Online Retail Sales Database Design

Introduction

This project aims to design a normalized relational database for an online retail platform. The system handles customer data, product catalog, orders, and payments. It is built to reflect real-world e-commerce operations with efficient schema and powerful SQL queries for reporting.

Abstract

The project includes the creation of multiple interrelated tables like Customers, Products, Orders, OrderItems, and Payments. The schema is normalized to avoid data redundancy and ensure consistency. Sample data was inserted to simulate transactions, and analytical SQL queries were developed to generate reports such as sales summary and stock status.

Tools Used

- MySQL / PostgreSQL
- DB Browser / DBeaver
- SQL for queries and schema creation

Steps Involved in Building the Project

1. Identified main entities: Customers, Products, Orders, Payments.
2. Designed ER model and normalized schema to 3NF.
3. Created tables using SQL with primary and foreign key constraints.
4. Inserted sample data to simulate real operations.
5. Wrote JOIN and aggregation queries for sales and inventory reports.
6. Created views for easy access to summarized data.

Conclusion

This project demonstrates practical database design and query writing for a retail sales system. The database is optimized for integrity, reporting, and scalability. This system serves as a solid foundation for real-world applications in e-commerce and retail analytics.