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IT314 Project

Guesthouse booking system

Group - 16

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1. Introduction

1.1 Purpose

The purpose of a guesthouse booking system is to simplify and streamline the process of booking and managing reservations for a guesthouse or hotel. The system allows guests to easily view available rooms, select dates of stay, and make reservations online. The guesthouse booking system can also manage room inventory, room rates, and guest information. The key benefits of a guesthouse booking system include - improved efficiency, increased revenue, enhanced customer experience, and better management of reservations. The guesthouse booking system helps improve the guest experience, increase revenue, and streamline operations for guesthouses and hotels.

1.2 Product scope

Customers or travelers can use the guesthouse booking system to reserve a room according to their needs. It gives them an easy, secure, and hassle-free manner to manage their stay. They can modify or cancel the bookings at their convenience.
The guesthouse owners can use it to list their property for the public to live and operate it efficiently. Using an online application will provide more extensive exposure and attract a more significant number of tenants, thus increasing the company's revenue.

1.3 Goals / Objectives

User Authentication: The system should allow users to authenticate themselves by providing their credentials (e.g. username and password) before they book any room.

User Roles: The system should provide different user roles with different access levels. For example, customers can not view the confidential information of the hotel they may be staying in; it should be available only to the hotel owner and staff.
Security and Privacy: The system should ensure the security and privacy of user data, including protection against unauthorized access, data breaches, and malicious attacks.

User Interface: The system should have an intuitive and user-friendly interface that allows users to navigate and find the information they need easily.

Accessibility: The system should be accessible to all users, including those with disabilities by adhering to accessibility guidelines and standards.

Scalability: The system should be scalable to accommodate the growing number of customers, as well as the increasing volume of data and traffic on the system.

2. Overall description

2.1 Product functions

The guesthouse booking system enables a user to login or register themselves in order to make any reservations for their stay. The product displays all the available options at that specific time and location the user enters. The user can select any of the available options as per their needs and confirm their stay by making the payment. Once the room is booked by any customer, it is marked as not available until the check-out date of the reservation.

2.2 Design and Implementation Constraints

The Guesthouse booking system is subject to the following constraints:

2.2.1 Technology Constraints

- The system will be built using the MERN (MongoDB, Express.js, ReactJS, Node.js) technology stack.
- The graphical user interface (GUI) will be designed using responsive web design techniques to ensure compatibility with various screen sizes and devices.
- The system will require an internet connection to access the database and display the details.
- The system must be able to store and manage a large amount of data, including guest information, reservation details, room inventory, and rates.
- The system may need to integrate with other systems, such as accounting or payment gateways, to streamline operations.
- The system should be designed to handle a large volume of reservations and guests, with the ability to scale up as the guesthouse or hotel grows.

2.2.2 Security Constraints

- Data in the database must be protected from unauthorized access, modification, and deletion.
- The system must comply with data protection regulations and industry standards to ensure the security of user data.
- The system must implement appropriate measures to prevent cross-site scripting.

2.3 Assumptions and Dependencies

- The guesthouse booking system is dependent on a stable and reliable internet connection to ensure seamless booking and payment processing.
- The system may assume the availability and compatibility of a payment gateway to process payments securely.
- The system may assume that rooms are available for booking and that the inventory is up-to-date.
- The system may assume that staff members are trained to use the system and that they have access to the necessary hardware and software infrastructure.

- The system may assume that appropriate security measures are in place to protect guest information, including secure storage and transmission of sensitive data.
- The system may assume that other systems, such as accounting or marketing software, can be integrated seamlessly to streamline operations.
- The system may assume that the user interface and support documentation are available in the appropriate languages for the target market.
- The system may assume that appropriate backup and recovery procedures are in place to ensure that data is not lost in the event of a system failure or other disaster.
- The system may assume that the guesthouse or hotel is in compliance with relevant regulations, such as data protection laws or consumer protection laws.
- The system may assume that guests will use the system as intended, including providing accurate information and following booking and cancellation policies.

3. System Features

- User Management: Admins should be able to manage user accounts and reset passwords.

- Hotel/Guesthouse/Property Management: Property owners should be able to register their property for booking/renting, with the admin able to verify documents and licenses.

- View hotel: The system should filter the property/hotel list based on user filters.

- Room Management/service: Admins should be able to add, edit, and delete rooms and vary room availability and pricing for different dates.

- Reservation Management: Users should be able to apply for waiting lists, make bookings, verify documents, view, approve, and reject bookings, and receive email confirmations.

- Cancellation Management: Cancellation should only be allowed if the user satisfies the hotel/guesthouse policy.

- Payment processing: The system securely enters and stores payment information and allows admins to view and track payments.

- User Support: Users should be able to give feedback, view, and respond to customer support requests.

4. Other Non-functional Requirements

- **Performance:** The system should be quick, responsive, and able to handle high volumes of concurrent users and transactions.

- **Scalability:** The system should be scalable and handle an extensive database of users and property details. Our static content and database are stored in cloud hence they are highly scalable and available.

- **Availability:** The system should have a high availability rate, minimize downtime, and have robust disaster recovery mechanisms.

- **Security:** The system should have robust security measures to protect sensitive information and comply with data protection regulations.

- **Usability:** The system should be user-friendly, intuitive, and accessible for those with disabilities.

- **Interoperability:** The system should be compatible with a range of devices and browsers and integrate with other systems.

- **Reliability:** The system should have a high level of reliability with minimal errors and bugs.

- **Maintainability:** The system should be easily maintainable and have the capability to be improved over time.

5. Software model

5.1 Software development life cycle

Incremental model was incorporated because -

- It allows for flexibility in development by allowing developers to change requirements between iterations. The product can be modified to meet changing user or market demands.
- It allows for early delivery of a working product, so stakeholders can start using it sooner and provide feedback for the next iteration.
- It reduces risk because each iteration is tested and evaluated, and feedback is received before moving on to the next iteration. This reduces the chance of project failure and costly rework.

- It allows for continuous delivery of new features and functionality, which can increase customer satisfaction.
- It allows for better cost management because the cost of each iteration can be estimated more accurately than the cost of the entire project.

5.2 Use cases:

Use case	**Apply Filter**
Description	The system facilitates the customer to filter on the property like price and by Title.
Actors	Customer, The system
Pre Condition	The customer should have an active internet connection and he should give input in the filter bar.
Post Condition	The customer should be on the system page.
Flow	The customer will select the relevant filter options given below and then select apply filter.

Use case	**Get Feedback**
Description	It is the feature that will prompt the customer to give their valuable feedback at the time of checkout.
Actors	Customer, The system
Pre Condition	The customer should be on the system page
Post Condition	The system will ask for feedback in case of checkout.
Flow	The customer will get an option for feedback after checkout in the hostel.

Use case	**Add Hotel Profile**
Description	Adding a hotel profile is a feature of a guesthouse Booking system that allows owners or managers to provide important information about their property.
Actors	User, Hotel Owner

Pre Condition	for adding a hotel profile user/owner should have be having a guesthouse Booking system account and all necessary information about the guesthouse
Post Condition	After adding a hotel profile, the guesthouse information is stored in the guesthouse Booking system, allowing customers to view and book the guesthouse online.
Flow	1.Log into the guesthouse Booking system 2.Navigate to My accommodation in user profile. 3.Click on the add guesthouse button 3.Fill in the necessary information about the guesthouse 4.Save the profile.
Alternative Flow	1.Log into the guesthouse Booking system 2.Navigate to My accommodation. 3.Encounter an error or missing information 4.Click on the accommodation which needs to be changed 5.Correct the error or provide the missing information 6.Save the profile

Use case	**Cancellation**
Description	Customers will be provided with the functionality to cancel the booking of rooms/reserve facilities.
Actors	Customer, System
Pre Condition	1.For cancellation a customer must login with the id with which he or she has booked a room. 2.Customers can cancel their booking a day before their booking date.
Post Condition	The system will remove your booking from the system .
Flow	1.Log into the guesthouse booking system. 2.Go to see my booking section 3.select the booking that he/she needs to cancel and click on cancel button if it follows cancellation policy of guesthouse.
Alternative Flow	If the customer fails to give correct login credentials then the system will prompt the customer with wrong credentials and ask to give correct credentials.

Use case	Make Payment
Description	The customer has to make the payment of their stay in the hotel. The bill is calculated according to their room type, number of days of their stay, and number of the guests.
Actors	Customer, System
Pre Condition	1.The customer has selected a specific guest house or room to book and has proceeded to the checkout page. 2.The customer has selected a payment method and has entered the necessary payment information, such as credit card or bank account details. 3.The guesthouse Booking system has successfully connected with the selected payment gateway to process the payment.
Post Condition	1.The payment has been successfully processed, and the customer has received a payment confirmation. 2.The guest house reservation has been confirmed and added to the guest house Booking system. 3.The customer can access the reservation details and confirmation information in the Booking section of the system.
Flow	1. Customers click on the book button. 2. Ask for card details. 3. To confirm payment click on the pay button.

5.3 Tools and technologies used

Frontend: We have used EJS because it allows for dynamic rendering of HTML templates with embedded JavaScript code, React.js because it provides a powerful toolset for building reusable UI components. This enables us to create complex user interfaces with ease and improve the performance of web applications and javascript and CSS.

Backend: We have used Node.js because of its high performance, scalability, JavaScript-based architecture, express.js because it provides a robust framework for building scalable and maintainable web applications. Additionally, using NPM packages allows us to easily incorporate third-party libraries and tools to enhance our project's functionality.

Database: We used open source NoSQL database MongoDB because of its flexibility and scalability. It offers a document-based data model that allows for easy storage and retrieval of complex data structures

6. Future Scope

- The integration of artificial intelligence (AI) technology could help improve the guest experience by providing personalized recommendations and insights based on guest preferences and booking history.
- The use of virtual and augmented reality (VR/AR) technology could allow guests to experience a virtual tour of the guesthouse and rooms before booking, providing a more immersive and interactive booking experience.
- A mobile app could be developed to enable guests to manage their bookings, access hotel information and services, and receive personalized recommendations and offers.
- Voice-activated technology could be integrated into the system to enable guests to book rooms or request services using voice commands.
- The use of blockchain technology could provide enhanced security and transparency for guest data, as well as streamline payment processing and reduce the risk of fraud.
- The system could be integrated with other travel platforms, such as online travel agencies or travel review sites, to increase visibility and reach a wider audience.
- Adding customer feedback/review functionality allows customers to make better decisions.