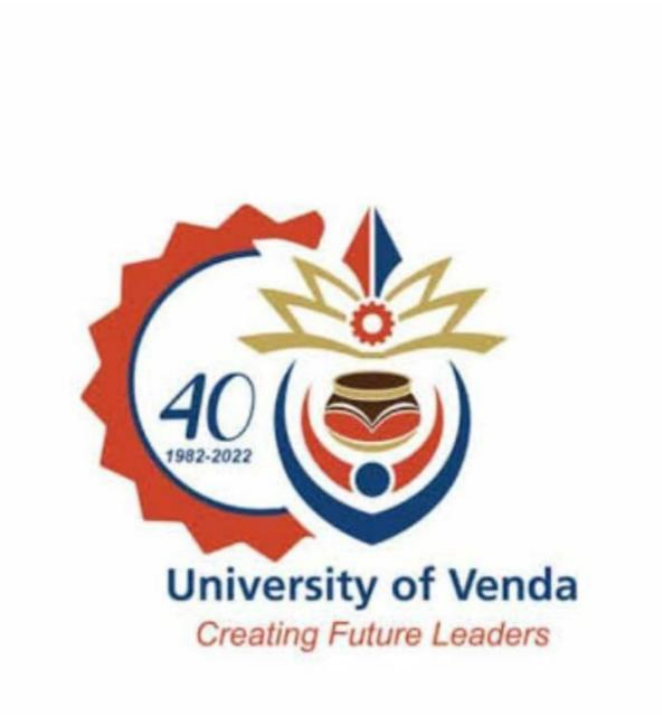

Title : Software specification documentation for an online pharmacy management system

Authors :

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ANALYSIS

1.Introduction

The online pharmacy management systems streamline the process involved in dispensing medications, improving efficiency and patient care.

The analysis phase is crucial in system development as it identifies user requirements and system functionalities.

2. Problem statement

Many traditional pharmacies face challenges such as inventory mismanagement, lack of real-time prescription tracking and limited accessibility for customers. These issues result in delays, errors and customer disappointment.

3. Objectives of these system(what our system is intended to achieve)

- Maintain accurate inventory records
- Provide a platform for online medicine ordering
- Allow pharmacists to manage prescriptions and verify authenticity.
- Improve communication between patients and pharmacists.

4. Scope of the system

The system will allow users to register, browse medicines, upload prescriptions, place orders and track deliveries. It will also provide pharmacists with tools to manage inventory and approve orders.

5.

5.1 User Requirements

R1:customer

R2:pharmacist

R3:System administrators

5.2 System Requirements

R1:Hardware

R2:Software

R3:Database

5.3 Functional Requirements

R1: Users must be able to register and log in to the system.

R2:Medication search and ordering

R3: Prescriptions management

R4:Order processing and shipping.

R5:System should provide customer support.

5.4 Non-functional Requirements

R1: Security >system should ensure the confidentiality, integrity and medication information.

R2: Usability>the system should be user-friendly and easy to navigate.

R3: Scalability >the system should scale up or down to accommodate changes in demand.

R4: Performance >system should be able to handle a high volume of users and orders without significant delays.

R5: Compliance>system should comply with relevant laws and regulations.

5.5 Testing Requirements

R1:Unit Testing >the system should be tested at the unit level to ensure that individual components function correctly.

R2: Integration Testing >the system should be tested at the integration level to ensure that components work together seamlessly.

R1: User Acceptance Testing >system should be tested by end-users to ensure that it meets their requirements and expectations.

DESIGN

Entity – Relationship Diagram

❖ Entities

- Customers: These are the individuals who purchase medication and request refills via our system.
- Pharmacists: Medical professionals who review and approve medication dispensing.
- Doctors: Medical professionals who prescribe medication to customers.

- Medication: prescription and over the counter medication available for purchase by customers.
- Orders: Customer orders for medications and products.
- Shipments: Delivery of orders to customers

1. Customers

Attributes

- **Customer ID**: A unique identifier assigned to each customer for tracking orders and prescriptions.
- **Name**: Full name of the customer.
- **Prescription ID**: Identifier for the specific prescription associated with the customer, ensuring accurate fulfilment.
- **Email**: Customer's email address used for communication and account-related notifications.
- **Address**: Residential or delivery address used for shipping prescriptions or verifying location-based services.
- **Phone Number**: Contact number for communication regarding prescriptions, orders, and customer support inquiries.

2.Pharmacist

Attributes

- Pharmacist ID: Unique identifier for each pharmacist.
- Name: Full name of the pharmacist.
- License Number: Pharmacist's license number.
- Contact Information: Email, phone number, and address.

Actions

- Review Orders: Review and verify customer orders.
- Approve Prescriptions: Approve or reject prescriptions based on validity and safety.
- Dispense Medication: Prepare and dispense medication for customer orders.
- Manage Inventory: Monitor and manage medication inventory.
- Provide Customer Support: Respond to customer inquiries and concerns.

3.Doctor

Attributes

- Doctor ID: Unique identifier for each doctor.
- Name: Full name of the doctor.

- Medical License Number: Doctor's medical license number.
- Specialty: Doctor's medical specialty.
- Contact Information: Email, phone number, and address.

Actions

- Prescribe Medication: Prescribe medication to patients.
- View Patient History: Review patient medical history.
- Update Patient Records: Update patient records with new prescriptions or medical information.
- Communicate with Pharmacists: Communicate with pharmacists regarding patient prescriptions.

4.Medications

Attributes

- Medication ID: Unique identifier for each medication.
- Name: Name of the medication.
- Description: Description of the medication, including dosage and side effects.
- Price: Price of the medication.
- Inventory Level: Current inventory level of the medication.

Actions

- Update Inventory: Update inventory levels when medication is dispensed or restocked.
- Track Expiration Dates: Track expiration dates of medications.

5.Orders

Attributes

- Order ID: Unique identifier for each order.
- Customer ID: ID of the customer who placed the order.
- Order Date: Date the order was placed.
- Status: Status of the order (e.g., pending, shipped, delivered).
- Total Cost: Total cost of the order.

Actions

- Place Order: Create a new order.
- Update Status: Update the status of an order as it is processed and shipped.

6.Shipments

Attributes

- Shipment ID: Unique identifier for each shipment.
- Order ID: ID of the order being shipped.
- Shipping Address: Address where the order is being shipped.

- Shipping Method: Shipping method used (e.g., standard, expedited).

  Actions

- Create Shipment: Create a new shipment for an order.
- Track Shipment: Track the status of a shipment.

❖ Relationships

1. Customers place Orders: One-to-many relationship (one customer can place multiple orders.)

2. Pharmacists review Orders: One-to-many relationship (one pharmacist can review multiple orders.)

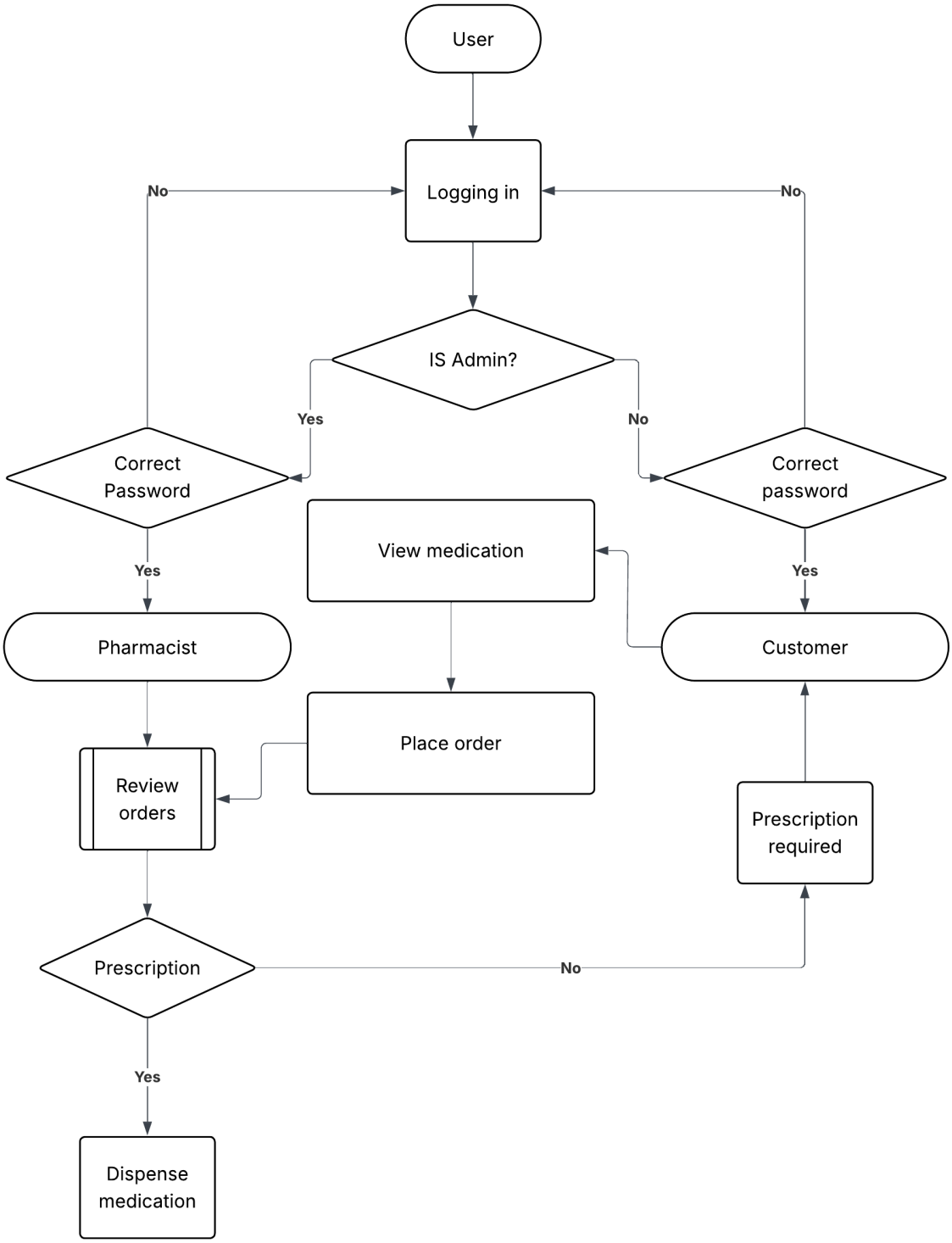
3. Orders contain Medications: Many-to-many relationship (multiple orders can contain multiple medications.)

4. Doctors prescribe Medications: One-to-many relationship (one doctor can prescribe multiple

Medications.)

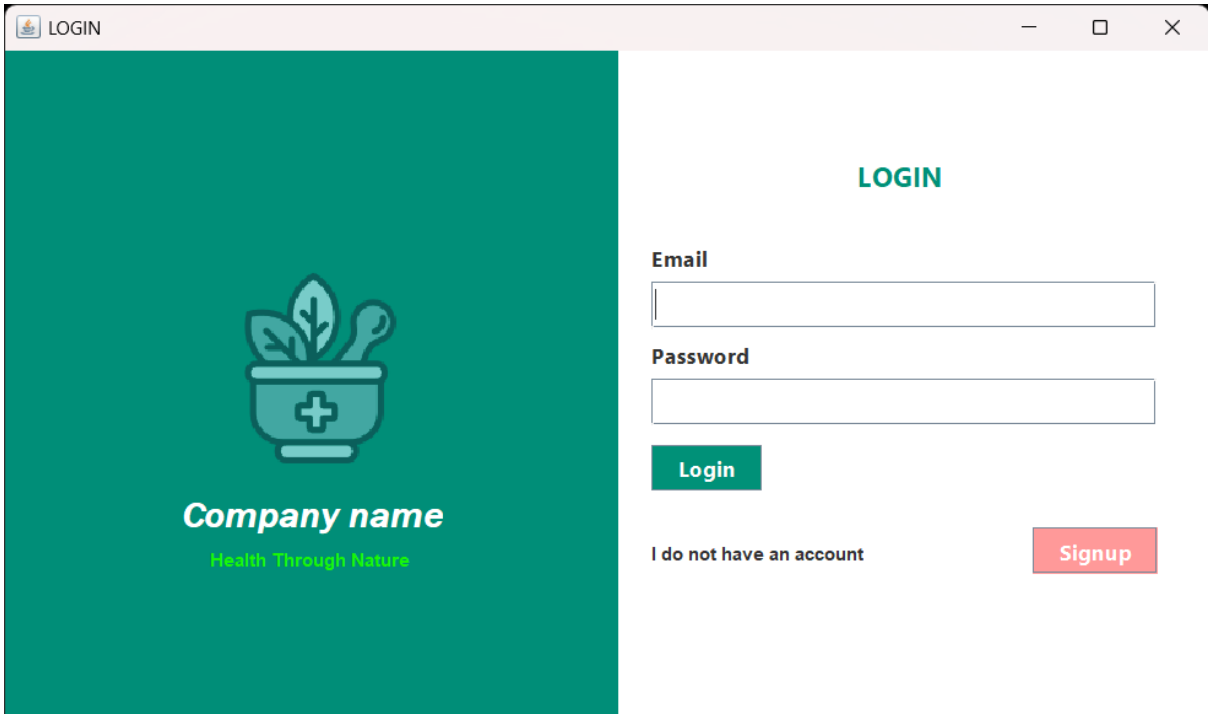
5.shippments contain orders: many-to-many (multiple shipments can contain many orders.)

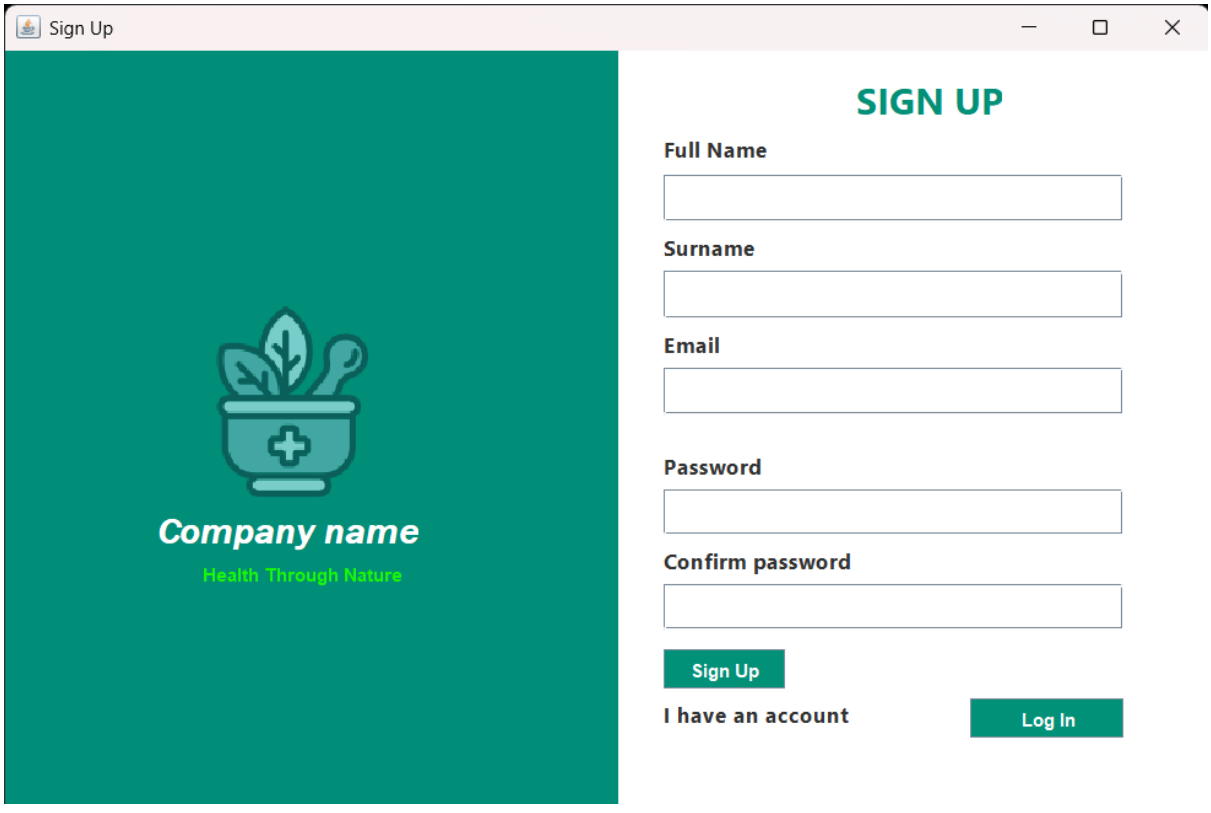

Customers
Customer id
Name
Prescription id
Email
Address
Phone number
Register account()
Login()
Place_order()
View order history()
Request refill()
Pharmacists
Pharmacist id
Name
License number
Phone number
Review orders()
Approve Prescription()
Release medication()
Manage inventory()
Orders
Order id
Customer id
Order date
Status
Total cost
Place order()
Update status
Medication
Medication id
Name
Description
Price
Location
Update inventory()
Doctor
Doctor id
Name
License number
Speciality
Phone Number
Prescribe medication()
View patient history()
Update patient records()
Shipment
Shipment id
Order id
Shipping address
Create shipment()
Track Shipment()
Deliver order()
Update Shipment status()


User
Logging in
No
No
IS Admin?
Yes
No
Correct Password
Correct password
View medication
Yes
Yes
Pharmacist
Customer
Place order
Review orders
Prescription required
Prescription
No
Yes
Dispense medication

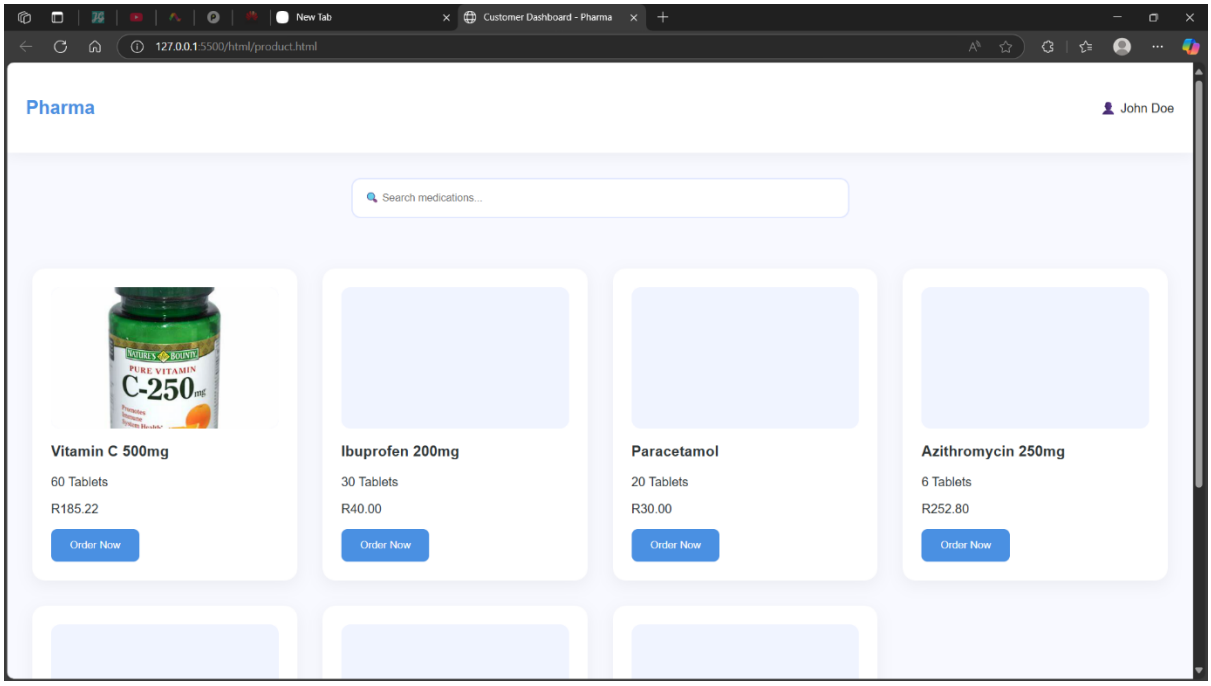
USER interface

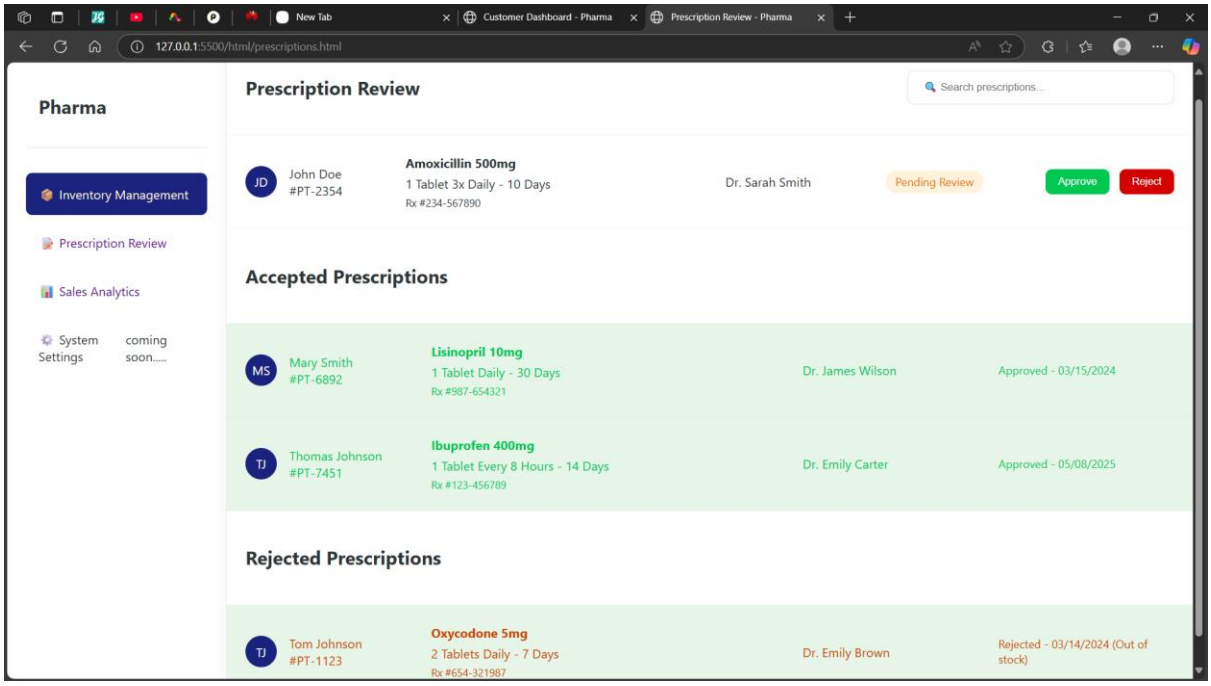
Customer And Admin Logins

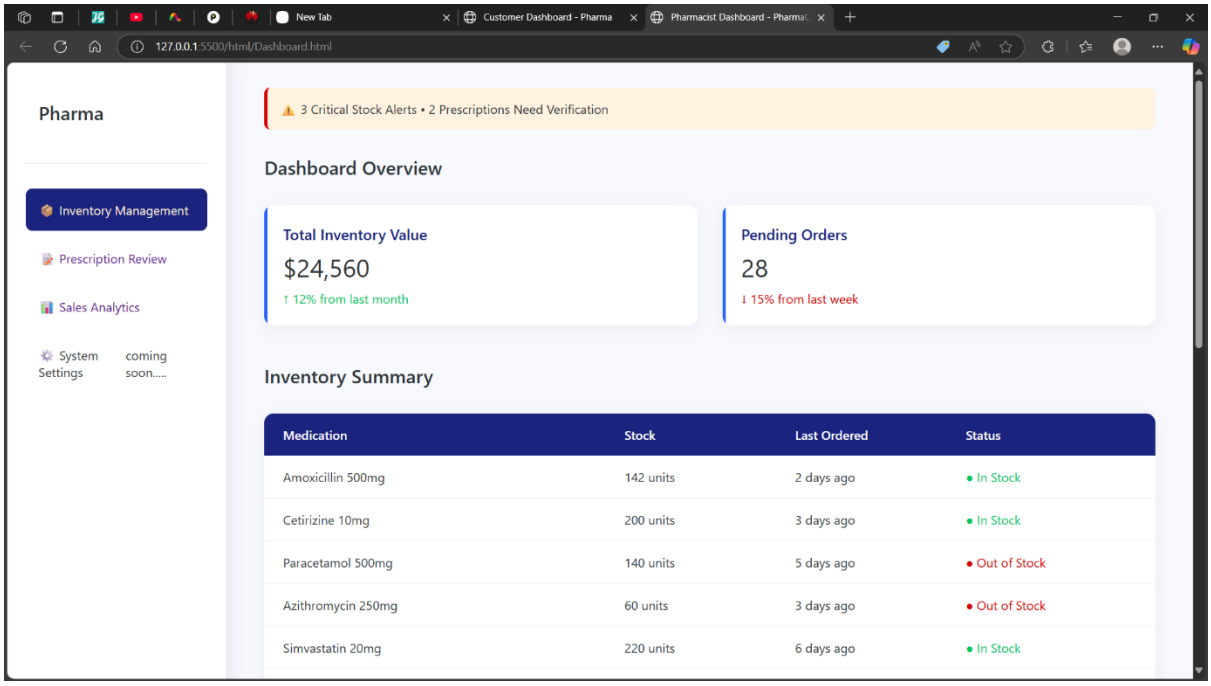


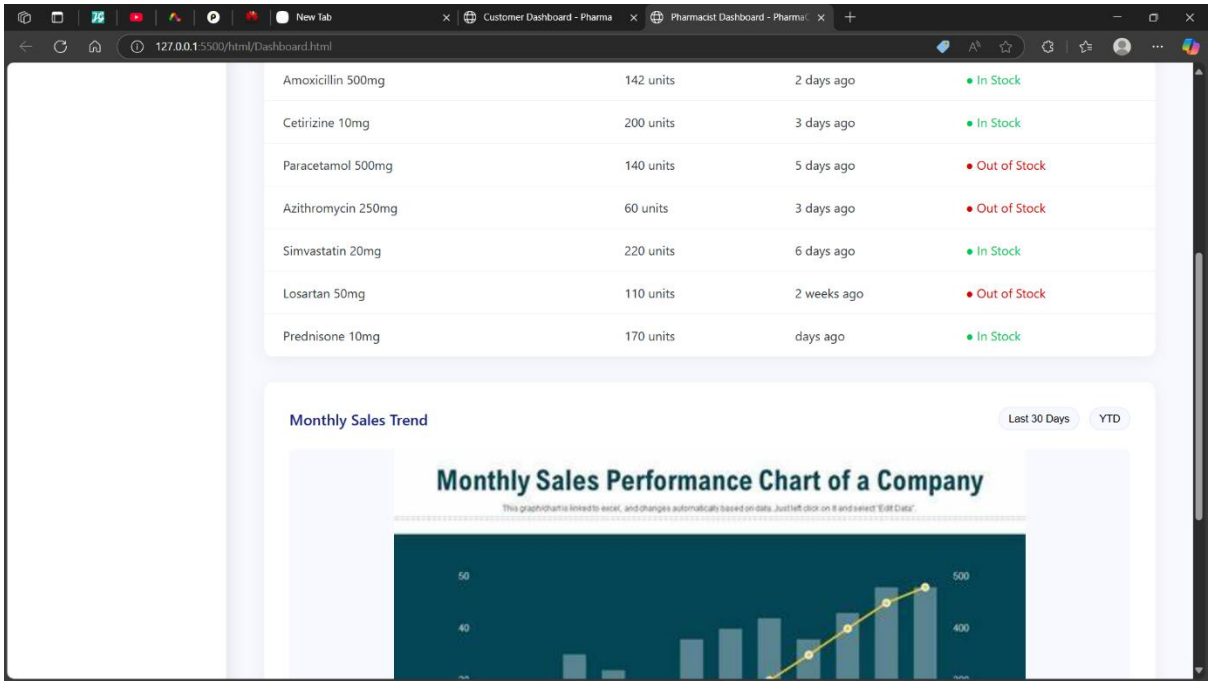


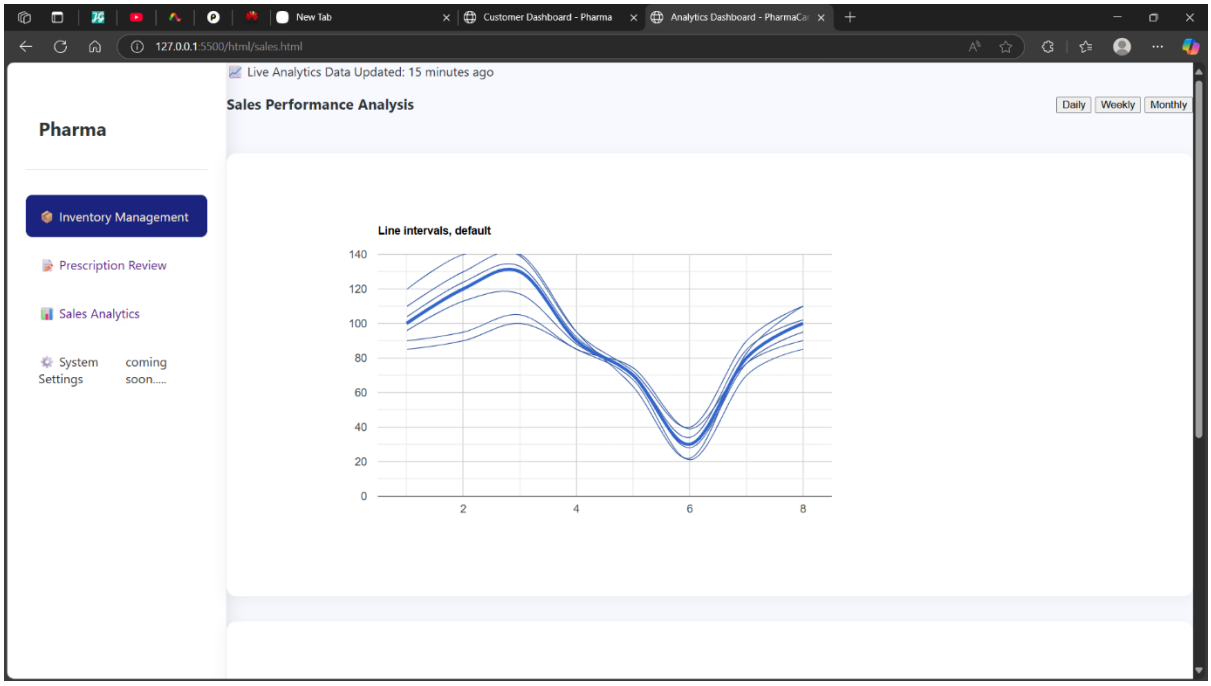
Products and Admin Dashboard






New Tab
Customer Dashboard - Pharma
Pharmacist Dashboard - Pharma
127.0.0.1:5500/html/Dashboard.html
Pharma
3 Critical Stock Alerts • 2 Prescriptions Need Verification
Inventory Management
Prescription Review
Sales Analytics
System Settings
coming soon.....
Dashboard Overview
Total Inventory Value
$24,560
↑ 12% from last month
Pending Orders
28
↓ 15% from last week
Inventory Summary
Medication
Stock
Last Ordered
Status
Amoxicillin 500mg
142 units
2 days ago
In Stock
Cetirizine 10mg
200 units
3 days ago
In Stock
Paracetamol 500mg
140 units
5 days ago
Out of Stock
Azithromycin 250mg
60 units
3 days ago
Out of Stock
Simvastatin 20mg
220 units
6 days ago
In Stock


New Tab
Customer Dashboard - Pharma
Pharmacist Dashboard - Pharma
127.0.0.1:5500/html/Dashboard.html
Amoxicillin 500mg
142 units
2 days ago
In Stock
Cetirizine 10mg
200 units
3 days ago
In Stock
Paracetamol 500mg
140 units
5 days ago
Out of Stock
Azithromycin 250mg
60 units
3 days ago
Out of Stock
Simvastatin 20mg
220 units
6 days ago
In Stock
Losartan 50mg
110 units
2 weeks ago
Out of Stock
Prednisone 10mg
170 units
days ago
In Stock
Monthly Sales Trend
Last 30 Days
YTD
Monthly Sales Performance Chart of a Company
50
40
500
400


New Tab
Customer Dashboard - Pharma
Analytics Dashboard - PharmaCa
127.0.0.1:5500/html/sales.html
Live Analytics Data Updated: 15 minutes ago
Pharma
Inventory Management
Prescription Review
Sales Analytics
System Settings
coming soon.....
Sales Performance Analysis
Daily
Weekly
Monthly
Line intervals, default
140
120
100
80
60
40
20
0
2
4
6
8

Development plan

Development plan

Sprint	Duration	Goals & Deliverables
Sprint 0	Day 1	**Planning & Setup:** Define requirements & user roles. Set up MySQL DB, repo, environments
Sprint 1	Days 2-5	**Authentication & User Roles:** User login/registration Admin, user, doctor, shipper access
Sprint 2	Days 6-9	**Product Catalog +Prescription Upload:** CRUD for products File upload for prescriptions
Sprint 3	Days 10-13	**Orders, Cart & Payment Status:** Add to cart Create order Track order & payment status
Sprint 4	Days 14-17	**Approval, Shipping, Admin Panel:** Approve prescriptions Assign shippers Admin dashboard
Sprint 5	Days 18-20	**Testing, Polish &Presentation:** Final testing Bug fixing Prepare demo & documentation

Testing

Online Pharmacy Management System Testing Documentation Analysis

PURPOSE

This document provides a thorough testing framework for an Online Pharmacy Management System, covering all critical aspects from unit testing to performance evaluation. The testing strategy is well-structured and addresses both functional and non-functional requirements.

Key Testing Components

1. Unit Testing

User Registration: Validates account creation with required fields

Login Functionality: Ensures proper authentication mechanisms

Medication Search: Tests search functionality by various parameters

Prescription Management: Verifies prescription upload and validation

2. Integration Testing

- **Order Placement: Tests end-to-end order processing**
- **Payment Processing: Validates multiple payment methods**
- **Order Shipping: Confirms status tracking functionality**
- **Critical Path: These tests verify interactions between major system components.**

3. User Acceptance Testing (UAT)

- **End-to-End Workflows: Registration → Ordering → Prescription → Support**
- **Real User Scenarios: Mimics actual customer journeys**
- **Business Value: Ensures the system meets actual user needs and expectations.**

Security Testing

- **Authentication: Tests unauthorized access prevention**
- **Data Encryption: Verifies protection of sensitive health and payment data**
- **SQL Injection: Confirms protection against common web attacks**

Performance Testing

- **Load Testing: Evaluates system behaviour under normal peak loads**
- **Stress Testing: Pushes system beyond normal operating conditions**

FRAMEWORKS

Given the system's PHP backend (for pharmacy business logic) and JavaScript/TypeScript frontend (patient-facing interfaces), here's how to leverage both testing frameworks effectively:

1. PHPUnit for Backend Pharmacy Logic

Use Cases:

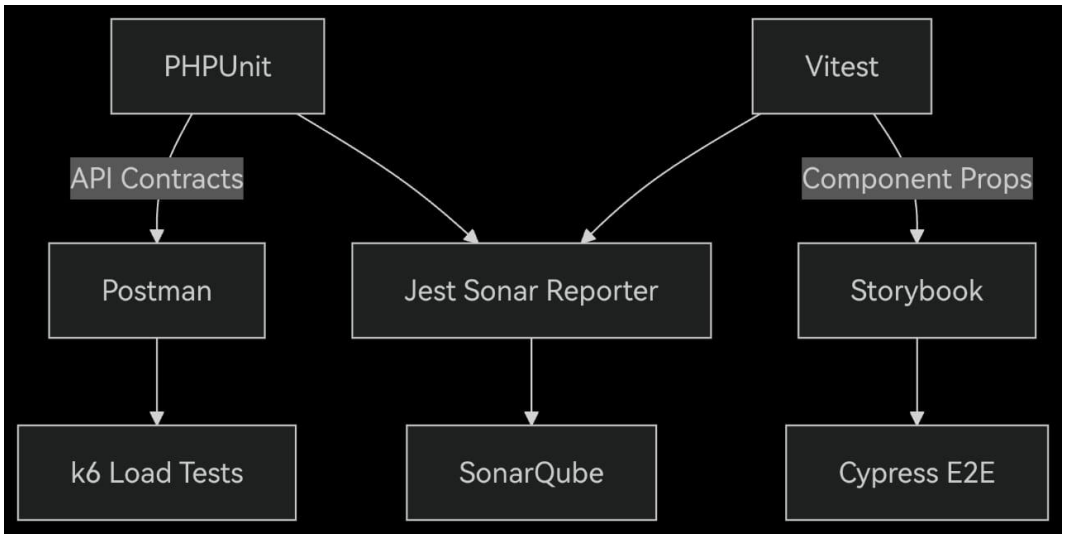
- **Prescription validation**
- **Drug interaction calculations**
- **HIPAA-compliant audit logging**
- **Pharmacy inventory management**

2. Vitest for Frontend Patient UI

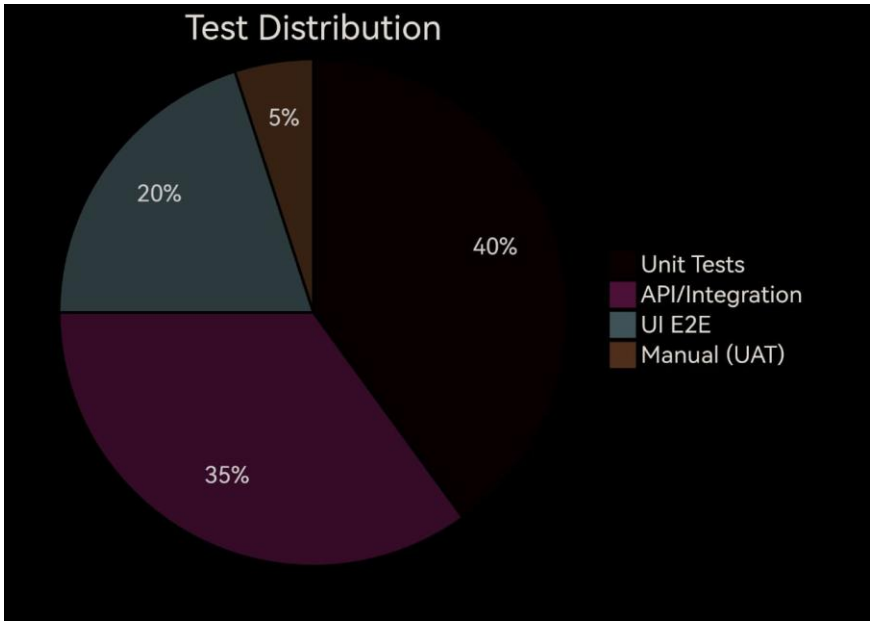
Use Cases:

- Medication search component

- Interactive dosage calculators
- Prescription upload flows
- Accessibility audits



TEST DISTRUBTION



Testing Scope

The testing scope includes the following components:

- ✓ **User registration and login**
- ✓ **Medication search and ordering**
- ✓ **Prescription management**
- ✓ **Order placement and payment processing**
- ✓ **Security features (authentication, data encryption, SQL injection protection)**
- ✓ **Performance under load and stress**

Unit Testing

The following unit tests will be conducted:

1. User Registration

- **Test case: Valid user registration with required fields (name, email, password, etc.)**
- **Expected result: User account created successfully**

2. Login Functionality

- **Test case: Valid login credentials (username, password)**
- **Expected result: User logged in successfully**

3. Medication Search

- **Test case: Search for medication by name, category, or keyword**
- **Expected result: Relevant search results displayed**

4. Prescription Management

- **Test case: Upload and verify prescription**
- **Expected result: Prescription uploaded and verified successfully**

Integration Testing

The following integration tests will be conducted:

1. Order Placement

- **Test case: Place an order with valid payment information**
- **Expected result: Order processed and payment successful**

2. Payment Processing

- **Test case: Process payment using different payment methods (credit card, PayPal, etc.)**
- **Expected result: Payment processed successfully**

3. Order Shipping

- **Test case: Track order status and shipping**
- **Expected result: Order status updated, and shipping tracked correctly**

User Acceptance Testing (UAT)

The following UAT tests will be conducted:

1. User Registration and Login

- **Test case: Register and log in as a new user**
- **Expected result: User can register and log in successfully**

2. Medication Ordering

- **Test case: Search, select, and order medication**
- **Expected result: Medication ordered successfully**

3. Prescription Upload

- **Test case: Upload prescription and verify**
- **Expected result: Prescription uploaded and verified successfully**

Security Testing

The following security tests will be conducted:

1. Authentication

- **Test case: Attempt to access system without valid credentials**
- **Expected result: Access denied**

2. Data Encryption

- **Test case: Verify data encryption for sensitive information (passwords, payment details)**
- **Expected result: Data encrypted correctly**

3. SQL Injection

- **Test case: Attempt SQL injection attack**
- **Expected result: System prevents SQL injection attack**

Performance Testing

The following performance tests will be conducted:

1. Load Testing

- **Test case: Simulate high traffic and user load**
- **Expected result: System handles load without significant delays**

2. Stress Testing

- **Test case: Test system under extreme conditions (high traffic, resources constraints)**
- **Expected result: System recovers from stress without data loss or corruption**

Test Environment

The testing will be conducted in a controlled environment with the following setup:

- **Hardware: [Lenovo ideapad]**
- **Software: [VScode]**
- **Network: [Specify network configuration]**

Test Schedule

The testing will be conducted according to the following schedule:

- **Unit testing: [2-3MAY]**
- **Integration testing: [8-9MAY]**
- **UAT: [10-11MAY]**
- **Security testing: [12-13MAY]**
- **Performance testing: [14MAY]**

Test Deliverables

The following test deliverables are expected:

- **Test plan**
- **Test cases**
- **Test results**
- **Defect report**

Conclusion

The Online Pharmacy Management System testing is designed to ensure the system meets the functional, security, and performance requirements. The testing will be conducted according to the specified test plan and schedule. The test results will be documented and used to identify and fix defects.

Conclusion

In conclusion, the online pharmacy management system was designed to address challenges faced by traditional pharmacies, such as poor inventory control and limited accessibility. Through the analysis phase, we identified user needs and system requirements, both functional and non-functional. The design includes user interfaces, detailed entity attributes, and relationships among customers, pharmacists, doctors, orders, and medications. We used an Entity Relationship Diagram (ERD) to model the system structure. The development follows the Scrum methodology, ensuring iterative progress with continuous user feedback and testing. This approach enhances system usability, security, and scalability while meeting user expectations effectively.