

Student Management System – Final Report

Project Overview

This project involved designing and implementing a relational database for a Student Management System using MySQL, followed by creating an interactive Power BI dashboard to help monitor and visualize key academic data. The system manages student, course, instructor, and enrollment information while supporting real-time reporting and decision-making.

Objectives

- Design a normalized SQL database to manage student records.
- Track and store course enrollments, instructors, and department information.
- Integrate the database with Power BI to visualize key metrics and trends.
- Provide a one-page dashboard for administrative monitoring.

Tools Used

- Database: MySQL 8.0
- Data Visualization: Power BI Desktop
- Data Source Connector: MySQL Connector/ODBC 8.0
- Others: GitHub for documentation

Database Design

Tables

- Student: Stores student personal information and department.
- Course: Details about available courses.
- Instructor: Stores instructor profiles.
- Department: Holds department details.
- Enrollment: Manages course enrollments and grades.

ERD Highlights

- One-to-many relationships:
 - Department → Students
 - Department → Instructors

- Instructor → Courses
- Course ↔ Enrollment ↔ Student (many-to-many via Enrollment)

Newly Added Columns

- admission_date (in Student table) – tracks when a student joined.
- enrollment_date (in Enrollment table) – tracks when each course was enrolled.

Power BI Dashboard Features

KPIs

- Total Students
- Total Departments
- Total Courses
- Total Lecturers

Main Charts

- Enrollment Trends Over Time
- Student Gender Distribution
- Course Popularity by Enrollment
- Student Count by Department

Interactivity

- Slicers for filtering by date
- Tooltips showing course-specific enrollment info

Key Insights

- Identified top-performing and most popular courses
- Discovered enrollment trends across time periods
- Monitored student distribution across departments

Challenges Faced

- Initial difficulties in configuring the MySQL connector for Power BI
- Manually populating date fields after schema change
- Ensuring relationships remained intact after modifying data

Conclusion

This project demonstrates how structured database design and modern BI tools can be combined to build a real-time academic monitoring system. It lays the groundwork for deeper analytics such as performance forecasting or academic advising systems.