

University of Messina



Bachelor of data Analysis

ACADEMIC YEAR – 2024/2025

WEB – PROGRAMMING

(Project Report)

University Timetable (web portal)

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1. Introduction

The **University Timetable Portal** is a comprehensive web-based system designed to facilitate the management of university class schedules efficiently. The system provides students with a structured and interactive timetable interface, while administrators can seamlessly manage students, courses, subjects, and timetables. This project was developed as part of a web programming course, emphasizing **full-stack development** using modern web technologies.

2. Motivation for Technology Choices

The choice of technologies was guided by the need for **scalability, maintainability, and performance** to ensure a seamless user experience.

Frontend Technologies:

- **HTML, JavaScript (Vanilla + jQuery):** Used to create a clean, interactive, and responsive user interface with dynamic content updates.
- **Manual CSS :** Designed to provide a professional and aesthetically pleasing user interface.

Backend Technologies:

- **Node.js (Express.js):** A lightweight, asynchronous, and scalable backend framework for handling API requests and routing.
- **JWT (JSON Web Token) Authentication:** Implemented for secure user login sessions, ensuring role-based access control.

Database:

- **MySQL:** Chosen for its structured relational database capabilities, providing efficient data storage, retrieval, and integrity enforcement.

Libraries and Tools:

- **jQuery:** Simplifies DOM manipulation, AJAX requests, and enhances UI interactivity.
- **Git & GitHub:** Utilized for version control and collaborative development, ensuring smooth project management.

3. Features and Development Decisions

-Student Functionalities:

- **Personalized Weekly Grid View:** Students can view their assigned timetable in a structured weekly format.
- **Toggle Between Grid and List Views:** Allows students to customize how they view their schedules.
- **User Authentication:** Secure login system ensuring only authorized users can access their data.

-Admin Functionalities:

- **Student Management:** Admins can add, assign courses, and remove students from the system.
- **Course & Subject Management:** Admins can create, delete, and modify courses and associated subjects.
- **Timetable Management:** Admins can assign subjects to time slots and classrooms dynamically.
- **Data Validation and Constraints:** Prevents duplicate course assignments and scheduling conflicts, ensuring database integrity.

4. Challenges and Solutions

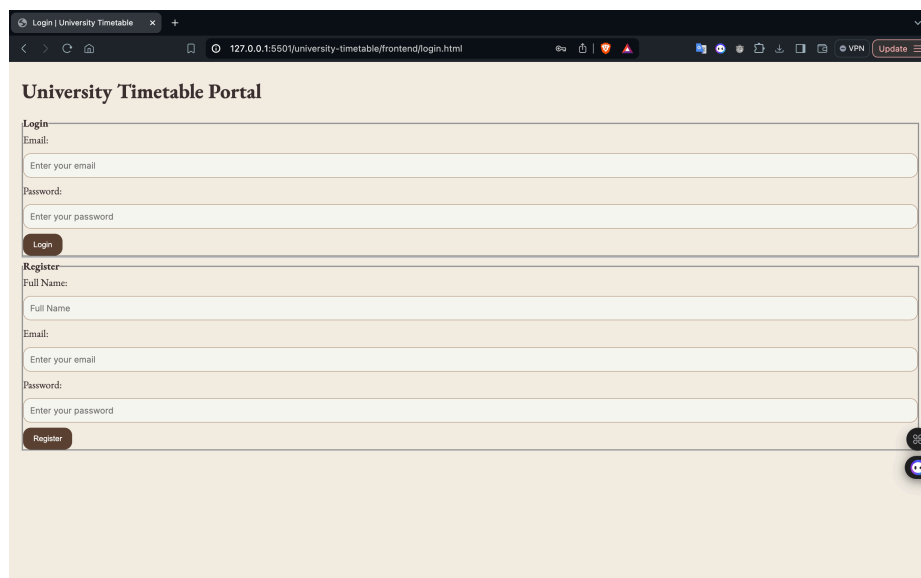
- **Database Integrity:** Implemented constraints to prevent duplicate student-course associations and scheduling conflicts.
- **Timetable Readability:** Transitioned from a basic list-based format to an intuitive weekly grid layout.
- **User Interface Optimization:** Iterative design improvements.

5. Learning Outcomes

- **Full-Stack Development Expertise:** Gained hands-on experience in both frontend and backend development using **Node.js, Express, MySQL, and JavaScript**.
- **Database Design and Optimization:** Understood the importance of **data integrity, indexing, and query optimization**.
- **User Interface and User Experience (UI/UX) Principles:** Applied design aesthetics for improved usability and accessibility.
- **Authentication and Security Measures:** Implemented **JWT authentication**, securing access for students and administrators.
- **Debugging and Problem-Solving:** Developed proficiency in debugging and refining complex web applications.

6. Screenshots of the Final Portal

- **Login/Register Page**



The screenshot displays a web browser window with the address bar showing '127.0.0.1:5501/university-timetable/frontend/login.html'. The page title is 'University Timetable Portal'. It features two main sections: 'Login' and 'Register'. The 'Login' section includes fields for 'Email' (with placeholder 'Enter your email') and 'Password' (with placeholder 'Enter your password'), followed by a 'Login' button. The 'Register' section includes fields for 'Full Name', 'Email' (with placeholder 'Enter your email'), and 'Password' (with placeholder 'Enter your password'), followed by a 'Register' button. The page has a light beige background and a dark header bar. A small dark blue icon is visible in the bottom right corner of the page.

- **Student Timetable Page**

Timetable | University

127.0.0.1:5501/university-timetable/frontend/index.html

Student's Weekly Timetable

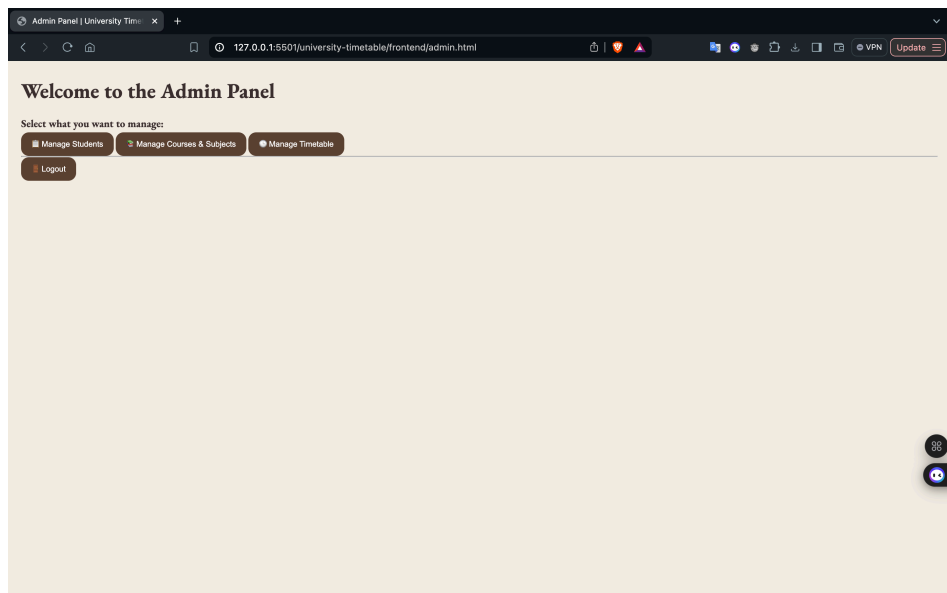
(Week: 2/10/2025 - 2/14/2025)

Switch View

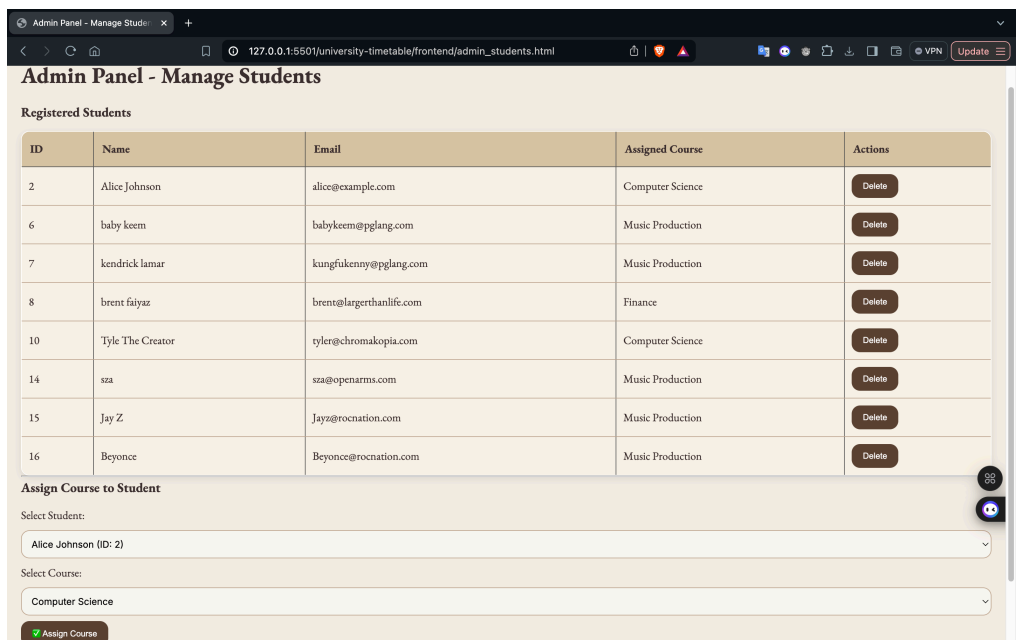
Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 - 10:00	Corporate Finance (Finance) - Room A101	-	Corporate Finance (Finance) - Room A101	-	-
8:00 - 9:00	-	-	-	-	Corporate Finance (Finance) - Room A101
8:00-10:00	-	Risk Management (Finance) - Room A101	-	Risk Management (Finance) - Room A101	-
11:00 - 13:00	-	-	-	-	Financial Accounting (Finance) - Room A101
12:00 - 14:00	Financial Accounting (Finance) - Room A101	Investment Analysis (Finance) - Room A101	-	-	-
12:00 - 14:00	-	-	Financial Accounting (Finance) - Room A101	Investment Analysis (Finance) - Room A101	-
15:00 - 16:00	-	-	-	-	Risk Management (Finance) - Room A101
17:00 - 18:00	-	-	-	-	Investment Analysis (Finance) - Room A101

Logout

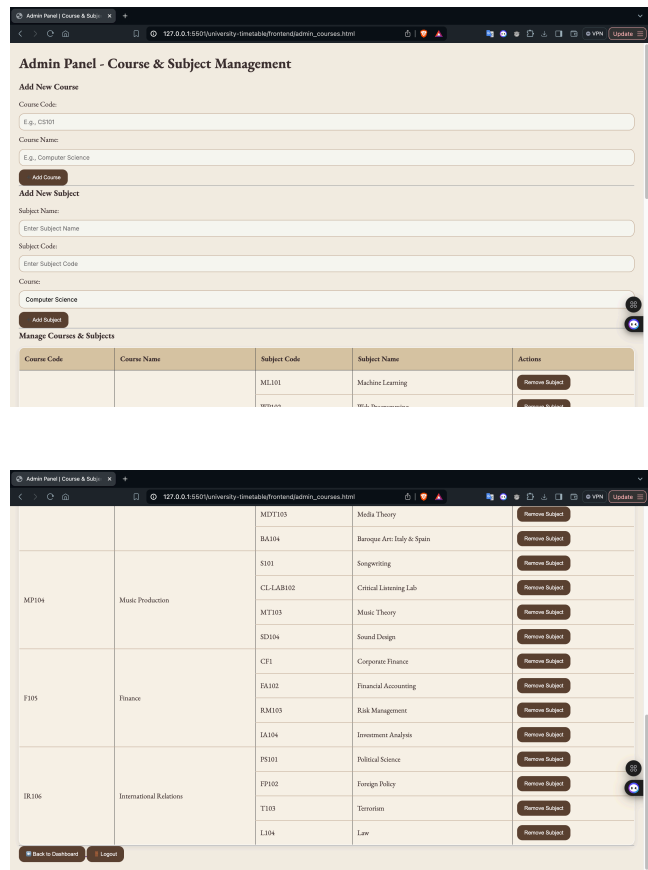
- **Admin Dashboard**



- **Admin Panel - Manage Students**



- **Admin Panel - Manage Courses/Subjects**



- **Admin Panel - Manage TimeTable**

Admin Panel | Timetable Man...x

127.0.0.1:5501/university-timetable/frontend/admin_timetable.html

VPNUpdate

Admin Panel - Manage Timetable

Add Timetable Entry

Select Course & Subject

Course:

Computer Science

Subject:

Select a Subject

Select Day & Time

Day:

Select a Day

Time Slot:

E.g., 10:00-12:00

Select Classroom

Classroom:

Select a Classroom

Add Entry

Current Timetable

Course	Subject	Classroom	Day	Time Slot	Actions
	Machine Learning	Room B202	Monday	8:00 - 10:00	Delete

Admin Panel | Timetable Man...x

127.0.0.1:5501/university-timetable/frontend/admin_timetable.html

VPNUpdate

Finance	Financial Accounting	Room A101	Wednesday	12:00 - 14:00	Delete
	Financial Accounting	Room A101	Friday	11:00 - 13:00	Delete
	Investment Analysis	Room A101	Tuesday	12:00 - 14:00	Delete
	Investment Analysis	Room A101	Thursday	12:00 - 14:00	Delete
	Investment Analysis	Room A101	Friday	17:00 - 18:00	Delete
	Risk Management	Room A101	Tuesday	8:00-10:00	Delete
	Risk Management	Room A101	Thursday	8:00-10:00	Delete
	Risk Management	Room A101	Friday	15:00 - 16:00	Delete
International Relations	Foreign Policy	Room A101	Tuesday	12:00-14:00	Delete
	Political Science	Room B202	Monday	8:00-10:00	Delete
Literature & Arts	Creative Writing	Room B202	Monday	12:00-14:00	Delete
	Poetry	Room C303	Monday	8:00 - 10:00	Delete
Music Production	Critical Listening Lab	Room A101	Monday	8:00-10:00	Delete
	Songwriting	Room C303	Monday	12:00-14:00	Delete

Back to Dashboard

Logout

7. Conclusion

The **University Timetable Portal** effectively addresses the challenges of university schedule management by offering an intuitive and functional interface for both students and administrators. The integration of a structured admin panel, personalized student timetables.

Future enhancements could include:

- **Automated Scheduling Algorithms:** AI-driven schedule optimization for improved class distribution.
- **Enhanced Role-Based Access Controls:** More granular permission settings for different admin levels.
- **Mobile-Friendly Design:** Further refinements for seamless responsiveness on mobile devices.

This project demonstrates the potential of modern web technologies in streamlining university schedule management while maintaining a **visually appealing and intuitive user experience**.