INVENTORY AND WAREHOUSE MANAGEMENT SYSTEM

Introduction

Effective warehouse management is essential for optimizing inventory, ensuring timely stock replenishment, and maintaining supplier coordination.

This project presents a SQL-based Warehouse Management System (WMS) designed to automate inventory tracking, monitor stock levels, and manage supplier relationships efficiently.

Abstract

The project implements a relational database system using MySQL to manage inventory across multiple warehouses.

It includes tables for Products, Suppliers, Warehouses, and Stock, ensuring referential integrity through foreign keys.

Key features include automated low-stock alerts via triggers and controlled warehouse transfers using stored procedures.

Tools Used

- **DBMS**: MySQL
- **Query Language**: Structured Query Language (SQL)
- **Platform**: MySQL Workbench / phpMyAdmin (optional)

Steps Involved in Building the Project

- **Database & Table Creation**:
  Created the WareHouseManagement database with four main tables – Products, Suppliers, WareHouse, and Stock.
- **Data Insertion**:
  Added sample data for suppliers, products, warehouses, and stock.
- **Inventory Queries**:
  Developed SQL queries to calculate total product quantities and detect products below reorder levels.
- **Low Stock Alert System**:
  Designed a trigger check_low_stock to insert alerts into a table whenever a product's quantity drops below 10 units.
- **Stock Transfer Mechanism:**
  Built a stored procedure transfer_stock to transfer items safely between warehouses.
- **Testing and Validation**:
  Verified alert generation and transfer process using SQL SELECT and CALL queries.

Key SQL Features Summary

Feature	Description
• Trigger	Automatically logs low-stock alerts when quantity drops below threshold.
• Stored Procedure	Transfers stock between warehouses safely with validation checks.
• Foreign Keys	Maintain relational integrity across tables (Products, Suppliers, Warehouses).

Learning Outcomes

- Enhanced understanding of SQL triggers and stored procedures.
- Learned to automate warehouse stock tracking and alerts.
- Strengthened knowledge of relational integrity and MySQL design.
- Developed practical skills in inventory management and monitoring.

Conclusion

This project demonstrates how MySQL can be effectively used to create a simplified yet powerful warehouse management solution.

Automated triggers and procedures ensure real-time monitoring, data consistency, and operational efficiency in warehouse systems.