Comprehensive MySQL Query Practice & Database Management Project Report

Student Details

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- **College / Institute:** IT Vedant Education Pvt Ltd.
- **Tool Used:** My SQL Workbench

1. Project Description

This project is designed to demonstrate practical knowledge of SQL and MySQL database management concepts. It includes **50+ SQL queries** covering database creation, table manipulation, data retrieval, joins, constraints, views, procedures, triggers, and user management. The project focuses on applying SQL queries to real-world–like datasets such as student records and Titanic passenger data.

2. Objectives of the Project

- To understand **relational database concepts**
- To practice **basic to advanced SQL queries**
- To perform **data manipulation and analysis**
- To implement **constraints, joins, views, procedures, and triggers**
- To gain hands-on experience with **MySQL Workbench**

3. Tools & Technologies Used

- **Database:** MySQL
- **Query Language:** SQL
- **Tool:** MySQL Workbench

4. Database Design Overview

The project consists of multiple tables such as:

- student, student1, student2
- parent, child
- titanic
- project

Key database concepts used:

- Primary Keys

- Foreign Keys
- ENUM data types
- AUTO_INCREMENT
- CHECK constraints
- Views
- Stored Procedures
- Triggers

6. SQL Concepts Covered

The queries are divided into the following categories:

🔷 **Database & Table Operations**

- CREATE DATABASE
- CREATE TABLE
- INSERT, UPDATE, DELETE
- TRUNCATE

🔷 **Constraints & Keys**

- PRIMARY KEY
- FOREIGN KEY
- CHECK
- ENUM

🔷 **Data Retrieval & Filtering**

- SELECT
- WHERE
- AND / OR / NOT
- IN / NOT IN
- DISTINCT

🔷 **Aggregation & Sorting**

- GROUP BY
- HAVING
- COUNT
- ORDER BY

- LIMIT

🔷 **Joins**

- INNER JOIN
- LEFT JOIN
- RIGHT JOIN

🔷 **Conditional Logic**

- CASE WHEN THEN

🔷 **Date & String Functions**

- YEAR, MONTH, DAY
- ADDDATE
- DATEDIFF
- TIMESTAMPDIFF
- CONCAT, CONCAT_WS
- TRIM, LENGTH

🔷 **Views**

- CREATE VIEW

🔷 **Stored Procedures**

- INSERT data into multiple tables using PROCEDURE

🔷 **Triggers**

- Automatically insert data after table insert

🔷 **User Management**

- CREATE USER
- GRANT
- REVOKE

7. Sample Use Case

This project simulates real-world database operations such as:

- Managing student and parent-child records
- Analysing passenger data
- Automating tasks using triggers
- Restricting data using constraints

Such operations are commonly used in **school management systems, HR systems, and data analysis applications**.

8. Key Learnings

- Strong understanding of **SQL query writing**
- Hands-on experience with **MySQL database design**
- Ability to write **complex joins and subqueries**
- Knowledge of **procedures and triggers**
- Practical exposure to **real-life database scenarios**

9. Conclusion

This project successfully demonstrates the implementation of **50+ SQL queries** using MySQL. It strengthens database fundamentals and prepares for real-world database development and data analysis roles.