

PROJECT DESIGN PHASE

Team ID	NM2025TMID04832
Project Name	Medical Inventory Management System
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Folder Reference:

Document/ProjectDesign Phase/

Includes:

- Problem-Solution Fit Template
 - Proposed Solution
 - Solution Architecture
 - Readme.md
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1. Problem-Solution Fit

Problem: Inefficient manual tracking and delayed stock updates.

Solution: Automated, centralized system with real-time inventory visibility and AI-assisted forecasting.

Key Fit Indicators:

- Reduces manual labor.
 - Enhances supply accuracy.
 - Prevents stockouts and wastage.
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2. Proposed Solution

The **Medical Inventory Management System** will automate stock monitoring, provide analytics, and facilitate communication between pharmacy, procurement, and administration departments.

Core Functionalities:

- Barcode scanning for each medicine batch.
- Intelligent reorder point detection.
- Automatic purchase order creation.
- Expiry management dashboard.
- Role-based permissions.

The screenshot displays the user interface of the Medical Inventory Management System. At the top, there is a floating window titled "Scanneren" with a barcode scanner icon, which includes a "Scan Barcode" button. To the right of this window, a callout bubble provides instructions: "Scan Infrared medical barcode or medicine, the stock monitoring process will be completed automatically." The main interface features a blue header with the logo "MSTCII" and navigation icons for Home, Scan, Stock, and Design. On the far right of the header is a user profile icon. Below the header, there are two main sections: "AI Stock Forecast" and a table of inventory items.

AI Stock Forecast

This section contains a line chart showing the monthly usage trend of a specific item. The Y-axis represents quantity from 0 to 2000, and the X-axis represents months from Total to Date. The chart includes three data series: "Current Stock Level" (blue line with circles), "Monthly Usage Trend" (red line with circles), and "Next Restock Date" (green line with circles). A vertical dashed line marks the "Automatic Stock Alert" level at approximately 500 units.

Inventory Table

Item Name	Quantity	Expiry Date
Item Name	\$20.000	2023-06-01
Item Name	\$20.057	2023-06-05
Item Name	\$45.025	2023-06-05
Item Name	\$29.057	2023-06-27
Expiry Date	\$40.085	2023-07-01

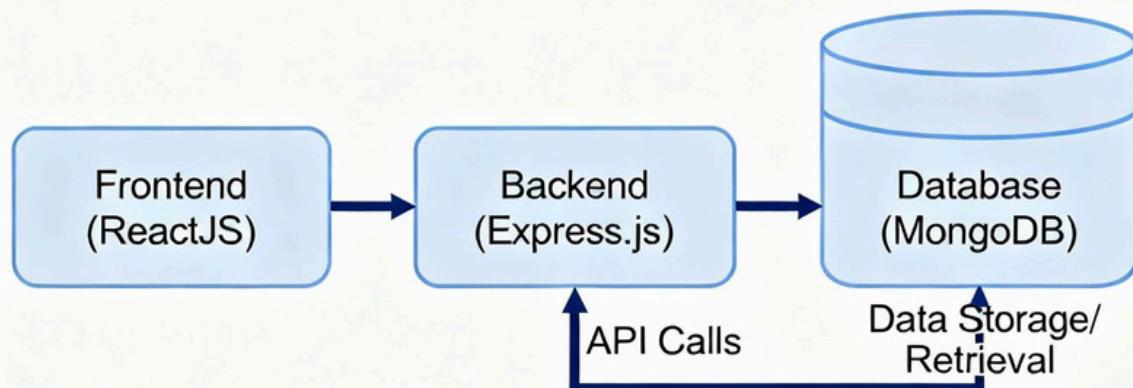
3. Solution Architecture (Conceptual)

Layers:

1. **Frontend (Client Layer):** ReactJS UI for user interaction.
2. **Backend (Application Layer):** Express.js handles routes, logic, and security.
3. **Database Layer:** MongoDB stores stock, supplier, and transaction data.
4. **Integration Layer:** APIs connect barcode scanners and alert systems.

Architecture Flow:

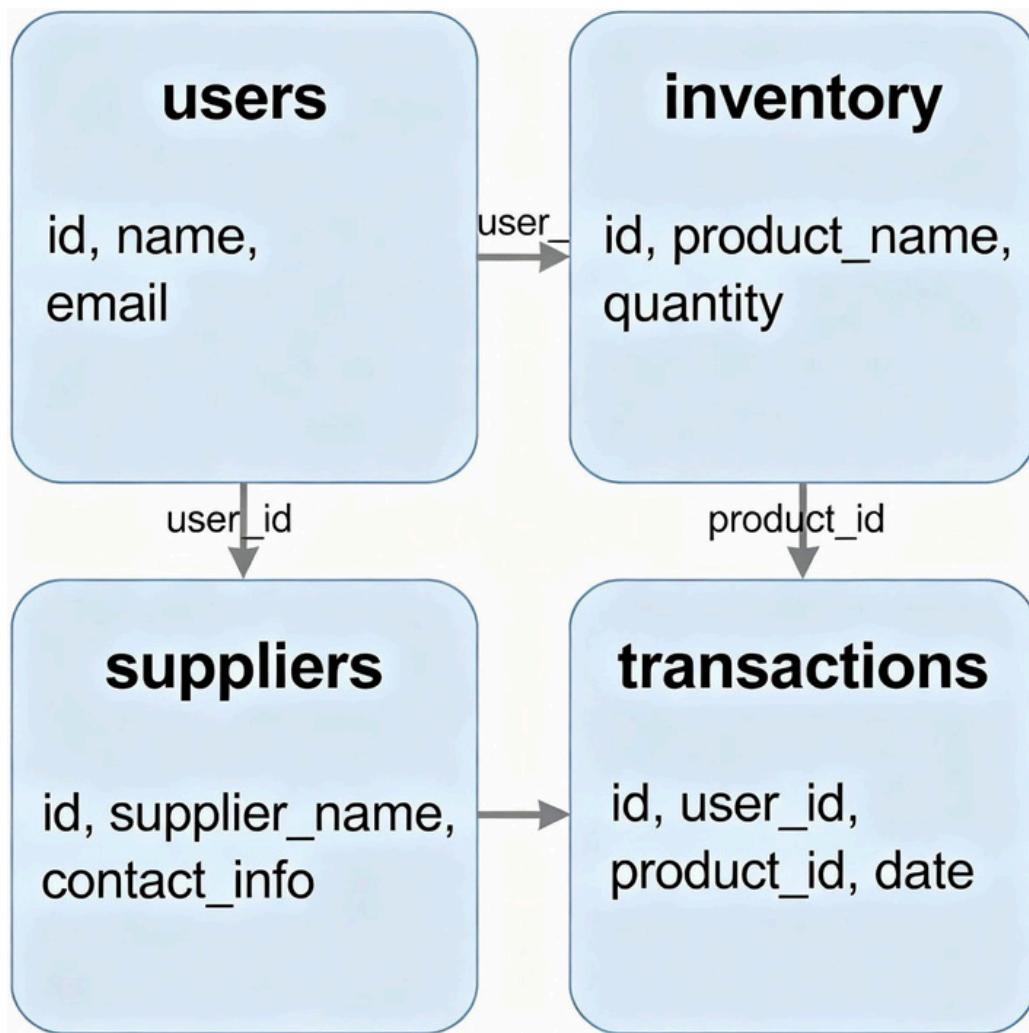
User → UI → API → Database → Response → Dashboard.



4. Database Design (Overview)

Collections:

- users—user details, roles, authentication.
- inventory – item name, batch no., expiry date, stock count.
- suppliers – supplier info, purchase records.
- transactions – issue and return logs.



5. Advantages

- Real-time synchronization across departments.
- Modular, scalable, and secure.

Easy-to-use UI for all staff roles.