**Project Report: Online Retail Sales Database Design**

**1. Introduction**

This project involves designing a normalized relational database for an online retail platform. The system models essential operations like customer management, order processing, inventory tracking, and payments. The goal was to build a structure that supports scalable storage, efficient data retrieval, and insightful reporting for business decisions.

**2. Abstract**

The project aims to create a clean, normalized schema in MySQL for a retail sales environment. This includes defining tables for customers, products, orders, order items, and payments, and establishing relationships via primary and foreign keys. Sample data and queries were built to simulate realistic use cases such as identifying top products, failed payments, and monthly revenues. The final system allows for both operational and analytical applications.

**3. Tools Used**

* **Database Engine:** MySQL (using MySQL Workbench)
* **ER Diagram Design:** draw.io (entity modeling and relationship mapping)
* **Languages Used:** Standard SQL (DDL, DML, Views, Joins, Aggregates)

**4. Steps Involved in Building the Project**

* Designed an ER diagram for the schema with proper normalization (up to 3NF)

*(Diagram is attached as part of the submission.)*

* Created SQL scripts with keys, constraints, and appropriate data types
* Populated tables with realistic sample data
* Built SQL views for reporting: customer summaries, revenue by product/month, etc.

Wrote analytical queries to answer business questions like:

* Top Performing Products by Revenue
* Revenue by Payment Method
* Customers with High Attempted Spend but Low Successful Payments

**5. Business Use Cases Enabled**

* **Customer segmentation** based on purchase behavior
* **Product performance tracking** across time and category
* **Revenue forecasting** via payment and order trends
* **Inventory planning** using real-time sales velocity
* **Operational alerts** on failed payments or stock depletion

**6. Conclusion**

This project demonstrates how thoughtful schema design, paired with realistic data and well-written queries, can turn raw transactions into actionable business insights. By prioritizing **data clarity**, **referential integrity**, and **analytical utility**, the system supports a wide range of use cases, from simple customer lookups to advanced product and revenue forecasting.

This isn’t just a schema. It’s a reporting foundation for real business decisions.