Student Information System

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A Project Report

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Information Management and Web Development

Instructor

Introduction

The system: A Student Information System (SIS) is a web application designed to manage and organize student-related data efficiently within an educational institution.

Technologies Used

Front-End

- HTML5
- CSS3
- Vanilla JavaScript

Back-End

- PHP
- PDO (PHP Data Objects)

Database Management

- MySQL

Development Tools

- XAMPP Server
- phpMyAdmin
- Visual Studio Code

Database Design

The database schema follows a normalized 3-table structure to ensure data integrity and efficient management of items and archives.

Entity-Relationship Diagram

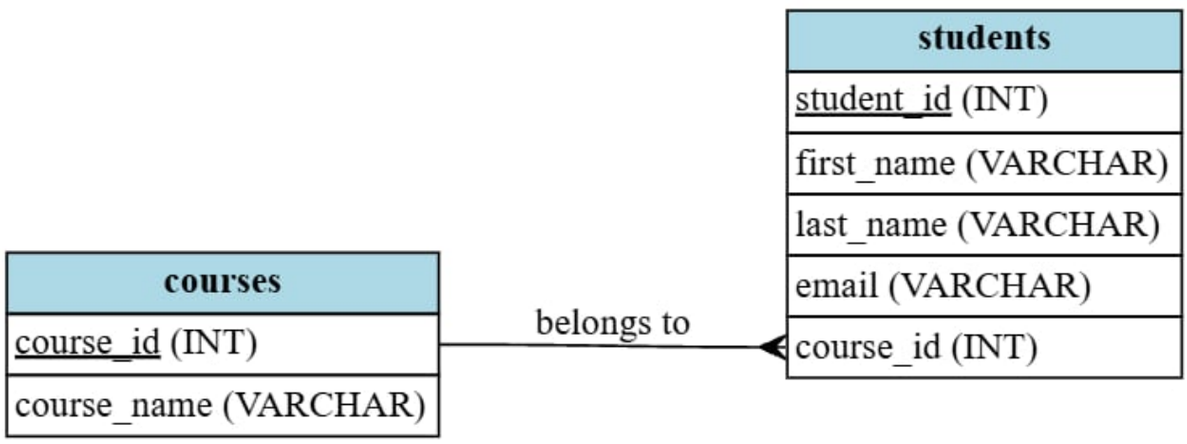

Figure 1 : ER diagram showing the relationship and cardinality using crow's foot notation

Table	Description	Key Columns
courses	Stores the unique list of academic courses available for students to enroll in.	`course_id` (PK), `course_name`
students	Stores personal details of students and tracks which specific course each student is assigned to.	`student_id` (PK), `course_id` (FK), `first_name`, `last_name`, `email`

Relationships

Relationship Breakdown

One-to-Many (1:N): One course can have multiple students enrolled, but each student is assigned to exactly one course (as defined by the course_id foreign key in your SQL).

Primary Keys: Indicated by underlined fields (course_id, student_id).

Foreign Key: The course_id in the students table links back to the courses table.

Web Interface

The initial webpage

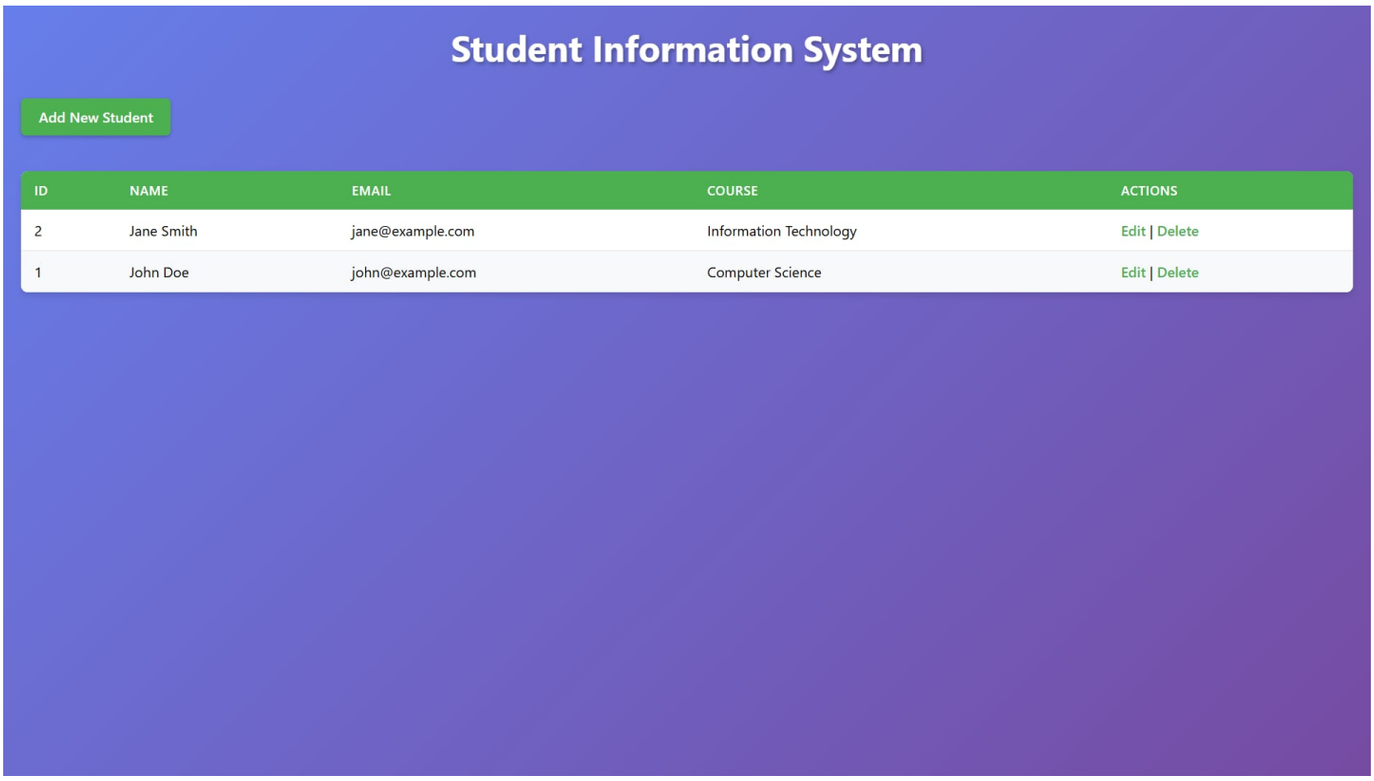

Figure 2 : GUI of the initial webpage

Add New Student: is designed for administrators or registrars to register new students into the system.

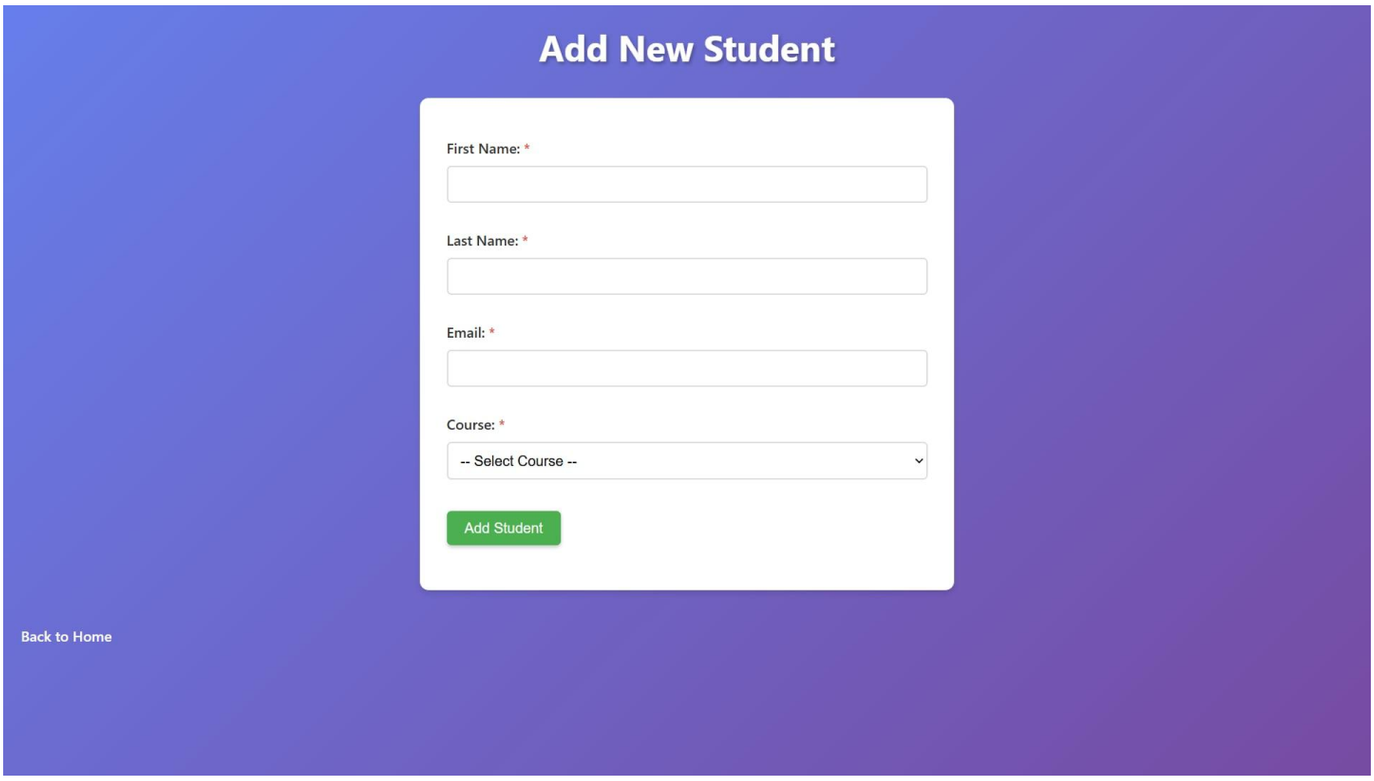

Figure 3 : GUI of the Add new student form

Select Course: Allows students to view and choose the subjects or courses they wish to enroll in for a specific semester or academic year.

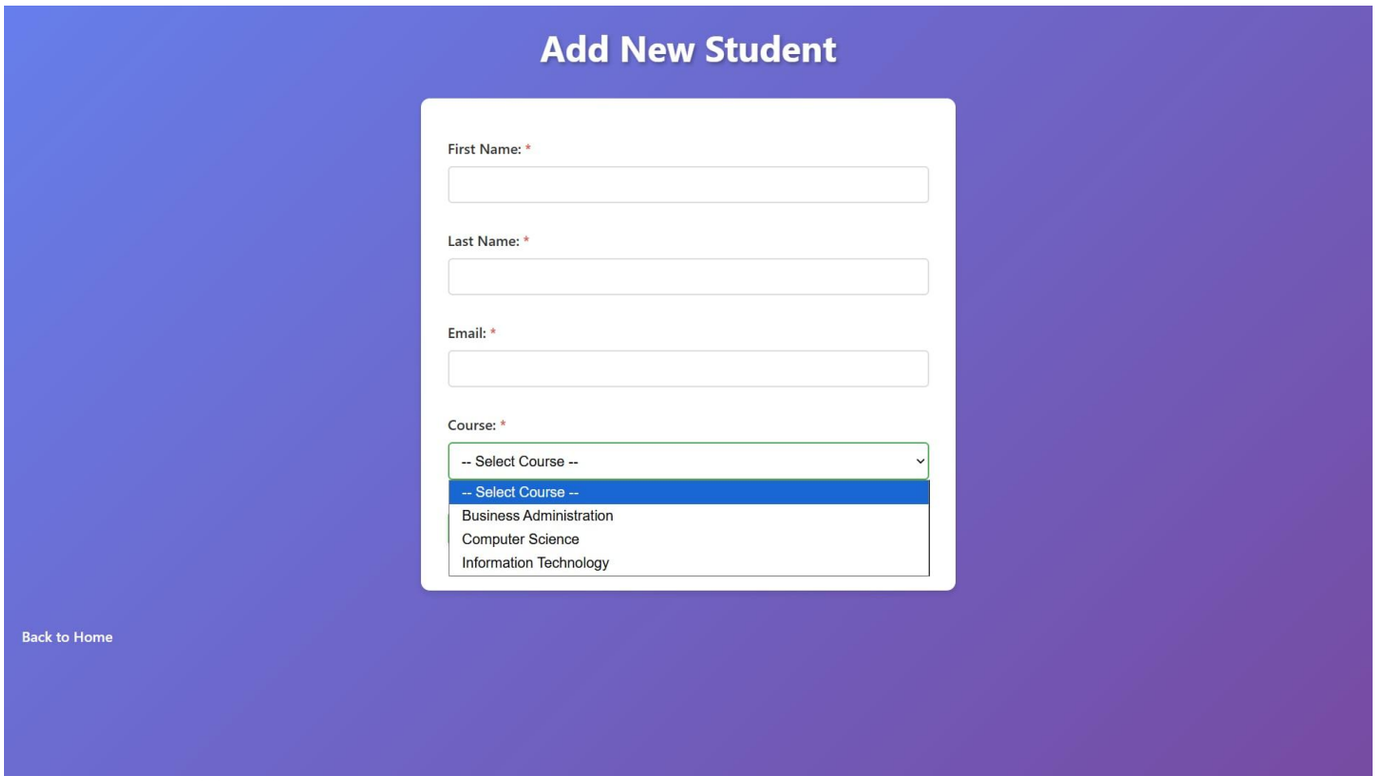

Figure 4 : GUI of the Select Course

Challenges and Learnings

Challenge – Normalization: Moving from a single-table setup to a three-table relational structure was challenging, particularly in handling foreign key constraints and ensuring that deleting a record automatically removed its related entries through ON DELETE CASCADE.

Challenge – Pathing & Caching: Troubleshooting missing images (404 errors) helped me understand the difference between absolute and relative paths in PHP, as well as how browser caching affects CSS updates.

Learning – Full-Stack Integration: I learned how JavaScript fetch requests serve as a vital link between the front-end interface and the MySQL database through PHP.

Learning – UI/UX: Applying CSS properties like object-fit: cover and display: block to make images fit neatly within their containers improved my appreciation for the precision needed in modern web design.