Inventory and Warehouse Management System

🧾 Project Report

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1. Introduction

Inventory and warehouse management is a crucial aspect of modern supply chains, where accurate tracking of goods, stock levels, and supplier relationships ensure efficiency and cost-effectiveness. This project aims to develop a structured SQL-based system to manage inventory flow across multiple warehouses, monitor low stock, and support restocking and internal transfers.

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2. Abstract

The project focuses on building a backend inventory management system using MySQL. It involves designing normalized database schemas, inserting sample records, and implementing logic to track inventory status. Advanced database functionalities like triggers and stored procedures are used to automate low-stock alerts and inter-warehouse stock transfers. The project ensures smooth and error-free tracking of stock across warehouses with minimal manual intervention.

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3. Tools Used

- **MySQL** – for database design, SQL execution, triggers, and procedures
- **SQL** – for all backend logic and query development

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4. Steps Involved in Building the Project

1. **Schema Design**: Created tables for Products, Warehouses, Suppliers, and Stock with appropriate relationships and normalization.
2. **Sample Data Insertion**: Populated tables with representative product and stock data.
3. **Query Development**: Wrote SQL queries to display current stock, alert on low inventory, and show total stock per product.
4. **Trigger Implementation**: Developed a trigger that logs alerts when stock falls below reorder level.
5. **Stored Procedure**: Created a procedure to transfer stock from one warehouse to another with quantity validations.
6. **Documentation**: Described all components including schema, queries, triggers, and procedures.

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5. Conclusion

This project provides a foundational SQL-based inventory management system capable of tracking products across warehouses efficiently. It uses relational integrity, automation (via triggers), and reusable logic (via procedures) to offer robust inventory control. The system can be extended further with user interfaces or connected to ERP software in real-world applications.
