Design and Development of an Online Movie Ticket Booking System Using MERN Stack Web Application

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ABSTRACT

The Online Movie Ticket Booking System is a web-based application developed using the MERN stack technology, which includes MongoDB, Express.js, React.js, and Node.js. The main objective of this system is to provide an efficient and user-friendly platform for customers to book movie tickets online. Traditionally, movie ticket booking required physical presence at theatre counters, which often resulted in long queues, time consumption, and inconvenience. This web-based solution eliminates these challenges by allowing users to browse available movies, check show timings, select seats, and complete bookings digitally from any location.

The system ensures secure user authentication, real-time seat availability updates, and online payment processing. All booking data is stored securely in a MongoDB database, ensuring reliability and transparency. The application enhances customer satisfaction and improves operational efficiency for theatre management by reducing manual errors and administrative workload.

I. INTRODUCTION

The rapid growth of internet technology has transformed various sectors, including the entertainment industry. Online platforms have significantly improved the way services are delivered to users. The Online Movie Ticket Booking System is designed to modernize the traditional ticket booking process by offering a digital solution that is accessible 24/7.

In conventional systems, customers were required to stand in queues to purchase tickets, which was time-consuming and inefficient. The proposed web-based system simplifies this process by enabling users to register, log in, explore available movies, view detailed information such as show timings and theatre locations, select preferred seats, and make secure online payments.

The system is developed using the MERN stack, where React.js is used for building an interactive user interface, Node.js and Express.js handle server-side logic and API integration, and MongoDB manages data storage. This combination ensures scalability, performance, and maintainability of the application.

II. LITERATURE REVIEW

1. Digital Transformation in Online Booking

Integrating digital solutions into the entertainment industry has greatly improved efficiency and accessibility. Research highlights that web-based applications simplify the ticket booking process, reduce paperwork, and enhance data accuracy.

2. The Role of Web Applications in Movie Ticket Booking

Web applications improve booking efficiency by providing real-time seat availability, secure authentication, and digital payment options. Online systems help users book tickets easily and reduce administrative workload for theatre management.

3. Challenges in Traditional Ticket Booking

Manual ticket booking methods are often time-consuming and error-prone. Studies indicate that digital booking systems significantly reduce processing time and eliminate common errors associated with manual ticket handling.

III. RESEARCH METHODOLOGY

1. Research Design

This study follows an applied research approach, focusing on developing and implementing a digital solution to simplify the traditional movie ticket booking process. A mixed-methods strategy combining qualitative and quantitative

techniques was adopted.

2. Data Collection Methods

- Primary Data: Surveys, user feedback, and testing sessions were conducted to understand the problems faced in traditional ticket booking systems.
- Secondary Data: A literature review was performed by analyzing research papers and case studies related to online booking systems and web-based applications.

3. System Development Approach

The Agile Software Development Life Cycle (SDLC) model was used, consisting of requirement analysis, system design, development, testing, deployment, and maintenance phases.

4. Data Analysis Methods

- Descriptive Analysis: Interpretation of user feedback and system testing results.

Comparative Analysis: Evaluation of improvements over traditional manual ticket booking methods.

- User Experience Testing: Collecting feedback regarding usability and system performance.

IV. RESULTS AND DISCUSSION

1. Implementation and User Experience

The Online Movie Ticket Booking System was successfully developed and tested. The application provides a simple and user-friendly interface for users to register, view movies, select seats, and book tickets online. Initial user feedback indicated that the system saves time and makes the booking process more convenient compared to traditional counter-based booking methods.

2. Performance Evaluation

The system was tested on different web browsers to ensure compatibility and smooth performance. Real-time seat availability worked efficiently and prevented double booking. Database performance testing confirmed efficient storage and retrieval of booking and user data.

3. Impact on Users and Theatre Management

- Time Efficiency: Users were able to complete ticket booking within a few minutes compared to waiting in long queues.
- Improved Accuracy: The elimination of manual ticket handling reduced booking errors and improved data management.

V. CONCLUSION

The Online Movie Ticket Booking System provides an efficient and user-friendly solution for booking movie tickets through a web-based platform. By eliminating the need for physical ticket counters, the system reduces waiting time and improves convenience for users.

The integration of secure authentication, real-time seat availability, and online payment options ensures smooth and transparent operations. The system enhances user experience and supports theatre management in handling bookings more efficiently. This digital approach demonstrates the importance of modern web technologies in improving service delivery in the entertainment industry.

VI. REFERENCES

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