DATABASES Project

1. Introduction

This report covers the design of a university database system to manage key data like departments, courses, instructors, students, and enrollments. The system aims to support administrative tasks efficiently and reliably.

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2. Project Idea Selection

A university database was chosen because managing large, connected data manually leads to errors. A database ensures accurate, organized, and easy access to important academic information.

3. Client Needs and Entities

The university requires a system that can:

- Accurately maintain data on departments, courses, instructors, and students.
- Track student enrollments and grades.
- Generate quick reports on courses and students.
- Ensure data security with role-based access for admins, instructors, and students.

Main entities include:

- **Departments** (e.g., Computer Science, Mathematics)
- **Instructors** (teaching staff)
- **Courses** (subjects offered)
- **Students**
- **Enrollments** (linking students to courses and grades)

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4. Database Design and Relationships

- Each department offers multiple courses.
- Each course is taught by one instructor.
- Students can enroll in multiple courses.

- Enrollments connect students and courses with associated grades.

An ER diagram illustrates these relationships and serves as a blueprint for the database structure.

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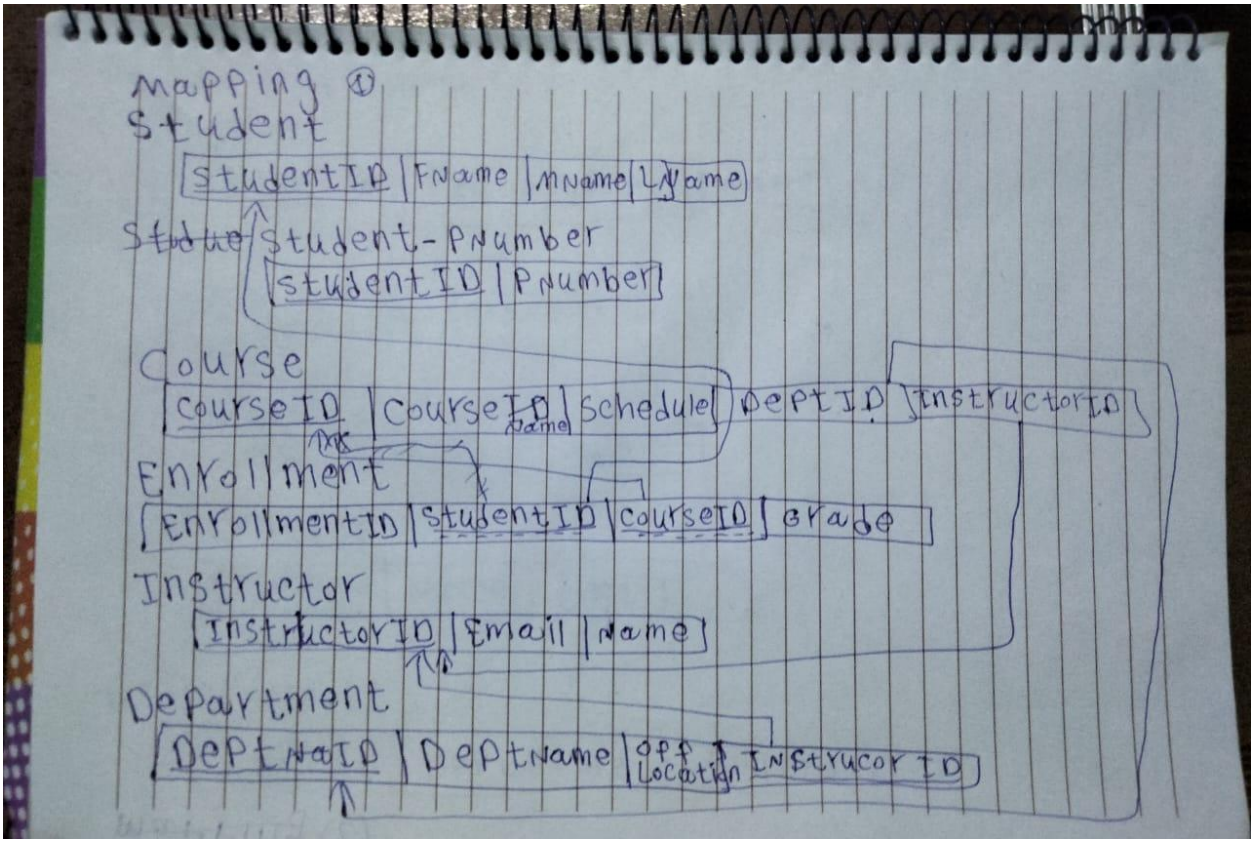
5. Normalization

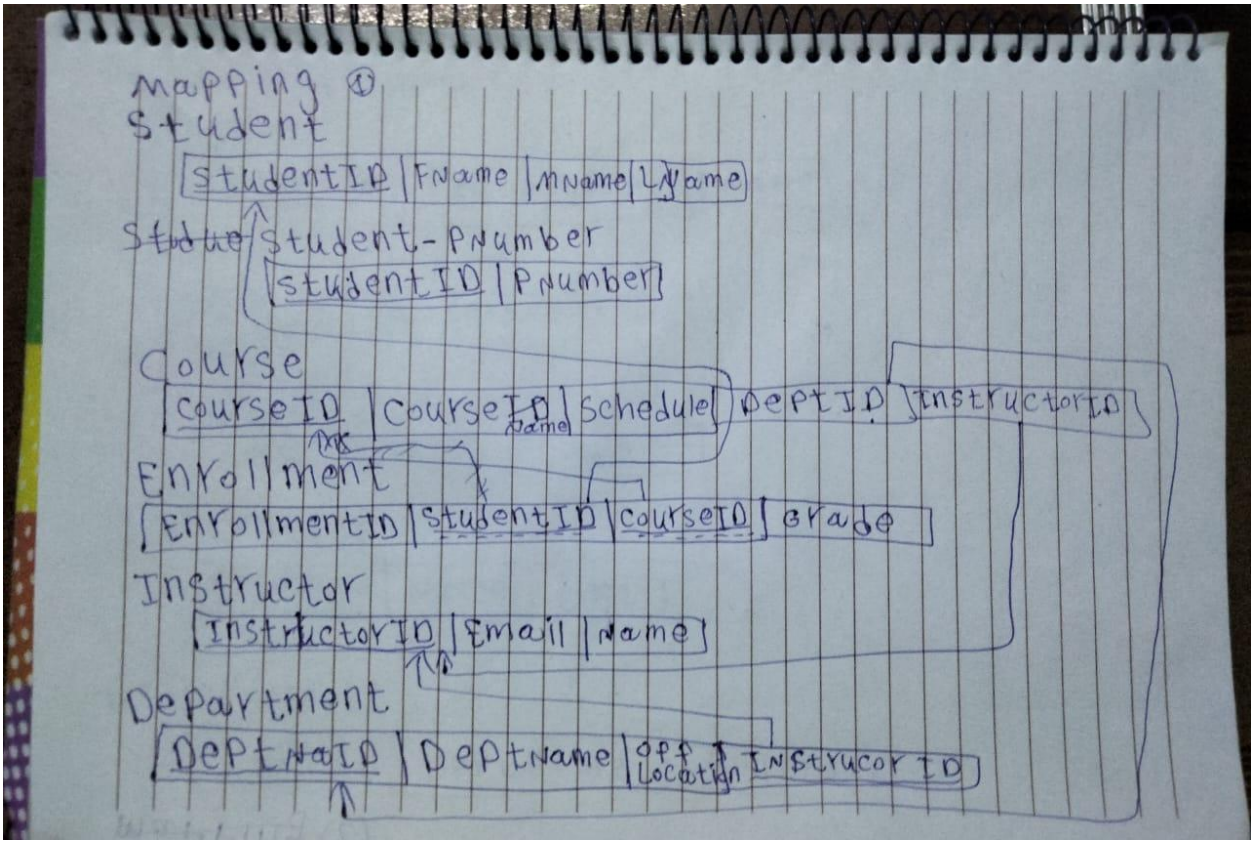
The database is normalized to eliminate redundancy and improve data integrity:

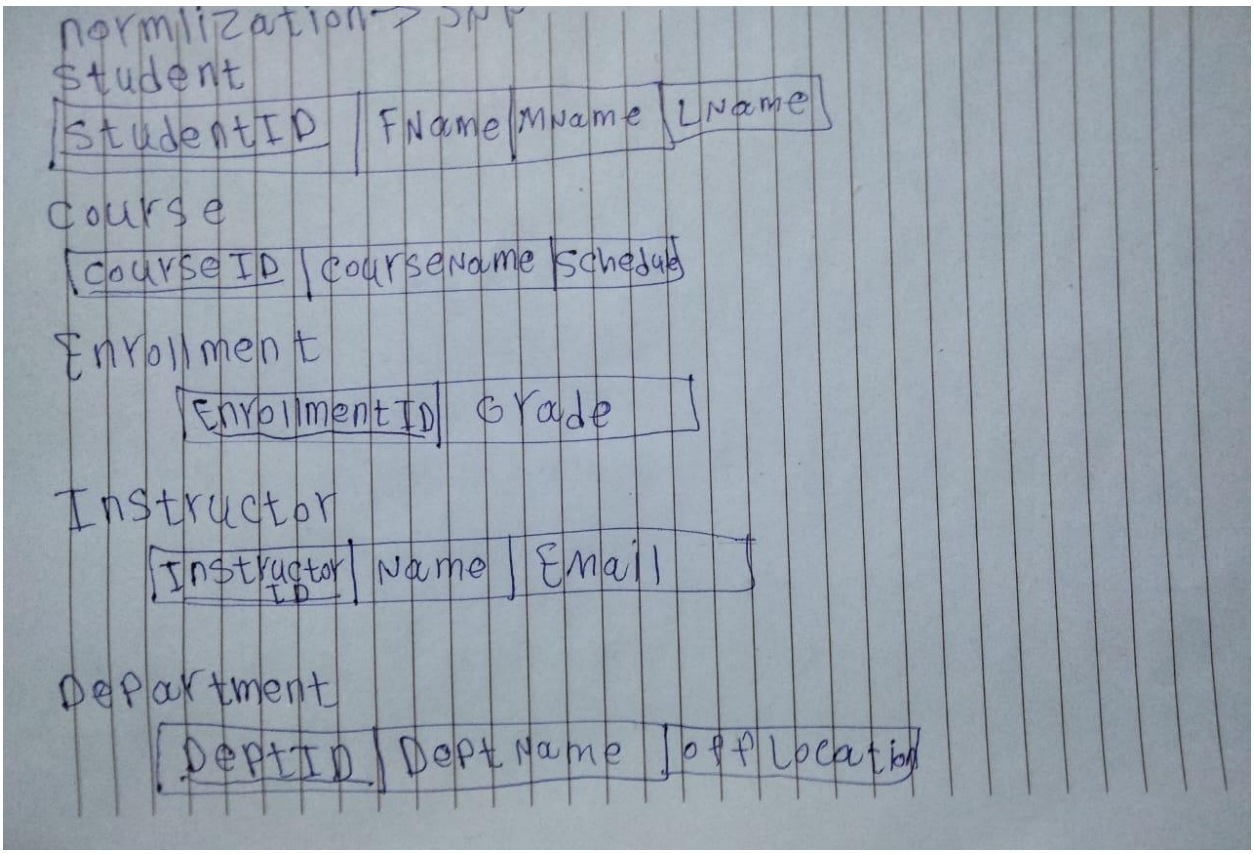
- Instructor details are stored separately and linked to courses.
- Student information is kept separate from enrollment data.
- This design ensures efficient data updates and consistency.

6.Conclusion

The project provides a practical and well-structured database design for university management. It meets the client's needs for accuracy, security, and ease of data handling, supporting smooth academic administ




Mapping ①
Student
StudentID | FName | MName | LName
Student-PNumber
StudentID | PNumber
Course
CourseID | CourseName | Schedule | DeptID | InstructorID
Enrollment
EnrollmentID | StudentID | CourseID | Grade
Instructor
InstructorID | Email | Name
Department
DeptNaID | DeptName | Off Location | INStrucor ID


normlization
Student
StudentID | FName | MName | LName
Course
CourseID | CourseName | Schedule
Enrollment
EnrollmentID | Grade
Instructor
InstructorID | Name | Email
Department
DeptID | DeptName | Off Location