Online Bookstore Database – SQL Project Report

1. Project Overview

This project is a complete SQL-based Online Bookstore Database System built using MySQL Workbench. It manages books, customers, orders, payments, inventory, and reviews. The project demonstrates database design, CRUD operations, analytical reporting, indexing, optimization, and stored procedures.

2. ERD Description

Key relationships: - Customers (1:M) Orders - Orders (1:M) Order Items - Books (1:M) Order Items - Books (1:M) Reviews - Books (1:1) Inventory - Orders (1:M) Payments

3. Database Schema Summary

Tables Created: - customers - books - inventory - orders - order_items - payments - reviews Each table includes primary keys, foreign keys, and necessary constraints.

4. CRUD Operations

CRUD operations include: - Adding customers, books, orders - Updating stock and order status - Deleting reviews safely - Selecting customer history and book lists

5. Analytics Reports

Analytics SQL queries included: - Total revenue - Daily sales - Monthly sales - Top-selling books - Customer lifetime value - Low stock inventory report - Best-rated books

6. Performance Optimization

Indexes added on: - Customers(customer_id) - Orders(order_id) - Books(book_id) - Payments(order_id) EXPLAIN PLAN was used to analyze query performance and optimize slow queries.

7. Stored Procedures

Stored procedures were created to: - Add new books - Process new orders - Update inventory automatically

8. Conclusion

This SQL project demonstrates full database design, data handling, reporting, and optimization skills suitable for academic submission or portfolio use.