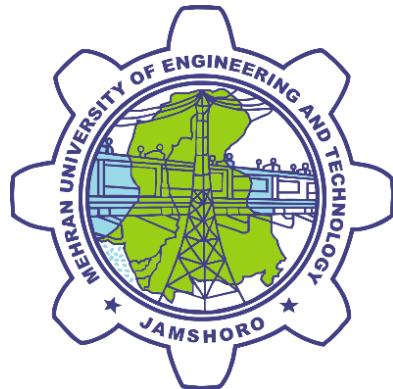


**Mehran University of Engineering and Technology  
JamshoroDepartment of Computer Systems Engineering**



**WEB Engineering Project Report**

**Project Title: Hotel Room Booking  
Website**

***Project Submitted by:***

**21cs017**

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**Mehran University of Engineering and Technology, Jamshoro**

Course: Web Engineering (CS-373)			
Instructor	Engr. Zaib Ul Nisa	Assignment Type	Complex Engineering Problem
Semester	6 <sup>th</sup>	Year	3 <sup>rd</sup>
Submission Deadline	31-10-2024	Assessment Score	05

The semester project is designed to enable students to solve complex engineering problems using Web Engineering Concepts. The following characteristics of complex engineering problems are targeted in this semester's project on WE.

Complex Engineering Problem – Characteristics		
1	Depth of knowledge Required	<input checked="" type="checkbox"/>
2	Range of Conflicting Requirements	<input checked="" type="checkbox"/>
3	Depth of Analysis Required	<input checked="" type="checkbox"/>
4	Infrequently Encountered Issues Involved	<input type="checkbox"/>
5	Beyond codes/standards of practice	<input checked="" type="checkbox"/>
6	Diverse groups of stakeholders with widely varying needs involved	<input type="checkbox"/>
7	Interdependence (high-level problems including many component parts/sub-problems)	<input type="checkbox"/>
8	Have significant consequences in a range of contexts	<input type="checkbox"/>
9	Judgment (Require judgment in decision-making)	<input type="checkbox"/>

## Project Objectives:

**Front-End Development:** Design and develop a responsive, intuitive, and user-friendly front-end interface using HTML, CSS, and JavaScript. Ensure cross-browser compatibility and mobile-first design principles.

**Back-End Development:** Implement a robust server-side architecture using Server-side language like PHP frameworks like Node.js, Django, or others. Ensure smooth handling of client requests, database connections, and application logic.

**Database Design:** Develop a scalable and efficient database schema using SQL Optimize data retrieval and storage with normalized structures and indexing.

**User Authentication and Authorization:** Implement secure user authentication mechanisms, such as OAuth or JWT, and establish role-based access control to protect user data and application resources.

**Form Handling and Validation:** Develop and implement efficient form handling systems with client-side and server-side validation to ensure data accuracy, security, and usability.

**Security and Data Protection:** Integrate security measures like HTTPS, data encryption, CSRF

protection, and secure cookies to protect user data and ensure secure interactions between clients and servers.

**Responsive and Adaptive Design:** Ensure that the website adapts to various screen sizes and devices by implementing responsive design patterns and media queries.

**Performance Optimization:** Apply optimization techniques, such as lazy loading, minification, caching, and CDN integration, to reduce load times and improve the overall user experience.

**Error Handling and Logging:** Design a system for proper error handling and logging, capturing potential issues in both client-side and server-side components to ensure smooth debugging and maintenance.

**Performance Optimization:** Apply optimization techniques to enhance the Website's performance, responsiveness, and energy efficiency.

## Project Deliverables:

**Technical Report:** A comprehensive technical report detailing the Website design, architecture, and implementation, including documentation of key algorithms and methodologies.

**Source Code:** Complete source code of the Web Engineering Project, well-organized and thoroughly commented for ease of understanding.

**User Documentation:** User guides and manuals explaining the system's functionalities, installation, and usage instructions.

Students would try to apply in-depth **engineering knowledge (WP1)** to complete each project. During the initial study and formulation of the proposed solution, they would focus on the detailed **requirements (WP2)**, and **real-time constraints (WP2)**, and performed **in-depth analysis (WP3)**.

## Projects would be evaluated on the following criteria:

Rubrics				CEP characteristics	Marks distribution
	Unacceptable 2	Acceptable 7	Proficient 10		
R1: Idea/Initial Study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WP2	10%
R2: Project Proposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WP1, WP3	10%
R3: Project Progress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WP3, WP2,WP5	30%
R4: Final Demo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WP3, WP2,WP5	40%
R5: Final Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WP3, WP1	10%

## **Introduction:**

The travel and tourism industry has evolved significantly in the modern era, with more people seeking seamless solutions to plan their trips and book accommodations online. Our **Hotel Room Booking Website** is designed to offer an efficient and user-friendly platform for travellers worldwide. This website aims to simplify the booking process by allowing users to browse various destinations, filter options based on their specific budget, and securely complete bookings. By focusing on intuitive navigation and customized filters, we aim to enhance the overall travel planning experience for users.

## **Problem Statement:**

Travel planning, particularly finding accommodations, often presents several challenges. Travelers frequently encounter issues such as:

- **Overwhelming Choices:** Many booking platforms list thousands of accommodations, making it difficult for users to find options that align with their preferences.
- **Inadequate Filtering Options:** Limited filtering for location, and budget can make it hard for travelers to narrow down choices effectively.
- **Security Concerns:** Users may hesitate to enter sensitive payment information on platforms that don't provide clear security assurances.

Addressing these issues is essential to creating a better experience for travelers, particularly those who want to streamline the booking process and feel confident in their choices.

## **Objectives:**

The primary goal of our website is to create a simplified and intuitive hotel booking platform. Our specific objectives are as follows:

1. **User Registration and Login:** Implement a secure and easy-to-use system that allows users to create accounts and log in.
2. **Visual Appeal and Navigation:** Design an engaging homepage that showcases popular travel destinations, allowing users to easily select a city of interest.
3. **Accommodation Filtering Options:** Enable users to filter accommodations by budget, helping them find the best match quickly.
4. **Detailed Hotel Information:** Provide comprehensive information on each hotel, including images, descriptions, amenities, and reviews, to aid informed decision-making.

5. **Secure Checkout System:** Implement a secure and straightforward process to instil confidence in users when making reservations.
6. **Responsive Design:** Ensure that the website is accessible and visually appealing on various devices, including desktops, tablets, and smartphones.

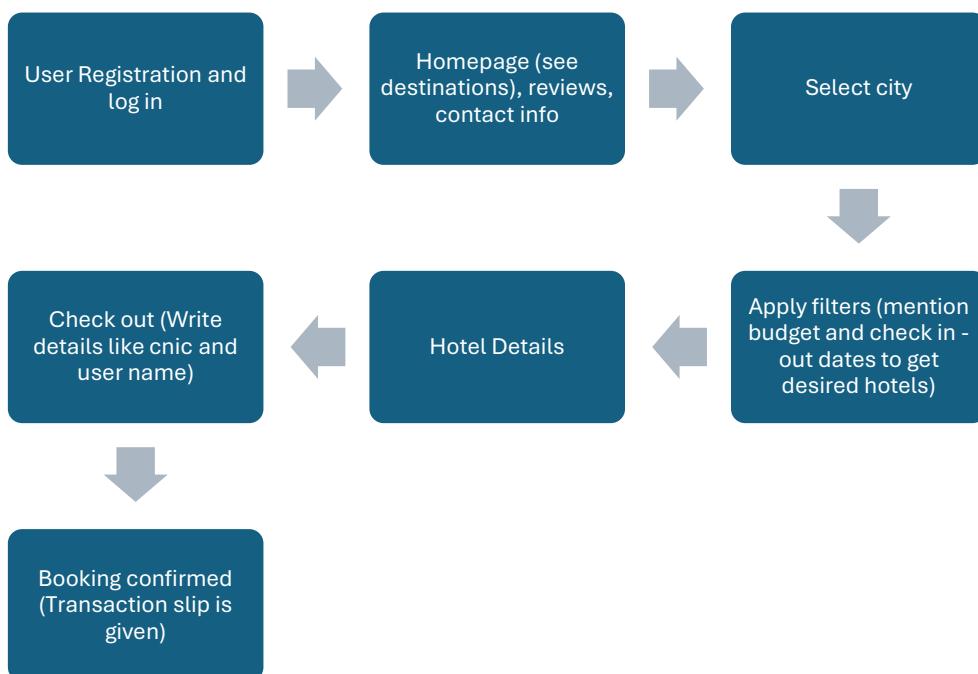
## Implementation:

The implementation of this project relies on a combination of front-end and back-end technologies, working in sync to deliver an efficient and secure user experience. Here's an outline of the core processes and a flowchart illustrating the user journey.

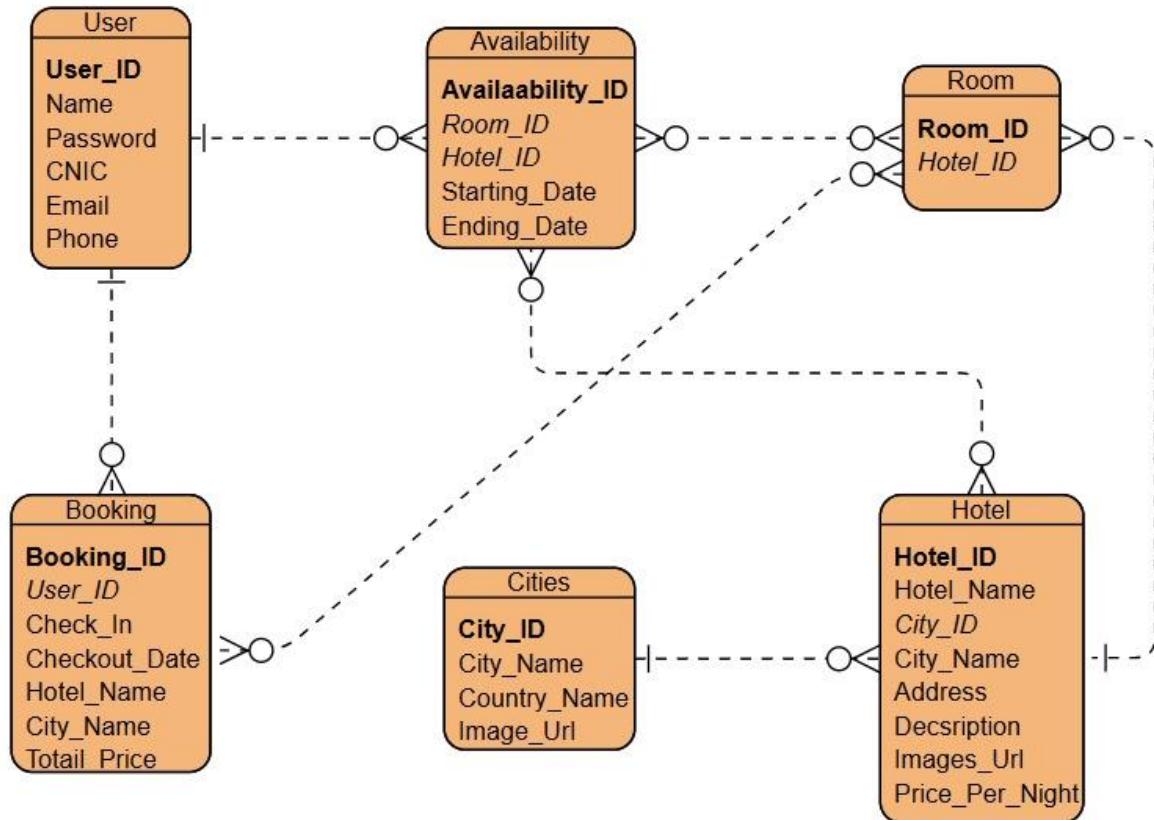
### Technologies Used:

- Frontend: HTML, CSS, and JavaScript for structure, styling, and interactivity.
- Backend: PHP for handling server requests, managing user data, and processing bookings.
- Database: MySQL to store and manage user information, hotel details, and booking records.

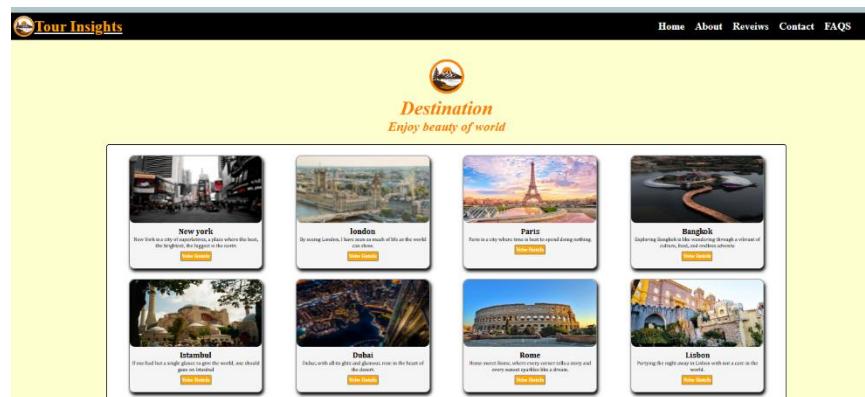
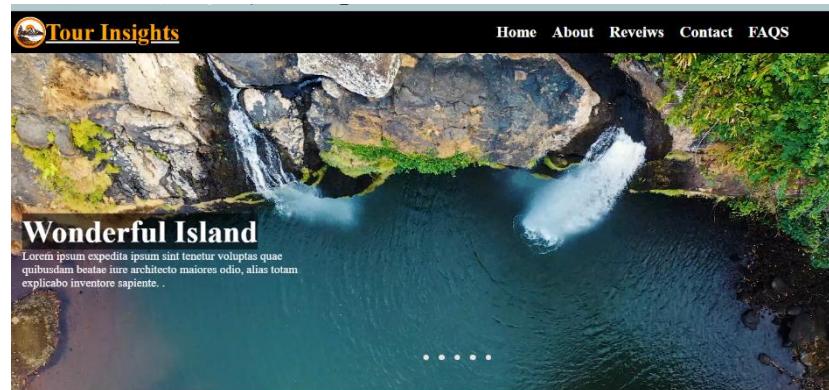
### User flowchart:



## ER Diagram:



## Webpage:



## **Conclusion:**

In conclusion, this hotel room booking website aims to create a streamlined, efficient, and secure platform for hotel bookings. By addressing common challenges in travel planning, such as difficulty in narrowing down accommodation choices and security concerns, our platform offers a hassle-free experience tailored to the needs of modern travelers. We expect this website to provide travelers with a tool that simplifies the hotel search and booking process, helping them focus on enjoying their travel experience.