PHASE III: REQUIREMENT ANALYSIS

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 objective of the Medical Inventory Management System is to automate and streamline the process of tracking, managing, and replenishing medical supplies, medicines, and equipment in healthcare facilities. The system ensures accurate stock monitoring, reduces wastage, prevents stockouts, enhances accountability, and ensures timely availability of essential items to support continuous patient care.

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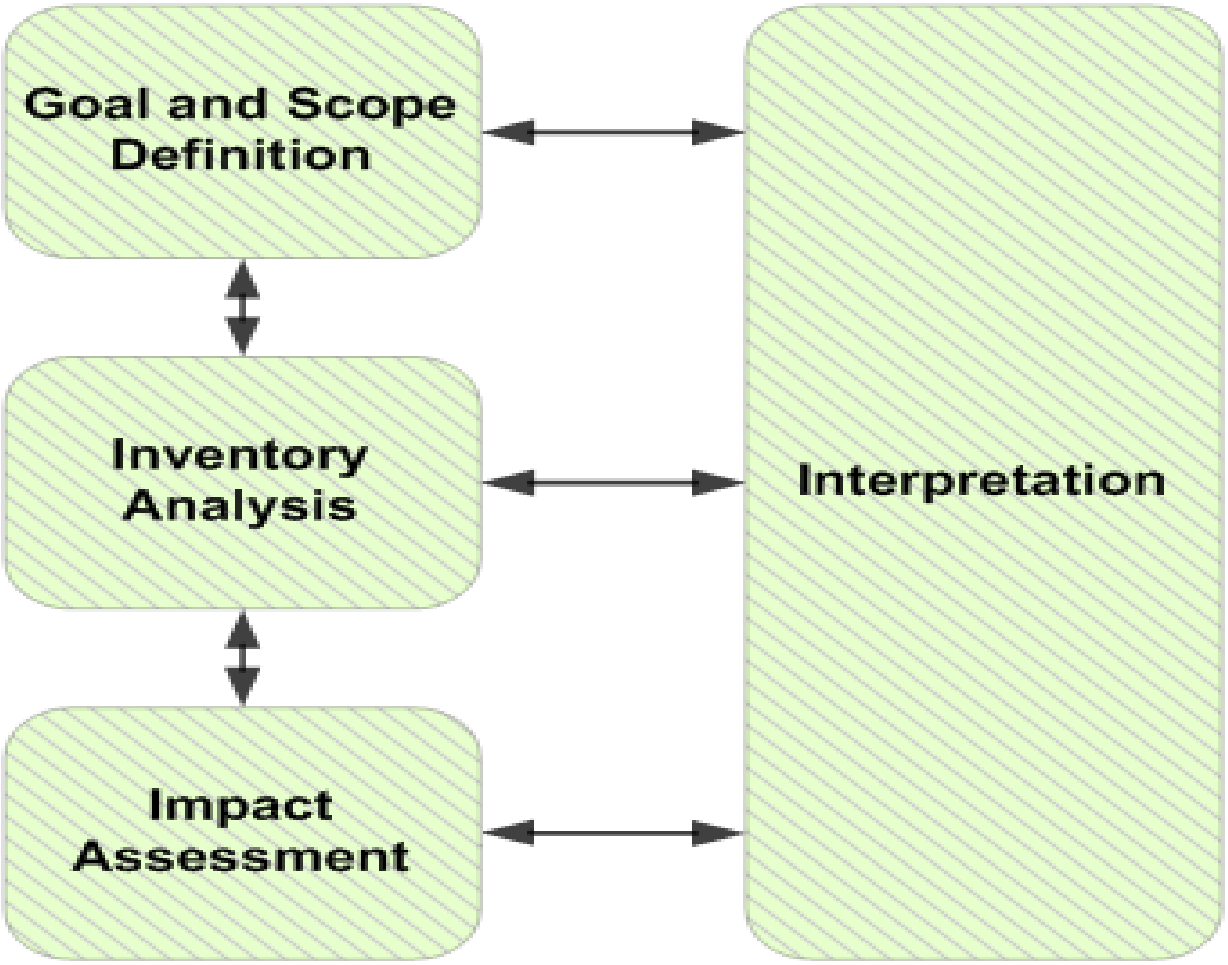
2. Scope of the System :

- Used by hospitals, clinics, pharmacies, and medical warehouses.
- Tracks stock levels, expiry dates, batch numbers, and supplier information.
- Supports automated alerts for low stock and near-expiry items.
- Helps in generating purchase orders and maintaining supplier records.
- Provides reporting and analytics for decision-making.
- Accessible to pharmacists, store managers, doctors, and administrators.

- Integrates with billing and patient management systems (optional).



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3. Functional Requirements :

ID	Requirement Description
FR1	User Authentication Users must log in with appropriate roles (Admin, Staff, Viewer).
FR2	Add/Edit/Delete Inventory Items System allows creation and modification of medical item records.
FR3	Track Stock Quantity System updates quantity when items are issued or received.
FR4	Expiry and Batch Tracking Capture expiry dates and batch numbers; notify near-expiry items.
FR5	Low Stock Alerts Automatic notifications when item quantity reaches threshold.

FR6	Generate Purchase Orders System can create orders for suppliers when stock is low.
FR7	Supplier Management Maintain supplier details and records of past purchases.
FR8	Reporting and Analytics Daily/Monthly stock summary, usage trends, expiry reports.
FR9	Audit Trail Record log of inventory changes and user actions

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4. Technical Requirements :

- Frontend: HTML, CSS, JavaScript / React / Angular.
- Backend: Python (Django / Flask) / Java / Node.js.
- Database: MySQL / PostgreSQL / MongoDB.
- Server Requirements: Minimum 4GB RAM, 100GB storage.
- OS Compatibility: Windows / Linux / Cloud hosting supported.
- Networking: Secure intranet or internet-based access with HTTPS.

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5. Non-Functional Requirements :

Type	Requirement
Performance	System must respond within 2-3 seconds for typical actions.
Security	Data encryption, role-based access control, secure login.
Reliability	99% uptime to ensure continuous hospital operations.
Usability	Intuitive UI suitable for non-technical medical staff.
Scalability	Should handle growth in number of items and users.
Backup	Scheduled daily/weekly database backups.

6. Data Model Design (Conceptual Entities) :

Entities:

Item (Item_ID, Name, Category, Unit, Batch_Number, Expiry_Date, Supplier_ID, Quantity, Min_Threshold)

Supplier (Supplier_ID, Name, Contact, Email, Address)

User (User_ID, Name, Role, Username, Password)

Purchase_Order (PO_ID, Date, Supplier_ID, Status)

Order_Details (PO_ID, Item_ID, Quantity_Ordered, Price)

Relationships:

- One Supplier supplies many Items.
- One Purchase Order contains multiple Item entries.
- Users perform activities recorded in transaction logs.

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7. User Interface Requirements :

- Dashboard showing current stock summary and alerts.
- Search Bar for quickly finding medicines/equipment.
- Forms for adding items, suppliers, and purchase orders.
- Tables for listing stock with filters and sorting.

- Color-coded Expiry Alerts (e.g., Red for expired, Yellow for near-expiry).

- Report Download in PDF/Excel formats

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8. System Validation Requirements :

- Validate user login credentials.

- Validate mandatory fields while adding or updating inventory.

- Validate stock quantity cannot be negative.

- Validate expiry dates must be in the future.

- Validate role-based permissions (e.g., Staff cannot delete records).

- Cross-check purchase orders with supplier records before approval.

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9. Risk Identification and Mitigation :

Risk	Impact	Mitigation Strategy
Data Loss	High	Regular backups and cloud storage redundancy.
Unauthorized Access	High	Strong authentication, encryption, RBAC.
Incorrect Data Entry	Medium	Form validation and periodic audits.
Network Failure	Medium	Offline access mode or local caching.
Expired Stock Not Notified	High	Automated scheduled expiry alerts.

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10. Summary :

The Medical Inventory Management System is designed to improve efficiency, reduce waste, and maintain accurate stock records in healthcare environments. By automating tracking, reporting, and procurement tasks, the system enhances reliability, transparency, and timely availability of critical medical supplies. It supports medical staff in providing uninterrupted patient care while minimizing operational risks.