

***Appointments and Patient Records Management System
In Aquino-Samontanes Dental Clinic***

Project Documentation Submitted to the Faculty of the
School of Computing and Information Technologies

Asia Pacific College

In Partial Fulfillment of the Requirements for
Applied Projects for IT
MCSPROJ

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In Partial Fulfillment of the Requirements for the Degree of

Bachelor of Science in Information Technology

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Executive Summary

The Aquino-Samontanes Dental Clinic, situated strategically in the heart of Llano, Caloocan City, has earned widespread acclaim for its outstanding dental services and owner-operated model. This privately owned clinic's success is rooted in its proximity to schools, ensuring accessibility for families and students alike. Recognizing the need to stay ahead in the competitive healthcare landscape, the clinic is poised to implement several innovative solutions. Plans include adopting a web-based appointment scheduling system and a dental supply monitoring system, highlighting a commitment to operational efficiency and patient convenience. Moreover, the introduction of an innovative patient records management system underscores the clinic's dedication to precision in treatments and personalized healthcare. The clinic's reliability and stability, attributed to its owner-operated status, further distinguishes it from competitors, fostering a sense of trust within the community. Embracing modernization, strategic location, and a patient-centric approach, the Aquino-Samontanes Dental Clinic stands as a beacon of excellence and innovation in the dental care sector, making it the preferred choice for individuals seeking exceptional and advanced healthcare services.

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Introduction

Organized dentistry investigates new goods for the benefit of a dental clinic's patients. To encourage better oral health in our nation, the American Dental Association (ADA) develops standards of care and suggestions for clients and professionals. With the help of organized dentistry, a network of dentists may watch out for one another and guide emerging professionals [2]. Oral health can be linked to physical, mental, and general health, energy levels, work restrictions, depression, and appetite. It is well-acknowledged that oral health plays a significant role in determining overall health and well-being. The estimated direct expenses of dental disorders in 2015 totaled USD 356.80 billion, while the estimated indirect costs of the same diseases totaled USD 187.61 billion. Oral healthcare is distinct from general healthcare in that it involves patients frequently and asymptotically, is surgical, is associated with pain and anxiety, and primarily treats cosmetic issues with secondary attention paid to treating diseases, according to Crisan, Covaliu & Chis [11].

For implementing a system that carries out the task of appointing, according to an article by Vahey [10], integrating patient scheduling software can save your practice hours of time and money that you are currently losing because of no-shows and cancellations. Since your clients are undoubtedly extremely comfortable utilizing apps, online purchasing services, and virtual communication already, convincing them to use your scheduling software will not be as tough as you think. Most patients will look for a dentist online before making their pick. As this will often be outside of office hours, patients will wish to schedule at these times (either before you open or after you close). Offering the possibility to book where and when patients are searching for you can enhance patient conversions. Dental patients adopt customer rather than patient attitudes because dental practitioners pay their salaries based on the number of clients they see, the interventions they perform, and the sales they generate. Despite these clear distinctions, oral healthcare quality management (OHQM) has gradually included techniques once employed in general medicine quality management. The use of the quality dimensions recommended by the Institute of Medicine (IoM) (safety, effectiveness, timeliness, patient-centeredness, efficiency, and equity quality dimensions), which are comparable to the dimensions suggested by Donabedian and used by Campbell and Tickle, has also been identified for OHQM. Donabedian is known for his structure, process, and outcome system approach to quality management [11].

A dental record is a thorough record of a patient's medical history, physical examination, diagnosis, treatment, and care. By law, dental professionals must create and keep complete patient records. With the increased awareness among the general public of legal issues surrounding healthcare, and with the troubling rise in malpractice claims, a complete grasp of dental record issues is vital for every practitioner. The capacity of clinical practitioners to create and maintain accurate dental records is crucial for providing patients with high-quality care and is also required by law. The patient's dental record ensures continuity of care and is essential in the case of a malpractice insurance claim, as stated in an article by Charangowda [4]. Patients are becoming increasingly conscious of the useful information included in their medical or dental records in general society. You should retain thorough and complete patient records at every dentist facility you visit. To provide quality care and for follow-up visits, keeping such a thorough record is essential, according to Datafied [6].

Dental practice software helps dentists do their job better and saves time. This means they can take better care of their patients and make sure they have valuable experience at the dentist. It also saves money by doing things automatically instead of by hand [12]. Keeping good records is especially important for dentists. They need to keep track of everything they do so they can take care of their patients properly. This is an important skill for dentists. They keep records so they can make sure their patients are healthy and follow up with them later [4]. Automated workflow is a way to increase efficiency and accuracy and reduce waiting times in the dental practice. This can be done by reducing manual data entry, manual intervention, or dealing with slow-moving paperwork. There are many benefits to automating your workflow according to Growth99 [12].

Project Context

The Aquino-Samontanes Dental Clinic is a privately owned dental service provider that offers a range of services including extraction, restoration, fillings, surgery, and others. The dental clinic business was established within a subdivision that is close to elementary and high schools along Llano, Caloocan City.

As part of the clinic's business processes, there is a need to monitor dental supplies and manage appointments and schedules. To maintain important levels of patient satisfaction, the clinic ensures that all dental supplies are well-stocked and readily available. The clinic's success is attributed to recommendations from past patients. Because of its outstanding reputation, the Aquino-Samontanes Dental Clinic can keep its current clientele and draw in new ones. The fact that the clinic is now owned by its owner rather than being rented has helped to support its accomplishment. For proper diagnosis and treatment of dental disorders, the clinic offers dental X-rays in addition to its usual dental treatments. All patients will receive the best dental treatment possible thanks to our holistic approach. The clinic is continuously looking for ways to improve its business procedures to preserve its commitment to providing excellent customer service. Implementing a more effective system for maintaining the availability and stock levels of dental supplies is one option that may be considered. A web-based appointment scheduling program might also improve the scheduling procedure, increasing efficiency. With these initiatives, the clinic hopes to reach a wider range of people while continuing to provide the community with high-quality dental care.

The Aquino-Samontanes Dental Clinic plans to put in place a patient records management system because they understand how important it is to keep patient data, treatments, and procedures correct and up to date. In addition to ensuring the accuracy of the information, this technology will make it easier to provide patients with individualized treatment. The clinic's focus on providing superior care seeks to improve patient well-being, simplify administrative procedures, and facilitate customized treatment regimens. The clinic's reputation can be further improved, it can draw in more patients, and it can reach a larger audience by implementing cutting-edge technology and methods. The clinic's dedication to providing the greatest caliber of dental treatment to the neighborhood is ultimately strengthened by these initiatives.

Statement of the Problem

Aquino-Samontanes Dental Clinic is encountering inefficiencies due to their current manual procedures, which hinder the smooth management of operations and the optimization of workflow. The problems that currently exist in the process are:

1. Conflict of schedule due to manual recording of appointment.
2. Lack of guidance on filling out medical history forms causes delays in treatment planning.
3. Inaccurate post-treatment patient information due to manual recording of patient records by the dentist.
4. Risk of losing X-ray films due to improper attachment methods.
5. Time-consuming in searching for a specific patient record.

Overall, putting in place an automated appointment and patient record management system is an essential first step in raising the clinic's operation effectiveness.

Objectives of the Project

The objectives of the proposed project are to address the current challenges faced by Aquino-Samontanes Dental Clinic. By implementing a comprehensive dental clinic management system, the project aims to improve the efficiency and accuracy of these processes, leading to better patient outcomes and increased customer satisfaction. General Objectives is measured in [here](#). The specific objectives include:

General Objective:

- To implement a patient record management system within four months that maintains complete patient information after treatment while being 75% faster than the current manual process.

Other Objectives:

- To develop an appointment system that allows for efficient and quick scheduling of patient visits within seconds.
- To develop a user-friendly system that provides clear instructions that minimizes the need for interviews by the dentist, resulting in minimizing of interviews conducted for gathering medical history information.
- To implement a secure and organized method for attaching and storing X-ray films in the system to prevent loss or misplacement.
- To implement an organized patient record retrieval that reduces the time required to search for specific patient records in less than a minute.

With the success of the project along with its objectives there is an opportunity for the Aquino-Samontanes Dental Clinic to branch out to other prospective locations and to be recognized.

Significance of the Project

This research project holds tremendous significance as it has the potential to revolutionize the operations of Aquino-Samontanes Dental Clinic. By implementing an advanced appointment system and patient record management system, the project aims to streamline processes, minimize errors, and elevate the quality of care provided to patients. Its impact will extend beyond the clinic's walls, making a lasting impression on various stakeholders:

- *Dental Clinic Owner* - the implementation of this innovative system will unlock new levels of efficiency, reducing administrative burdens and optimizing staff productivity. With improved resource management and minimized risks, the clinic can achieve greater success, ensuring its reputation as a paragon of excellence in dental care.
- *Other Dental Offices* - will find inspiration in this project, as it sets a high standard for appointment and records management systems. By adopting similar improvements, dental clinics across the industry can enhance their workflows, elevate patient experiences, and strive towards excellence in their practices.
- *Patients* - as the appointment and records management system will enhance their journey through personalized care. Reduced waiting times, real-time access to appointments, and accurate records management will make visits more convenient and efficient. Patients will feel valued, fostering trust and enabling them to achieve optimal oral health outcomes.
- *Future Developers* - the project serves as a shining example of technological innovation in healthcare. By studying its implementation, architecture, and best practices, developers can pave the way for even more efficient, productive, and patient-centric healthcare systems. This project stands as a testament to the power of innovation in driving positive change.

Scope and Limitations

The scope of the project includes the development and implementation of a web-based system that will automate the appointment system in Aquino-Samontanes Dental Clinic, this includes: generate reports

- The project will focus on the development of an appointment system and patient record management for Aquino-Samontanes Dental Clinic.
- The appointment system will allow clients to easily book, reschedule, or cancel appointments.
- The patient record management system will allow dental staff to easily access patient records, update them as needed, and view patient history.
- The project will involve the selection and implementation of appropriate software to support the appointment and patient record.

- The generated form will have multiple checkboxes for patients to fill-up for their medical history, which consists of commonly asked illness or symptoms during dentist interviews.
- Patients can edit their personal information and change scheduled appointments.
- The system provides dedicated buttons or links for patient easy access to editing functions.

For the limitations of the proposed system:

- The project will only focus on the implementation of an appointment scheduling system and patient records management system for the Aquino-Samontanes Dental Clinic. It will not cover other areas of the clinic's operations or other dental clinics.
- The project will only be implemented in one location of the Aquino-Samontanes Dental Clinic, which is within a subdivision in Llano, Caloocan City.
- The project's success depends on the cooperation and support of the clinic's staff, particularly in adapting to innovative technologies and workflows.
- The project will require resources, including time, funding, and personnel, which may affect the feasibility and timeline of implementation.
- The project may face regulatory or legal constraints, such as data privacy laws and regulations, which may impact the implementation and usage of the systems.

Review of Related Literature / Systems

Beyond dental treatments, the system brings numerous benefits to ease staff worries. Picture a helpful program that assists dentists in effortlessly managing clients and appointments. It generates insightful reports, safeguards vital information, and minimizes the risk of data loss. While only the administrator can make changes, others can access the data. It is like a specialized computer program designed exclusively for dentistry offices, streamlining operations and enhancing efficiency.

Related Literature

Integrating Patient Generated Health Data Into Clinical Care Settings

This is a study on how beneficial it is to implement a data recording system to patients from Project HealthDesign. According to the study of Cohen et al.,[9], the study's goal was to investigate the perceptions of medical professionals who use PGHD in outpatient clinics. Patient-generated health data (PGHD) are health-related data collected or documented by patients to support their awareness of their own health and ability to take care of themselves. The collection of data for PGHD is patient-driven, as opposed to practice- or research-driven, which distinguishes it from other patient-reported outcome data. Technical tools that let people gather PGHD promote self-management practices including a healthy diet and regular exercise and can be crucial for treating and avoiding disease.

The professionals evaluated Project HealthDesign Round 2 in order to compile findings from 5 studies that were sponsored to test technologies intended to assist patients in gathering PGHD and sharing this information with members of their healthcare team. Twelve healthcare professionals who took part in these studies and 13 members of the Project HealthDesign study team engaged in semi-structured interviews. To examine the data, they adopted an immersion-crystallization methodology. The findings offer crucial details on the opinions of medical experts and their experiences with the application of PGHD in a clinical setting.

The three main advantages of PGHD accessibility in clinical settings were identified by healthcare professionals as follows: (1) deeper understanding of a patient's condition; (2) more accurate patient information, especially when of clinical relevance; and (3) insight into a patient's health between clinic visits, enabling revision of care plans for improved health goal achievement while avoiding unnecessary clinic visits. The recording of significant symptoms by medical professionals and members of the PHD study team led to a deeper and more accurate understanding of a patient's illness, and these individuals reported more informed interactions with patients who had collected PGHD. This is due to the fact that PGHD assisted physicians in recognizing and comprehending how patients' symptoms changed over longer periods of time, assisted them in identifying issues that could otherwise go unreported, and assisted both them and their patients in managing their disease more effectively.

Importance of Online Appointment System: Survey in Taiwan

Patients now rely heavily on online medical services for their medical information. Web-based scheduling systems with asynchronous and real-time modes have been built in various nations, including China's "web-based appointment systems (WAS)" and the National Health Service's (NHS) "Choose and Book" appointment system. Patients seeking medical attention can quickly make an outpatient appointment and get real-time information with the use of such web-

based appointment systems. In reality, some studies have shown that online scheduling provides advantages in terms of lowering staff labor, waiting times, and non-attendance rates, as well as raising satisfaction levels.

In Taiwan, more than half of the hospitals offer open online appointment scheduling. However, most systems just serve the purpose of registering users, seldom taking advantage of the chance to collect extra data like the relevant medical history or the rationale for the consultation. In order to increase the effectiveness of consultations, more work should be put into improving the features of these online appointment systems. To increase appointment process efficiency, some information extraction and retrieval strategies for unstructured medical records, such as a lexicon-grammar based methodology, should be taken into account according to Yang et al [15].

How Appointment Scheduling Software is Beneficial

Customers and subscribers prefer to interact on their terms. They want more digital options, more freedom of choice, and easier use—and they'll leave behind organizations that can't provide them with the flexibility they need. One significant (and frequently underutilized) area that can do this is self-serve appointment scheduling services.

Transparent appointment systems are not only advantageous for the individual, though; tellers and advisors can also greatly benefit from them. Appointment scheduling software allows staff employees to serve more customers effectively and efficiently despite the ongoing economic crisis and labor scarcity having left them exhausted and overworked.

For the protection of our patients, organized dentistry investigates new goods. To encourage better oral health in our nation, the ADA develops standards of care and suggestions for clients and professionals. With the help of organized dentistry, a network of dentists may watch out for one another and guide emerging professionals according to Coconut Software [5].

Why Digitization is Necessary to Dental Clinics

According to Al-Jubouri and Azari [14], they conducted a systematic review of the introduction and advancements of dental digitizers in dentistry. They emphasized the advantages of utilizing 3D digitization in dental practice, particularly in prosthodontics, as it provides an alternative to traditional methods of impression-taking. The authors underscored the precision and predictability of digital technology in making previously manual tasks quicker and more accurate. Additionally, they discussed the different types of dental scanners that have been introduced or are currently being developed, such as intraoral and extraoral scanners. Al-Jubouri and Azari [10] highlighted that incorporating 3D digitization into dental practice is a modern and innovative option, offering great potential benefits to both patients and practitioners. Overall, their systematic review provides valuable insights into the advancements of dental digitizers in dentistry and the potential advantages they offer.

Benefits of Integrated Payment in Healthcare

It has been observed by Eppley [20], healthcare professionals now have easy access to both patient and payment information thanks to integrated payments. This makes it easier for employees and patients to interact more effectively, especially when an integrated payment solution can give staff members scripts and suggestions to use.

Providers may simply respond to common patient inquiries about choices for paying for care at the time of service, recurring payments to assist manage high medical costs, and prompt-pay discounts by having simple access to combined payment and patient data. Providers can also arrange payments for recurrent visits like physical therapy or dialysis and safely keep the patient's credit card on file for future or remote payments. Patients can spend more time asking questions about care and treatment and less time wondering about how they will pay for a visit by streamlining communication around these services and payment choices. Better health results and higher patient satisfaction may result from this.

Related System

Dentrix

Dentrix reigns as a highly regarded and widely embraced patient record management system. Its reputation stems from its remarkable ability to streamline the intricate management of patient information, appointments, treatment plans, and billing procedures. Picture a digital powerhouse with an intuitive layout that effortlessly guides dental practitioners toward vital patient data. With Dentrix by their side, these practitioners gain swift access to a wealth of information crucial to providing top-notch care. What sets Dentrix apart is its unwavering commitment to effectively managing patient information and optimizing dental clinic operations. By offering a centralized platform for storing and organizing critical data, such as medical history, treatment notes, and X-ray pictures, Dentrix ensures that dental practitioners are armed with accurate and up-to-date information. This wealth of knowledge empowers them to make informed decisions, choose the most suitable treatments, and maintain the highest standards of dental care.

Now, envision Dentrix as a guiding light, shedding its brilliance on our proposed system. It serves as a beacon, illuminating the importance of comprehensive patient record management and seamless integration of various dental software. By drawing inspiration from Dentrix's wealth of features and embracing a patient-centric approach, our system strives to elevate dental clinic operations, amplify efficiency, and deliver unparalleled care to our valued patients [13]. Together, let us embark on a journey where innovation meets excellence, and where the smiles of our patients shine brighter than ever before.

DentalAssociates

The highly regarded dental practice DentalAssociates has put in place an innovative appointment system to simplify scheduling and improve patient satisfaction. Modern technology is used by this creative approach to effectively organize patient visits while maximizing the use of dental resources. The DentalAssociates appointment system offers several benefits to both the clinic and its clients. Particularly noteworthy is that it enables patients to easily schedule appointments online, doing away with the need for time-consuming phone calls and manual scheduling. The technology improves patient happiness and participation by offering an accessible and user-friendly interface.

Additionally, DentalAssociates' appointment system has automatic notifications and reminders. Patients receive timely email or text message reminders about their forthcoming appointments, reducing the possibility of missed appointments and increasing overall clinic productivity. Additionally, the system maximizes the use of dental resources, allowing the clinic to efficiently manage its schedule, shorten wait times, and improve patient flow in general. The suggested method attempts to provide a comparable degree of ease and efficiency and was

inspired by DentalAssociates' appointment system's success. It emphasizes the implementation of an easy-to-use appointment system that enables patients to easily make appointments, receive reminders, and maximize the use of dental resources.

This will not only enhance patient satisfaction but also improve the overall operational efficiency of dental clinics, ensuring that appointments are managed effectively and patient care is prioritized [7].

DentalWorld Manila

DentalWorld, a well-known dental clinic, has revolutionized its appointment system to address the challenges posed by the COVID-19 pandemic. With a strong emphasis on the safety and well-being of patients and staff, DentalWorld has introduced an innovative approach that combines rigorous safety measures with streamlined processes. At the heart of this new system is an advanced online platform that allows patients to schedule appointments conveniently and securely. By leveraging technology, DentalWorld minimizes physical contact and reduces the need for in-person interactions, ensuring the utmost convenience and peace of mind for patients.

Furthermore, DentalWorld's appointment system incorporates comprehensive COVID-19 screening protocols and pre-visit assessments. Before their scheduled appointments, patients are required to complete health-related questionnaires and undergo temperature checks. This proactive approach enables early identification of potential COVID-19 symptoms, safeguarding the health of both patients and staff. Inspired by the success of DentalWorld's model, our proposed system aims to integrate similar safety measures and streamlined processes. We are dedicated to developing a user-friendly online platform that enables patients to easily schedule appointments, complete necessary assessments, and adhere to vital COVID-19 safety protocols. By embracing this innovative system, we contribute to the overall efforts in creating a safe and healthy dental environment during these challenging times [8].

Implementation of Dental Clinic Appointment System (DCAS)

According to Rai [19], a web-based tool called Dental Clinic Appointment System (DCAS) assists patients in scheduling appointments with dentists in dental clinics. Only patients who have registered with DCAS are permitted to utilize the system. It is managed by health professionals with extensive training and expertise. The admin panel, doctor panel, receptionist panel, and patient panel are all covered on this website. The user has the option of searching by the doctor's name, gender, and specialization. Users can look through doctors' profiles and see information about their specialties. The registered user may select and schedule an appointment for any time and day. They can confirm or revoke their reservation. Additionally, it enables dental clinic employees to manage and handle patient information via a computerized method.

The DCAS was created to overcome the issues that existed with the traditional manual system. Additionally, this system was created to meet the specific requirements of the business to conduct operations efficiently and effectively. The program is kept as simple as possible to prevent data entry errors. It is an intuitive system. DCAS can result in a management system that is error-free, safe, dependable, and quick. The system will be built to realize the functionality of the system to assist patients at dental clinics. HTML, CSS/Bootstrap, JavaScript, PHP, MySQL, AJAX, and Laravel are all used in the development of DCAS.

UDent: Universiti Teknologi Malaysia Dental Clinic Appointment System

The UTM Dental Clinic Appointment System (UDent), an online scheduling tool, was created to help the University of Technology Malaysia Dental Clinic manage appointments. The technology, which was created especially for UTM Dental Clinic, makes it simple for patients to book appointments with dentists at times that work best for them. Anyone seeking dental care from the UTM Dental Clinic will benefit from the web-based system's additional information about the clinic and the treatments it offers. The administrative staff of the clinic may utilize the system to notify patients and provide information about their treatments, which further helps to streamline appointment administration. The system has a reminder feature that sends users email confirmations of their appointments to help them remember them, as well as a calendar that shows open appointment dates, a study conducted by Ramli & Zahila [1].

Electronic Dental Records (EDR) System Adoption

Based on the research conducted by Abramovicz-Finkelsztain et al. [16], the introduction of electronic dental record (EDR) systems in dental offices offer valuable advantages, including increased operational efficiency and the promotion of environmentally sustainable practices. By embracing "green" initiatives and reducing paper usage, dental offices can minimize chemical waste production. EDR systems leverage computer applications to facilitate various tasks such as patient scheduling, communication, and comprehensive management of clinical and financial data. Furthermore, EDR systems enable a seamless exchange of patient information with insurance companies, aligning with the growing demand for digital formats. However, the study observed significant disparities in the annotation fields between paper and electronic records. It was concluded that digital records have certain limitations when it comes to capturing a comprehensive range of patient clinical information.

In essence, the study emphasizes how EDR systems empower dental offices to enhance their operational efficiency while adopting environmentally conscious practices. Nonetheless, it also underscores the need for continued development to ensure that digital records effectively capture all relevant clinical information [16].

Online College Management System (OCMS)

This gives an interface for the preservation of the student details, and it can be used by an educational institutes or colleges to keep the records of the students efficiently and the student information system deals with all type of batch information, college information, course information, educational related reports, placement information, student information, syllabus and other resource related information too. It will also have batch implementation information, faculty information, students' information in all features, several academic proclamations to the staff and students updated by the college administration. It also eases us to explore all the activities that are happening in college, different reports and queries can be produced based on wide choices related to batch, credential, course, examinations, faculty, semesters, students and for the whole college. The placement administrator is in charge of updating the placement related details like the suitable criteria for a specific company, arriving time for the company, which is coming for hiring, the list of students who are suitable for attending the process of hiring according to Teke et al. [3].

Electronic Medical Records in Philippine Hospitals

It serves as a mechanical solution that gives an array of opportunities for healthcare suppliers and EMRs have proven to be essential in the success of technology assimilation in the medical services transportation. By enhancing data sharing patient care, lessening costs,

obtaining precision, EMR's integrated solutions address the continuing problems related with the manual processes of medical services transportation. Also, by digitizing medical graphs the medics are able to capture, preserve, and share patient's medical data that are essential for better transportation of medical services and details captured by EMRs is made attainable to the other medical organization and additional services like drugstores and laboratories which has been observed by Ebarido & Celis [17].

NU Safe

The "NU Safe" application in Microsoft Power App features a valuable component known as the "Daily Health Check." This system incorporates a series of form questions that students must complete, covering common symptoms through checkboxes and assessing mental health using a Likert scale. Similarly, the proposed system will incorporate a pre-dentist procedure form that patients must respond to. This form aims to gather essential information to ensure a safe and efficient dental procedure, enhancing overall patient care and well-being. By implementing such a form, our system aligns with the objective of promoting comprehensive and personalized healthcare experiences for dental patients [18].

Synthesis

To summarize, the implementation of various systems, such as the Dental Clinic Appointment System (DCAS) and UDent, highlights the significance of online scheduling tools in enhancing patient convenience and streamlining appointment management in dental clinics. Transaction Processing Systems (TPS) play a vital role in recording and organizing data in minimarkets, while the adoption of Electronic Dental Records (EDR) systems promotes efficiency and eco-friendly practices in dental offices. Furthermore, the utilization of Online College Management Systems (OCMS) contributes to efficient student information management in educational institutions. These systems underscore the value of technological advancements in optimizing scheduling, record-keeping, and operational processes across diverse sectors.

Technical Background

Current System

The current system of Aquino-Samontanes Dental Clinic is purely manual operated in processing patient appointments, screening, creating, updating and filing patient records as well as monitoring of dental supplies. This manual system is prone to human errors, and it requires a lot of effort and time spent to do these processes. It has a huge effect on the overall performance of the dental clinic itself.

The Aquino-Samontanes dental clinic operates using traditional manual processes for managing patient treatments. While the clinic utilizes modern automatic machines and equipment, it lacks a computerized system or any digital applications. The absence of technological integration hinders the clinic's ability to streamline operations, automate administrative tasks, and leverage the benefits of digital advancements. By recognizing the need for modernization and embracing the use of web-based systems, the clinic aims to enhance its efficiency, accuracy, and overall patient experience. Introducing a digital application will facilitate efficient appointment scheduling, streamlined patient record management, and timely access to relevant information. This technological upgrade will bring the clinic in line with industry standards and improve its competitiveness in the evolving healthcare landscape.

Since mostly of the businesses now are embracing the use of advance technologies, we introduced to the management the use of web-based system to speed up its operation and to boost clinic performance as well as convenience to both patients and dental clinic staff.

Proposed System

The proposed Aquino Samontanes dental clinic system intends to streamline and improve the appointment scheduling process, providing a positive experience for both patients and clinic staff. The system will be a web-based platform available via the clinic's website, with a simple interface that allows patients to select convenient time slots and book appointments in real time. This not only alleviates the pressure on front-desk personnel, but also lessens the likelihood of scheduling problems.

Furthermore, the system will include features like automated appointment reminders via SMS to help reduce no-show rates. Patients will also be able to reschedule or cancel appointments online, guaranteeing greater utilization of clinic resources and giving patients more flexibility in managing their calendars. The appointment system will include a user-friendly dashboard for dental practitioners to efficiently manage their schedules and access patient records.

The proposed system will also have a safe online patient portal for expedited patient record management. With the use of this portal, admins may easily update the medical information and finish changes. In addition to guaranteeing a comprehensive and accurate assessment of each patient's dental health, this proactive involvement improves the overall patient experience. The dental clinic will benefit from increased operational efficiency, improved patient satisfaction, and a modern approach to managing and organizing patient data thanks to the integration of this patient records management system.

Methodology

Requirement Analysis

Product Backlog / User Stories

ID	As a/an...	I want to be able to...	So that...	Priority
01	Patient	schedule an appointment in Aquino-Samontanes Dental Clinic whenever I want	I can visit without any issues concerning in schedule.	Must
02	Receptionist	Easily manages the appointments that are scheduled now and future dates	I can adjust the schedule for other patient visits.	Must
03	Receptionist	Set dates and times for the clinic's availability	patients would know when not to appoint their schedule.	Must
04	Patient	Know what to input in the medical history whenever I am given a form to answer	My visit would go smoothly without any delays	Must
05	Dentist	see the necessary medical history of patients whenever visiting	I know what to do when I do the treatment to my patients.	Must
06	Receptionist	schedule another appointment for patient's next visit	It would not result in conflict of schedule	Must
08	Dentist	efficiently organize patient records	I can do other things in the clinic that would normally be delayed.	Must
09	Receptionist	find an old patient's record, with complete information like their X-ray films	Preparations by the dentist would not cause delay in treatment planning.	Must

Table 1 Product Backlog Table

Event Tables

Event	Trigger	Source	Use Cases	Response	Destination
Managing Accounts	Manage Accounts	Admin	Manage Accounts	Create Accounts	Admin/System
		Receptionist		View Accounts	Admin/System

				Update Accounts	Admin/System
Managing Patients	Manage Patient	Receptionist	Manage Patient	Create Patient Information Modify Patient Information View Patient Information	Admin/System Receptionist System Dentist System
Managing Appointments	Manage Appointments	Receptionist Dentist	Manage Appointments	Create Appointments Accept Appointments Cancel Appointments View Appointments Modify Appointments Check Availability	Receptionist/Dentist Receptionist/Dentist Receptionist/Dentist Receptionist/Dentist Receptionist
Managing Records	Manage Patient Records	Dentist	Manage Patient Records	Create Patient Records View Patient Records Edit Patient Records pdate Patient Records Archive Patient Records	Admin/System Admin/System Admin/System Admin/System
Managing Treatments	Manage Treatment Plan	Dentist	Manage Treatments	Create Treatment Plan	Dentist Dentist

				Accept Treatment Plan	Dentist
				Deny Treatment Plan	Dentist
				Edit Treatment Plan	Dentist
				View Treatment Plan	

Table 2 Event Table

Use Case Diagram

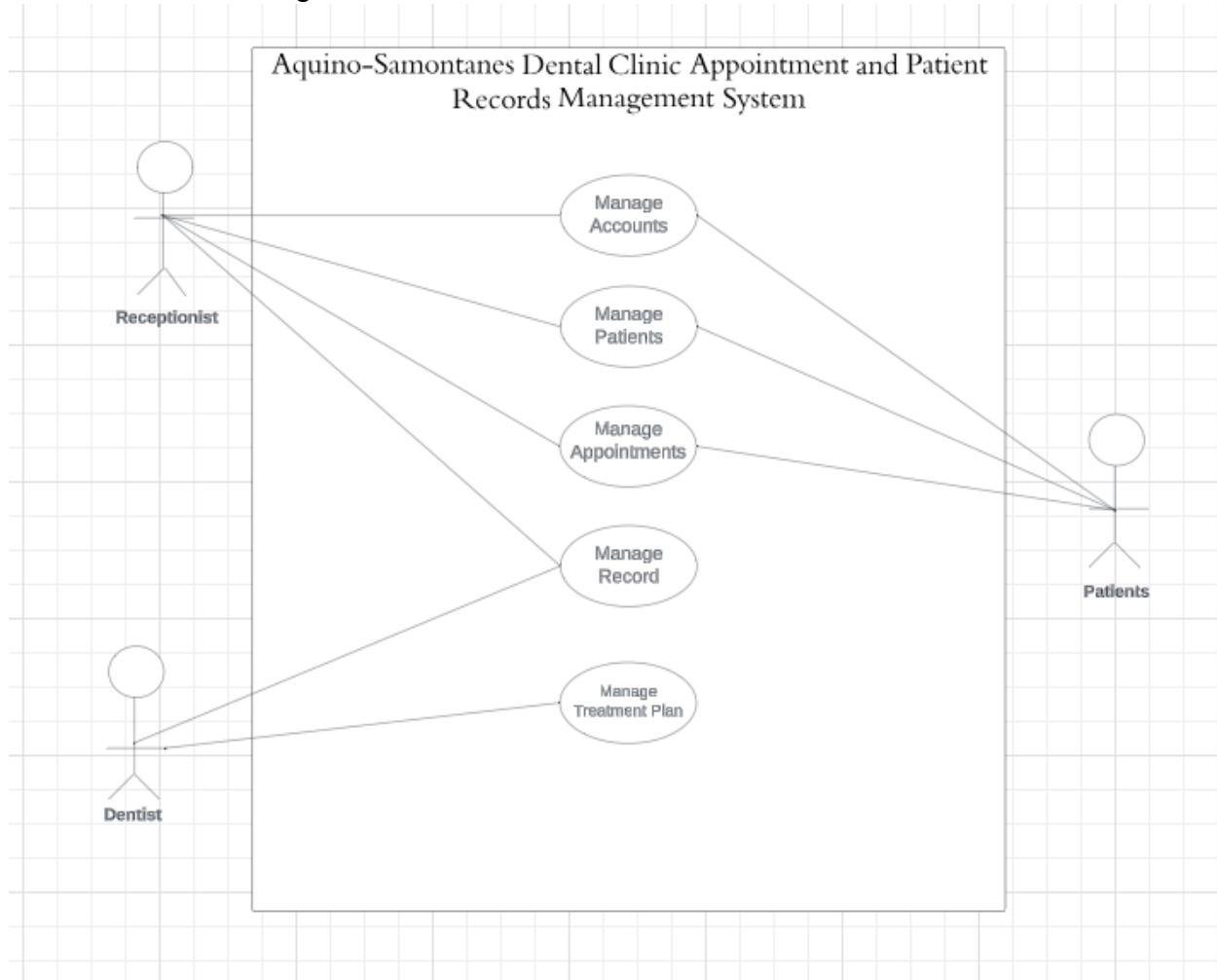


Figure 1 Use Case Diagram

Use Case Full Description

Use Case ID	1.0	
Use Case Name	Managing Accounts	
Created By	Timothy Angelo Samontanes	
Date Created	February 27, 2024	
Description	The patient is registering their account in the dental clinic system, enabling them to book appointments and access their dental information.	
Primary Actor	Admin	
Secondary Actors	System	
Include Use Cases	<div>1. Book Appointments</div> <div>2. Access Dental Records</div>	
Preconditions	<div>1. The Dental Clinic system is operational.</div> <div>2. The patient has not yet registered their account previously.</div> <div>3. The patient has the necessary credentials and permissions to create an account.</div>	
Postconditions	<div>1. The patient's account is successfully registered in the dental clinic system.</div> <div>2. The patients can log in and now create appointments.</div>	
Main Flow		
	Actor	System
	1. Patient accesses the dental clinic system's website.	1.1 The system welcomes the patient and presents the login and registration options.
	2. Patient selects the "Register Account" option.	2.1 The system presents the registration form to the patient.
	3. Patient enters their personal information, including name and contact details	3.1 The system captures and validates the information provided by the Patient.
	4. Patient sets up a unique username and password for their account.	4.1 The system validates the username's uniqueness and enforces password complexity rules
	5. Patient confirms the registration.	5.1 The system stores the patient's account information in the database.

	6. Patient is now officially registered to the system.	6.1 Patient receives a confirmation message, and their account is now registered in the system.
Alternative Flows	<p>3.1. If the patient's entered information is incomplete or invalid, the system will prompt them to correct the errors.</p> <p>4.1. If the selected username is not unique, the system will request the patient to choose a different username.</p> <p>5.1. If there are technical issues during registration, such as database errors or network problems, the patient will be informed to try again later</p>	

Use Case ID	2.0	
Use Case Name	Managing Patients	
Created By	Timothy Angelo Samontanes	
Date Created	February 27, 2024	
Description	After the patient enters the credential to the login system, they can now view and edit their own information.	
Primary Actors	Patient	
Include Use Cases	1. Create Treatment Plan 2. Manage Appointments	
Preconditions	1. The Dental Clinic system is operational. 2. The User has registered an account in the system. 3. The User has a valid username and password.	
Postconditions	1. The user is successfully logged into the system. 2. The system grants access to the user's account, enabling them to manage patient information.	
Main Flow		
	Actor	System
	1. User enters their username and password.	1.1 The system validates the credentials.
	2. User clicks the “Login” button.	2.1 The system verifies the credentials. 2.2 If the credentials are valid, the system grants access to the dentist’s account.

	3. User now has login to their account.	3.1 User gains access to their account and the system's functionalities.
	4. User can go to the patient profile	4.1 The system will redirect the user to the view patient profile page.
	5. User can now edit and update their own information	5.1 Once updated, the system will now update the necessary information
Alternative Flows	<p>2.2. If the entered credentials are invalid, the system will display an error message, and the dentist will need to re-enter their username and password.</p> <p>3.1. If there are technical issues during the login process, such as database errors or network problems, the dentist will be informed to try again later.</p>	

Use Case ID	3.0	
Use Case Name	Manging Appointments	
Created By	Timothy Angelo Samontanes	
Date Created	February 27, 2024	
Description	Patient wants to schedule an appointment for dental checkup, giving their contact information, their desired date and time, and indicating the purpose for the visit	
Primary Actor	Patient	
Secondary Actor	Receptionist	
Include Use Cases	1. Modify Appointment 2. View Appointment Schedule	
Preconditions	1. The patient must be entered into the clinic's database. 2. The dental clinic system needs to be working properly	
Postconditions	1. The appointment is saved in the database. 2. An appointment confirmation message is delivered to the patient. 3. The dentist schedule has been revised.	
Main Flow		
	Actor	System
	1. Patient starts the procedure of making an appointment.	1.1 The system offers a user-friendly interface, for patient to communicate with the scheduling system.

	1. The dentist logs into the system using their credentials.	1.1 The system displays the patient's record on the screen.
	2. The dentist goes to the patient records table to view records.	2.1 The system directs the dentist to the list of patient records.
	3. Dentist will then view a patient's information for necessary procedures.	3.1 The system will direct and open the chosen patient's record
	4. The dentist can now update if information is inaccurate.	4.1 The system saves the updated information and notifies the dentist that the patient record is now updated.
	5. The dentist has the option to archive any inactive patient that has been registered.	5.1 The system will direct the archived patient to a new table that is specifically for archived records.
	6. The dentist can search for a specific record with the search bar. As well as sort the table.	6.1 The system will alphabetically order the patient and provide the patient that has been searched.
Alternative Flows	4.1. If the system notices any unattended field whenever updating records, the system will notify that the dentist has not entered a specific field.	

Use Case ID	5.0
Use Case Name	Managing Treatments
Created By	Danny Boy Camarillo Jr.
Date Created	March 4, 2024
Description	To view and edit any patient's treatment plan. This use case focuses on how dentist can manage their treatment-related details.
Primary Actor	Dentist
Include Use Cases	<ol style="list-style-type: none"> 1. Create Treatment Plan 2. Review Treatment Plan 3. Accept Treatment Plan
Preconditions	<ol style="list-style-type: none"> 1. The dentist has successfully registered an account in the system. 2. The Dental Clinic system is up and running.

Postconditions	1. The dentist has a valid username and password. 2. The dentist is successfully logged into the system. 3. The dentist gains access to their account, enabling them to manage patient information.													
Main Flow	<table><tr><th>Actor</th><th>System</th></tr><tr><td>1. The dentist logs into the system using their credentials.</td><td>1.1 The system displays the patient's record on the screen.</td></tr><tr><td>2. The dentist goes to the specific patient record to view his/her treatment plans.</td><td>2.1 The system directs the dentist to the patient's record with full details.</td></tr><tr><td>3. The dentist discusses the findings with the patient, explaining the diagnosis and treatment options.</td><td>3.1 The system records all examination details and discussions in real-time, updating the patient's record.</td></tr><tr><td>4. The dentist creates a treatment plan for the patient.</td><td>4.1 The system updates the treatment plan in the patient's record, including proposed procedures and estimated costs.</td></tr><tr><td>5. The dentist schedules follow-up appointments for the approved treatments.</td><td>5.1 The system sends appointment reminders to both the dentist and the patient prior to the scheduled dates.</td></tr></table>		Actor	System	1. The dentist logs into the system using their credentials.	1.1 The system displays the patient's record on the screen.	2. The dentist goes to the specific patient record to view his/her treatment plans.	2.1 The system directs the dentist to the patient's record with full details.	3. The dentist discusses the findings with the patient, explaining the diagnosis and treatment options.	3.1 The system records all examination details and discussions in real-time, updating the patient's record.	4. The dentist creates a treatment plan for the patient.	4.1 The system updates the treatment plan in the patient's record, including proposed procedures and estimated costs.	5. The dentist schedules follow-up appointments for the approved treatments.	5.1 The system sends appointment reminders to both the dentist and the patient prior to the scheduled dates.
	Actor	System												
	1. The dentist logs into the system using their credentials.	1.1 The system displays the patient's record on the screen.												
	2. The dentist goes to the specific patient record to view his/her treatment plans.	2.1 The system directs the dentist to the patient's record with full details.												
	3. The dentist discusses the findings with the patient, explaining the diagnosis and treatment options.	3.1 The system records all examination details and discussions in real-time, updating the patient's record.												
	4. The dentist creates a treatment plan for the patient.	4.1 The system updates the treatment plan in the patient's record, including proposed procedures and estimated costs.												
	5. The dentist schedules follow-up appointments for the approved treatments.	5.1 The system sends appointment reminders to both the dentist and the patient prior to the scheduled dates.												
Alternative Flows	4.1. The system allows access if the updated credentials are valid; if not, the error message is still presented.													

Gap Analysis

GOAL: Improve Dental Clinic Appointment Efficiency

Current State	Future State	Gap Description	Possible Next Steps
The web-based system is not ready to be used on the dental clinic.	To be able to contribute to our client, as well as their patients.	Almost at completion.	Develop a strategic for the dental clinic with relations to the system.

About 80% of the system's functionality is currently on use.	100% functionality with minimal errors.	Almost at completion.	Utilize much greater databases to handle numerous patients.
Lack of additional features.	Implement every feature the client wants.	Needs more time to be implemented.	Interview patients for information about implementing new features to the system.

Table 3 Gap Analysis

System Analysis and Design

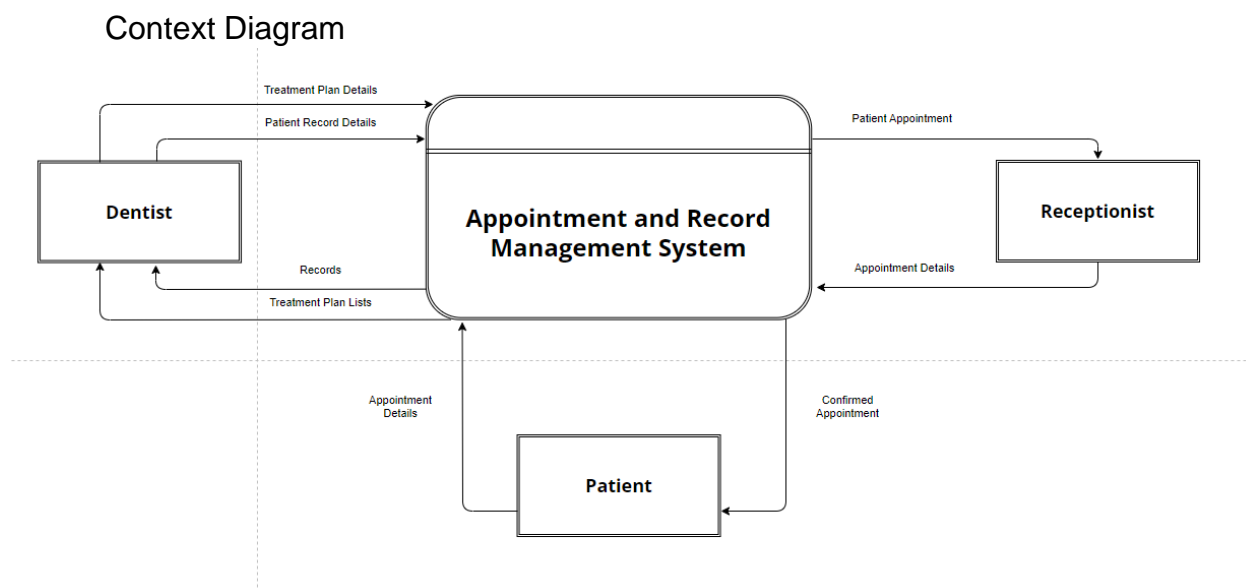


Figure 2 Level 0: Context Diagram

Data Flow Diagrams

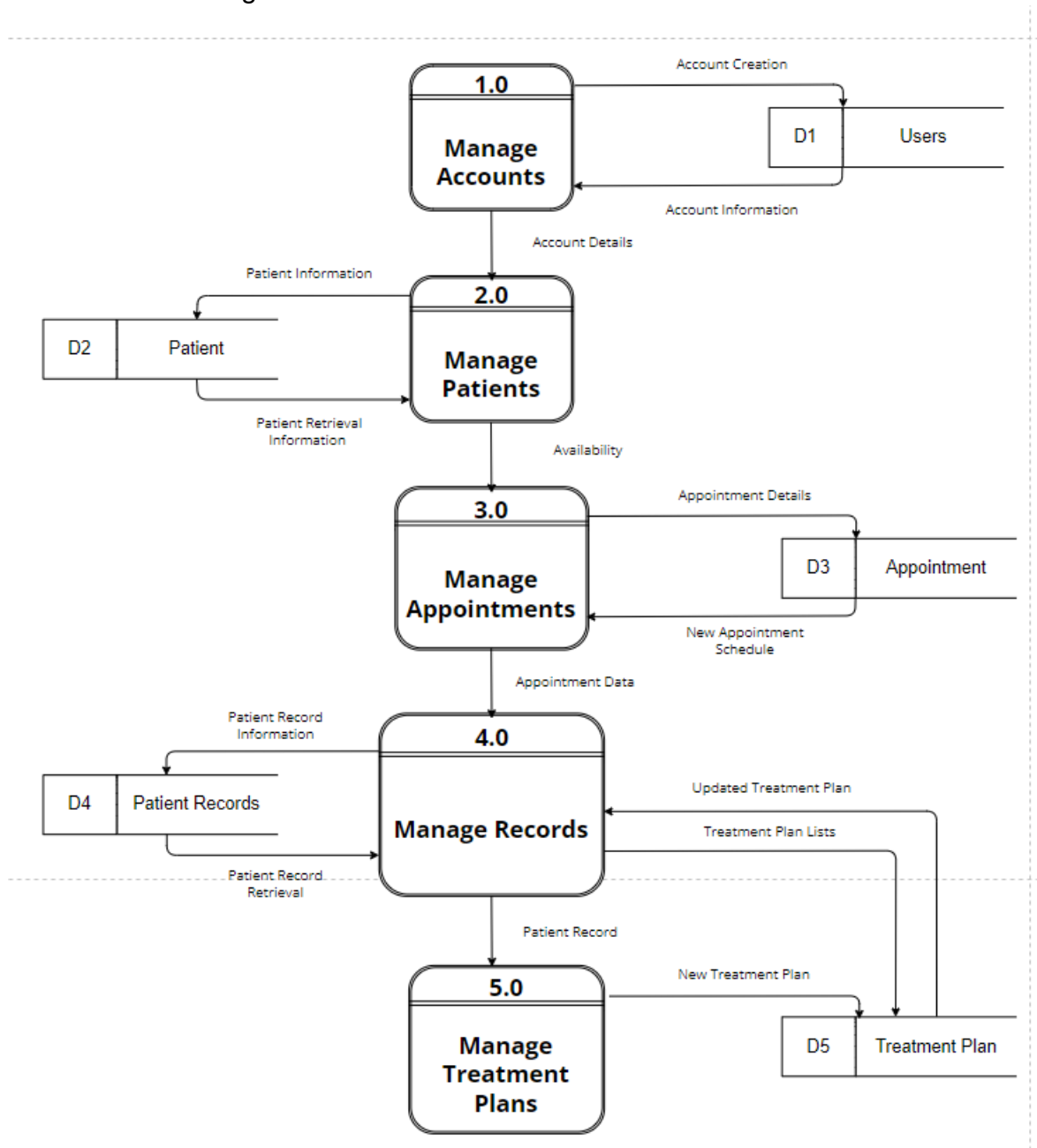


Figure 3 Level 1 DFD

1.0 Manage Account

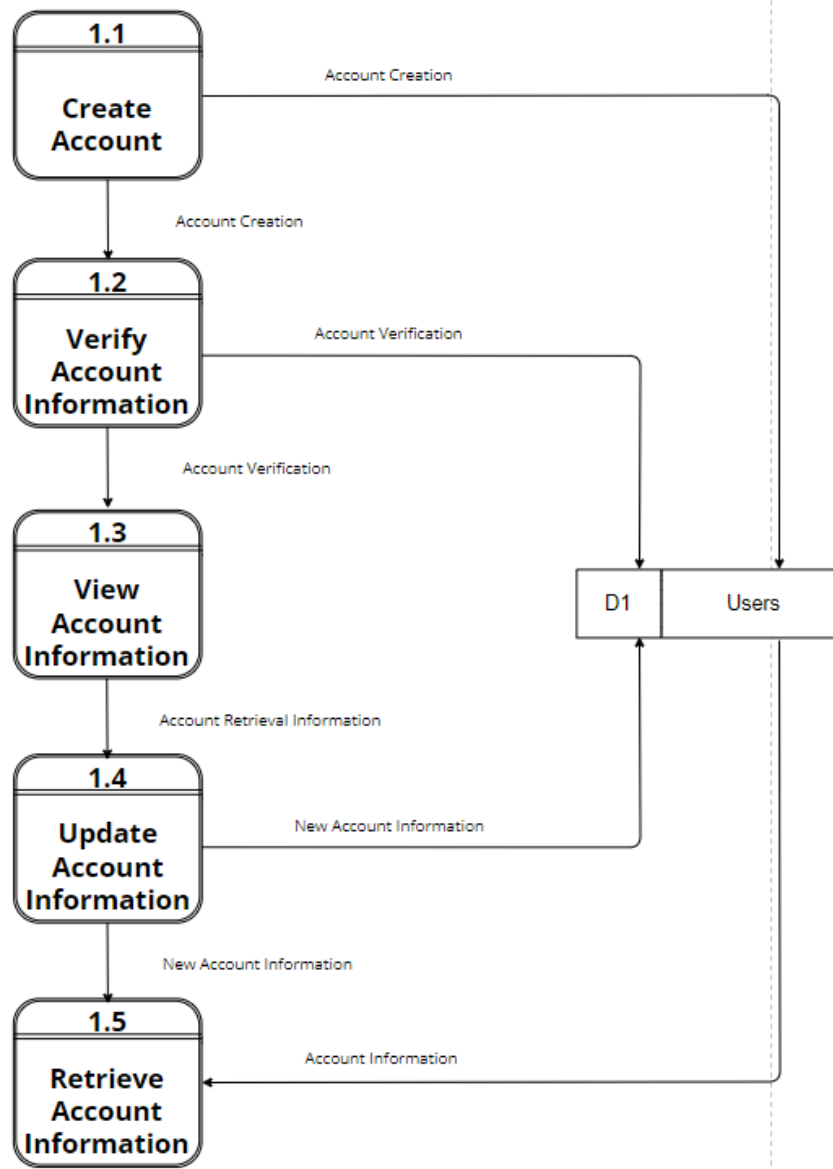


Figure 4 Level 2: Manage Account

2.0 Manage Patients

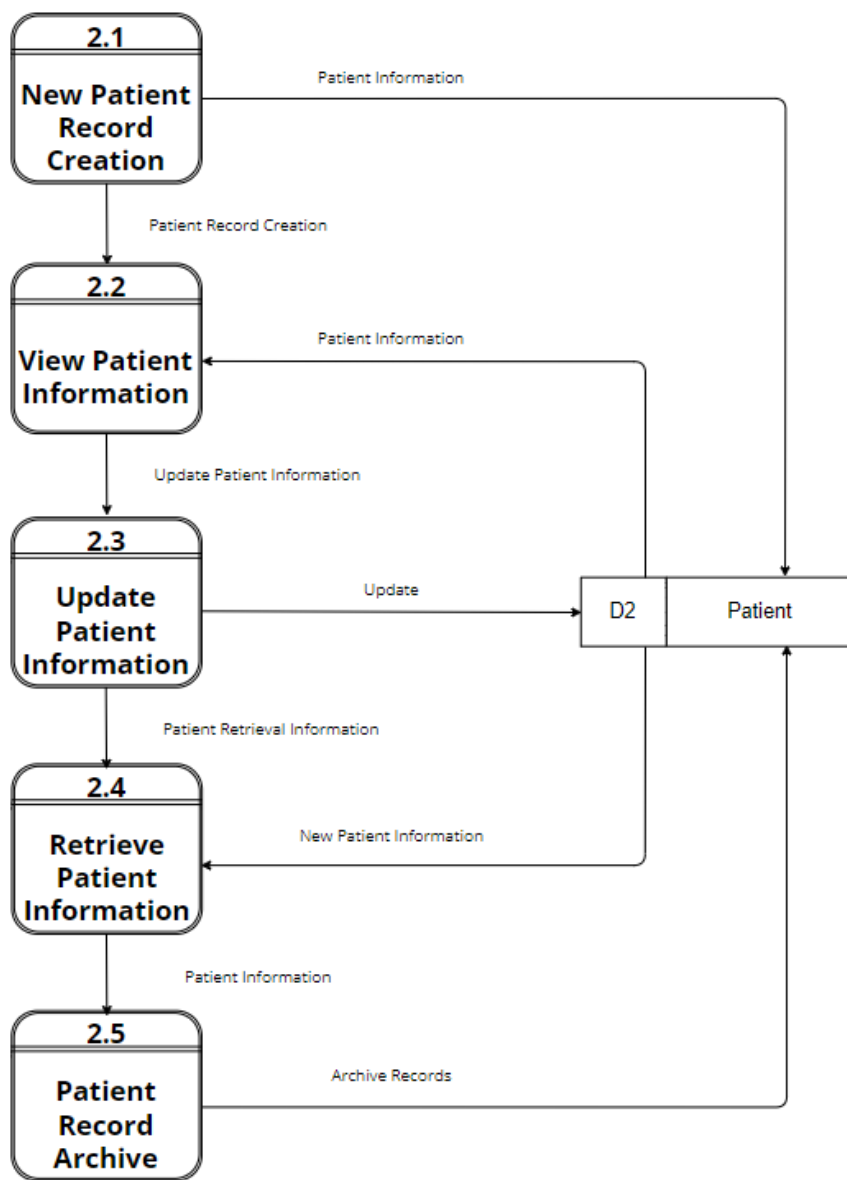


Figure 5 Level 2: Manage Patients

3.0 Manage Appointments

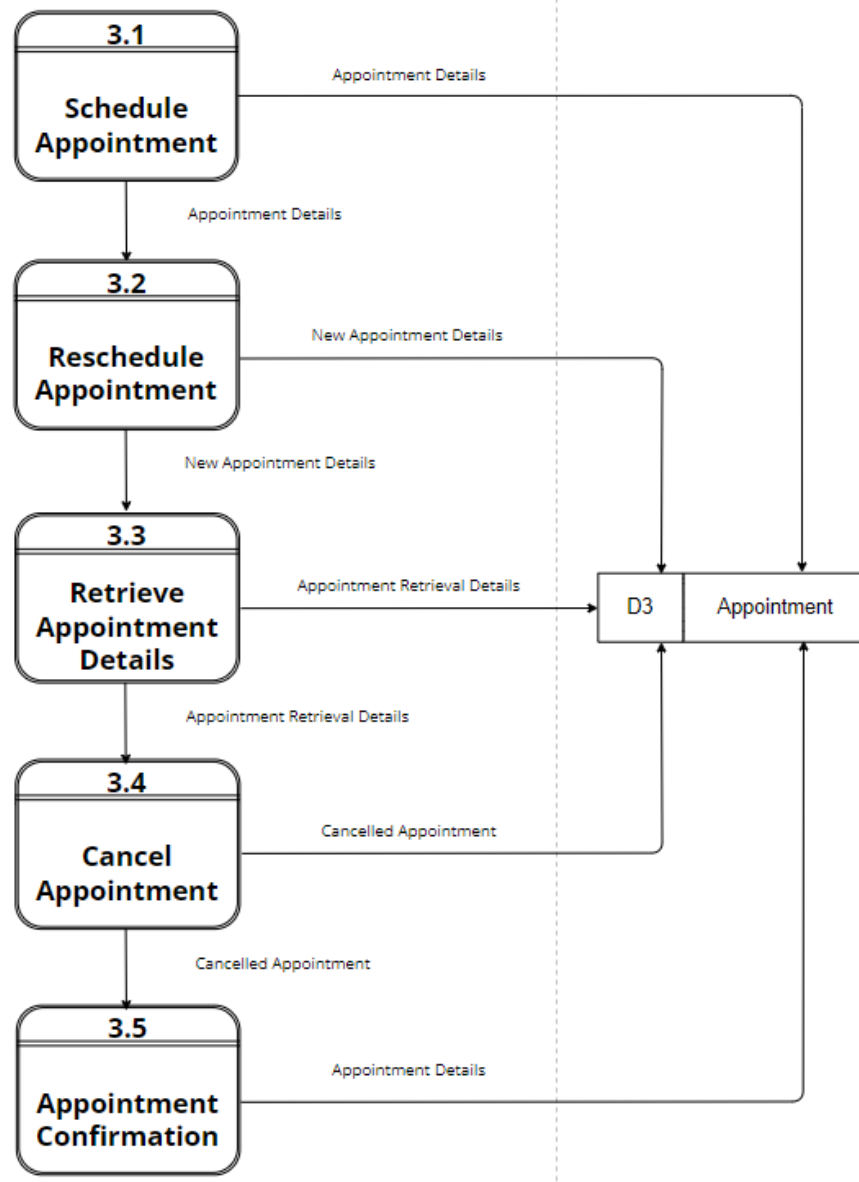


Figure 6 Level 2: Manage Appointments

4.0 Manage Records

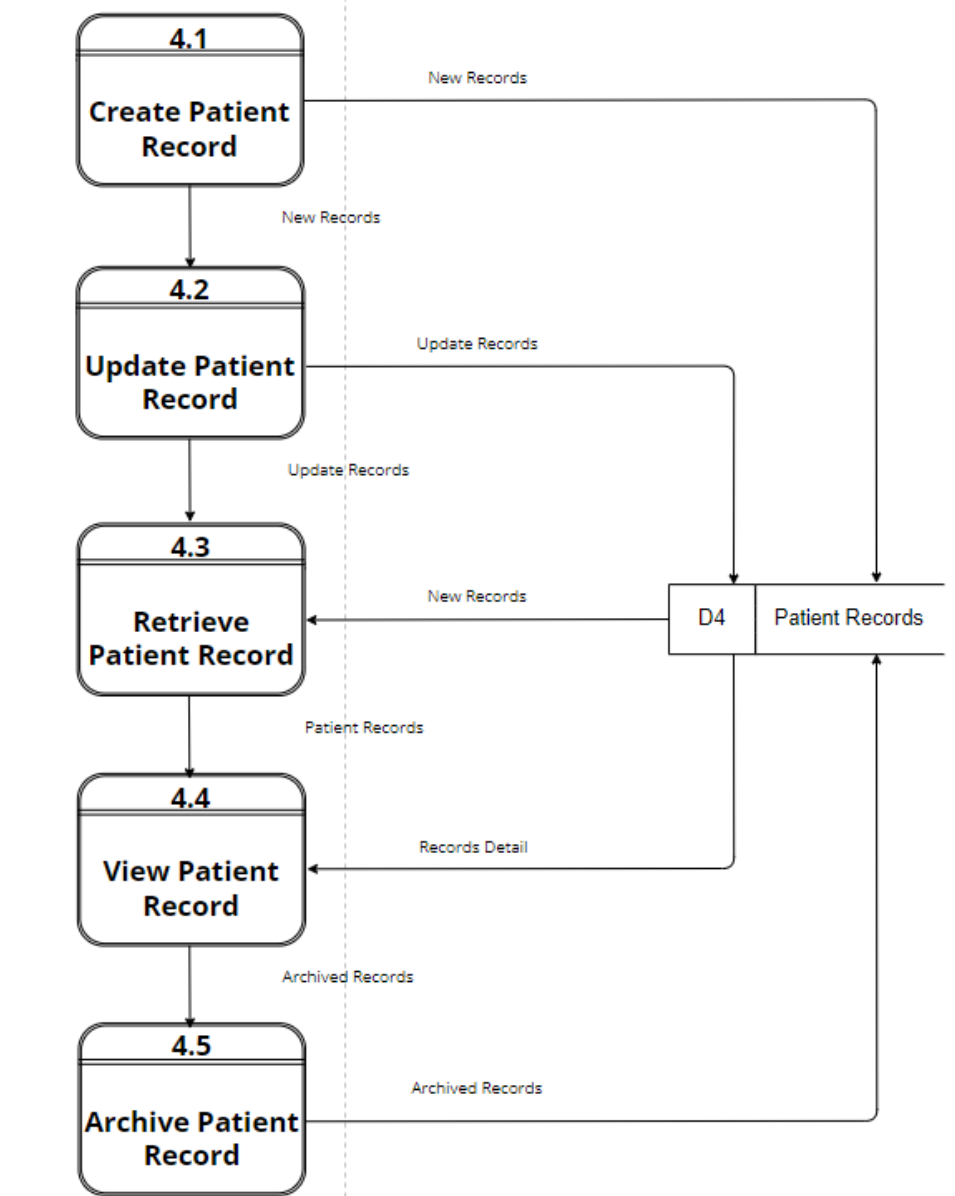


Figure 7 Level 2: Manage Records

5.0 Manage Treatment Plans

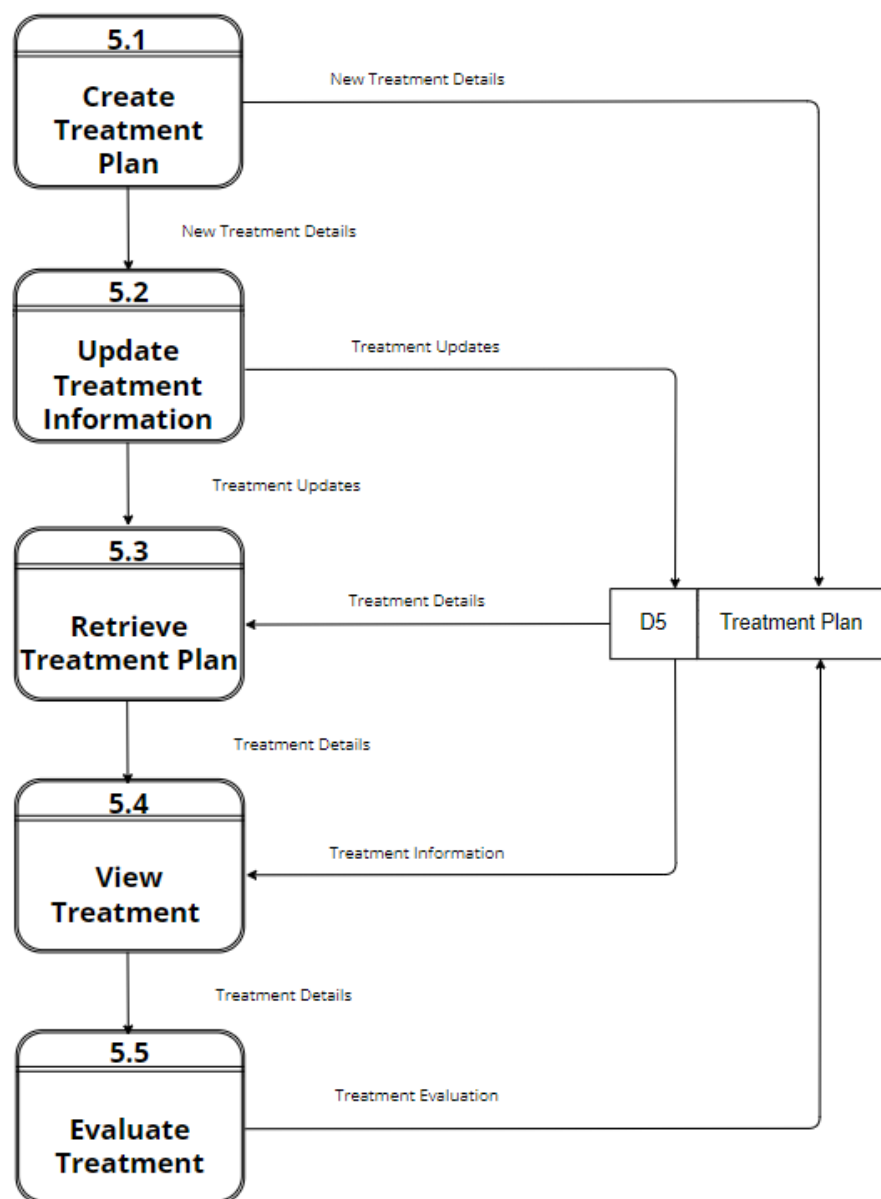


Figure 8 Level 2: Manage Treatments

Entity-Relationship Diagrams

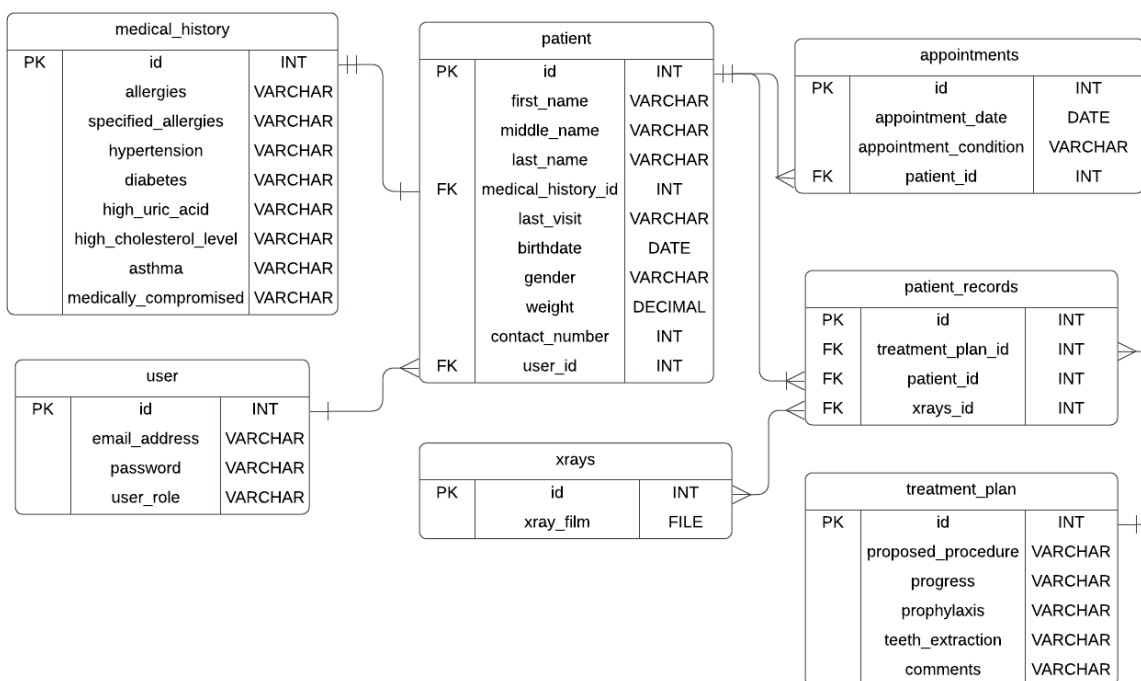


Figure 9 Entity-Relationship Diagrams

Results and Discussion

Release Plan

Target Group: Aquino-Samontanes Dental Clinic

Goal: To develop a web-based dental clinic management system with an integrated appointment scheduling and patient record management system, streamlining the process and reducing scheduling conflicts and complexities.

Needs: The dental clinic requires a digital solution to efficiently manage appointments and patient records, improving overall operational efficiency and enhancing the patient experience.

Value: Our proposed system, Aquino-Samontanes Dental Clinic Appointment and Records Management System, will provide an all-in-one platform for the dental clinic staff to easily manage appointments, access patient records, and automate the reservation process. It eliminates the need for manual data processing and reduces the reliance on external services, resulting in cost savings for the clinic.

Key features: User login for staff members, appointment scheduling module, patient record management module, database integration for secure storage and retrieval of patient information.

Release Plan

Release 1

- Project Paper
- Prototype

Release 2

- Addition of Booking/Reservations and Patient Records Management Functions to the Website
- Data Modeling
- Database System Implementation
- Designing the website interface

Release 3

- Finalizing User-End Designs to the Web-based System
- Conducting thorough testing of the functionalities introduced in releases 2 and 3
- Finalizing and deploying the fully functional website

Prototype

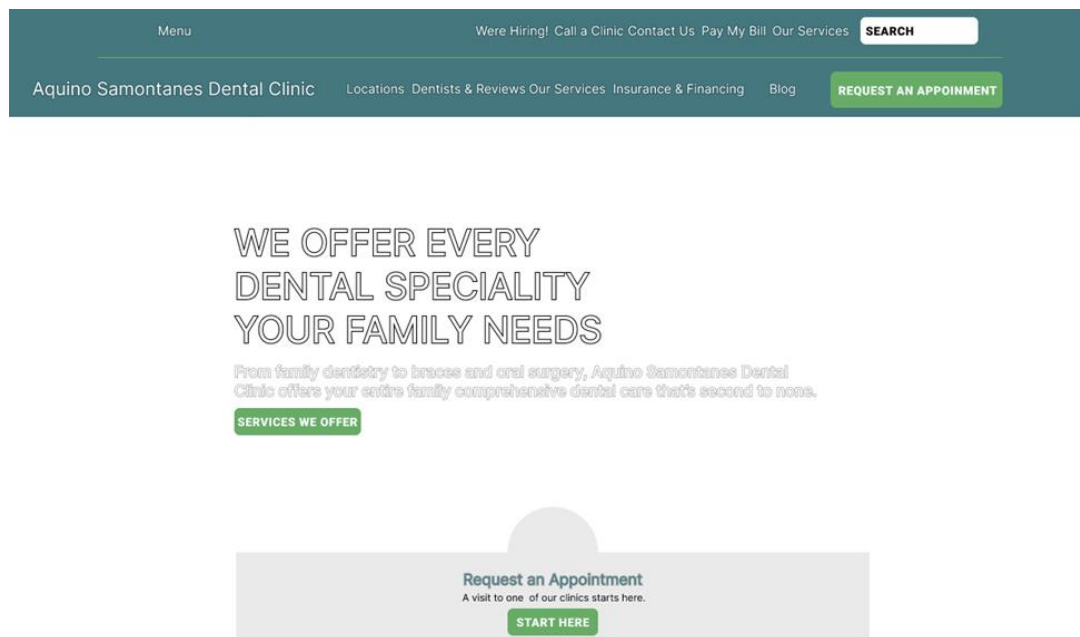


Figure 10 Home/Appointment Page Prototype

The Home Page features a clean and user-friendly layout, making it easy for visitors to notice and request appointments. With a prominent "Request Appointment" button, users can quickly initiate the appointment booking process, ensuring a seamless and efficient experience.

Fill Up Form

[BACK](#)

First Name

Last Name

Contact Number

Email

Preferred Date & Time of Visit

June 2023

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

☐ 10:30 AM

☐ 11:30 AM

☐ 1:00 PM

☐ 3:00 PM

☐ 5:00 PM

Your Concerns

Your Concerns

Health Declaration
<p>Do you have a fever or above normal temperature?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>Have you experienced shortness of breathe or had trouble breathing?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>Do you have a dry cough?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>Do you have runny nose?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>Have you recently lost or had a reduction in your sense of smell?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>Do you have sore throat?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p>Do you have diarrhea?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>

Figure 11 Fill-up Form Prototype

The Fill-up Form page allows patients to provide essential information, including personal details, concerns or symptoms in a dedicated text box, and their medical history using checkbox options. This form streamlines the appointment booking process and ensures accurate patient information, facilitating personalized care.

Figure 12 Appointments Page Prototype

The Appointments Page serves as the final step in the appointment booking process. Patients can review and confirm their appointment details before clicking the "Submit" button, ensuring peace of mind and accurate scheduling.

Figure 13 Log-in and Register Page Prototype

Figure 5 is the log-in and registration page where an admin must input the correct credentials to access the website. Note that users or patients do not directly go here for they can freely explore the website before creating an account.

AQUINO SAMONTANES DENTAL CLINIC

[BACK](#)

NEW PATIENT PROFILE

Patient ID:

First Name:

Middle Name:

Last Name:

Date of Birth:

Gender:

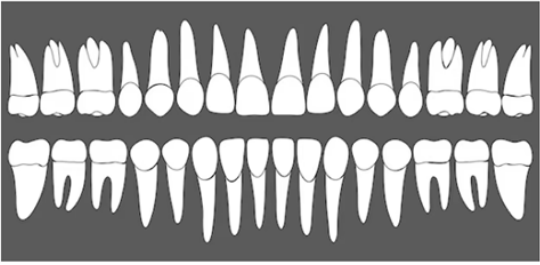
Phone Contact:

Email Address:

Residential Address:

Date of Appointment:

[SAVE RECORD](#)



Treatment Plan:

Progress Tracking:

Figure 14 Add/Edit Patient Records Page Prototype

The Add/Edit Patient Record Page allows healthcare professionals to manage patient records efficiently. It includes the ability to select and specify teeth-related problems, ensuring detailed and accurate patient profiles, which is crucial for precise diagnosis and treatment planning.

AQUINO SAMONTANES DENTAL CLINIC

[+](#)

Patient Records Table

Show

entries

Search:

Patient No.	Last Name	First Name	Middle Name	Gender	Age	Contact No.	Date Added	Action
P-01	Hannah	Jennie	Canon	Female	26	09293932931	2019-03-13	EDIT VIEW
P-02	Navarra	James	Fernandez	Male	25	09292342923	2019-03-19	EDIT VIEW
P-03	Cuevas	Justin	Aquino	Male	29	09292234122	2019-04-13	EDIT VIEW
P-04	Castro	Chris	Moreno	Male	28	09323223020	2019-04-26	EDIT VIEW

Figure 15 Patient Records Table Page Prototype

The Patient Records Table provides an overview of all listed patients, allowing healthcare providers to quickly access and reference patient information. It simplifies patient management and retrieval of records, improving workflow efficiency and patient care.

AQUINO SAMONTANES DENTAL CLINIC

BACK

Aquino S. Samontanes

Patient ID: P-01

Date of Birth: 01-01-2001 Gender: Male

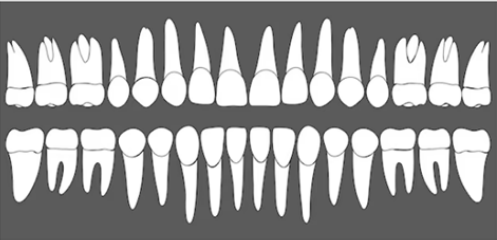
Phone Number: 0909-090-0909 Email: aquino@gmail.com

Address: Blk 09 Lot 09 Samontanes Street. City of San Aquino Del Monte City Rizal

Date of Appointment: 01-01-2003

Health Declaration

Covid-19: No	Covid-19: No	Covid-19: No
Covid-19: No	Covid-19: No	Covid-19: No
Covid-19: No	Covid-19: No	Covid-19: No
Covid-19: No	Covid-19: No	Covid-19: No



Treatment Plan: Braces Progress: Ongoing


Comments:

Needs further examming. Extra cleaning in the back. Before retainer, make sure to have atleast 3 more visits.

Figure 16 View Patient Records Page Prototype

The View Patient Records Page offers in-depth details that go beyond what's available in the patient records table. It provides comprehensive patient information, history, and treatment records for a more thorough understanding of each patient's healthcare journey. This page empowers healthcare providers with the insights they need to deliver personalized and effective care.


Our Services



X-ray

refers to a diagnostic imaging technique that uses X-ray radiation to capture images of a patient's teeth, jaws, and surrounding structures.


MORE



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MORE



X-ray

refers to a diagnostic imaging technique that uses X-ray radiation to capture images of a patient's teeth, jaws, and surrounding structures.

MORE

Figure 17 Services Page Prototype

The Service Page displays a comprehensive list of dental procedures and services in an easily digestible card format. Patients can browse through the available services to learn more about their options, make informed decisions, and explore the full range of dental care offered.

Use Classes and Characteristics

Patients	Patients are the clinic clients that makes an appointment request through the system. They are considered as the end user of the system that can also interacts with the receptionist personally and through online.
Receptionist	The receptionist receives and record the appointment with the details provided by the patients.
Dentist	The dentist receives the initial record prepared by the receptionist then review before executing the dental procedure of the patient.
Team Developer	Developers are responsible for the entire maintenance of the web-based system.

Table 4 Use Classes and Characteristics Table

Conclusion

The proposed Aquino Samontanes Dental Clinic project aims to address important challenges and bring significant benefits to the clinic and its patients. By implementing an appointment system and patient record management, clinics can overcome appointment conflicts, improve treatment planning and increase overall efficiency. Appointment systems streamline the scheduling process, ensuring appointments are accurate and organized, while reducing delays due to patient tardiness. A patient record management system provides easy access to patient information, enabling accurate updates, improved continuity of care, and efficient record retrieval.

Moreover, the proposed system reduces the risk of losing important documents by implementing secure storage methods. In addition, the patient is notified of appointments through her SMS, improving punctuality and reducing missed appointments. Additionally, the system features a comprehensive medical history form that helps patients provide accurate information for effective treatment planning. For dentists, the system offers a streamlined workflow and increases efficiency when performing dental procedures. With easy access to patient records and treatment plans, dentists can make informed decisions, ensure accurate diagnoses and provide personalized care. This system eliminates manual recording, reduces the risk of error and saves valuable time. Dentists can focus more on providing quality care and building stronger relationships with their patients.

Receptionists also benefit from this system as they have a centralized and organized reservation management system. Scheduling, rescheduling, and canceling appointments is easy, reducing conflicts and improving overall clinic efficiency. Reduce no-shows and optimize the use of available time slots by automating booking reminders with the system. In addition, receptionists have instant access to patient files to get the information they need to help dentists ensure smooth patient care. The proposed system is tailored to the specific needs of the Aquino-Samontanes Dental Clinic to ensure a smooth transition and maximize the benefits of the new technology. Extensive training is provided in collaboration with clinic management to ensure that staff can use the system effectively. The project uses an iterative, collaborative development approach to prioritize design and analysis to refine functionality.

Overall, the implementation of the proposed system will improve operational efficiency, increase patient satisfaction, and improve the quality of dental care. It revolutionizes appointment management, streamlines the record keeping process, and provides a solid foundation for the clinic's future growth and success.

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Appendices

Appendix A: Product Vision

Target Group	The target group for the "Aquino-Samontanes Dental Clinic Appointment and Records Management System" includes dental clinic staff, dentists, and patients.
Needs	The system aims to address the needs for efficient appointment scheduling, streamlined patient records management, improved communication, and enhanced patient experience.
Product	The product is a comprehensive web-based application that integrates appointment management, patient records storage, communication tools, and analytics to optimize the dental clinic's operations and provide a seamless experience for both staff and patients.
Business Goal	The business goal is to increase operational efficiency, reduce administrative tasks, enhance patient satisfaction, and improve overall clinic performance by implementing a digital system that automates and streamlines appointment and records management processes.

Table 5 Product Vision

Appendix B: Product Roadmap

MNTSDEV	MYSADD1	MCSPROJ
Finding a client <ul style="list-style-type: none"> Looking for the Client Client interaction and idea collection Problem identification and analysis Project Pitch <ul style="list-style-type: none"> Documentation SWOT Analysis for dental clinic Making of prototype 	Design <ul style="list-style-type: none"> Data modeling Database System System Design System prototype development Detailed construction of a prototype Website <ul style="list-style-type: none"> Login Patient recording Bookings/Reservation Online 	Website <ul style="list-style-type: none"> Beta Testing Progress Report Development <ul style="list-style-type: none"> Debugging Iterative prototyping and refinement Deployment of the project

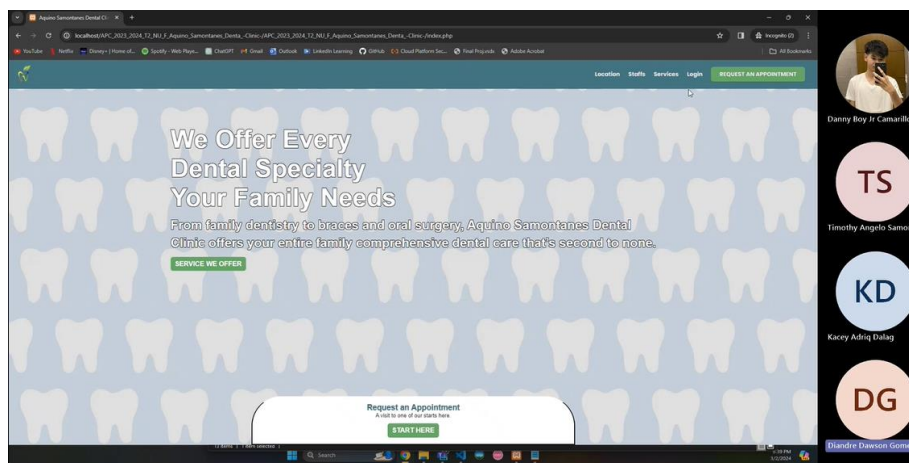
Table 6 Product Roadmap

Appendix C: Source Code

Discover the Aquino-Samontantes Dental Clinic's advanced Appointments and Patient Records Management System through our GitHub repository. Developed as a part of the APC School of Computing and Information Technologies project for the academic year 2023-2024, this system optimizes clinic operations with features like seamless appointment scheduling, efficient patient records management, a user-friendly interface, robust security measures, and integration capabilities. Access the repository at this link to explore the source code:

https://github.com/APC-SoCIT/APC_2023_2024_T2_NU_F_Aquino_Samontanes_Dental-Clinic-.git

Appendix D: Final Interview with the Client



3/2/2024

Question	Answer
How long does it take for you to manually create, manage, and organize one patient record?	<i>“5mins sa pagfill up, updating record after procedure mga 10mins, filing ng records mga 3mins so total of 18 mins each record”</i>
How about for the system?	<i>“Less than 5 minutes.”</i>

Table 7 Final Interview with Client

$$\text{Percentage Increase} = \left(\frac{18-4}{18} \right) \times 100\%$$

$$\text{Percentage Increase} = 0.7778 \times 100\%$$

$$\text{Percentage Increase} = \boxed{77.78\%}$$

Appendix E: Links

- Admin Manual

[https://asiapacificcollege.sharepoint.com/:w:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/r.\)%20User%20Manual,%20Admin%20Manual/Admin%20Manual.docx?d=wb55df40bb4894929a455e2901f01ebb4&csf=1&web=1&e=hTL6ZF](https://asiapacificcollege.sharepoint.com/:w:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/r.)%20User%20Manual,%20Admin%20Manual/Admin%20Manual.docx?d=wb55df40bb4894929a455e2901f01ebb4&csf=1&web=1&e=hTL6ZF)

- Patient Manual

https://asiapacificcollege.sharepoint.com/:w:/s/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/EYIxnkOn7S5Iny4n-5GI5KYBjCUvKfWoQIUSCHhUyrYSUQ?e=CxfsmU

- SRS Document
[https://asiapacificcollege.sharepoint.com/:w:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/e.\)%20Software%20Requirements%20Specification%20\(SRS\)/GROUP%203%20TEETH%20TITANS%20-%20SOFTWARE%20REQUIREMENT%20SPECIFICATIONS.docx?d=wb96732e2c89a41fa822f17cbb8a4252e&csf=1&web=1&e=8pnXM6](https://asiapacificcollege.sharepoint.com/:w:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/e.)%20Software%20Requirements%20Specification%20(SRS)/GROUP%203%20TEETH%20TITANS%20-%20SOFTWARE%20REQUIREMENT%20SPECIFICATIONS.docx?d=wb96732e2c89a41fa822f17cbb8a4252e&csf=1&web=1&e=8pnXM6)
- Vision and Scope
https://asiapacificcollege.sharepoint.com/:w:/s/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/ESjc2Fs-SBJAhBwpNwP0jaAB-FtFBvVbmBL8oW_qmL3U4A?e=m4XM4h
- Gantt chart
[https://asiapacificcollege.sharepoint.com/:u:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/c.\)%20Gantt%20Chart/WBS%20Teeth%20Titans.pod?csf=1&web=1&e=loEylb](https://asiapacificcollege.sharepoint.com/:u:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/c.)%20Gantt%20Chart/WBS%20Teeth%20Titans.pod?csf=1&web=1&e=loEylb)
- Contingency Plan
[https://asiapacificcollege.sharepoint.com/:x:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/n.\)%20Contingency%20Plan/Contingency%20Plan.xlsx?d=wb6a219a6fb9f46f3afd12520369a869a&csf=1&web=1&e=yFuFqk](https://asiapacificcollege.sharepoint.com/:x:/r/sites/MCSPROJ_IT212_NU_FAIRVIEW_2nd_TERM_AY_2023_2024/Shared%20Documents/TEETH%20TITANS/Final%20Requirements/n.)%20Contingency%20Plan/Contingency%20Plan.xlsx?d=wb6a219a6fb9f46f3afd12520369a869a&csf=1&web=1&e=yFuFqk)