

CSYE 6200 – Concepts of Object-Oriented Design

Spring 2024, Prof. Jones Yu Lab 7 - Assignment 3

Q1 – Team Name –

Ans – SyntaxSquad

Q2 – Team members names

Ans - Channaveera. (002825263), Nagarjun Mallesh (002788601)

Q3 – The summary of the project?

Ans – The hospitality industry currently faces significant challenges in room booking and management due to disjointed and outdated systems. Consumers often struggle with:

Scattered Information: Information about hotel availability is spread across multiple websites and platforms, making it difficult for users to find all options in one place.

Outdated Availability Data: Many booking platforms do not update in real-time, leading to the frustration of double bookings or finding out a room is unavailable after choosing it.

Complex Booking Processes: Users often navigate through cumbersome and unclear booking processes, leading to a decrease in user satisfaction and potential loss of sales.

Lack of Personalization: Difficulty in finding rooms that match specific user preferences and requirements. For hotel administrators, the challenges include:

Inefficient Room Management: Managing room statuses across multiple platforms can be time-consuming and prone to errors.

Customer Service Issues: Difficulty in tracking and managing customer bookings leads to poor customer service and experience.

Data Synchronization: Keeping room availability and details synchronized across different platforms is a complex task that often leads to inaccuracies.

Q4: What is the idea to solve the problem & What topics will be used (covered) in the project?

Ans – Our innovative solution, Hotel Hub, aims to revolutionize the hotel booking process. The core ideas of Hotel Hub include:

Centralized Platform: A single platform for users to search, compare, and book hotel rooms, integrating all necessary information and real-time availability.

Real-Time Updates: Employing a dynamic system that updates room availability and details in real-time, preventing overbooking and ensuring users have access to the latest information.

Simplified Booking Experience: An intuitive, streamlined booking process that reduces steps and complexity, improving user satisfaction and conversion rates.

Personalized Searches: Advanced filtering and recommendation systems that allow users to find hotels and rooms that meet their specific needs and preferences.

For administrators:

Unified Management Console: A comprehensive backend system for hotel staff to manage bookings, update room information, and add new listings seamlessly.

Data Analytics: Integrated analytics tools to track bookings, user preferences, and room utilization, aiding in better decision-making and marketing strategies.

Who are the target users?

Ans –

Travelers and Individuals: From solo travelers to families, anyone looking for a seamless booking experience tailored to their needs.

Business Travelers: Professionals needing quick, reliable bookings with specific amenities.

Hotel Administrators: Hotel managers and staff looking for an efficient way to manage room inventories, bookings, and customer interactions.

Why It's a Good Idea:

For Consumers:

- **Convenience and Efficiency:** Reduces the time and effort needed to book accommodations by providing all necessary information and options in one platform.
- **Confidence in Booking:** Real-time updates and a clear, straightforward booking process reduce the anxiety and frustration associated with booking hotel rooms.
- **Personalized Options:** Improved ability to find rooms that meet specific criteria, enhancing overall travel experience.

For Hotel Administrators:

- **Streamlined Operations:** Simplifies the management of room listings and bookings, reducing administrative overhead and potential for error.
- **Improved Customer Satisfaction:** Leads to better reviews and repeat bookings due to improved customer experience.
- **Data-Driven Decisions:** Access to analytics and user behaviour data allows for better strategic decisions and targeted marketing.

Hotel Hub, by addressing these industry and consumer needs, sets a new standard for hotel booking platforms, ultimately aiming to enhance the efficiency of the booking process and improve the overall user experience for both travellers and hotel operators.

Topic Covered

- **Stacks (Chapter 5, 6):** The application will utilize stacks to manage the history of user actions, such as page views and data entries. This will allow users to navigate back and forth between different stages of the booking process seamlessly.
- **Queues, Deques, Priority Queue (Chapter 7, 8):** We will implement queues to manage booking requests, ensuring they are processed in an orderly and efficient manner. This will be especially useful during high traffic periods, ensuring fair and prompt handling of all reservations.
- **Hashing (Chapter 22, 23):** Hash tables will be used for storing and retrieving user and booking information swiftly. This approach will facilitate quick searches, improving the efficiency of the booking process and user management.
- **Trees and Binary Search Tree (Chapter 24, 26):** Tree structures will organize hotel information and bookings, allowing for efficient information retrieval and updates, which is critical for maintaining an up-to-date inventory of available rooms.

- **Graph (Chapter 29, 30):** We will use graph structures to represent the relationships between different entities such as hotels, locations, and user preferences. This will help in optimizing the search and booking process, ensuring users find hotels that best match their criteria.

Q5: The design of the project ? - Design Process

- **Usage Scenario:** Upon accessing Hotel Hub, a user will search for hotels by location and date, view available rooms, and complete a booking. Meanwhile, an administrator can log in to add or update hotel listings and manage bookings.
- **UI Design:** The user interface will be intuitive, featuring a clean layout with search filters, list and detailed views for hotels, and simple booking forms. For administrators, there will be dedicated sections for managing listings and reservations.

Q6: Project Schedule & Expected Result Weekly Schedule

Week 1: Planning and Setup

Week 2: Core Development - Backend and Basic UI

Week 3: Advanced Features and Frontend Development

Week 4: Finalization and Presentation Preparation

Deliverables: Final application, complete project documentation, presentation materials.