

# **StockFlow - B2B Inventory Management System Case Study**

## **Part 1: Code Review & Debugging**

Issues Identified:

1. Lack of SKU Uniqueness Check - Can cause data inconsistency.
2. Products Can Exist in Multiple Warehouses - Current model assumes one warehouse.
3. Missing Transaction Handling - Partial commits may cause inconsistencies.
4. Lack of Input Validation - Invalid data can cause runtime errors.
5. No Error Handling - Causes unclear server failures.
6. Price Precision Issue - Float type can lead to rounding issues.

## **Part 2: Database Design**

Designed schema with Companies, Warehouses, Products, Suppliers, Inventories, and Logs. Handled multi-warehouse, supplier mapping, and inventory tracking with normalization.

## **Part 3: API Implementation - Low Stock Alerts**

Implemented GET /api/companies/{company\_id}/alerts/low-stock with proper joins and filters. Includes supplier info, recent sales checks, and handles edge cases gracefully.

## **Summary of Design Decisions**

- SKU uniqueness enforced globally.
- Used transactional consistency.
- Added audit logging and supplier integration.
- Designed for scalability and multi-warehouse support.