Project Report

Inventory and Warehouse Management System

1. Abstracts

This project focuses on building a **SQL-based backend system** for managing warehouse inventory. It helps in tracking stock levels, monitoring suppliers, managing warehouses, and generating automatic low-stock alerts. A stored procedure is also implemented to transfer stock between warehouses efficiently. This system provides a structured and reliable solution for real-time inventory management.

2. Introduction

Inventory management plays a critical role in supply chain and warehouse operations. Proper tracking of products ensures smooth operations, timely reordering, and efficient stock distribution across warehouses.
In this project, we designed and implemented a **relational database system** using **MySQL** to manage suppliers, products, warehouses, and stock levels. The system also includes triggers and stored procedures to automate repetitive tasks like low-stock notifications and stock transfers.

3. Tools Used

- **MySQL**
- **MySQL Workbench (for queries and ER diagram)**

4. Steps Involved

1. Database Schema Design
    - Created tables: Suppliers, Products, Warehouse, Stock, Notifications
    - Defined primary keys, foreign keys, and relationships
2. Data Insertion
    - Inserted sample suppliers, products, warehouses, and stock data
3. Inventory Queries
    - Checked stock levels in each warehouse
    - Generated reorder alerts for low-stock products

    - Calculated total stock of each product across warehouses
4. Trigger Implementation
    - Created a low_stock_notification trigger to automatically insert an alert into the Notifications table whenever stock goes below the reorder level
5. Stored Procedure Implementation
    - Created TransferStock procedure to transfer stock between warehouses while validating available quantity
6. Testing
    - Verified stock movement, trigger execution, and reorder alerts

5. Conclusion

The **Inventory and Warehouse Management System** demonstrates how SQL can be applied in real-world business use cases such as inventory tracking and warehouse management.
With this system:

- Stock levels are monitored efficiently
- Reorder alerts are automated
- Stock transfers between warehouses are simplified

This project showcases the practical application of SQL concepts such as **joins, aggregation, triggers, and stored procedures**, making it a complete mini-project suitable for real-world inventory management solutions.