MINISTRY OF HIGHER EDUCATION
SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION
DEPARTMENT OF INFORMATION TECHNOLOGY

Pharmacy Management System

Individual Project Proposal

FINAL PROJECT

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Registration No: GAL/IT/2022/F/0027

Subject Code: 4052

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Problem Statement

Traditional pharmacies rely on manual record-keeping and paper-based inventory management, leading to inefficiencies, errors, and delays in service. Pharmacists often struggle with stock mismanagement, causing either shortages or overstocking of medicines. Additionally, tracking medicine expiry dates is difficult, increasing the risk of selling expired drugs. Customers face long waiting times for purchases, as orders and billing are processed manually. Moreover, the lack of automated sales reports and analytics makes it challenging for pharmacy owners to track business performance and make informed decisions.

Furthermore, traditional pharmacies lack digital convenience for customers, requiring them to physically visit the store for purchases. This can be inconvenient, especially for elderly or sick patients who need regular medications. Security is also a concern, as sensitive patient data and sales records may be exposed to unauthorized access. Additionally, many traditional pharmacies fail to comply with healthcare regulations such as HIPAA and GDPR, putting customer data at risk. The absence of online ordering, and automated prescription management further limits business growth and customer satisfaction. These challenges highlight the urgent need for a modern, automated Online Pharmacy Management System (OPMS) to enhance efficiency, security, and service quality.

1. Introduction

An Online Pharmacy Management System (OPMS) is a specialized web based software solution designed to streamline and automate the operations of an online pharmacy. It facilitates efficient tracking, management, and control of pharmaceutical inventory, orders, sales, and deliveries, ensuring compliance with regulatory requirements and improving overall efficiency. By providing real-time insights into stock levels, prescription processing, and order fulfillment, an OPMS helps pharmacies enhance customer satisfaction while minimizing operational costs.

In the highly regulated and competitive pharmaceutical industry, maintaining an optimal inventory level is essential to meet customer demand while ensuring compliance with drug safety regulations. Overstocking can lead to wastage due to expired medicines, while understocking may result in critical medication shortages. An effective OPMS addresses these challenges by automating key processes such as prescription verification, stock monitoring, order processing, and sales tracking.

Key Features of the Proposed OPMS:

- Monthly Sale Report
- Daily Top Ten Sale Report
- Latest Medicine List
- Add Users Role
- Settings
- Add Payment Method
- Medicine Stock Info
- Medicine Expire Info
- Supplier Invoice Management

Dashboard:

- Monthly Sale Report
- Daily Top Ten Sale Report
- Latest Medicine List

User Management :

- Add Users Role
- Add Users
- Show Users List

Medicine Category Management:

- Add/ Update
- Show List

Medicine Generic Management :

- Add/ Update
- Show List

Medicine Management :

- Medicine Add/ Update
- Show Medicine List

Medicine Supplier Management :

- Supplier Add/ Update
- Show Supplier List

Medicine Order Management :

- Place Order
- Order List

2. Business Process

The business process of a Pharmacy Management System involves the activities required to ensure the smooth operation of the store and satisfaction of customers.

1. User Management Process

- Admin adds user roles (e.g., Pharmacist, Cashier, Manager).
- Admin adds new users and assigns roles.
- Users log in to access their respective modules.
- Admin can view and manage the list of users (edit, deactivate, or delete).

2. Dashboard & Reporting Process

- The Dashboard displays key business metrics:
- Monthly sales report
- Daily top ten sales report
- Latest medicines added
- Reports are automatically generated based on transactions and inventory updates.
- Admin and authorized users can analyze sales trends and medicine stock levels.

3. Medicine Category & Generic Management Process

- Admin or authorized users can add or update medicine categories (e.g., Antibiotics, Painkillers).
- The system allows management of generic medicine names (e.g., Paracetamol, Ibuprofen).
- Users can view the categorized medicine list for better stock organization.

4. Medicine Management

- Pharmacists add/update medicine details (name, price, stock, expiry) and categorize them for easy tracking. like returns, exchanges, or refunds in a timely manner.

5. Medicine Supplier Management

- Admin/pharmacists manage supplier details for efficient restocking.

6. Medicine Order Management

- Pharmacists place and track orders; received orders are verified and updated in stock automatically.

7. Stock & Expiry Management

- The system monitors stock levels, alerts for low stock, and flags expiring medicines for action.

8. Supplier Invoice Management

- Invoices are generated, reviewed, and processed for payments, ensuring proper financial documentation.

9. System Settings & Configuration

- Admins configure user access, business details, and report settings.

3. Problems and Weaknesses

- Data Issues: Duplicate records, inconsistent medicine pricing, and data redundancy.
- Security Risks: Unauthorized access, lack of encryption, and vulnerability to cyber threats.
- Inventory Challenges: Stock mismatches, expired medicines not flagged properly.
- Performance Issues: Slow response times and system crashes under heavy transactions.
- Order & Supplier Limitations: Manual order tracking, lack of supplier integration.
- Payment Risks: Failed transactions and financial mismanagement.
- User Experience Gaps: Complex interface, lack of training, and operational errors.
- Privacy & Confidentiality Risks
  Without proper data protection policies, sensitive customer and supplier data may be leaked or misused.
- Reporting Limitations: Delayed or non-customizable reports.
  Data Backup & Recovery Risks: No automatic backups, risk of data loss.
  Legal & Compliance Issues: Non-compliance with pharmacy regulations and tax errors.

Addressing these issues early in the project will ensure smoother implementation and better performance of the inventory management system.

4. Aims and Objectives of The Project

Aims:

The project aims to develop an efficient, secure, and user-friendly Online Pharmacy Management System (OPMS) that automates pharmacy operations, improves inventory management, enhances customer service, and ensures compliance with medical regulations.

Objectives:

- Automate Sales & Reporting – Generate real-time reports for monthly sales, daily top-selling medicines, and stock levels.
- Enhance Inventory Management – Track medicine stock, expiry dates, and supplier details to prevent shortages and losses.
- Improve Supplier & Order Management – Streamline order placement, invoice handling, and supplier transactions for better procurement.
- Implement user roles (Admin, Pharmacist, Cashier) to protect sensitive data and restrict unauthorized access.
- User Role & Access Control – Provide secure role-based access for pharmacists, admins, and finance teams to prevent unauthorized data access.
- Simplify Medicine Categorization – Organize medicines based on categories, generics, and suppliers for easy retrieval.
- Enhance Customer Service – Ensure faster billing, accurate prescriptions, and seamless order tracking.
- Improve System Usability – Design a user-friendly interface for easy navigation and efficient operations.

5. Benefits of The Project

- ❖ Improved Efficiency & Automation
    - Reduces Manual Work: Automates medicine sales, inventory tracking, and billing.
    - Faster Order Processing: Customers can place orders online, reducing waiting time.

- ❖ Better Inventory & Medicine Management
    - Stock Tracking: Monitors stock levels to prevent medicine shortages.
    - Expiry Alerts: Notifies pharmacists about medicines nearing expiry.
    - Supplier Management: Keeps records of suppliers and invoices for easy tracking.

- ❖ Enhanced Customer Experience
    - Online Ordering: Customers can order medicines from home without visiting the store.
    - Medicine Search & Availability Check: Helps customers find medicines easily.
    - Multiple Payment Options: Supports cash, card, and online payments for convenience

- ❖ Increased Sales & Business Growth
    - 24/7 Availability: Unlike physical stores, an online system allows orders anytime.
    - Data-Driven Sales Strategy: Sales reports help analyze top-selling medicines and customer trends.
    - Promotions & Discounts: Easier to apply discounts and offers to boost sales.

- ❖ Better Decision Making: The system generates detailed reports and analytics, helping the business make informed decisions regarding purchasing, sales, and stock management.

- ❖ Improved Customer Satisfaction: With better inventory control, the system ensures timely product availability and quicker order fulfillment, leading to

6. Functional and Non-Functional Requirements

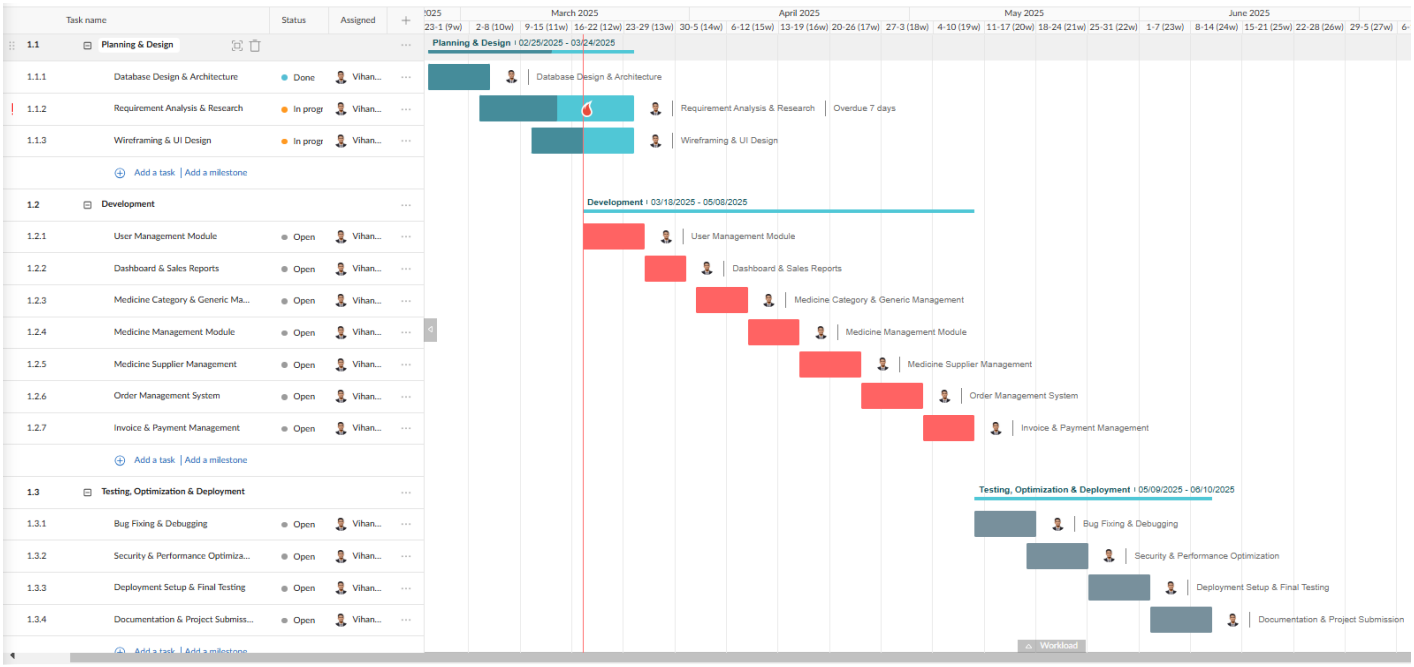
Functional Requirements:

- ❖ User Management
    - User Roles: Admin, Pharmacist, Supplier, Customer
    - User Registration & Authentication: Secure login/logout, password recovery
    - Role-Based Access Control (RBAC): Restrict features based on user roles
    - Manage Users: Add, update, delete users
    - View Users List
- ❖ Medicine Management
    - Add/Edit/Delete Medicines
    - Manage Medicine Categories & Generics
    - Medicine Stock Info: Track available quantity
    - Medicine Expiry Tracking: Notify before expiry
- ❖ Supplier & Inventory Management
    - Add/Edit/Delete Suppliers
    - Supplier Invoice Management
    - Stock Replenishment Alerts: Notify admin when stock is low
- ❖ Notifications & Alerts
    - Low Stock Alerts
    - Medicine Expiry Alerts
    - Order Confirmation Notifications
- ❖ Settings & Configuration
    - Update Pharmacy Details (Name, Address, Contact Info)
    - Customize Role Permissions

Non-Functional Requirements:

- Usability: The system should have a user-friendly interface, easy for employees to learn and use.
- Scalability: The system should be scalable to support business growth, such as adding more products or locations.
- Security: The system must ensure data protection with features like user authentication, role-based access, and secure data storage.
- Reliability: The system should be stable and available with minimal downtime, ensuring continuous access to inventory data.
- Compatibility: The system should be compatible with existing business tools, like accounting software or e-commerce platforms.

In summary, functional requirements focus on what the system must do, while non-functional requirements focus on how the system should perform and behave.


Task name
Status
Assigned
March 2025
April 2025
May 2025
June 2025
1.1 Planning & Design
Planning & Design | 02/25/2025 - 03/24/2025
1.1.1 Database Design & Architecture
Done
Vihan...
Database Design & Architecture
1.1.2 Requirement Analysis & Research
In progr
Vihan...
Requirement Analysis & Research
Overdue 7 days
1.1.3 Wireframing & UI Design
In progr
Vihan...
Wireframing & UI Design
Add a task | Add a milestone
1.2 Development
Development | 03/18/2025 - 05/08/2025
1.2.1 User Management Module
Open
Vihan...
User Management Module
1.2.2 Dashboard & Sales Reports
Open
Vihan...
Dashboard & Sales Reports
1.2.3 Medicine Category & Generic Ma...
Open
Vihan...
Medicine Category & Generic Management
1.2.4 Medicine Management Module
Open
Vihan...
Medicine Management Module
1.2.5 Medicine Supplier Management
Open
Vihan...
Medicine Supplier Management
1.2.6 Order Management System
Open
Vihan...
Order Management System
1.2.7 Invoice & Payment Management
Open
Vihan...
Invoice & Payment Management
Add a task | Add a milestone
1.3 Testing, Optimization & Deployment
Testing, Optimization & Deployment | 05/09/2025 - 06/10/2025
1.3.1 Bug Fixing & Debugging
Open
Vihan...
Bug Fixing & Debugging
1.3.2 Security & Performance Optimiza...
Open
Vihan...
Security & Performance Optimization
1.3.3 Deployment Setup & Final Testing
Open
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Deployment Setup & Final Testing
1.3.4 Documentation & Project Submiss...
Open
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Documentation & Project Submission
Workload