Title: Online Retail Sales Database Design

Introduction

This project focuses on designing a normalized SQL database schema for an online retail sales platform. The aim is to build a robust backend system that can efficiently handle products, customers, orders, and payments, ensuring smooth e-commerce operations.

Abstract

In today’s digital commerce world, efficient database systems are essential for managing high volumes of customer and sales data. This project identifies key entities and relationships in online retail sales, applies normalization principles up to the Third Normal Form (3NF), and develops a structured schema. The schema improves data consistency, removes redundancy, and supports reporting through SQL queries and views.

Tools Used

MySQL Workbench – For schema design and database implementation.

dbdiagram.io – For ER diagram visualization.

PostgreSQL (Optional) – Alternative RDBMS for testing.

Steps Involved in Building the Project

1. Identified core entities: Products, Customers, Orders, Payments.

2. Designed an ER Diagram using dbdiagram.io.

3. Applied Normalization (1NF → 3NF).

4. Implemented schema with DDL commands (CREATE TABLE with keys & constraints).

5. Inserted sample records into tables.

6. Wrote JOIN queries and created views for generating sales reports.

Conclusion

The project successfully delivers a normalized SQL schema for online retail sales. The database ensures integrity, supports smooth operations, and provides analytical reports. It can be extended with features like inventory, shipping, and advanced analytics to support real-world e-commerce applications.