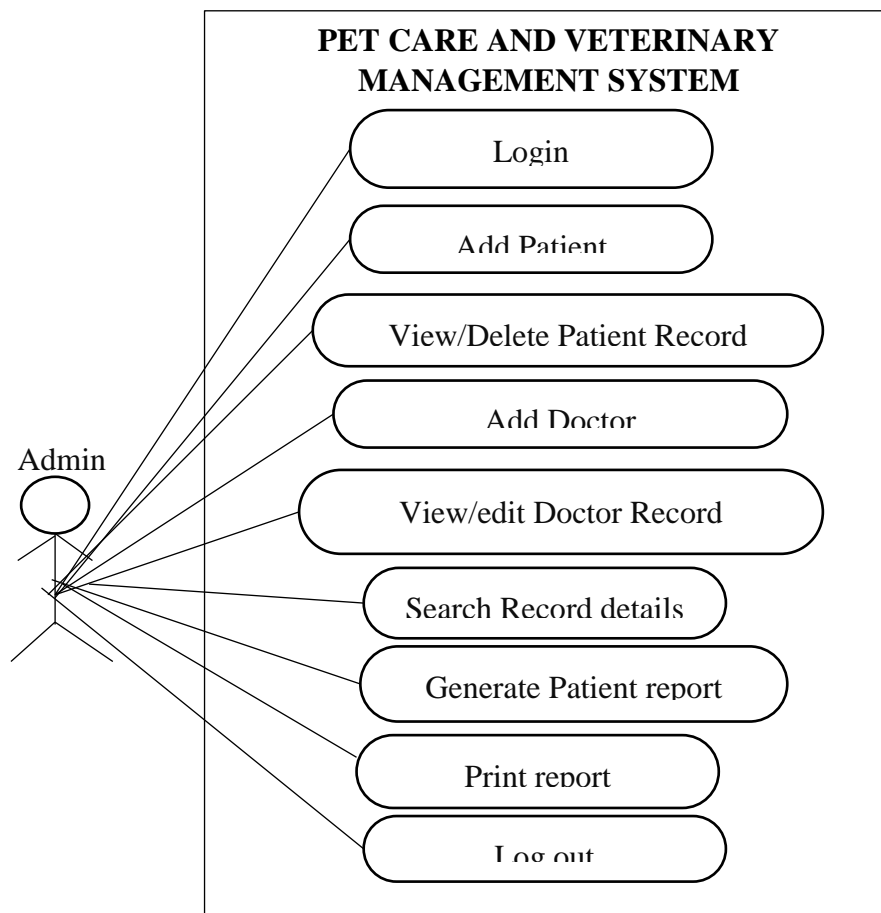


Figure 3.2: Use Case Diagram

#### 3.6.2 System Architecture

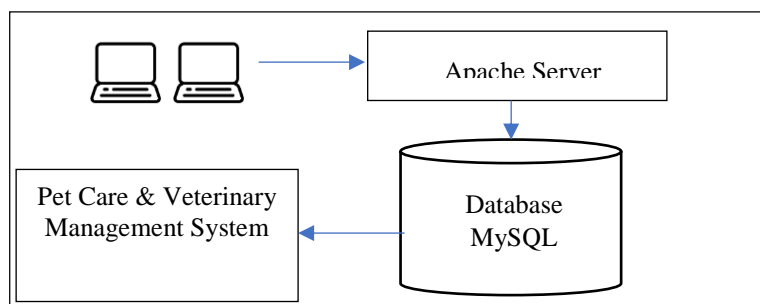


Figure 3.3: System Architecture

### 3.6.3 Database Tables/Queries Structures

**Table 3.1: Admin Details**

Name	Type	Null	Default	Extra
<b>Id</b>	int(10)	No	<i>None</i>	AUTO_INCREMENT
<b>First name</b>	varchar(12)	Yes	<i>NULL</i>	
<b>Last name</b>	varchar(12)	Yes	<i>NULL</i>	
<b>username</b>	varchar(12)	Yes	<i>NULL</i>	
<b>Email</b>	varchar(12)	Yes	<i>NULL</i>	
<b>gender</b>	varchar(155)	Yes	<i>NULL</i>	
<b>Profile image</b>	varchar(15)	Yes	<i>NULL</i>	
<b>Password</b>	varchar(15)	Yes	<i>NULL</i>	
<b>Type</b>	varchar(155)	Yes	<i>NULL</i>	
<b>Status</b>	varchar(155)			
<b>Date</b>	timestamp	Yes	current_timestamp()	

**Table 3.2: Category**

Name	Type	Null	Default	Extra
<b>Id</b>	int(10)	No	<i>None</i>	AUTO_INCREMENT
<b>name</b>	varchar(120)	Yes	<i>NULL</i>	
<b>deleted</b>	varchar(120)			
<b>date</b>	timestamp	Yes	current_timestamp()	

**Table 3.3: Service lists**

Name	Type	Null	Default	Extra
<b>Id</b>	int(10)	No	<i>None</i>	AUTO_INCREMENT
<b>Category_id</b>				
<b>name</b>	varchar(120)	Yes	<i>NULL</i>	
<b>description</b>	varchar(120)			
<b>fee</b>	int(12)			
<b>deleted</b>	int(12)			
<b>date</b>	timestamp	Yes	current_timestamp()	

**Table 3.4: Appointment Records**

Name	Type	Null	Default	Extra
<b>Id</b>	int(10)	No	<i>None</i>	AUTO_INCREMENT
<b>Code</b>	varchar(15)	Yes	<i>NULL</i>	
<b>Schedule</b>	varchar(15)	Yes	<i>NULL</i>	
<b>Owner_name</b>	varchar(15)	Yes	<i>NULL</i>	
<b>Contact</b>	varchar(50)	No	<i>None</i>	
<b>Email</b>	varchar(120)	Yes	<i>NULL</i>	
<b>Address</b>	varchar(50)	Yes	<i>NULL</i>	
<b>Category</b>	varchar(50)	Yes	<i>NULL</i>	
<b>Breed</b>	varchar(50)	Yes	<i>NULL</i>	
<b>Age</b>	varchar(50)	Yes	<i>NULL</i>	
<b>Service</b>	varchar(50)	Yes	<i>NULL</i>	
<b>Status</b>	varchar(50)	Yes	<i>NULL</i>	
<b>Date</b>	varchar(50)	Yes	<i>NULL</i>	

### 3.6.4 Database Entity Relationship Diagram

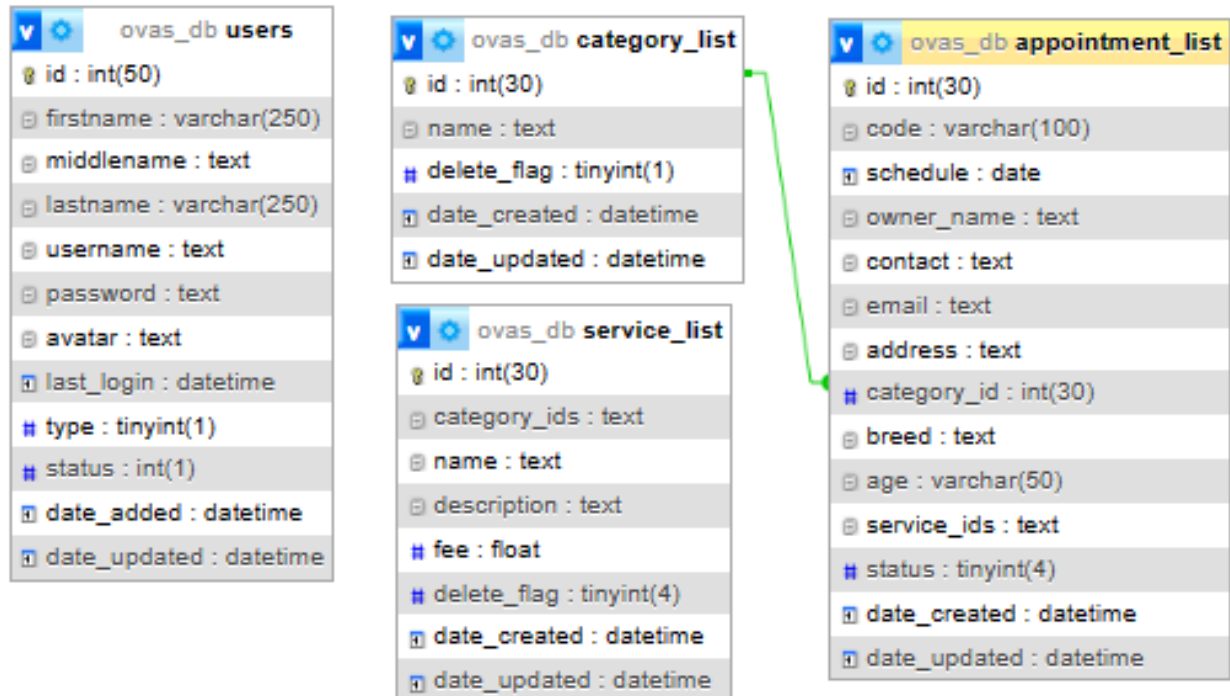


Figure 3.4: Database Entity Relationship Diagram

### 3.6.6 Input and Output Design

BOOK APPOINTMENT	
<b>OWNER INFORMATION</b>	<b>PET INFORMATION</b>
Full Name	Select Pet Type
Phone Number	Breed
Email Address	Age
Address	Service
<div>SAVE CANCEL</div>	

Figure 3.5: Book Appointment Form

ADD SERVICE
Service Name
For category
Service Description
Service Fee
SAVE

Figure 3.6: Add Service

ADD CATEGORY
Category name
SAVE

Figure 3.7: Add category

**LOGIN INTERFACE**

**SAVE**

Figure 3.8: Login Interface

S/N	DATE	CODE	OWNER	STATUS
1	2022-01-04 16:27	OVAS-2022010006	Jane Park	Confirmed
2	2022-01-04 15:59	OVAS-2022010004	Samantha Miller	Pending
3	2022-01-04 15:58	OVAS-2022010003	Mark Cooper	Pending
4	2022-01-04 15:56	OVAS-2022010002	Claire Blake	Pending
5	2022-01-04 15:55	OVAS-2022010001	John D Smith	Pending

Figure 3.9: Appointment Output

S/N	DATE	SERVICE	FOR	COST
1	2022-01-04 11:16	Anti-Rabies	Dogs	500.00
2	2022-01-04 11:16	Anti-Rabies	Cats	250.00
3	2022-01-04 11:15	Check-up	Birds, Cats, Dogs, Hamsters, Rabbits	500.00
4	2022-01-04 10:59	Immunization	Cats, Dogs	1,500.00

Figure 3.10: Services Output

### **3.7 System Requirement Specification**

#### **3.7.1 Hardware Requirements**

The software to be design needs the following hardware for an effective operation of the newly designed system.

- i.** A system running on intel, P(R) duo core with higher processor
- ii.** The-Random Access Memory (RAM) should be at least 512MB.
- iii.** At least 20-GB hard disk.
- iv.** A monitor.

#### **3.7.2 Software Requirements**

The software requirements include:

- i.** A window 7 or higher version of operating system.
- ii.** XAMP or WAMP for Database
- iii.** PHP
- iv.** MySQL
- v.** Browser

#### **3.7.3 Personnel Requirement**

Any computer literate who has a technical knowhow of internet surfing can use the system because it is user friendly.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the results and discussions of the newly developed system, which utilizes PHP and MySQL for efficient record insertion and updating. The system is designed to streamline the management and retrieval of information, thereby enhancing operational efficiency.

#### 4.2 Results

##### 4.2.1 Welcome Interface

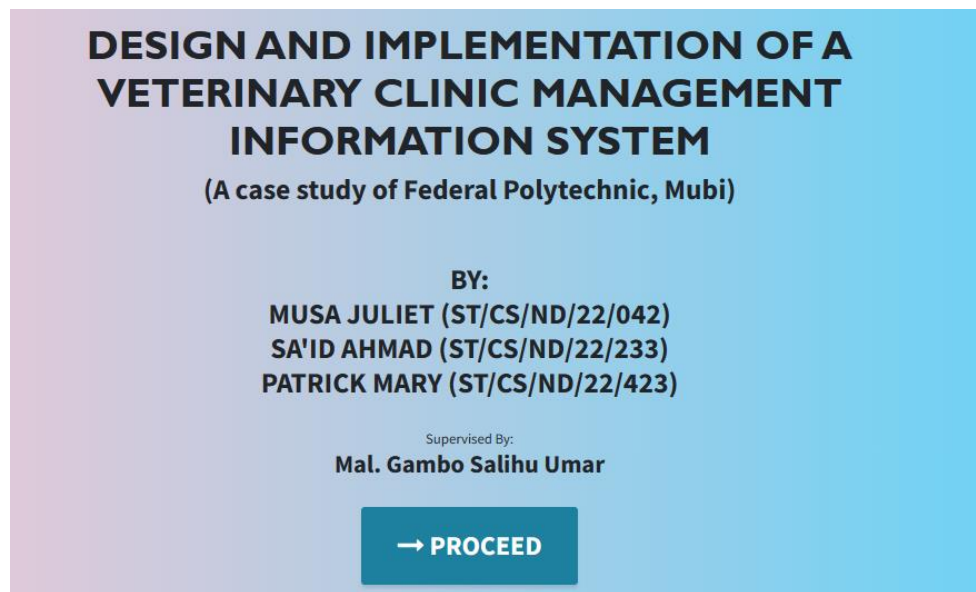


Figure 4.1: Welcome Interface

Figure 4.1 shows the welcome page of the Veterinary Clinic Management System; the welcome page is the first page that displays the project topic.

##### 4.2.2 Login interface

The image shows a login form titled "LOGIN". It has two input fields: "Email" with the value "admin@freshair.com" and "Password" with masked characters ".....". Below the password field is a link "Create New Account". At the bottom are two buttons: "Login" (blue) and "Cancel" (grey).

Figure 4.2: Login interface

Figure 4.2 above represents the user interface and workflow for gaining access into the system by entering the username and password.

### 4.2.3 Book Appointment

Set an Appointment

Appointment Schedule

August 01, 2024

Owner Information

Name

GABRIEL ADO KPONKIUS

Contact #

08068941990

Email

kponkius@yahoo.com

Address

Shop 3#, SUG Block, Federal Polytechnic, Mubi  
Shop 3#, SUG Block, Federal Polytechnic, Mubi

Pet Information

Pet Type

Cats

Breed

Fowl

Age

2

Service(s)

Anti-Rabies ×

Check-up ×

Immunization ×

Save

Cancel

Figure 4.3: Book Appointment

Figure 4.3 above shows where a customer can book an appointment with the clinic for a particular service for his or her pet.

### 4.2.4 Appointment Availability Interface

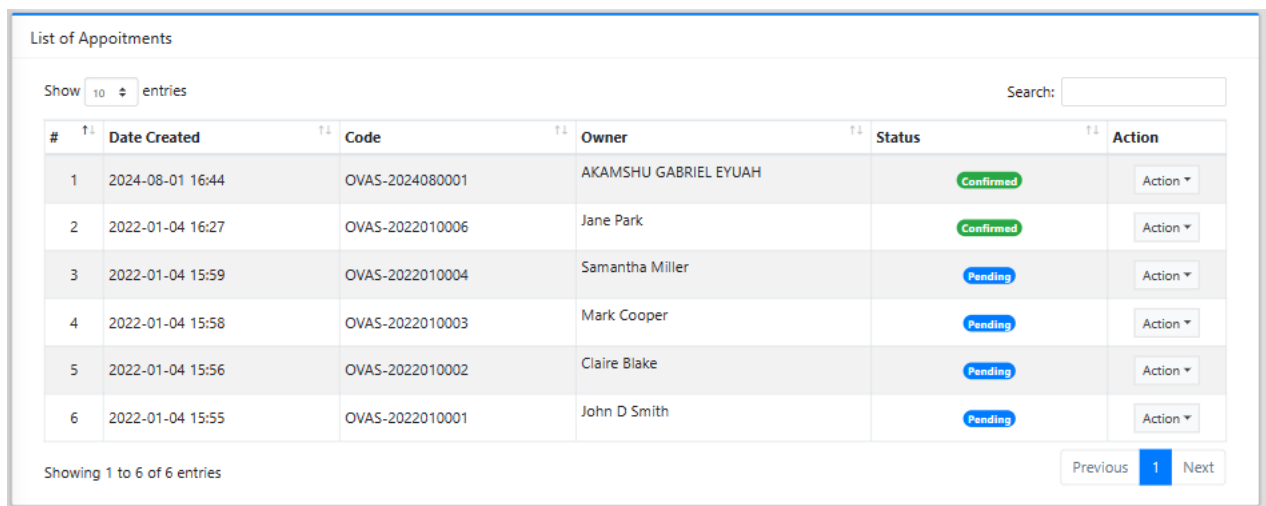
Appointment Availability						
August 2024						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
				14	15	15
4	5	6	7	8	9	10
15	15	15	15	15	15	15
11	12	13	14	15	16	17
15	15	15	15	15	15	15

Figure 4.4: Appointment Availability interface

Figure 4.4 shows the available dates and number of appointments for the particular date.



## 4.2.5 Appointment list



List of Appointments

Show 10 entries

Search:

#	Date Created	Code	Owner	Status	Action
1	2024-08-01 16:44	OVAS-2024080001	AKAMSHU GABRIEL EYUAH	Confirmed	Action
2	2022-01-04 16:27	OVAS-2022010006	Jane Park	Confirmed	Action
3	2022-01-04 15:59	OVAS-2022010004	Samantha Miller	Pending	Action
4	2022-01-04 15:58	OVAS-2022010003	Mark Cooper	Pending	Action
5	2022-01-04 15:56	OVAS-2022010002	Claire Blake	Pending	Action
6	2022-01-04 15:55	OVAS-2022010001	John D Smith	Pending	Action

Showing 1 to 6 of 6 entries

Previous 1 Next

Figure 4.5: Appointment list interface

Figure 4.5 shows all records of appointments that are in the system showing the code, owner and status.

## 4.2.6 Dashboard interface

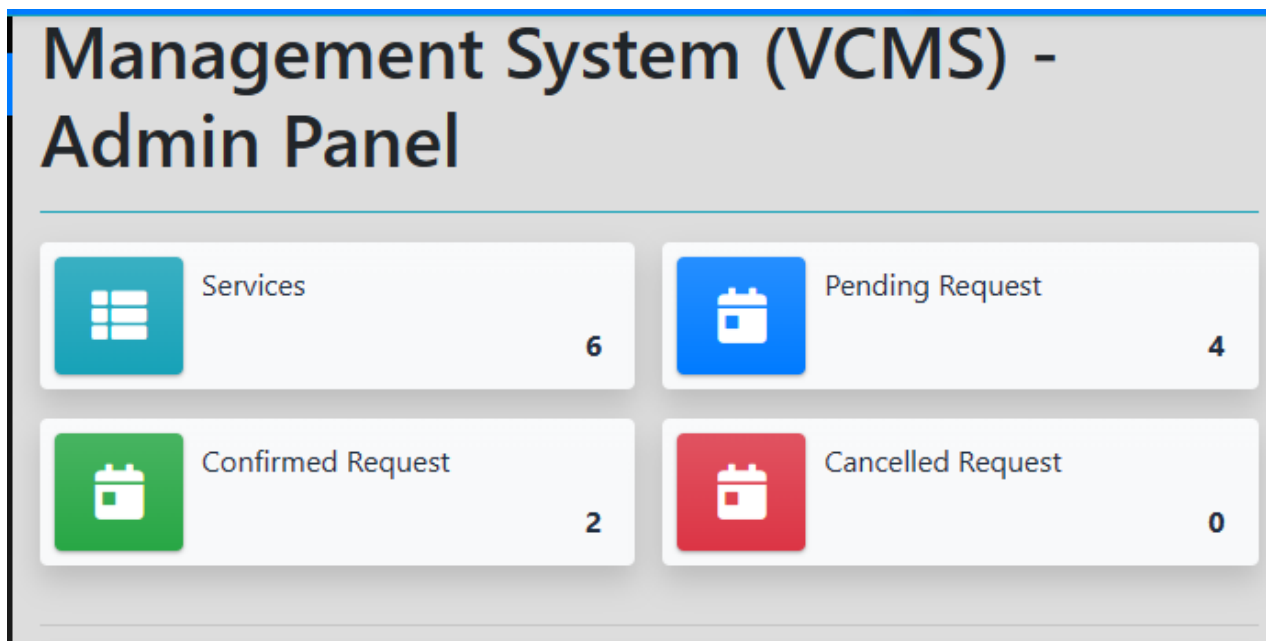


Figure 4.6: Dashboard interface

Figure 4.6 above depicts the main dashboard interface of the veterinary clinic management system. The dashboard provides an overview of the system.

### 4.2.7 Services Interface

List of Services

+ Add New Service

Show 10 entries

Search:

#	Date Created	Service	For	Cost	Action
1	2022-01-04 11:16	Anti-Rabies	Dogs	500.00	Action
2	2022-01-04 11:16	Anti-Rabies	Cats	250.00	Action
3	2022-01-04 11:15	Check-up	Birds, Cats, Dogs, Hamsters, Rabbits	500.00	Action
4	2022-01-04 10:59	Immunization	Cats, Dogs	1,500.00	Action
5	2022-01-04 11:14	Vaccination	Cats, Dogs	1,700.00	Action

Showing 1 to 5 of 5 entries

Previous

1

Next

Figure 4.7: Services interface

Figure 4.7 shows the services interface shows all the services offered by the clinic that are listed on the system with their respective fees.

#### 4.2.8 Add Service interface

## Add New Service

Service

Immunization

For Category *(Pet Types)*

Cats x Dogs x Rabbits x

Description

Segoe UI ▾

Immunization

Fee

45000

Save

Cancel

Figure 4.8: Add service interface

Figure 4.8 shows where an admin can add a service into the system by providing the service name, category and fee charge.

## 4.2.9 Add Category/Category List

List of Category (Pet Types) + Add New

Show  entries Search:

#	Date Created	Name	Action
1	2022-01-04 10:32	Birds	Action ▾
2	2022-01-04 10:31	Cats	Action ▾
3	2022-01-04 10:31	Dogs	Action ▾
4	2022-01-04 10:32	Hamsters	Action ▾
5	2022-01-04 10:32	Rabbits	Action ▾

Showing 1 to 5 of 5 entries Previous 1 Next

Figure 4.9: Add category/ category list

Figure 4.9 shows where the admin can add a category to the system and also displays all the available categories in the system.

## 4.3 Discussion

The Welcome Interface is the initial page that users encounter upon accessing the Veterinary Clinic Management System (VCMS) for the Federal Polytechnic, Mubi. It is designed to create a positive first impression and provide an overview of the clinic's offerings. The interface typically includes branding elements like logos, color schemes, and images to establish a professional and welcoming atmosphere. A concise introductory message sets the tone by introducing the VCMS and its purpose, highlighting the clinic's commitment to providing quality veterinary care. The navigation menu is intuitively designed to allow users to easily find different sections of the system, such as the login page, appointment booking, services, and contact information. Additionally, the page features sections for highlighting key services, announcements, client testimonials, and a prominent call to action (CTA) encouraging users to engage further, whether by booking an appointment or contacting the clinic.

The Login Interface is a secure portal for authorized users, such as clinic staff and administrators, to access the VCMS. This interface ensures that sensitive information is protected and only accessible to those with appropriate permissions. It features a user authentication form where users input their username and password, with the option for multi-factor authentication (MFA) for enhanced security. The interface also includes a "Forgot Password" feature, allowing users to reset

their passwords through a secure verification process, typically via email or phone. The system differentiates users based on their roles, providing access to various functionalities and data according to their responsibilities. Security notices may be displayed to remind users of best practices for maintaining account security.

The Book Appointment interface facilitates the process of scheduling appointments, offering a user-friendly experience for clients. This page includes an appointment form where clients can specify the type of service they require, such as consultations, vaccinations, or surgeries, along with their preferred date and time. Clients can also select their preferred veterinarian if desired. An interactive availability calendar helps clients view and select from available time slots, ensuring efficient scheduling and preventing double bookings. Once an appointment is booked, the system sends a confirmation via email or SMS, along with reminders closer to the appointment date to reduce no-shows. The interface also allows clients to cancel or reschedule appointments easily, providing clear guidelines on how to do so.

The Appointment Availability Interface provides real-time visibility into the clinic's scheduling, helping clients find suitable appointment times. The interface features a calendar view that displays available, booked, and pending appointment slots in real-time, which can be viewed daily, weekly, or monthly. Users can filter and search for appointments based on criteria such as date, time, type of service, or veterinarian, making it easy to find convenient slots. Detailed information about each time slot, including the duration and specific services offered, helps clients make informed decisions. Direct links or buttons are available for users to book an appointment immediately, streamlining the process.

The Appointment List interface provides a comprehensive overview of all scheduled appointments, accessible to both clinic staff and clients. It lists all appointments, including details such as date, time, client and pet names, service type, and the assigned veterinarian. Status indicators are used to show the appointment's status, such as confirmed, pending, completed, or canceled. The interface includes search and filter options to help users quickly find specific appointments based on various criteria. Detailed views and actions, such as editing appointments or contacting clients, are also available. For clinic management purposes, the interface may offer export and print options for offline use.

The Dashboard Interface serves as the central hub for clinic staff and administrators, providing an overview of key metrics and quick access to important functions. It features summary widgets displaying critical data such as the number of scheduled appointments, total revenue, inventory levels, and outstanding payments. Charts and graphs offer visual representations of trends and data, aiding in understanding the clinic's performance. Quick access links to frequently used functions,

such as booking appointments or managing inventory, are prominently displayed. Notifications and alerts keep staff informed about important events like low inventory or upcoming appointments. The dashboard is customizable based on user roles, ensuring that users see relevant information tailored to their specific needs.

The Services Interface provides detailed information about the range of veterinary services offered by the clinic. Services are organized into categories such as preventive care, diagnostics, surgeries, dental care, and emergency services, with each category expandable to reveal more details. Comprehensive descriptions of each service include what the service entails, its benefits, procedures involved, and any special preparations clients need to know. Transparent pricing information helps clients understand the cost implications of each service. Educational content, such as articles or FAQs, is available to inform clients about common pet health issues and the importance of various services. The interface also features call-to-action buttons for booking appointments or contacting the clinic for more information.

The Add Service Interface is a backend tool for clinic administrators and staff, allowing them to manage the services offered by the clinic. It includes a detailed form for entering or updating service information, such as the name, category, description, duration, and price. Administrators can assign services to one or more categories, making them easily searchable and navigable on the Services Interface. The interface allows for media uploads, such as images or videos, related to the service. Visibility settings enable administrators to control whether a service is publicly visible or internal only, useful for services in development. The interface includes options to save the service as a draft or publish it immediately, with the possibility to schedule future visibility.

The Add Category/Category List interface is a backend feature for organizing the services and content offered by the clinic. It allows administrators to create and manage categories, ensuring that services are well-organized and easily navigable for users. A category creation form enables the addition of new categories, including fields for the name, description, and associated metadata like SEO keywords. The interface supports creating a hierarchical structure of categories, with parent-child relationships, allowing for detailed organization (e.g., "Preventive Care" as a parent category with "Vaccinations" and "Wellness Exams" as subcategories). The category list view displays all existing categories, with options to edit, delete, or rearrange them. Search and filter tools facilitate finding specific categories, while batch actions allow administrators to perform actions on multiple categories simultaneously.

#### 4.4 User manual

The following are the necessary steps to take in order to use the system efficiently and effectively.

- i. Load the url of the system <https://localhost/bookshop/> the welcome page will be displayed.
- ii. Click on the **Proceed** button to proceed to the main system.
- iii. If you created an account, provide your login details by entering your username and password.
- iv. Depending on the login details provided you will be automatically directed to the dashboard.
- v. The various task that you can perform on the portal will be displayed on the sidebar of the dashboard.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary**

This study focused on developing and implementing a Veterinary Clinic Management System (VCMS) for the Federal Polytechnic, Mubi. The primary objective was to create a system that streamlines clinic operations, enhances client communication, and improves the overall management of veterinary services. The research covered the design and functionality of various interfaces, including the Welcome Interface, Login Interface, Book Appointment, Appointment Availability Interface, Appointment List, Dashboard Interface, Services Interface, Add Service Interface, and Add Category/Category List.

The system aimed to provide a comprehensive solution that integrates appointment scheduling, patient management, service cataloging, and administrative functions. Key features include secure user authentication, real-time appointment availability, detailed service descriptions, and administrative tools for managing services and categories. The system was designed to be user-friendly, efficient, and secure, ensuring that it meets the needs of both clinic staff and clients.

#### **5.2 Conclusion**

The development and implementation of the Veterinary Clinic Management System for the Federal Polytechnic, Mubi, mark a significant advancement in managing veterinary clinic operations. The VCMS addresses the challenges of manual record-keeping, inefficient appointment scheduling, and limited client communication. By providing a centralized platform for managing all aspects of the clinic, the system enhances operational efficiency, improves client satisfaction, and ensures better patient care. The use of technology in veterinary practice not only streamlines processes but also provides valuable insights through data analytics, contributing to more informed decision-making.

#### **5.3 Recommendations**

Based on the findings and implementation of the VCMS, the following recommendations are made:

- i. It is recommended that all clinic staff undergo comprehensive training on using the VCMS. This will ensure that they are familiar with the system's features and can utilize it effectively to improve clinic operations.
- ii. To maximize the benefits of the system, clients should be educated about its functionalities, such as online appointment booking and accessing service information. This can be done through informational brochures, the clinic's website, and in-clinic demonstrations.
- iii. The VCMS should be regularly updated to incorporate new features and address any identified issues. Continuous improvement of the system will ensure that it remains relevant and effective in meeting the evolving needs of the clinic.

- iv. Developing a mobile application or optimizing the system for mobile use can enhance accessibility for clients and staff, allowing them to manage appointments and access information on the go.

#### **5.4 Contribution to Knowledge**

The development of the VCMS contributes significantly to the field of veterinary clinic management by demonstrating the potential of digital solutions in improving clinic operations. This system serves as a model for other veterinary clinics looking to implement technology-driven management solutions. It highlights the benefits of integrating various clinic functions into a single platform, thereby improving efficiency and client satisfaction. Additionally, the study provides a comprehensive framework for developing similar systems, offering insights into user interface design, system functionalities, and security considerations.

#### **5.5 Area for Further Work**

While the VCMS has successfully addressed many challenges faced by the Federal Polytechnic, Mubi's veterinary clinic, there are several areas for further exploration and development:

- i. Future work could focus on enhancing the system's data analytics capabilities, providing deeper insights into clinic operations, patient demographics, and service utilization trends.
- ii. Integrating telemedicine features could allow veterinarians to offer remote consultations, expanding access to veterinary care and providing convenience for clients.
- iii. Developing a mechanism for collecting and analyzing client feedback within the system can provide valuable insights into client satisfaction and areas for improvement.



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## APPENDIX A

### Welcome interface

# DESIGN AND IMPLEMENTATION OF A VETERINARY CLINIC MANAGEMENT INFORMATION SYSTEM

(A case study of Federal Polytechnic, Mubi)

BY:

MUSA JULIET (ST/CS/ND/22/042)  
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PATRICK MARY (ST/CS/ND/22/423)

Supervised By:

MAL. UMAR BELLO

→ PROCEED

### Login interface

## LOGIN

Email

Password

[Create New Account](#)

### Appointment list

List of Appoitments

Show10entries

Search:

#	Date Created	Code	Owner	Status	Action
1	2024-08-01 16:44	OVAS-2024080001	AKAMSHU GABRIEL EYUAH	Confirmed	Action
2	2022-01-04 16:27	OVAS-2022010006	Jane Park	Confirmed	Action
3	2022-01-04 15:59	OVAS-2022010004	Samantha Miller	Pending	Action
4	2022-01-04 15:58	OVAS-2022010003	Mark Cooper	Pending	Action
5	2022-01-04 15:56	OVAS-2022010002	Claire Blake	Pending	Action
6	2022-01-04 15:55	OVAS-2022010001	John D Smith	Pending	Action

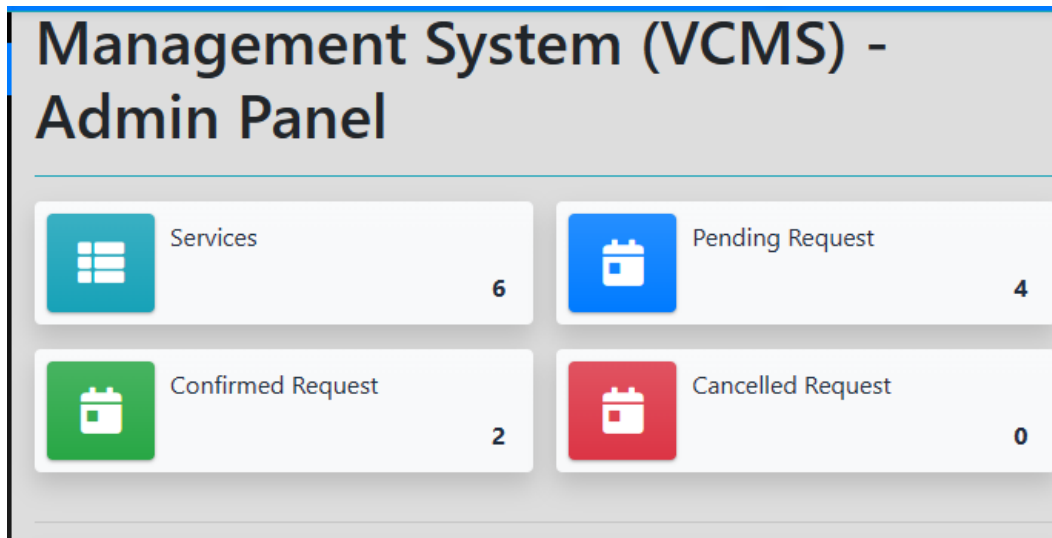
Showing 1 to 6 of 6 entries

Previous

1

Next

## Dashboard interface



## Book Appointment

**Set an Appointment**

**Appointment Schedule**  
August 01, 2024

---

<b>Owner Information</b>	<b>Pet Information</b>
<b>Name</b> GABRIEL ADO KPONKIUS	<b>Pet Type</b> Cats
<b>Contact #</b> 08068941990	<b>Breed</b> Fowl
<b>Email</b> kponkius@yahoo.com	<b>Age</b> 2
<b>Address</b> Shop 3#, SUG Block, Federal Polytechnic, Mubi Shop 3#, SUG Block, Federal Polytechnic, Mubi	<b>Service(s)</b> Anti-Rabies × Check-up × Immunization ×

**Save** **Cancel**

# Appointment Availability Interface

Appointment Availability

August 2024

today < >

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
				14	15	15
4	5	6	7	8	9	10
15	15	15	15	15	15	15
11	12	13	14	15	16	17
15	15	15	15	15	15	15

# Services Interface

List of Services

+ Add New Service

Show 10 entries

Search:

#	Date Created	Service	For	Cost	Action
1	2022-01-04 11:16	Anti-Rabies	Dogs	500.00	Action
2	2022-01-04 11:16	Anti-Rabies	Cats	250.00	Action
3	2022-01-04 11:15	Check-up	Birds, Cats, Dogs, Hamsters, Rabbits	500.00	Action
4	2022-01-04 10:59	Immunization	Cats, Dogs	1,500.00	Action
5	2022-01-04 11:14	Vaccination	Cats, Dogs	1,700.00	Action

Showing 1 to 5 of 5 entries

Previous1Next

## Add Service interface

### Add New Service

**Service**  
Immunization

**For Category** (Pet Types)  
Cats × Dogs × Rabbits ×

**Description**  

**B**

**U**

Segoe UI

GD

?

Immunization

**Fee**  
45000

Save Cancel

## Add Category/Category List

List of Category (Pet Types)+ Add New

Show  entries

Search:

# ↑↓	Date Created ↑↓	Name	Action ↑↓
1	2022-01-04 10:32	Birds	Action ▾
2	2022-01-04 10:31	Cats	Action ▾
3	2022-01-04 10:31	Dogs	Action ▾
4	2022-01-04 10:32	Hamsters	Action ▾
5	2022-01-04 10:32	Rabbits	Action ▾

Showing 1 to 5 of 5 entries

Previous 1 Next

## APPENDIX B

### PROGRAM CODE

```
<!DOCTYPE html>
<html lang="en">

  <head>

    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-
to-fit=no">
    <meta name="description" content="">
    <meta name="author" content="">

    <title>VETERINARY CLINIC MANAGMEMENT SYSTEM</title>

    <!-- Bootstrap Core CSS -->
    <link href="vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">

    <!-- Custom Fonts -->
    <link href="vendor/font-awesome/css/font-awesome.min.css" rel="stylesheet"
type="text/css">
    <link
href="https://fonts.googleapis.com/css?family=Source+Sans+Pro:300,400,700,300ital
ic,400italic,700italic" rel="stylesheet" type="text/css">
    <link href="vendor/simple-line-icons/css/simple-line-icons.css"
rel="stylesheet">

    <!-- Custom CSS -->
    <link href="css/stylish-portfolio.min.css" rel="stylesheet">

  </head>

  <body id="page-top" style=" background: linear-gradient(90deg, pink, rgb(67,
207, 250));">

    <!-- Header -->
    <header class="masthead d-flex">
      <div class="container text-center">

        <h1 class="mb-2" style="font-size: 45px; font-weight: bolder; font-
family: 'Gill Sans', 'Gill Sans MT', Calibri, 'Trebuchet MS', sans-serif; text-
transform: uppercase;"><span style=" margin-top:15px;"> DESIGN AND IMPLEMENTATION
OF A VETERINARY CLINIC MANAGEMENT INFORMATION SYSTEM</span> <br> </h1>
        <h2 class="mb-3" style="">(A case study of Federal Polytechnic,
Mubi)</h2><br><br>
        <h2>BY: <br> MUSA JULIET (ST/CS/ND/22/042) <br> SA'ID AHMAD
(ST/CS/ND/22/233) <br>PATRICK MARY (ST/CS/ND/22/423)</h2> <br>

        Supervised By:
        <h3>MAL. UMAR BELLO</h3>
        </h3>

        <br>
```

```

        <strong><a class="btn btn-primary btn-xl js-scroll-trigger" href="ovas/"
style="font-size: 30px;"><span class="fa fa-long-arrow-right"></span>
PROCEED</a></strong>
        <br> <br> <br>
        <!-- <h4 class="alert alert-success"><a href="onlinefood-
order/admin/index.php">Admin Login Here!</a></h4> -->
        </div>
        <div class="overlay"></div>
</header>

<!-- Scroll to Top Button-->
<a class="scroll-to-top rounded js-scroll-trigger" href="#page-top">
    <i class="fa fa-angle-up"></i>
</a>

<!-- Bootstrap core JavaScript -->
<script src="vendor/jquery/jquery.min.js"></script>
<script src="vendor/bootstrap/js/bootstrap.bundle.min.js"></script>

<!-- Plugin JavaScript -->
<script src="vendor/jquery-easing/jquery.easing.min.js"></script>

<!-- Custom scripts for this template -->
<script src="js/stylish-portfolio.min.js"></script>

</body>

</html>

<style>
.fc-event-title-container{
    text-align:center;
}
.fc-event-title.fc-sticky{
    font-size:2em;
}
</style>
<?php
$appointments = $conn->query("SELECT * FROM `appointment_list` where `status` in
(0,1) and date(schedule) >= '".date("Y-m-d")."' ");
$appointment_arr = [];
while($row = $appointments->fetch_assoc()){
    if(!isset($appointment_arr[$row['schedule']]))
$appointment_arr[$row['schedule']] = 0;
    $appointment_arr[$row['schedule']] += 1;
}
?>
<div class="content py-5">
    <div class="row justify-content-center">
        <div class="col-md-12">
            <div class="card card-outline card-primary rounded-0 shadow">
                <div class="card-header rounded-0">
                    <h4 class="card-title">Appointment Availablity</h4>
                </div>
                <div class="card-body">
                    <div id="appointmentCalendar"></div>

```



```

        </div>
    </div>
</div>
</div>
<script>
    var calendar;
    var appointment = $.parseJSON('<?=json_encode($appointment_arr) ?>') || {};
    start_loader();
    $(function(){
        var date = new Date()
        var d     = date.getDate(),
            m     = date.getMonth(),
            y     = date.getFullYear()
        var Calendar = FullCalendar.Calendar;

        calendar = new Calendar(document.getElementById('appointmentCalendar'), {
            headerToolbar: {
                left : false,
                center: 'title',
            },
            selectable: true,
            themeSystem: 'bootstrap',
            //Random default events
            events: [
                {
                    daysOfWeek: [0,1,2,3,4,5,6], // these recurrent events move
separately
                    title:<?=$_settings->info('max_appointment') ?>',
                    allDay: true,
                }
            ],
            eventClick: function(info) {
                console.log(info.el)
                if($(info.el).find('.fc-event-title.fc-sticky').text() > 0)
                    uni_modal("Set an
Appointment", "add_appointment.php?schedul="+info.event.startStr, "mid-large")
            },
            validRange:{
                start: moment(date).format("YYYY-MM-DD"),
            },
            eventDidMount:function(info){
                // console.log(appointment)
                if(!appointment[info.event.startStr]){
                    var available = parseInt(info.event.title) -
parseInt(appointment[info.event.startStr]);
                    $(info.el).find('.fc-event-title.fc-sticky').text(available)
                }
                end_loader()
            },
            editable : true
        });

        calendar.render();
    })
</script>

```