

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 (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

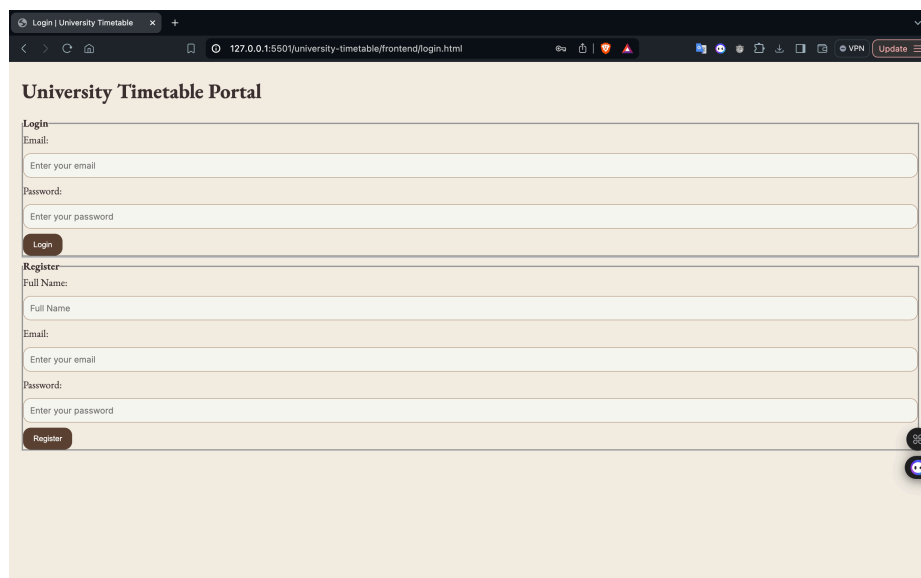
- **Database Integrity:** Implemented constraints to prevent duplicate student-course associations and scheduling conflicts.
- **Timetable Readability:** Transitioned from a basic list-based format to an intuitive weekly grid layout.
- **User Interface Optimization:** Iterative design improvements.

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 an 'Email' field with a placeholder 'Enter your email', a 'Password' field with a placeholder 'Enter your password', and a 'Login' button. The 'Register' section includes a 'Full Name' field with a placeholder 'Full Name', an 'Email' field with a placeholder 'Enter your email', a 'Password' field with a placeholder 'Enter your password', and a 'Register' button. The page has a light beige background and a dark header bar.

- **Student Timetable Page**

Timetable | University

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

Student's Weekly Timetable

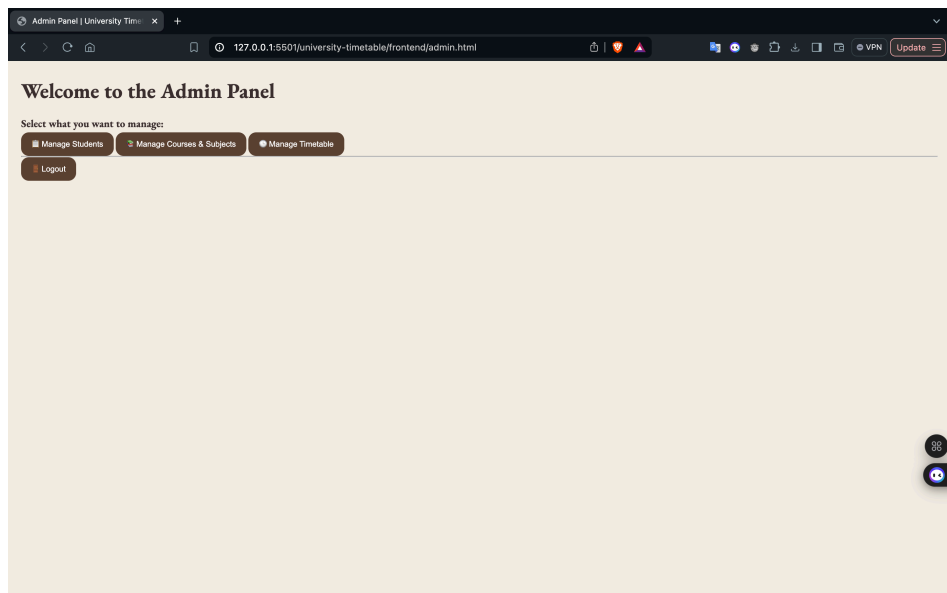
(Week: 2/10/2025 - 2/14/2025)

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 Students

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

Update

Admin Panel - Manage Students

Registered Students

ID	Name	Email	Assigned Course	Actions
2	Alice Johnson	alice@example.com	Computer Science	Delete
6	baby keem	babykeem@pglang.com	Music Production	Delete
7	kendrick lamar	kungfukenny@pglang.com	Music Production	Delete
8	brent faiyaz	brent@largerthanlife.com	Finance	Delete
10	Tyle The Creator	tyler@chromakopia.com	Computer Science	Delete
14	sza	sza@openarms.com	Music Production	Delete
15	Jay Z	Jays@rocnation.com	Music Production	Delete
16	Beyonce	Beyonce@rocnation.com	Music Production	Delete

Assign Course to Student

Select Student:

Alice Johnson (ID: 2)

Select Course:

Computer Science

Assign Course

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

Admin Panel | Course & Subj...

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

Update

Admin Panel - Course & Subject Management

Add New Course

Course Code:
E.g., CS301

Course Name:
E.g., Computer Science

Add Course

Add New Subject

Subject Name:
Enter Subject Name

Subject Code:
Enter Subject Code

Course:
Computer Science

Add Subject

Manage Courses & Subjects

Course Code	Course Name	Subject Code	Subject Name	Actions
		ML101	Machine Learning	Remove Subject
		MT103	Music Theory	Remove Subject

Admin Panel | Course & Subj...

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

Update

MP104

Music Production

MT103

Music Theory

Remove Subject

BA104

Baroque Art: Italy & Spain

Remove Subject

S101

Songwriting

Remove Subject

CL-LAB102

Critical Listening Lab

Remove Subject

SD104

Sound Design

Remove Subject

CF1

Corporate Finance

Remove Subject

FA102

Financial Accounting

Remove Subject

RM103

Risk Management

Remove Subject

IA104

Investment Analysis

Remove Subject

PS101

Political Science

Remove Subject

FP102

Foreign Policy

Remove Subject

T103

Terrorism

Remove Subject

L104

Law

Remove Subject

Back to Dashboard

Login

- 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**.