

# Project Design Phase

## Proposed Solution

Date	03 November 2025
Team ID	NM2025TMID01909
Project Name	Medical Inventory Management
Maximum Marks	2 Marks

### Overview

The proposed solution is a **comprehensive, digital Medical Inventory Management System (MIMS)** designed to **automate, monitor, and optimize** the management of medical supplies, medicines, and equipment within healthcare institutions.

### System Features & Modules

Module	Description	Purpose / Problem Solved
Inventory Management Module	Tracks all medical items, their quantities, and storage details in real-time.	Eliminates manual tracking errors and ensures transparency.
Expiry & Stock Alert System	Generates automatic alerts for low stock and upcoming expiries.	Prevents wastage and stock shortages.
Purchase & Reorder Module	Automatically creates purchase orders when stock hits the reorder threshold.	Ensures continuous supply and reduces delays.
Supplier & Vendor Management	Stores and manages supplier details, contracts, and delivery records.	Simplifies procurement and improves accountability.
Barcode / RFID Integration	Scans items for automatic data entry and updates in the system.	Reduces manual workload and enhances accuracy.
Analytics & Reporting Dashboard	Displays real-time metrics like usage, wastage, purchase trends, and stock status.	Supports data-driven decision-making and budget optimization.
User Role Management	Provides role-based access for admin, pharmacist, nurse, and supplier.	Ensures data security and task clarity.

## System Workflow

1. **Stock Entry:** Items are entered via barcode or supplier invoice.
2. **Real-Time Update:** Each issue or return updates the central database automatically.
3. **Monitoring:** The system continuously checks expiry dates and stock levels.
4. **Alerts:** Sends notifications for low stock or soon-to-expire items.
5. **Reordering:** Auto-generates purchase orders to approved suppliers.
6. **Reports:** Generates monthly usage, wastage, and supplier performance summaries.

## Technical Implementation

Component	Technology
Frontend	React.js / Angular (Responsive Web UI)
Backend	Node.js / Django / Spring Boot
Database	MySQL / PostgreSQL
Authentication	JWT / OAuth 2.0
Integration	Barcode / RFID Scanning API
Hosting	AWS / Azure / On-Premise Server

## Key Advantages

- **Automation:** Minimizes manual entries and human errors.
- **Efficiency:** Speeds up inventory checks, reorders, and reporting.
- **Accountability:** Provides full traceability and audit trails.
- **Cost Control:** Reduces wastage and improves purchase accuracy.
- **Scalability:** Can be used across departments, branches, or hospitals.
- **Accessibility:** Web or mobile access for real-time data visibility.

### INVENTORY MANAGEMENT IN HOSPITAL

