Software Requirements Specification for Pharmacy Management System

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1. Introduction

This section provides an overview of the SRS document and the Pharmacy system, explaining how they work together.

1.1 Purpose

This document outlines the functional and non-functional requirements for the updated version of the Pharmacy Management System (PMS). This paper provides a clear and comprehensive guide for the ongoing development of the PMS Flet application, serving as a reference for future users and stakeholders to understand the system's behavior, capabilities, and functionalities, including its goal, scope, and other features.

1.2 Scope

The PMS or Pharmacy Management System is a digitized and streamlined pharmacy operations, enabling authorized personnel to:

- For Administrators: It will allow them to manage user roles, access for users, generate reports, and manage system security.
- For Pharmacist/s: It will allow them to review prescriptions, verify personal information or details, dispense medications accurately according to needs, and generate reports.
- For Inventory Manager: It will allow them to manage, maintain, update, and track the inventory of medicine stock and its information.
- For Patient/User: It will allow them to create an account, have access to the services like purchasing medicines, allow them to search for other medicines, upload prescriptions, view their bills, and see their prescription and profile information details.
- For Billing Clerk: It will allow them to view, create patients' bills, view all invoices and generate automated billing, and send it to the patient.
- For Staff: It will allow them to assist patients by allowing them to search patient(s),and view all active patients.

Thus, this efficiently manages prescriptions, medicines, and records within a secure and controlled environment.

The following Core Functions or Features are included and is applied to the application.

Core Features Include(s):

- *User authentication and role-based access control.*
- *Patient is authorized to create an Account*
- *User Login authentication for every registered role*
- *Prescription upload, review, and validation.*
- *Medicine inventory management (add, update, delete, search, and view stock items).*
- *Automatic alerts or notifications for low stock or expired medicines.*
- *Generate transaction and inventory reports.*
- *Audit logging for traceability of actions.*
- *Generated reports and billing reports.*
- *Full patient medical record management beyond prescription-related data.*
- *Billing and creating the invoice process.*
- *Payment History for the payment process*
- *Viewing details: prescription, bills, patient records, system logs, and other reports, etc.*

1.3 Definitions, Acronyms, and Abbreviations

- SRS: Software Requirements Specification
- PMS: Pharmacy Management System
- UI: User Interface
- Pharmacist: Authorized personnel responsible for validating and dispensing medications.
- Admin: System Administrator/s
- Inventory Manager: User responsible for managing the inventory stock of medicines.
- Billing Clerk: Manage the bills and the submission of calculated bills.
- Staff member: Authorized personnel responsible for validating personal details.
- User: User of the Developed Application
- Patient: Avail the prescribed medication

1.4 References

- ISO/IEC/IEEE 29148:2018 - Systems and software engineering — Life cycle processes — Requirements engineering.
- Local FDA and DOH guidelines on medicine handling and record-keeping.

1.5 Overview

This document is organized into three main sections. Section 1 provides an introduction. Section 2 gives an overall description of the product, its users, and its operational constraints. Section 3 details the specific functional and non-functional requirements.

Introduction

The **Pharmacy Management System (PMS)** is a desktop, application, or web-based system designed to automate daily pharmacy operations, reduce manual errors, and ensure safe medicine dispensing within healthcare settings such as hospitals or clinics.

2. Overall Description

This section describes the general factors that affect the product and its requirements.

2.1 Product Perspective

The Pharmacy Management System (PMS) is a modular, role-based application that is designed to centralize pharmacy processes within an advanced and efficient manner of system.

2.2 Product Functions

The major functions of the Pharmacy Management System include(s):

- Secure login for Patient and Access Control for Admin.
- Allow to validate, view, record, update, and link specific requirements for patients.
- Enables authorized users (limited to Admin, Inventory Manager, and Pharmacist) to manage and view medicine details.
- Enable the Alert system notification on tracking of stock levels of medicine to view and generate low-stock notifications.
- Maintains system logs and recent activity actions via the Admin Dashboard and ensures to monitor and manage the system.
- Generate detailed information, reports, medicine inventory, and activity summaries, and allow users to view the report.

2.3 User Characteristic

- Administrator: Manages system users, roles, and system configurations, generates comprehensive reports, and monitors recent activity and system security.
- Patient/User: Creates accounts, searches and purchases medicines, adds to cart medicines, views and submits prescriptions, views details (ordered medicine), pays bills, and manages personal profile information.
- Pharmacist: Reviews and validates prescriptions, verifies patient information, can search for medicines, and generates prescription-summary reports.
- Inventory Manager: Maintains and monitors medicine stock levels, updates inventory data, and manages low-stock notifications.
- Billing Clerk: Handles billing operations and transactions, calculates total costs, creates and generates invoices, views billing summaries and recent activity, processes payments, and generates summary reports.
- Staff Member: Assists patients and by handling patient information, and has read-only access to patient records.

2.4 Constraints

- The system must comply with the safeguarding of sensitive data information using encryption.
- Accessibility of medicine CRUD functionality must be restricted to pharmacists, inventory managers, and administrators.
- The system is likely to have limited space for handling information records.
- device (device used in the making) functions, but later on will depend on other or future measures.
- System development of the Project is developed using the Flet framework and Python, which limits its environment.
- Admin has higher accessibility in managing the system's features and other functions.
- The system interface can likely not be very responsive on other display resolutions or other systems.
- Some contents have limited responsive interface of 1024 x 768
- System development and testing are constrained by limited time.
- Future scalability or integration with hospital management systems is outside the current project scope, but may be considered in future versions.
- The project will or can be focused on local-based or network-based in the later or future phases.
- All users entering password data must be encrypted
- The system must authenticate users through app that state a single sign-on (SSO) service.
- Development must be completed using the Flet framework.
- Does not really apply the reality guidelines of pharmacy.

2.5 Add or Clarify Constraints

Technical Constraints:

- The system is developed using the Flet framework (Python), limiting deployment to platforms that support the Python runtime.

- SQLite database is used for data storage, which may have limitations for concurrent multi-user access.

- No external API integrations (payment gateways, insurance systems) in the current version. - - Limited to local/network deployment; cloud deployment not included in v1.3.

Security Constraints:

- User passwords are hashed using SHA-256 (Note: Consider upgrading to bcrypt in future versions).

- Role-based access control must be strictly enforced at all access points.

- Session management with automatic logout after inactivity.

Data Constraints:

- Database backups must be performed regularly (recommend daily automated backups).

- Patient data must comply with data privacy regulations.

Development Constraints:

- The development timeline is constrained by the academic semester schedule

- Testing is limited to desktop environments (Windows primarily).

- The user interface may not be fully responsive on all screen resolutions.

2.6 Assumptions and Dependencies

- All users will have valid login credentials issued by the database.
- The system will operate on a stable local network or internet connection.
- Prescription and medicine data will follow simple or classic medical record formats.
- The system will use the Flet Framework (Python**)** for cross-platform deployment.
- It is assumed that the development and testing environment will remain consistent throughout the project.
- All users in the system are expected to comply with the access permissions assigned to their respective roles.
- In the future, extensions such as integration with hospital systems, payment services, or other systems that are considered outside the scope of this version.

3. Specific Requirements

3.1 Functional Requirements

These details what the system should do.

FR-001: User Authentication

- Description: The system must allow new users (Patients) to create accounts by providing username, password, email, phone, and personal details. All user types (Administrator, Pharmacist, Inventory Manager, Billing Clerk, Staff, Patient) must log in with username and password; this will be determined by what they can access. Upon successful login, users are directed to their role-specific dashboard. *Patient accounts are self-registered through the public registration page.*

FR-002: Role-Based Access Control

- Description:

  - Administrators: Full access to user management, system reports, and activity logs

  - Pharmacists: Access to prescription review, patient records (read-only), reports

  - Inventory Managers: Manage medicine stock, low-stock alerts, and generate inventory reports

  - Billing Clerks: Create and manage invoices, view patient invoices, and generate billing reports

  - Staff Members: Read-only access to patient records, assist with data entry

- Patients: Personal dashboard, medicine search, order management, profile settings.

- Sidebar Navigation menus and dashboard features are dynamically displayed based on user role.

FR-003: Medicine Inventory Management

- Description: The Admin and Inventory Manager should be able to view, add, update, and delete, as well as search for medicines. Pharmacists can search for medicines and view details. Each medicine will have details like, for example, its name, category, dosage, batch number, expiry date, and how many stocks are left. The system should always keep track of stock information to be updated.

FR-004: Prescription Management

- Description: Pharmacists must also upload or enter prescription information and ensure that it is correct prior to releasing the drug. All prescriptions must also correspond to the patient.

FR-005: Dispensing of Medicines (Completed)

- Description: The system should allow the pharmacist to view which medicines were to be given to which patient. Once, it was confirmed that the number of medicines given out should automatically be deducted from the pending review that requires action by the pharmacist.

FR-006: Stock Monitoring and Alerts (Completed)

- Description: The system is on alert, checking medicine stock and expiry dates. When medicines are almost out of stock or nearing expiry, the Inventory Manager should get an alert so they can buy the medicines and restock or dispose of them.

FR-007: Billing and Payment Processing (Not yet implemented)

- Description: The Billing Clerk should be able to make billing records for every transaction on the system, according to the patient's or user's bill. The system should automatically calculate the total amount, billing details, apply the amount, and generate an invoice or receipt details for the patient or user.

FR-008: Patient Account Management

- Description: New patients should be able to register for an account where they can enter their ID, name, and password. After registering, they can now log in to check their prescriptions, billing records, with the available list of medicines.

FR-009: Reporting and Record

- Description: The Admin and Pharmacist should be able to see reports and summaries of stocks of medicines, usage, and patient prescriptions. Patients should be able to see their bills and medicines available. This will make the system allow reports to be recorded in a desirable way and reviewed.

  For admin: Administrators can view comprehensive system reports, including:

  * User Activity Report (registrations, role distribution)

  * Inventory Status Report (stock levels, categories, values)

* Prescription Summary Report (pending, approved, rejected)

* Low Stock Alert Report (critical and low-stock items)

* System Usage Statistics (overall counts and metrics)

FR-010: System Activity Logging and Audit Trail Description: (NEW) (from system logs of admin)

- System records all significant user actions and system events.

- Activity logs include: user logins, user management actions, inventory changes, prescription actions, and system events. - Administrators can view, filter, and search activity

- Logs include datestamp, username, action type, and details.

- Logs can be filtered by time period and days period.

3.2 Non-Functional Requirements

These details show *how* the system should perform its functions.

NFR-001: Performance

- Description: The system should respond quickly to respond when doing things like viewing, searching, and linking data. This should work properly even though fewer users tend to use it at the same time.

NFR-002: Usability

- Description: The interface should be simple and easy to use. Buttons should only form when they are labeled clearly, and staff have guides available for users, so the user or patient can understand how the system works.

- Added Description: User passwords are hashed using SHA-256 before storage (Note: bcrypt recommended for future). Login requires valid username and password authentication. Role-based access control is enforced at navigation and function levels. - Session management with user state tracking. Sensitive patient data should be protected.

NFR-003: Security (EDITED) (this is important as this is where some functionality for IAS will be served)

- Description: Patient accounts and user data should be encrypted. This will require the users to make a login action before accessing the system, and it should automatically log them out after they stop using or are inactive for a while.

NFR-004: Reliability

- Description: The system reliably allows the user to run smoothly during or even the testing and avoid sudden crashes. The system used a seeded database for this should also be a way to back up data, so nothing will get lost when something goes wrong.

NFR-005: Maintainability

- Description: In terms of maintainability, the code is organized properly so that, later on, when fixing an error or bug, it will be easier to fix. Other members of the group should be

able to understand and modify without breaking existing parts.

NFR-006: Scalability

- Description: The system should be able to handle more users and additional users in the features, which include medicines and billing transactions, without needing a full redesign.

NFR-007: Portability

- Description: In terms of its sense of portability, it should work on any device that can run both Python and Flet, whether it's a desktop or mobile, or even a website. This makes it easier to access, test, and use on different platforms.

NFR-008: Data Integrity

- Description: The entire Information in the system should stay encrypted, accurate, and consistent. Any change, however, to the system, like stock of medicine, prescriptions, or billing, should update across all related parts of the system.

NFR-009: Accessibility

- Description: The design of the system should use clear text, fonts, readable information, and enough contrast so users can easily read what's going on in the system. In future versions of the system, this may add features for users wherein will likely have vision difficulties.