

: SQL Database Design and Querying

Project Title: SQL-Based Relational Database Design and Query Analysis

Technologies: MySQL / PostgreSQL, SQL Workbench, Sakila/Maven Movies Schema

Objective

To design normalized relational database schemas and perform advanced SQL querying using the Maven Movies (Sakila) dataset and a custom employee-product-order system.

Project Structure

1. Schema Design

- Designed tables like employees, products, students, orders, etc., with:
 - Primary keys, foreign keys
 - NOT NULL, UNIQUE, CHECK, DEFAULT constraints
 - Normalized structure following 1NF–3NF

2. SQL Querying

- Created and joined multiple tables to:
 - Calculate total product sales per customer
 - Show orders with or without matching products
 - Summarize revenue from different films (Maven Movies DB)

3. Advanced SQL Features

- Used:
 - INNER JOIN, LEFT JOIN, GROUP BY, HAVING, SUM()
 - Subqueries, aggregate functions, and views
 - Table alterations and schema corrections

Key Results

- Successfully normalized and linked tables using best practices.
- Wrote over 15+ functional SQL queries to solve real-world scenarios.
- Leveraged foreign key relationships for relational integrity.
- Designed views and triggers (in Maven Movies schema) to automate data workflows.

Required Project Files

File Name	Description
<code>final_assignment.sql</code>	Custom schema creation and queries
<code>Mavenmovies.sql</code>	Full Sakila-like database structure
<code>README.md</code>	GitHub project documentation
<code>ERD_Diagram.png</code> (optional)	Entity Relationship Diagram (if created)
<code>SQL_Project_Report.pdf</code>	This summarized project report
<code>sample_queries.txt</code> (optional)	List of sample queries for demo

Outcome

This project demonstrates end-to-end knowledge of:

- Database schema design
- Writing complex SQL queries
- Working with a real-world database schema (Maven Movies)
- Understanding and enforcing relational integrity