Pharmacy Inventory & Stock Management System

1. Introduction

The Pharmacy Inventory & Stock Management System is designed to help pharmacies efficiently manage their medicine stocks, track expiry dates, and ensure timely restocking. By allowing pharmacists to maintain detailed records, monitor stock levels, and generate alerts for low or expiring medicines, this system helps improve operational efficiency, reduce waste, and ensure patient safety. The solution is built using technologies like FastAPI, Postman and MongoDB to handle real-time data management and reporting.

2. Objectives

- Provide a structured system to register and manage medicines with details like name, brand, quantity, price, and expiry date.
- Monitor stock availability and for low stock or near-expiry medicines.
- Ensure scalability and performance for large pharmacies.

3. Technologies Used

- Backend Framework: FastAPI (Python) – for creating RESTful APIs quickly and efficiently.
- Database: MongoDB – flexible document-based storage for medicine records and alerts.
- Version Control: GitHub – for tracking changes and managing source code.
- Testing Tools: Postman – for API testing and validation.

4. Features

1. Medicine Registration: Add and manage medicine details including name, brand, quantity, price, expiry date, and description.
2. Stock Monitoring: Track current stock levels and receive alerts when stock falls below predefined thresholds.
3. Expiry Alerts: Identify medicines nearing their expiry for timely removal or restocking.

4. Search & Filter: Quickly search medicines by name, brand, or expiry date to assist pharmacists in daily operations.

5. System Architecture

User Interface API (Postman) → Backend API (FastAPI) → MongoDB Database (medicine records, stock, expiry alerts)

The system architecture allows seamless data flow between pharmacists and the database for stock management.

6. Workflow

1. Medicines are added with all relevant details including batch numbers, price, and expiry dates.
2. The stock levels and expiry dates are continuously monitored.
3. Pharmacists view, update, or delete medicine records as needed to maintain accurate stock information.

7. Benefits

- Improved Efficiency: Easy access to stock details.
- Patient Safety: Reduces risks from expired or unavailable medicines.
- Cost Saving: Minimizes waste due to expired stock and avoids overstocking.
- Scalability: Designed to handle large volumes of medicines and multiple users.
- Real-Time Management: Fast updates and reporting through API-driven architecture.

8. Future Enhancements

- Integration with mobile apps for pharmacists to manage stock on the go.
- Email and SMS alerts for low stock and expiry notifications.
- Supplier integration for automated restocking requests.

- Barcode scanning for quick medicine entry.
- Analytics dashboards for insights into sales and inventory patterns.

9. Conclusion

The Pharmacy Inventory & Stock Management System is a robust and scalable solution that addresses the challenges of inventory control in pharmacies. By using FastAPI and MongoDB, it ensures real-time tracking, easy data access, and efficient management of medicines. This system helps pharmacies operate smoothly while ensuring patient safety and reducing wastage.