EIE4432 Web Systems and Technologies
Group Project Specification

Project Overview

This group project requires the design and implementation of a real-world web system, focusing on usability, functionality, and modern web technology practices. The goal is to integrate concepts learned in class, develop teamwork skills, and demonstrate creative problem-solving in a software engineering context.

Project Milestone 1: UI Prototype
Date of Submission: 9-Nov-2025 SUN (Week 10) (Submitted by ONE group representative)

Project Milestone 2: Final Product
Early Bird Submission: 25-Nov-2025 TUE (Week 13) (Submitted by ONE group representative.)
Regular Submission: 30-Nov-2025 SUN (Week 13) (Submitted by ONE group representative.)

Project Topic

Students will be assigned one of the following project topics based on the modulo calculation of their student ID(s)

Remainder	Topic
0	**Hong Kong Food Carnival Booth Reservation System** This system enables Hong Kong Food Carnival organizers to arrange and offer booths to vendors across multiple floors and sections during the event. Each section on different floors is organized around a specific theme, such as "Health Preserving Zone" and "Leisure Food Zone". Event administrators use the system to set booth categories, administer pricing, allocate spaces, and monitor reservations in real-time. Vendors can browse available booths, which are categorized by size, location, and theme, and reserve their preferred booth by paying the applicable fee. Reference: Hong Kong Food Carnival; Floor Plan
1	**Hong Kong Book Fair Stall Booking System** This system is designed to help publishers, bookstores, and literary organizations reserve exhibition stalls at the Hong Kong Book Fair. Participating exhibitors can browse the layout of available stalls, view detailed event information, select preferred booth spaces, and complete payments to secure their participation. The system also highlights important fair-related details, such as event schedules, venue information, and guidelines for exhibitors. On the administrative side, fair organizers can manage events, configure stall layouts, monitor booking statuses, and track all exhibitor reservations to ensure smooth coordination throughout the fair.

	Reference: Hong Kong Book Fair; Floor Plan
2	**Western Orchestral Music Performance Seat Booking System** This system allows users to book specific seats online for Western Orchestral Music performances. Users can look up upcoming performances, see seating layouts and prices, and choose which seats to buy for each show. Admins can set the seating arrangement and ticket prices for each performance, schedule new shows, and keep track of seat bookings and sales. Reference: ● A Western Orchestral Music Performance Page ● Hong Kong Cultural Centre Concert Hall Seating Plan ● Hong Kong City Hall Concert Hall Seating Plan

Grouping

Each group consists of two students. No group may contain more than two students. A one-member group is allowed but not recommended, as teamwork is also a necessary learning process. The requirement is the same for a one-member group or a two-member group. There are three topics for the group project. Each group will be assigned a topic by adding the last digit of each member's student ID and **dividing the result by three**. The remainder will determine the assigned topic for the group.

Example

The final digit of group member one's student ID: 4

The final digit of group member 2's student ID: 7

Calculation: (4+7) mod 3 = 2

Expression	Division Result	Remainder (Modulo)
4+7=11	11/3=3	2

(For single-member group: the final digit of the student ID mod 3)

Assigned Topic: Western Orchestral Music Performance Seat Booking System

Warning: Working on an incorrect project topic may result in a zero mark or a deduction in marks. Please ensure you clearly indicate your student ID(s) and assigned topic on the cover page of both the interim report and the final report.

Technical Specifications

Server Environment

- Operating System: Windows, Linux, or MacOS
- Frontend Framework: Bootstrap or Tailwind CSS only. JavaScript or TypeScript.
- Backend Framework: Node.js and/or Express.js.
- *Note:* The use of other frameworks or site-building platforms, including but not limited to ReactJS, Angular, Vue.js, Next.js, Nuxt.js, WordPress (content management system), Wix (template-based/AI-assisted website builder), or Webflow (visual site builder), is not permitted. If a different framework or platform is desired, you must obtain prior approval from the lecturer.

Database Requirement

- Choice of MySQL, MongoDB, or any online free database service.
- The database can be provided by a free online service or run locally.
- Links, usernames, and passwords must be provided for access by markers.

Hosting Requirement

- Web apps can be hosted locally or on public cloud services (e.g., Vercel). Access credentials and URLs must be submitted.

Code Quality

- Each source code file must begin with a comment that lists all group members' names and student IDs.
- Code must be refactored for readability and modularity with reusable logic encapsulated in functions or separate files.
- Follow the framework specifications strictly, without unauthorized frameworks.

Feature Categories and Deliverables

The evaluation of your project will be based on achieving features arranged in three progressive levels: Basic, Credit, and Advanced. Marks will be awarded proportionally based on the successful demonstration of these features.

1. Basic Features

Category	Deliverables	Complete or not?
User Account Registration	● Registration page collecting standard user information (user ID, password, nickname, email, gender, birthdate, etc.) ● Input validations including password policy and duplicate ID checks ● Notifications for validation success or failure ● Administrator account creation is not required	
User Authentication	● Two roles: Admin and User ● Use user ID and password to log in. The admin uses the default ID "**admin**" and password "**adminpass**" to log in. ● Logout functionality	
Event Dashboard	● Display single event with details (date, time, title, description, venue) ● Show current ticket, booth or stall sales and availability	
Booth/Stall/ Ticket Booking Page	● Selection of one seat/stall/booth using an SVG-based map ● Visual distinction of available vs. occupied via color coding ● Real-time pricing calculation	
Payment Page	● Review booking details and total cost ● Enter payment information (dummy data accepted) ● Feedback on payment success/failure ● Issue electronic tickets after successful transactions ● Update order status immediately after payment	
Booth/Stall/ Seat Management Page (Admin Only)	● Create SVG map for one floor/venue with at least 20 seats/stalls/booths ● View availability status with color coding ● Uniform pricing for all seats/stalls/booths	
Event Management Page (Admin Only)	● Add new events with date/time, title, venue, description	

2. Credit Features (Additional advanced user and administration capabilities)

Category	Deliverables	Complete or not?
User Login Enhancements	● Option to remember login user ID	

User Account Management	● Access and update profile information including name, password, email, and profile image	
Event Dashboard	● Display at least two events with full details including cover images ● Search/filter events by date/time, title, venue, and description ● Real-time event name suggestions during search (autocomplete style; like Google auto-complete predictions)	
Ticket/Booth/ Stall Booking Page	● Select multiple seats/stalls/booths simultaneously ● Immediate pricing update reflecting multiple selections	
Transaction History	● Show detailed history of all transactions including booking details and prices	
Booth/Stall /Seat Management Page (Admin only)	● Manage maps for two floors/venues with at least 40 seats/stalls/booths total ● Modify existing SVG maps (Disable some booths/stall/seat) ● Provide at least two pricing tiers (e.g., economy, premium)	
Event Management Page (Admin Only)	● Add/edit events with cover images ● Search and filter existing events ● View transaction history across all users/events	

3. **Advanced Features** (Select any two of the following advanced implementations)

Category	Deliverables	Complete or not?
Enhanced User Registration	● Profile image upload during registration ● Passwords stored securely using password hashing ● Allow admin access to view all user accounts (Admin Only)	
Interactive Booth/Stall/ Seat Management (Admin Only)	● Interactive SVG map that displays buyer information when hovering or clicking a seat/stall/booth sold	
Custom Advanced Features	● Any advanced features designed by you, with complexity comparable to the one of the above (must be reported and demonstrated)	

Deliverables and Deadlines

<u>Milestone 1: UI Prototype with Interim Report</u>

Submission Deadline: <mark>9-Nov-2025 SUN (Week 10)</mark> (Submitted by ONE group representative; Please include all members' full names and student IDs on the cover page.)

Deliverables

- (1) Interim report including:
    - Cover page includes the names and student IDs of the group members and the assigned topic
    - Website structure diagram (tree format)
    - UI prototype screen captures. These can be drawn or designed using HTML, MS Paint, MS Word, MS PowerPoint, or Figma showing the layout of each web page.
    - Application workflow diagram
    - Project plan with key activities and deliverables in different weeks
    - Work distribution (in percentage of each major functions or tasks)
- (2) Source Code of UI Prototype in ZIP or 7-ZIP file if you have

<u>Milestone 2: Final Product with Final Report, Source Code, and Demonstration Video</u>

Early Bird Deadline: <mark>25-Nov-2025 TUE (Week 13)</mark>

Regular Deadline: <mark>30-Nov-2025 SUN (Week 13)</mark>

(Submitted by ONE group representative; Please include all members' full names and student IDs on the cover page.)

Deliverables

- (1) Final report including:
    - Here are the parts required to be included, but not limited to:
        - The cover page includes the names and student IDs of the group members and the assigned topic. Public URL for accessing the web application if applicable
        - Table of Contents
        - Introduction
        - Technical stack summary (frontend, backend, database, tools, hosting)
        - Website structure
        - Application features checklist
            - A tabulated checklist table to indicate which features have been completed.

Features	Complete or Partial Complete or Not Complete
Feature 1	Complete
Feature 2	Not Complete
Feature 3	Partial Complete
…	…

- ■ Database design with diagram
  - ● Description of tables and data fields of each table

Column Name	Description
pid (PK)	It is the unique key that start with digit 9 to identify each access permission information.
userID (FK)	It is the field to identify the specific user
password	It the field to store the password of user
role	It is the field to store the role of user, such as user and admin

  - ● If MySQL is used, please provide an Entity-Relationship Diagram (ERD). If NoSQL is used, please provide a Data Model Diagram
- ■ Describe if any third-party APIs or npm packages are used
- ■ User test cases, including both valid and invalid scenarios, with screenshots
- ■ Project timeline with key activities and deliverables in different weeks
- ■ Work distribution (in percentage of each major functions or tasks)
- ■ Conclusion
- ● (2) Source Code: Submit the complete project source code in ZIP or 7-Zip format, plus a database data dump exported via the export or dump feature. Include a README.txt with install and login instructions.
- ● (3) Video Demonstration
  - ○ Demonstrate your full system functionality clearly and verbally (show all functions; do not show slides)
  - ○ All members should participate and show their faces in the video demonstration, which should be in MP4 format. If the video is too large to submit, please share it using OneDrive or YouTube.
  - ○ Time limit for the video (Maximum: 15 minutes)
  - ○ Presentation fluency

Evaluation Criteria

Component	Weight
Features (Basic 25%, Credit 25%, Advanced 10%)	60%
Database Design	5%
UI Design & User Experience	15%
Interim Report	4%
Final Report + Video Demo + Complete Source Code	16%
Total	100%

UI Design and user Experience with realistic applicability

- Multi-platform responsiveness. This includes collapsible menus on mobile, automatic layout and feature adjustments across devices (mobile, tablet, desktop), resizing adaptability during demonstrations, user-friendly prompts and validation, and consistent styling using CSS or Bootstrap.
- Innovation and real-world applicability are emphasized within the Features and UI design scope.
- You must demonstrate these advantages clearly both in the report and video demonstration.

Submission Guidelines

- Deliverables are submitted by one group representative via the Blackboard.
- Early bird submission rewards a 5% bonus added to the total mark (max 100%).
- A 20% penalty per day applies for late submission of report, video, and product.

Academic Integrity: Declaring Use of Generative AI Tools

On the cover page of all reports, groups must include a declaration of Generative AI tool usage, for example:

- I declare that Generative AI tools have been used to prepare the submitted work. The Generative AI tools used and how they were used are as follows with brief description: _____.
- You must reference them according to the IEEE style.

END OF GROUP PROJECT SPECIFICATION