

SmartInventoryDB

A Team-Based DBMS for Inventory & Supply Chain Management

Tech Stack: MERN Stack (React, Node, Express) + PostgreSQL

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Problem Statement

Managing inventory and supply chain operations involves complex coordination among multiple users and roles.

- Existing systems often lack real-time updates and multi-user collaboration.
- Manual stock tracking leads to errors, delays, and inefficient reorder processes.
- Lack of automated notifications results in stockouts or overstock situations.
- Difficulty in generating timely reports for data-driven decision making.

This project aims to build a team-based, role-aware DBMS that streamlines inventory control and supply chain management.

SmartInventoryDB is a comprehensive DBMS designed to streamline inventory control and supply chain operations for businesses.

- Role-based multi-user system (warehouse staff, suppliers, managers)
- Real-time stock updates & automated low-inventory notifications
- Product categorization, supplier management, order & shipment tracking
- Detailed sales & inventory reports for data-driven decisions

Advanced DBMS concepts used:

- Stored procedures for bulk order processing
- Triggers for automatic stock updates
- Views & indexes for query optimization
- Audit logs for transaction tracking

Module Descriptions (1/2)

1. User Module

- Registration & login
- Role-based access control (staff, supplier, manager)
- Profile management & audit logging

2. Product & Supplier Module

- Add/edit/delete products & suppliers
- Product categorization
- Manage stock quantities

3. Order Management Module

- Create new orders
- Track order status
- Link orders to suppliers & products

Module Descriptions (2/2)

4. Inventory Module

- Real-time stock updates
- Inventory logging
- Trigger-based low stock alerts

5. Shipment Module

- Track shipment details
- Update delivery status

6. Notification Module

- Notify users about low stock, shipment updates, system alerts
- Manage notification preferences

7. Reporting Module

- Sales, stock, supplier performance reports
- Views & stored procedures for optimized queries

Entity Relationship Diagram

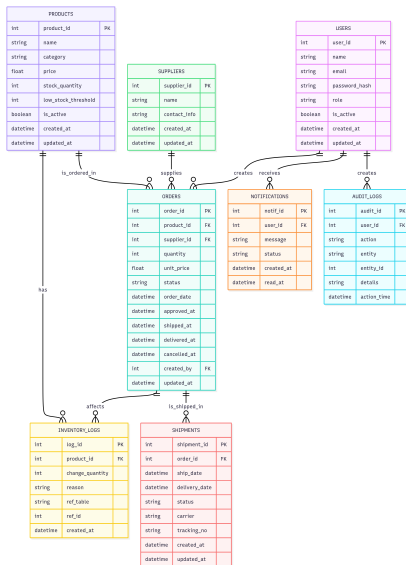


Figure: SmartInventoryDB - Entity Relationship Diagram

DFD Level 0 Diagram

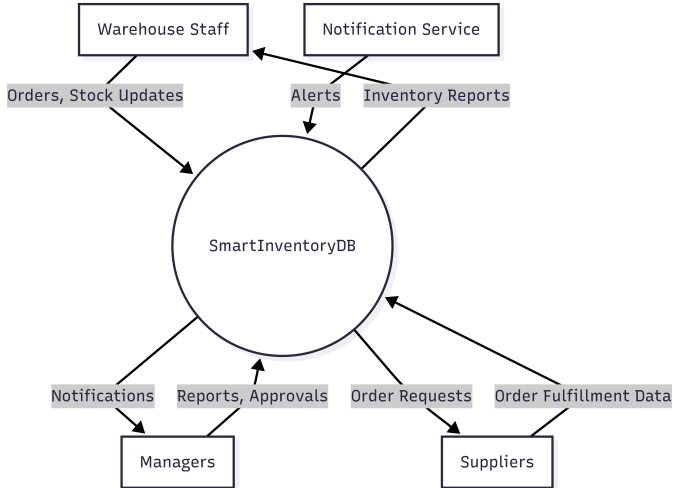


Figure: DFD Level 0 - Context Diagram

DFD Level 1 Diagram

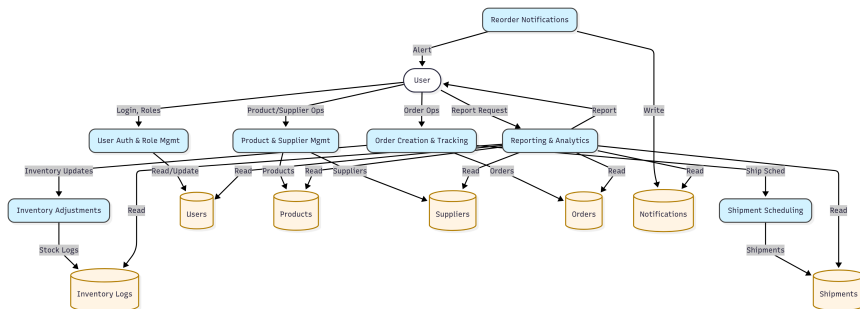


Figure: DFD Level 1 - Main Processes and Data Stores

DFD Level 2 Diagram



Figure: DFD Level 2 - Order Management Process