PHASE IV : PROJECT DESIGN

Date	06 November 2025
Team ID	7DDB99C3AFBFD678BC14B32342A420F8
Project name	Medical Inventory Management
Maximum Marks	4 Marks

Title: Brainstorming for "Medical Inventory Management"

1.Objectives :

The main objective of the system design is to create a reliable, efficient, and user-friendly solution that supports smooth task execution, ensures secure data handling, and provides meaningful insights through dashboards. The design aims to streamline workflows, reduce manual effort, enhance usability, and support future scalability.

- The main objectives of the **Project Design** for **Medical Inventory Management** are to develop a structured, efficient, and user-friendly system that ensures accurate tracking, storage, and distribution of medical supplies.
- The design aims to create a system architecture that supports real-time monitoring of stock levels, automated alerts for low inventory, and streamlined order management processes.
- It focuses on improving accessibility, scalability, and data security while minimizing manual errors and delays. Another key objective is to design an intuitive user interface that simplifies operations for healthcare staff, pharmacists, and administrators.

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2. Design Overview :

The system follows a modular design approach where each module is developed independently and integrated to work together. The design focuses on:

- Clear navigation
- Efficient data storage and retrieval
- Secure access control

- Real-time notifications and reporting

- The architecture supports both current operational needs and future enhancements.

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3. User Interface Design :

- Simple and clean layout with easy navigation.

- Home Dashboard with key information and quick shortcuts.

- Standardized forms for data entry and updates.

- Clear labels, icons, and error validation messages.

- Responsive design for mobile and web usage (if applicable).

Goal: Ensure that users can operate the system with minimal training.

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4. Automation Design :

- Automatic notifications for important events (ex: low stock, new requests, pickup alerts).

- Scheduled background processing for report generation and data backup.

- Repetitive workflows are automated to reduce manual effort and improve accuracy.

- Trigger-based actions are used for faster decision-making.

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5. Security Design :

- Role-based access control (Admin, Staff, Volunteer, etc.).
- Password encryption and secure login authentication.
- Data validation to prevent unauthorized access and input attacks.
- Session timeout and logout security mechanisms.
- Audit logs to track important operations.

Goal: Protect system data and ensure safe usage.

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6. Reporting and Dashboard Design :

- Dashboard shows real-time key metrics (e.g., stock level, pending tasks, recent activity).
- Search, filter, and export options for reports.

- Graphical representation using charts and tables.

- Automated periodic reports sent to admin as needed.

Goal: Help users make quick and informed decisions.

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7. System Architecture Design :

- Front-End Layer: User-facing interface.

- Application Layer: Handles business logic and workflows.

- Database Layer: Stores structured system data.

- Data flows between layers using secure API calls.

- The architecture supports modular updates and easy integrations with external services.

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8. Design Constraints :

- Limited computing resources for some user devices.
- Internet connectivity required for real-time features.
- System accuracy depends on correct data input by users.
- Budget or hardware limitations may restrict advanced features.

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9. Future Design Considerations :

- Integration with mobile app or cloud services.
- AI-based prediction for usage trends or demand forecasting.
- Real-time GPS tracking for delivery/volunteer routing.
- Multi-language and voice input support.
- Advanced analytics dashboards for decision-making.

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10. Summary :

The system design focuses on simplicity, security, automation, and usability.

It provides an efficient interface, structured data handling, real-time reporting, and scalable architecture.

The design supports current needs while allowing future enhancements for improved performance and functionality.

Key Achievements :

- Developed a well-structured and efficient system architecture for managing medical supplies.
- Enabled real-time tracking of inventory levels and stock movements.
- Implemented automated alerts for low stock, expirations, and reorder levels.