Student Database Management System
Final Project Summary
Name: Usaidkhan Pathan Nasimkhan
Banner ID: 916489191
Project URL: http://elvis.rowan.edu/~usaidk28/AdvancedDatabases/Final_Project/

Group Members (5%)

This project was completed **individually** by **Usaidkhan Pathan Nasimkhan**.
No other group members contributed to this project.

Brief Description of the Final Project (5%)

This project implements a **Student Database Management System** that centralizes the academic, financial, and administrative records of students in an educational institution. The system is designed to simplify tasks such as course enrollment, fee tracking, attendance management, scholarship handling, grade submission, and more.

The application was built on a normalized relational schema and implemented using **MySQL** for the backend and **PHP** for the frontend. The UI includes student, instructor, and admin portals with functionalities like secure login, record access, updates, and summary dashboards.

Key Features:

- Secure multi-user access for students, instructors, and admins.
- Course registration and automated grade/attendance logging.
- Fee payment tracking with scholarship integration.
- Triggers to auto-update payment and academic status.
- Stored procedures and functions for real-time data operations.
- Views for easy reporting and summaries.
- Fully hosted on Rowan's **Elvis** web server.

My Contributions (5%)

Since I worked alone on this project, I handled **every stage of the development lifecycle**, including requirement analysis, database design, normalization, implementation, testing, and deployment.

Requirements & Analysis (Part 1):

- Identified primary actors (admin, students, instructors, finance dept.).
- Collected over 20 functional and non-functional requirements.
- Drafted a complete list of entities (e.g., Student, Instructor, Course, Enrollment, FeeTransaction, Attendance, Grade, Scholarship).
- Created initial schema and use case scenarios.

Conceptual & Logical Design (Part 2):

- Designed the **ER Diagram** with entity relationships (1:N and M:N).
- Mapped all entities into relational tables.
- Applied **1NF, 2NF, and 3NF** to remove redundancy and maintain integrity.
- Introduced junction tables for M:N relationships like ENROLLMENT and COURSE_INSTRUCTOR.
- Created a final logical schema with 11+ interrelated tables.

Physical Implementation & SQL Operations (Part 3):

- Used **MySQL Workbench** for forward engineering of the schema.
- Populated all tables with realistic test data (5+ records per table).
- Implemented multiple **JOIN queries** to retrieve academic and financial summaries.
- Created **views** for student-course and fee-status overviews.
- Developed **stored procedures** like EnrollStudentInCourse with transaction blocks and rollback handling.
- Wrote **functions** to compute total fee and average grade.
- Created **triggers** for automatic grade assignment and fee status updates.
- Handled issues like syntax errors, server connection failures, and foreign key constraints during development.

Technologies Used:

- **MySQL 8.0 / MySQL Workbench**
- **PHP & HTML/CSS**
- **Rowan Elvis Server (Web Hosting)**
- **Figma (for initial UI design)**

Project URL (5%)

To view the live version of this project hosted on Rowan's Elvis server, please visit:
http://elvis.rowan.edu/~usaidk28/AdvancedDatabases/Final_Project/