

Assignment 1, Project Summary

Course

Web Technologies - 2025

Project Author

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Project Name

Project name

UniRoom Scheduler

Short project description (Business needs and system features)

Description

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"Effective space management is crucial for university operations. The **UniRoom Scheduler** provides the ability for authenticated students and teachers to view real-time room availability and book resources, while ensuring academic priorities are met. **Security is a priority: no schedule information is visible to the public.** The system will be developed as a **Web Application** using **HTML, CSS, and JS** as front-end, and **Node.js + Express** as backend technologies and **MongoDB** database. The base of the timetable is the "Base Schedule" (official classes), which cannot be modified by users. The main user roles are:"

Unauthenticated User – has **zero access** to data. Can only view the Login and Registration forms.

Student (extends Registered User) – can view the schedule, filter by room type (normal, lecture, computer) and time. They can reserve a free room for a maximum of **2 hours**. They cannot override existing bookings.

Teacher (extends Registered User) – has priority access. They can reserve rooms like students, but if a room is occupied by a student booking during a needed time, the Teacher can **remove (override)** the student's reservation to claim the slot.

Administrator (extends Registered User) – can manage (create, edit and delete) **Users, Rooms** (capacity, number, type), and the **Base Schedule** (official classes)

Main Use Cases / Scenarios

Use case name	Brief Descriptions	Actors Involved
Register/Login	Unauthenticated User registers (using valid credentials) or logs in.	Unauthenticated User

	Authentication is mandatory to access any part of the application..	
Browse Schedule	Registered Users can browse the master schedule which combines the "Base Schedule" (immutable classes) and "Bookings". Public access is blocked..	Student, Teacher, Admin
Filter & Search	Registered Users can filter the schedule view by Room Type (normal, lecture, computer), specific Time Period , or search availability by Room Number .	Student, Teacher
Reserve Room	Registered Users find a free slot and create a reservation. For a student the system enforces a maximum duration of 2 hours	Student, Teacher
Teacher Override	Teacher attempts to book a slot currently held by a Student . The system cancels the Student booking and creates the Teacher booking.	Teacher
Manage System	Administrator can browse, add, edit, or delete rooms (setting capacity and type).	Administrator
Manage Base Schedule	Administrator can define the fixed class schedule that serves as the foundation for availability.	Administrator
Manage Users	Administrator can browse users and manage their roles or delete accounts.	Administrator

Main Views (SPA Frontend)

View name	Brief Descriptions	URI
Home/Login	Login/Register forms.	/
Dashboard	The main interactive timetable. Visible only after login. Offers ability to Filter (Type, Time) and Search (Room #).	/dashboard
Room Details	Room features and weekly view.	/rooms/{id}

My Bookings	Displays the current user's active reservations with options to cancel them.	/my-bookings
Admin Panel	Central hub for Administrators to manage Users, Rooms, and Base Schedule.	/admin
User Profile	Presents ability to view and edit personal User Data.	/profile

API Resources (Node.js Backend)

Resource	Brief Descriptions	URI
Auth	POST User Credentials (login) to receive session/token. POST to register new users. Public access.	/api/auth
Users	GET all users, PUT to modify roles. Available only for Administrators	/api/users
User	GET, PUT, DELETE User Data for specified user.	/api/users/{userId}
Rooms	GET all rooms (with query params for filtering by type/capacity). POST new room (Administrator only). Requires Auth.	/api/rooms
Room	GET, PUT, DELETE details for a specific room. (Administrator only for modify). Requires Auth.	/api/rooms/{roomId}
Schedule	GET the combined schedule (Base + Bookings). Requires Auth (Strictly blocked for public).	/api/schedule
BaseSchedule	POST, PUT, DELETE official class slots. Available only for Administrators	/api/schedule/base
Bookings	POST a new reservation. Logic checks for conflicts and enforces "2-hour max" rule here. Requires Auth.	/api/bookings
Booking Override	POST a request where a Teacher overrides a Student booking. Verifies roles before swapping.	/api/bookings/override
Booking	DELETE a booking (User cancels their own).	/api/bookings/{bookingId}

