Hotel reservation web site

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Introduction & Problem Statement:

Background Context: The global tourism and hospitality industry is increasingly
reliant on online platforms for bookings. Customers expect a seamless, secure, and feature-rich experience when reserving accommodations online. Modern web technologies are essential to meet these demands.

The Problem: Many small and medium-sized hotels lack a robust, integrated online presence. They often rely on third-party booking platforms that charge high commissions or have outdated, insecure websites that do not provide a modern user experience, manage real-time room availability effectively, or secure customer payment information.

Significance: This project aims to provide a dedicated, secure, and user-friendly web application for such hotels. It will allow them to directly manage their bookings, reduce dependency on third-party sites, increase profitability, and offer a better direct service to their customers.

Literature Review:

The development of web-based reservation systems has evolved from simple static forms to dynamic, data-driven applications. Key technologies and concepts include:

ASP.NET Core: A cross-platform, high-performance framework for building modern web applications. Its built-in dependency injection, security features, and MVC pattern make it ideal for this project (Microsoft, 2023).

Entity Framework Core: An Object-Relational Mapper (ORM) that simplifies data access, allowing for efficient interaction with the database using C# instead of raw SQL.
Payment Gateways: Integrating secure payment processors like Stripe or PayPal is a standard practice for e-commerce. Their APIs handle sensitive financial data, reducing the application's PCI DSS compliance scope (Stripe Documentation, 2023).
Existing Solutions: Platforms like Booking.com and Airbnb dominate the market but operate as aggregators. This project differs by creating a white-label solution for individual hotels, giving them full control over their brand and customer data.

Project Objectives:

Primary Objective: To design, develop, and test a full-featured, secure hotel reservation web application using the ASP.NET Core MVC framework.

Secondary Objectives:

To implement a responsive user interface (UI) that provides an intuitive browsing and booking experience for customers on both desktop and mobile devices.
To develop a comprehensive administrative dashboard for hotel staff to manage rooms, bookings, and customer data.
To design a normalized relational database schema to efficiently store information about users, rooms, bookings, and payments.
To integrate a secure online payment gateway (e.g., Stripe Sandbox) for processing customer payments.
To ensure application security by implementing ASP.NET Core Identity for user authentication and authorization, protecting against common web vulnerabilities like SQL Injection and XSS.

Methodology:

Tools & Technologies:

Backend: ASP.NET Core 6.0/7.0, C#
Frontend: HTML5, CSS3, JavaScript, Bootstrap 5, Razor Pages
Database: Microsoft SQL Server with Entity Framework Core
Payment Gateway: Stripe API (Test Mode)
Development Environment: Visual Studio 2022, Git for version control

Procedures & System Architecture:
Requirement Analysis & Design (): Finalize features, create wireframes, and design the database schema.
Core Infrastructure Setup (): Set up the ASP.NET Core MVC project, configure the database with EF Core, and implement ASP.NET Core Identity.

User-Facing Module Development ():
Develop the public website: Homepage, room listing/gallery, room details, and search/filter functionality.
Implement the user registration, login, and booking process (without payment).
Admin Module Development (Weeks):
Build the admin dashboard.
Develop CRUD (Create, Read, Update, Delete) functionalities for managing rooms, room types, and bookings.
Payment & Advanced Features ():
Integrate the Stripe API for payment processing.
Implement email confirmation for bookings.
Develop booking availability validation to prevent double-booking.
Testing & Deployment ():
Perform unit and integration testing.
Fix bugs and optimize performance
Prepare final report and presentation.
Expected Deliverables:

A fully functional Hotel Reservation ASP.NET Core Web Application with source code.

A complete project report/thesis documenting the design, development, and testing process.

A project presentation with live demonstration.

A GitHub repository containing the project code and documentation.

References:

Microsoft. (2023). *ASP.NET Core Documentation*. https://docs.microsoft.com/en-us/aspnet/core/

Stripe. (2023). *Stripe API Documentation*. https://stripe.com/docs/api

Bootstrap 5 Documentation. (2023). https://getbootstrap.com/docs/5.0/getting-started/introduction/