

# Title: Online Retail Sales Database Design

## 1. Introduction

The Online Retail Sales Database Design project focuses on creating a structured and normalized SQL database system for an e-commerce platform. The primary objective is to store and manage essential information such as products, customers, orders, and payments efficiently. The system is designed to minimize redundancy, ensure data integrity, and provide quick access to useful sales reports.

## 2. Abstract

This project involves designing an Entity-Relationship (ER) diagram, normalizing the schema to the Third Normal Form (3NF), and implementing it using SQL. Tables are created with appropriate primary and foreign key constraints. Sample data is inserted to test the database, and SQL queries including JOINS, views, and aggregations are written to generate sales reports. This system enables efficient management of retail sales data and supports decision-making by providing meaningful insights through reports.

## 3. Tools Used

Database: MySQL / PostgreSQL

Diagram Tool: dbdiagram.io

Language: SQL (DDL, DML, DQL, Views, Joins)

## 4. Steps Involved in Building the Project

1. Entity Identification – Defined key entities such as Products, Customers, Orders, and Payments.

2. ER Diagram Design – Designed the ER diagram to represent relationships between entities.

3. Normalization – Applied normalization rules to bring the schema to 3NF, removing redundancy.

4. DDL Implementation – Created SQL tables with appropriate constraints (Primary Key, Foreign Key, Unique).

5. Data Insertion – Populated tables with sample records for products, customers, and orders.

6. Queries and Views – Implemented JOIN queries and views to analyze sales reports, customer purchases, and product demand.

## 5. Conclusion

The Online Retail Sales Database successfully demonstrates the process of designing a normalized database schema for an e-commerce platform. It ensures data consistency, eliminates redundancy, and enables efficient reporting. The final system includes an ER diagram, SQL schema, sample data, and reports generated through queries and views, making it a practical model for real-world online retail management.