**A PROPOSED OFFERING OF A CLINIC RECORDS MANAGEMENT SYSTEM**

**FOR**

**HI-PRECISION DIAGNOSTICS – MALABON BRANCH**

A Thesis Project Presented to the

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**CHAPTER I**

**INTRODUCTION**

Outlines the project's purpose, the problems with the current paper-based system, and the objectives of the proposed digital system.

**Background of the Project**

Many educational institutions and small clinics manage patient health records using traditional paper-based systems. This method is prone to significant inefficiencies and risks. Physical records consume valuable storage space, are difficult to search and retrieve quickly, and are vulnerable to damage or complete loss from fire, water, or misplacement. Furthermore, maintaining the confidentiality and integrity of paper files presents an ongoing challenge, as access is difficult to track and secure. This manual process can lead to delays in patient care, administrative errors, and an inability to analyze health trends within the patient population.

This project proposes the development of a Clinic Record Management System (CRMS) to address these challenges. The system will provide a centralized, digital platform for storing, accessing, and managing patient health information. By digitizing records, the clinic can significantly improve operational efficiency, enhance data security, and ensure the availability of patient information for clinic staff. This transition from a manual to a digital system is a critical step in modernizing the clinic’s administrative functions and improving the quality of its healthcare services.

This project will serve as a pilot system targeted specifically at managing the patient consultation records at the Malabon branch, addressing a need to digitize this particular workflow within the larger organization.

**Project Objectives**

The primary goal of this project is to design, develop, and implement a functional Clinic Record Management System. The specific objectives are as follows:

* To develop a system for managing patient records that protects sensitive information through user authentication.
* To create a user-friendly interface that allows authorized personnel to perform operations with minimal training.
* To implement core features for patient information management, including the ability to add, view, update, and search for patient demographic data.
* To build a module for managing consultation records, allowing staff to log patient complaints, diagnoses, and treatments for each visit.
* To integrate a basic inventory management feature for tracking the stock levels of clinic medicines.

**CHAPTER II**

**CLIENT INFORMATION**

Provides details about the Hi-Precision Diagnostics – Malabon Branch, including its profile and business services.

**Client Profile**

Hi-Precision Diagnostics Malabon Branch provides a comprehensive range of high-quality and affordable medical services, from laboratory tests and imaging to clinical consultations. Visit their clinic on the Ground Floor of Fisher Mall Malabon or contact them for appointments at (02) 8741-7777.

* Client Organization: Hi-precision Diagnostics Malabon Branch
* Address: Right Wing - Outside Ground Floor, Fisher Mall, Malabon, Metro Manila, Philippines
* Contact: Landline (02) 8741-7777

**Relevant Images**

*Hi-Precision Diagnostics Front View, https://www.hi-precision.com.ph/*

**Description Of Business**

Hi-Precision Diagnostics (HPD) is a leading medical diagnostic services provider in the Philippines, operating numerous branches nationwide. The organization's mission is to deliver high-quality diagnostic healthcare at affordable prices, with a vision of making these services accessible to all. HPD’s business philosophy is built on core values of accuracy, excellent customer care, respect, ownership, and innovation, establishing it as a trusted entity in the national healthcare industry.

The client offers a comprehensive range of diagnostic and clinical services. These services are categorized into three primary areas:

* **Laboratory Services -** Including routine examinations (blood, urine, stool), and specialized services such as multi-panel drug testing.
* **Imaging Services -** Encompassing a wide array of procedures such as X-Ray, General and Special Ultrasounds (abdominal, breast, thyroid), and advanced cardiovascular scans like 2D Echo with Doppler.
* **Clinical and Physician Services -** Offering medical consultations, full physical examinations, vaccine administration, Paternity testing, and specialized procedures.

**CHAPTER III**

**PROJECT SCOPE**

Defines the project's boundaries, specifying the deliverables, included and excluded features, assumptions, and constraints.

**Deliverables**

The final deliverable for this project will be a functional, standalone desktop application for Clinic Record Management. The key modules of the application will include:

* **Patient Information Module -** For creating and managing patient profiles.
* **Consultation History Module -** For recording and viewing patient visit details.
* **Medicine Inventory Module -** For managing the stock of available medicines.
* **User Authentication -** A secure login system for authorized personnel.

**Inclusions and Exclusions**

**Inclusions**

* User login and logout functionality.
* Create, Read, Update, and Delete (CRUD) operations for patient records.
* A search function to find patients by name or ID.
* Ability to add and view consultation notes for each patient.
* Ability to add medicines and update stock quantities.
* A simple reporting feature.

**Exclusions**

* Complex billing, invoicing, and insurance claim processing.
* Online appointment scheduling or public-facing portals.
* Integration with external laboratory or pharmacy systems.
* A dedicated mobile application (iOS/Android).
* Multi-language support.

**Assumptions and Constraints**

**Assumptions**

* The end-user (clinic staff) possesses basic computer literacy.
* The client will provide a computer that meets the minimum hardware requirements for running the application.

**Constraints**

* The project will be developed by a single person, which limits the scope and complexity of features.
* The system does not require a persistent internet connection for its core functions.
* The development timeline is fixed by academic requirements.

**CHAPTER IV**

**PROJECT APPROACH**

Describes the AGILE development methodology to be used, involving iterative sprints and continuous feedback.

**Methodology**

This project will be developed using an **AGILE framework SDLC** to ensure a structured, iterative, and flexible workflow. This approach breaks down the project into manageable components, allowing for continuous progress and regular feedback.

The methodology will be implemented through the following core practices:

* **Project Backlog Management**

A comprehensive list, known as the **Project Backlog**, will be created. This list will contain all desired features, requirements, and tasks for the entire system.

Each item in the backlog will be prioritized based on its importance to the core functionality of the clinic management system.

* **Iterative Development through Sprints**

The project will be divided into a series of short, time-boxed development cycles called **Sprints**, with each sprint lasting approximately one to two weeks.

At the beginning of each sprint, a selection of high-priority tasks from the Project Backlog will be moved into a **Sprint Backlog**. This becomes the to-do list for the current sprint.

The primary goal of each sprint is to produce a **Demonstrable Increment**—a stable, tested piece of working software that incorporates the features from the Sprint Backlog.

* **Continuous Feedback and Adaptation**

At the conclusion of each sprint, a **Sprint Review** meeting will be held with the project advisor.

During this review, the functional software increment will be demonstrated to showcase the progress made.

Feedback gathered during this meeting will be used to refine the system and adjust the priorities in the Project Backlog for future sprints.

**CHAPTER V**

**PROJECT TEAM**

Identifies the person responsible for the project and details their roles in development and management.

**Roles And Responsibilities**

This project will be made by Catubay Mark Lawrence L., who serves as both the Full-Stack Developer and Project Manager.

* **Project Proponent -** Catubay Mark Lawrence L.
* **Role** - Full-Stack Developer / Project Manager
* **Responsibilities** - Responsible for all aspects of the project, including planning, system design, development, testing, and documentation.

**CHAPTER VI**

**PROJECT TIMELINE**

Presents the high-level schedule, breaking the project into phases with estimated durations.

**High-Level Timeline**

A High-Level Timeline is a summary of the project's schedule that outlines the major phases, key activities, and their estimated durations. It provides a strategic overview of the project from start to finish without detailing day-to-day tasks, making it easy for stakeholders to understand the project's flow and overall duration.

|  |  |  |
| --- | --- | --- |
| PHASE | ACTIVITY | EST. DURATION |
| Initiation & Backlog Creation | Requirement Analysis, Feature Prioritization, & Initial System Design | 2 Weeks |
| Iterative Development (Sprints) | Sprint cycles developing features from the backlog (UI, Data Logic, Testing) and producing a demonstrable increment after each cycle. | 7 Weeks |
| System Testing & Refinement | End-to-end integration testing, bug fixing, and final feature refinement based on cumulative feedback from all sprints. | 1 Week |
| Finalization & Documentation | Bug Fixing & Feature Refinement | 1 Week |

**CHAPTER VII**

**PROJECT RESOURCES**

Lists the required hardware, software, and financial budget for the project.

**Hardware and Software Requirements**

Hardware and Software Requirements specify the necessary technological resources for the project. Hardware refers to the physical computer components (processor, RAM, storage), while Software refers to the operating systems, development tools, frameworks, and databases needed to build, test, and run the application.

**Hardware**

A personal computer or laptop with a modern processor, at least 8GB of RAM, and 500MB of free storage space.

**Software**

* Operating System: Windows 10/11 or macOS
* Development Environment: Visual Studio Code
* Runtime/Frameworks: Node.js, Electron.js, Express.js
* Database: SQLite

**Budget**

A Budget is a financial plan that itemizes the estimated costs required to complete a project. It covers expenses such as hardware, software licenses, human resources (labor), and operational overhead.

|  |  |  |
| --- | --- | --- |
| ITEM CATEGORY | DESCRIPTION | COST |
| Hardware | Proponent's personal laptop for development and client-provided PC for deployment. | PHP 0.00 |
| Software & Tools | Visual Studio Code, Node.js, Electron.js, SQLite, Git, etc. | PHP 0.00 |
| Human Resources | Time and effort of the Project Proponent (Catubay, Mark Lawrence L.). | PHP 0.00 |
| Operational Overhead | Internet connectivity, electricity, and other miscellaneous utilities. For (2.5 months) | PHP 1400 |
| TOTAL BUDGET |  | **PHP 1400** |

**CHAPTER VIII**

**RISK MANAGEMENT**

Identifies potential project risks and presents proactive strategies to prevent or lessen their impact.

**Potential Risks and Mitigation Strategies**

This section identifies potential problems (risks) that could negatively impact the project's schedule, quality, or success. For each risk, a mitigation strategy is a proactive plan designed to either prevent the risk from occurring or lessen its impact if it does.

|  |  |  |  |
| --- | --- | --- | --- |
| RISK | PROBABILITY | IMPACT | MITIGATION |
| Technical Challenges | Medium | Medium | Allocate buffer time in the project timeline. Seek for resources online. |
| Data Loss | Low | High | Use version control (Git) with a remote repository. Maintain regular local backups. |
| Scope Creep | Medium | High | Strictly adhere to the project scope defined in Chapter 3. Or add it in the next sprint. |
| Hardware Failure | Low | High | Regularly push code and documentation to a cloud-based repository. |

**CHAPTER X**

**PROJECT GOVERNANCE**

This chapter will contain the overview of how the project will be governed and decision-making processes

The core principles of governance are as follows:

* The Project Proponent is responsible for all day-to-day technical and operational decisions. However, any significant changes that affect the project's scope, objectives, or timeline must be formally discussed with and approved by the Project Advisor.
* Project progress will be reported and demonstrated during the Sprint Review meetings at the end of each development cycle. This ensures the Project Advisor has regular visibility into the project's status and can provide timely feedback.
* Any proposed deviations from the scope defined in Chapter III (Project Scope) must be submitted to the Project Advisor for review. This process ensures that "scope creep" is managed and that all changes are aligned with the project's primary objectives and academic requirements.

**CHAPTER XII**

**APPENDIX**

Contains supplementary materials, including a technical overview of the system's architecture and a detailed list of its functions.

**Overview**

This appendix contains supplementary materials that support the information presented in the main body of this proposal. These documents provide additional technical detail, visual concepts, and definitions relevant to the Clinic Record Management System project.

**System Component Overview**

The proposed Clinic Record Management System is designed as a standalone desktop application. Its architecture is composed of three primary layers that work together to deliver the required functionality without needing a constant internet connection.

* **Presentation Layer (Front-End) -** This is the user interface that the clinic staff will directly interact with. It will be built using standard web technologies (HTML, CSS, JavaScript) and will be responsible for displaying forms, data tables, and navigation menus. All user input, such as creating a patient profile or adding a consultation note, originates here.
* **Logic Layer (Back-End) -** This layer acts as the brain of the application. It receives requests from the Presentation Layer, processes data according to business rules and performs the necessary operations. This will be powered by Node.js and Express.js, handling all Create, Read, Update, and Delete (CRUD) operations.
* **Data Layer (Database) -** The system will use SQLite for data storage. SQLite is a self-contained, serverless database engine that stores the entire database in a single file on the local computer. This design choice ensures that the application is portable, easy to install, and fully functional offline.
* The entire application will be packaged using **Electron.js**, a framework that allows these web-based components to be bundled into a native desktop application for Windows or macOS.

**Core System Functionalities by Module**

This section describes the key features and capabilities of the proposed system from a user's perspective.

**User Authentication Module**

* Provides a secure login screen requiring a username and password.
* Restricts access to the system to authorized clinic personnel only.
* Includes a logout function to securely end a user session.

**Patient Information Module**

* Functionality to create new patient records, capturing demographic data such as name, address, and date of birth.
* A central view to list all registered patients.
* A search function to quickly find specific patients by name or ID.
* Ability to select a patient and view their complete profile.
* Functionality to update or edit existing patient information.

**Consultation History Module**

* Ability to add a new consultation entry linked to a specific patient.
* Fields to record the patient's complaint, the doctor's diagnosis, and the prescribed treatment for each visit.
* A chronological view of all past consultations for any selected patient, allowing for easy review of their medical history.

**Medicine Inventory Module**

* Functionality to add new medicines to the clinic's inventory list.
* Ability to view the current stock levels of all available medicines.
* Functionality to update the quantity of a medicine to reflect usage or restocking.