

Student Management System (SQL Project)

Project Overview

The **Student Management System** is a SQL-based database project that manages student, course, batch, and enrollment data for educational institutions. It enables efficient storage, validation, and querying of student information and course statistics.

Tools & Technologies

- **Database:** MySQL
 - **Interface:** MySQL Workbench
 - **Techniques Used:** SQL Queries, Data Cleaning, Exploratory Data Analysis (EDA)
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Dataset Schema

1. Students

- `sid` : Student ID
- `sname` : Student Name
- `sdob` : Date of Birth
- `scity` : City
- `squal` : Qualification
- `semail` : Email
- `sphone` : Phone Number

2. Courses

- `courseid` : Course ID
- `coursename` : Course Name
- `coursecategory` : Course Category (Graduate/PG/UG)
- `coursefees` : Course Fees
- `courseduration` : Duration
- `batch_end_date` : End Date (Batch-wise)

3. Enrollments

- `batchid` : Batch ID
- `sid` : Student ID
- `edate` : Enrollment Date
- `weekday` , `dayname`

4. Batch Details

- `batchid` : Batch ID
 - `bsdate` : Batch Start Date
 - `datetime`
 - `bstrength` : Batch Strength
 - `courseid` : Linked Course ID
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Objective

To develop a robust SQL-based system that helps educational institutions manage student and course enrollment efficiently and generate insights for academic planning.

Sample Queries & Reports

- Undergraduate students with names starting with 'S' and length between 5–20.
 - Senior citizen students (age ≥ 60).
 - Validate emails and mobile numbers using SQL conditions.
 - Duplicate email IDs and invalid contact detection.
 - Student demographics by qualification and birth month.
 - Revenue analysis and most-enrolled courses.
 - Enrollment date validations and batch timing conflicts.
 - Students with similar names but different emails.
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Findings

- 20 students enrolled; 4 are senior citizens.
 - 6 students had invalid phone numbers; 3 had invalid emails.
 - Most enrolled course: **Compmat** (20 enrollments)
 - Highest revenue course: **Biomaths** (despite fewer enrollments)
 - 7 students enrolled after batch started.
 - 2 students with no contact information.
 - Only 3 students were from the home city (Kolkata).
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ER Diagram (*To be added*)

A simple ER diagram linking Students, Courses, Batches, and Enrollments can help visualize relationships. (You can draw one using dbdiagram.io or Lucidchart.)

Folder Structure

```
Student-Management-System/  
├─ CREATE_TABLES.sql  
├─ INSERT_DATA.sql  
├─ ANALYSIS_QUERIES.sql  
└─ README.md
```

How to Use

1. Import `CREATE_TABLES.sql` in MySQL Workbench.
2. Insert data using `INSERT_DATA.sql`.
3. Run and modify `ANALYSIS_QUERIES.sql` as needed.

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