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BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING.

COURSE UNIT: INTERNET TECHNOLOGY AND WEB DESIGN.

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Hotel Booking System Project Description

Project Overview

The "Hotel Booking System" is a web-based application designed to allow users to browse and book rooms at various hotels. The system facilitates the hotel management process, providing a platform where hotel owners can list their hotels, add room details, and manage bookings. The user experience is streamlined to allow customers to register, log in, and select from available hotels and rooms. Furthermore, it includes functionalities for payment processing and confirmations.

The system is designed with an intuitive, responsive interface, enabling users to access the platform via web browsers. The backend ensures secure management of user data, hotel information, and booking records, while the frontend provides users with an engaging, easy-to-navigate experience.

Project User Requirements

The hotel booking system needs to meet the following key user requirements:

1. User Authentication and Management:

- Users must be able to register and log in securely.
- Admins should have the ability to manage hotel listings, including adding, updating, and deleting hotels and rooms.
- Registered users should have access to their booking history and the ability to modify or cancel bookings.

2. Hotel and Room Information:

- Users should be able to search for hotels by location, rating, and availability.
- Hotel managers should be able to upload detailed hotel information (name, location, amenities, etc.) along with room details (type, price, availability).

3. Room Selection and Booking:

- Users should be able to select a hotel and room based on their preferences and book a room.
- Availability status of rooms should be updated in real-time to prevent double-booking.

4. Payment Processing:

- The system should support secure payment methods, such as credit cards, PayPal, or bank transfers.
- Once the payment is successful, users should receive a booking confirmation with payment details.

5. Booking Confirmation and Notifications:

- After successful booking and payment, users will receive a confirmation page detailing their booking information, including the hotel name, room type, check-in/out dates, and price.

- Users should also receive email notifications upon successful bookings, cancellations, or updates.

6. Admin Panel:

- The system should provide an admin panel for hotel managers to manage bookings, view guest details, and monitor room availability.

Why a Web Application is a Better Choice

1. Accessibility:

A web application allows users to access the system from any device with an internet connection. It provides flexibility and convenience for both users and administrators to manage hotel bookings at any time, from any location.

2. Cross-Platform Compatibility:

Unlike desktop applications, web-based platforms can be accessed from various operating systems, including Windows, macOS, and Linux, without any additional setup or installation requirements. This ensures a broader audience reach.

3. Real-Time Updates:

A web-based system allows for real-time updates of room availability, booking status, and payment processing. Any changes made in the backend (like room availability) can be instantly reflected to the users, ensuring an accurate and seamless experience.

4. Scalability and Maintenance:

A web application is easier to scale and maintain than a native desktop application. The updates, bug fixes, and new features can be pushed through the server without needing users to manually install updates.

5. Cost-Effective Development:

With a web-based platform, you only need to maintain one version of the application. There is no need to create multiple versions for different platforms (iOS, Android, Windows). Additionally, web applications reduce the overhead associated with local storage and processing power by relying on cloud-based services.

Technical Description

The Hotel Booking System is developed using a combination of frontend and backend technologies, each serving distinct functions to meet the project requirements.

1. Frontend Development (User Interface):

- HTML/CSS: These languages are used for building the structure and styling of the web pages. The user interface includes hotel cards, booking forms, and profile pages.
- JavaScript: Used for adding interactivity to the web pages. It enables form validation, dynamic updates (e.g., room availability), and interactive features like date pickers for check-in/check-out.
- Bootstrap: A responsive framework used to ensure the application is mobile-friendly and looks consistent across different screen sizes.

2. Backend Development (Server-Side Logic):

- PHP: The primary backend language used for processing the business logic. It handles user authentication, hotel and room management, and booking functionalities. It integrates with the MySQL database to fetch and store data like user information, room details, and booking records.
- MySQL: A relational database management system used to store and retrieve user data, hotel and room information, and booking history. It supports SQL queries to interact with the backend.
- Sessions: PHP sessions are used to manage user login and authentication securely, allowing users to stay logged in while navigating through the site.

3. Payment Integration:

- Stripe/PayPal API: These payment gateways are integrated to process secure payments. After a user selects a room and confirms the booking, they are redirected to a payment gateway to complete the transaction.

4. Security:

- CSRF Protection: To prevent cross-site request forgery attacks, tokens are used to ensure the validity of requests.
- Password Hashing: User passwords are securely hashed using PHP's password-hash () function, ensuring they are stored in a secure format.
- SSL/TLS Encryption: The entire application uses SSL encryption to ensure secure communication between the user's browser and the server.

Project Technical Requirements

1. Software Requirements:

- Web Server: Apache.
- Database: MySQL 5.7.
- Programming Languages: PHP 7.4, HTML5, CSS3, JavaScript (ES6)
- Payment Integration: Stripe API or PayPal SDK
- Development Tools: Visual Studio Code, XAMPP for local development

2. Hardware Requirements:

- Server: A server capable of running PHP and MySQL, with sufficient disk space for file uploads (images, documents), and handling concurrent user requests.
- Client Devices: Users can access the application from any device with a browser (smartphones, tablets, or desktops).

3. Networking:

- Internet Connection: Both users and administrators will need an internet connection to access the platform.
- Firewall and Security Measures: The application should be hosted behind a secure firewall to protect against potential attacks.

This comprehensive project plan outlines how the hotel booking system will meet the needs of both end-users and administrators while using appropriate technologies to ensure scalability, security, and ease of use. By leveraging a web application, users and administrators can access the platform seamlessly across devices, ensuring smooth operation and a positive user experience.