

PROJECT DESIGN PHASE

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Project Name	Medical Inventory Management System	
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Folder Reference: Document/Project

Design Phase/ Includes:

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

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 "Scanning" with a barcode scanner icon. Below it, a callout bubble says: "Scan medical items to record their details. The system will automatically update its status." A blue button labeled "Scan Barcode" is located at the bottom of this window. The main interface has a blue header with the logo "MSTCI" and navigation icons. The main content area features a chart titled "AI Stock Forecast" showing monthly usage trends. The chart includes three data series: "Current Stock Level" (blue circles), "Monthly Usage Trend" (red line), and "Next Restock Date" (green dashed vertical line). The Y-axis ranges from 0 to 2000, and the X-axis shows months: Total, June, Stock, July, Money, Ten, Stand, Save, Return, Date. Below the chart is a table titled "Inventory Stock Details" with columns: Item Name, Quantity, and Expiry Date. The table lists six items with their respective details.

Item Name	Quantity	Expiry Date
Item Name	\$20.000	2023-06-01
Item Name	\$20.057	2023-05-05
Item Name	\$45.025	2023-04-27
Eyn Name	\$20.057	2023-03-27
Expiry Date	\$40.055	2023-02-25

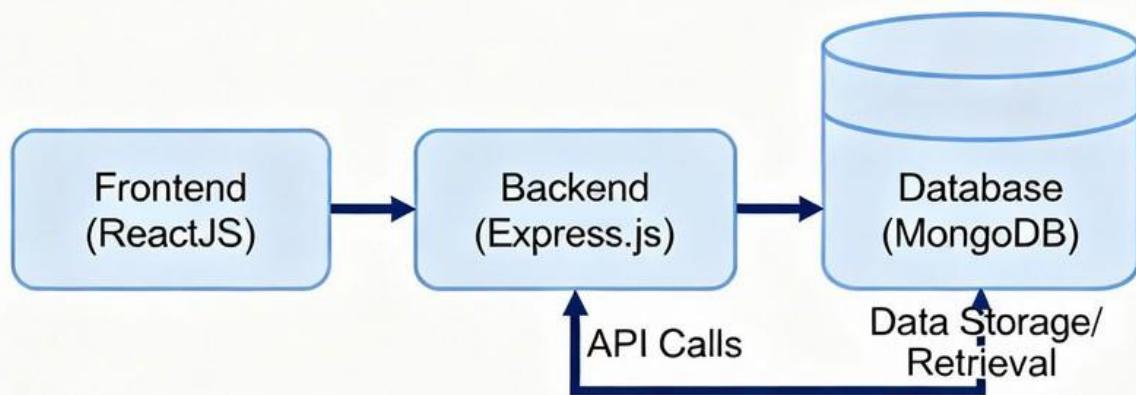
3. Solution Architecture (Conceptual)

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:

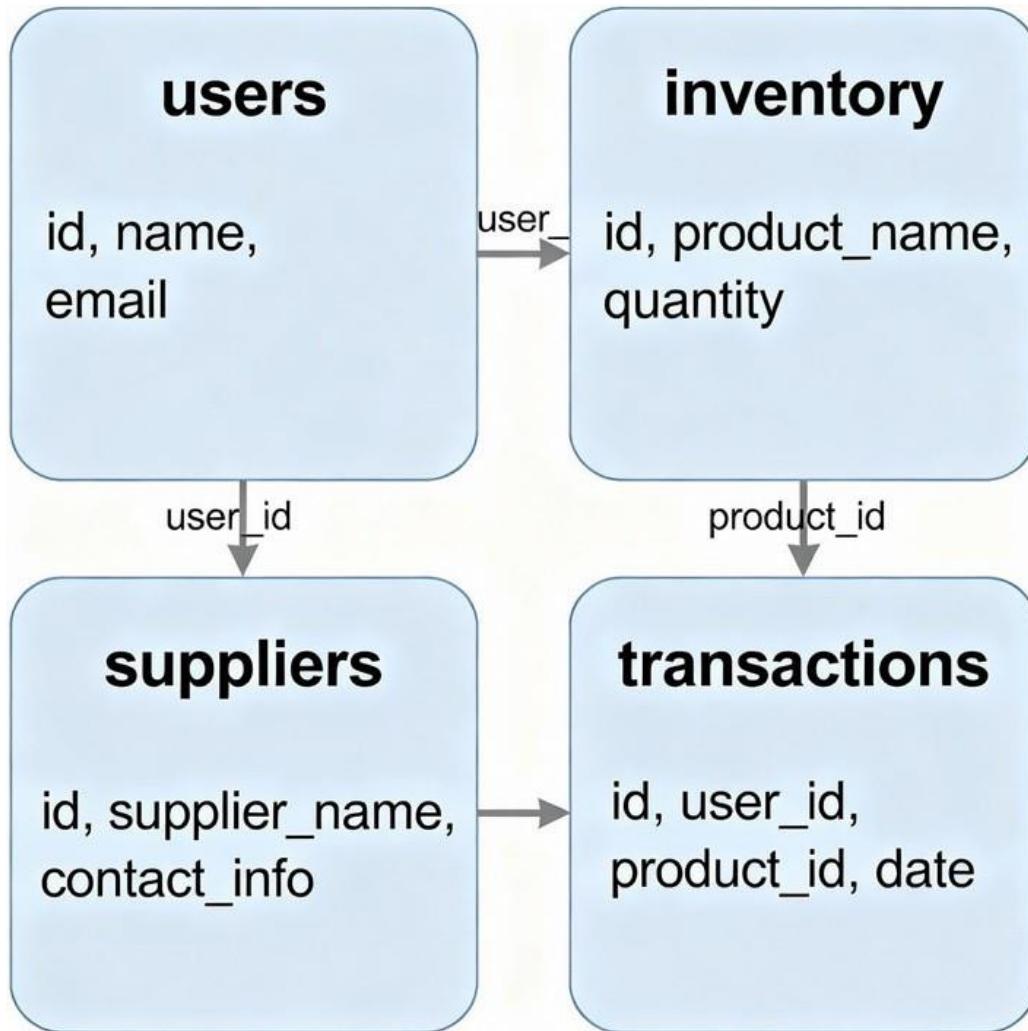
User → UI → API → Database → Response → Dashboard.



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.