

# Project Design Phase

## Solution Requirements

Date	01 NOV 2025
Team ID	NM2025TMID02942
Title	Medical Inventory System
Maximum Marks	4 Marks

### 1. Introduction

The **Medical Inventory Management System (MIMS)** is designed to automate and streamline the management of medical supplies, medicines, and equipment within healthcare institutions.

This document outlines the **solution requirements**, defining the core functionalities, performance criteria, and constraints necessary to ensure that the system meets operational and business goals.

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### 2. Goals of the Solution

- Provide **real-time visibility** of medical inventory levels across departments.
  - Reduce **human error and manual data entry** by automating key inventory processes.
  - Enable **timely reordering** of essential supplies to prevent shortages.
  - Track **expiry dates** to minimize wastage and enhance patient safety.
  - Offer **data-driven insights** for procurement, budgeting, and compliance reporting.
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### 3. Functional Requirements

Functional requirements define the **specific behaviors, processes, and features** that the system must provide.

Category	Requirement ID	Description
User Management	FR-01	The system shall allow registration, login, and logout for users with different roles (Admin, Pharmacist, Nurse, Procurement Officer, Supplier).
	FR-02	The system shall support role-based access control to restrict unauthorized operations.
Inventory Management	FR-03	The system shall allow adding, updating, and deleting medical items with attributes such as name, batch number, category, expiry date, and quantity.
	FR-04	The system shall track real-time stock levels for all items.
	FR-05	The system shall record all stock transactions (issue, receive, return, disposal).
Stock Monitoring & Alerts	FR-06	The system shall generate automatic alerts when stock levels fall below minimum thresholds.
	FR-07	The system shall send notifications for items nearing their expiry dates.
Procurement & Supplier Management	FR-08	The system shall enable generation and management of purchase orders.
	FR-09	The system shall store supplier information (name, contact, delivery history).
	FR-10	The system shall update stock levels upon supplier delivery confirmation.

Category	Requirement ID	Description
Reporting & Analytics	FR-11	The system shall generate daily, weekly, and monthly reports on stock usage and expiry trends.
	FR-12	The system shall allow exporting reports in PDF and Excel formats.
Audit & Compliance	FR-13	The system shall maintain an audit trail of all inventory changes (who, when, what).
Search & Filtering	FR-14	The system shall provide search and filter capabilities for items based on name, category, expiry, or supplier.
Backup & Recovery	FR-15	The system shall support automated backup and data recovery in case of failure.

#### 4. Non-Functional Requirements

Non-functional requirements describe **system performance, reliability, usability, and security standards**.

Category	Requirement ID	Description
Performance	NFR-01	The system shall load dashboard and inventory data within 3 seconds under normal network conditions.
	NFR-02	The system shall support at least 100 concurrent users without performance degradation.
Scalability	NFR-03	The system shall allow integration with additional hospital branches or departments.

Category	Requirement ID	Description
Reliability & Availability	NFR-04	The system shall maintain 99.9% uptime during operational hours.
	NFR-05	The system shall use encrypted connections (HTTPS, SSL/TLS).
Security	NFR-06	All sensitive data (passwords, patient info) shall be stored using secure hashing/encryption.
	NFR-07	The system shall automatically log out inactive users after a defined timeout period.
	NFR-08	The user interface shall be intuitive and accessible to non-technical staff.
Usability	NFR-09	The system shall be accessible via desktop and mobile devices.
	NFR-10	The system shall be modular to allow easy updates or feature additions.
Maintainability	NFR-11	The system shall perform automatic daily backups of the database.
Backup & Recovery	NFR-12	The system shall comply with healthcare inventory and data protection regulations.
Compliance		