Smart Hall Booking Management

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Abstract - The Smart Hall Booking System is a web-based application developed to simplify and automate the process of reserving halls for events such as seminars, meetings, workshops, and conferences. In many institutions, hall booking is still managed manually using registers or spreadsheets, which can cause scheduling conflicts, human errors, duplicate bookings, and delays.

To solve these issues, the system provides a centralized online platform where users can check hall availability and submit booking requests. The booking details are stored in a database and sent to the administrator for approval. The admin dashboard allows administrators to view requests, verify availability, approve or reject bookings, and manage hall schedules.

The system is developed using ASP.NET with C# as the backend programming language and SQL Server as the database. The frontend is created using HTML, CSS, and JavaScript to provide a user-friendly interface. By automating the booking process, the system reduces paperwork, prevents double bookings, and improves efficiency, allowing users to reserve halls quickly and conveniently online.

Keywords - *Hall Booking System, Web-Based Application, Online Reservation, Event Scheduling, ASP.NET, C#, SQL Server, Admin Dashboard, Hall Management, Automated Booking*

1.INTRODUCTION

In educational institutions, corporate offices, and event management organizations, halls are frequently used for various activities such as seminars, meetings, training sessions, and cultural programs. Managing the booking of these halls efficiently is an important task. However, in many places the booking process is still handled manually using paper registers or spreadsheets.

Manual hall booking systems often create several problems. Users must visit the office to check availability and submit booking requests. Administrators have to manually verify the schedule and update records. This process is slow, inefficient, and increases the chances of errors such as duplicate bookings or scheduling conflicts.

The Smart Hall Booking System is designed to solve these problems by providing a digital platform where users can view hall availability and submit booking requests online. The system automatically records booking information in a database and allows administrators to manage bookings easily.

The application is developed using ASP.NET and C#, which provide a strong and secure platform for webbased systems. SQL Server is used to store and manage data such as hall details, user information, and booking records. The system interface is created using HTML, CSS, and JavaScript to make it easy to use. By implementing this system, organizations can manage hall reservations more efficiently, reduce manual work, and improve overall resource utilization.

2. LITERATURE SURVEY

The research paper by A. Kumar and S. Patel presents a webbased hall booking system that allows users to reserve halls online and check availability in real time. The system reduces manual booking work and helps avoid double booking problems. However, the system mainly focuses on booking functionality and does not include payment tracking or event management features. The proposed Smart Hall Management System improves this by integrating booking, payment management, and facility tracking in a single platform.

The study conducted by R. Sharma and P. Gupta describes an event hall management application where users can register events, check hall capacity, and manage schedules. The system improves the organization of events but lacks an automated notification system for booking confirmation. Our proposed system improves this by adding email or SMS notifications for users and administrators.

Another research article by L. Chen and M. Wang introduces an online reservation system used for conference halls in corporate environments. The system allows employees to book meeting rooms and view schedules through a web dashboard. While it provides good scheduling features, it is mainly designed for internal company use and cannot manage large public bookings. The proposed system extends these features for public hall booking such as banquet halls, community halls, and auditoriums.

The research work by S. Deshmukh and K. Patil proposes a database-driven hall booking system using MySQL and Java technologies. The system stores hall details, booking information, and customer records in a centralized database. Although the system manages records efficiently, it lacks userfriendly dashboards and real-time availability checking. The proposed Smart Hall Management System enhances this by providing a visual dashboard and real-time hall status updates.

3. PROPOSED SOLUTION

The idea of the Smart Hall Booking Management System is to provide an efficient and automated platform for managing hall reservations, availability tracking, and user notifications in institutions, hotels, and event venues. The system is designed to simplify the process of booking halls, reduce scheduling conflicts, and provide real-time updates to users and administrators. By integrating web technologies, database management systems, and automated notification services, the system ensures smooth and transparent hall management. The main components of the proposed system include a webbased user interface, a centralized database, a server-side processing system, and notification services such as email or SMS alerts. Users can access the system through a web portal or mobile interface to check hall availability, submit booking requests, and receive confirmation notifications.

The system continuously maintains and updates the hall availability schedule in the database. When a user requests a booking, the server processes the request and verifies whether the selected hall and time slot are available. If the slot is free, the booking is confirmed and the system updates the schedule automatically. If the hall is already booked, the system notifies the user and suggests alternative available time slots.

The administrator panel acts as the central control unit of the system. Administrators can monitor all bookings, approve or reject requests if required, manage hall details, and view reports related to usage statistics. This centralized management helps in maintaining proper scheduling and avoiding double bookings.

To enhance user awareness, the system sends automatic notifications through email or SMS whenever a booking is confirmed, modified, or cancelled. This ensures that both users and administrators remain informed about the booking status in real time.

The overall design follows a modular architecture, where the booking module, user management module, notification module, and database module work together but remain independently manageable. This structure improves system reliability and allows easy future upgrades such as mobile

application support, payment gateway integration, and IoTbased hall occupancy monitoring.

The proposed Smart Hall Booking Management System is costeffective, easy to implement, and scalable for use in colleges, conference centers, community halls, hotels, and corporate offices. It provides a practical solution to streamline the hall reservation process, improve resource utilization, and reduce manual management errors.

Figure 3.1: System Architecture for Smart Hall Booking Management

Fig 3.1 System Architecture for Smart Hall Booking

Management

4. Methodology

The methodology for the Smart Hall Booking Management System describes the process followed to design, develop, and implement the system for efficient hall reservation and management. The system follows a structured approach that includes requirement analysis, system design, development, and testing to ensure smooth operation and reliability.

In this phase, the requirements of the system are identified and analyzed. The main objective is to understand the needs of users and administrators for booking halls efficiently. The system must allow users to check hall availability, request bookings, and receive confirmations. At the same time, administrators should have the ability to manage bookings, update hall information, and monitor system activities.

After identifying the requirements, the overall system architecture is designed. The system consists of different modules such as the User Interface Module, Booking Module, Database Module, and Notification Module. The design also includes an Admin Panel that allows administrators to control and monitor the entire booking system. The architecture ensures smooth communication between users, the server, and the database.

A centralized database is used to store all the information related to hall details, booking schedules, user information, and booking history. The database ensures that all booking requests are processed correctly and prevents double booking by checking the availability of the hall before confirming any reservation.

Users access the system through a web portal or mobile application. They can select the desired hall, date, and time slot. The system then checks the database for availability. If the hall is available, the booking request is accepted and stored in the database. If the hall is already reserved, the system informs the user and suggests alternative time slots.
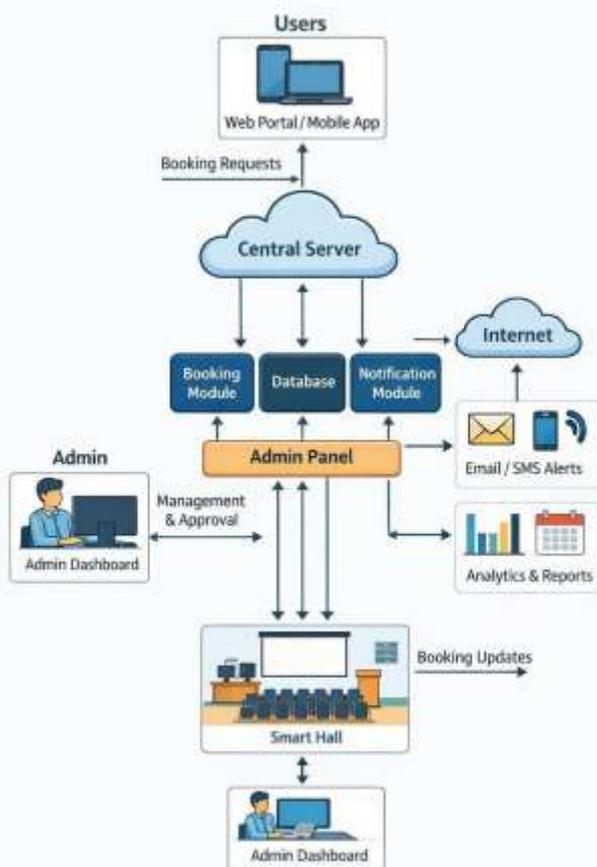
The Admin Panel provides administrative control over the system. Administrators can approve or reject booking requests, manage hall details, and view reports on hall usage. This helps maintain proper scheduling and efficient utilization of resources.

The system sends automatic notifications to users through email or SMS when a booking is confirmed, modified, or cancelled. This feature ensures that users stay informed about their booking status in real time.

Before deployment, the system undergoes testing to ensure that all modules function properly. Testing includes checking booking functionality, database operations, and notification services. After successful testing, the system is implemented for practical use in institutions, offices, or event venues.

The proposed methodology ensures that the Smart Hall Booking Management System operates efficiently, reduces manual effort, prevents scheduling conflicts, and improves the overall booking experience for both users and administrators.

5. Hardware and Software Requirements

5.1 Hardware Requirements

The hardware components required to run the Smart Hall Booking Management System are minimal since the system mainly operates through web-based technologies.

1. Computer / Laptop

Used by administrators and users to access the booking system through a web browser

2. Server System

A server is required to host the application and manage communication between users and the database.

3. Internet Connection

A stable internet connection is necessary for accessing the system, sending booking requests, and receiving notifications

4. Smart Devices (Optional)

Smartphones or tablets can be used by users to access the system through a mobile browser or application.

5. Display Screen / Projector (Optional)

Can be installed in the hall to display booking schedules or event information.

5.2 Software Requirements

The software components are required for developing and running the Smart Hall Booking Management System.

1. Operating System

Windows, Linux, or macOS for running the development environment and server.

2. Programming Languages

- HTML – For designing web pages

- CSS – For styling the user interface

- JavaScript – For interactive features

- PHP / Python / Node.js – For backend development

3. Database Management System

- MySQL or MongoDB for storing user data, hall details, and booking records.

4. Web Browser

Browsers such as Google Chrome, Mozilla Firefox, or Microsoft Edge to access the system.

5. Development Tools

- Visual Studio Code / Sublime Text for coding

- XAMPP / WAMP for local server environment.

6 RESULT AND OUTPUT

The Smart Hall Booking Management System was successfully developed and tested to manage hall reservations efficiently. The system provides a simple and user-friendly interface through which users can check hall availability, book halls, and receive confirmation notifications. The implementation of this

system helps in reducing manual work and avoids scheduling conflicts.

The system allows users to select a hall, choose the required date and time slot, and submit a booking request through the web portal. Once the request is submitted, the system checks the availability in the database and confirms the booking if the hall is free. If the hall is already reserved, the system notifies the user and suggests other available time slots.

The Admin Panel enables administrators to monitor and manage all booking activities. Administrators can approve or reject booking requests, update hall information, and view booking schedules. This centralized management improves the efficiency of hall utilization and ensures proper scheduling.

The system also generates notifications such as email or SMS alerts to inform users about booking confirmations, modifications, or cancellations. In addition, the system can generate reports and analytics related to hall usage, helping administrators understand booking patterns and manage resources effectively.
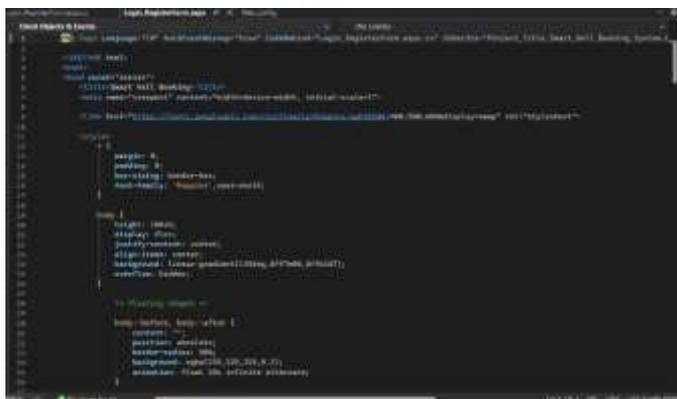

Fig 6.2 **:** Smart Hall Booking System – Login Form ASP.NET Code

Fig 6.3: Smart Hall Booking System – Login and Registration Page UI
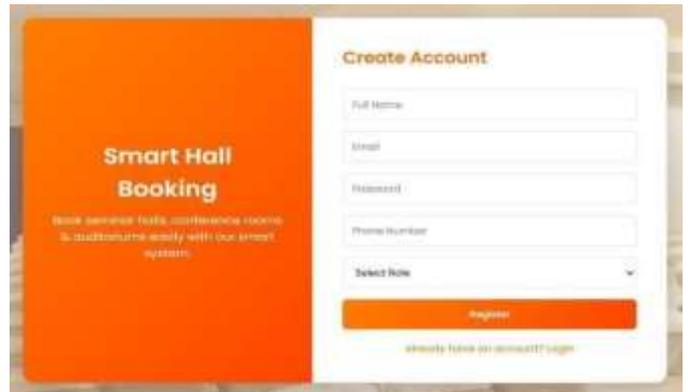

Fig 6.1: Smart Hall Booking System – Login and Registration Page UI Design Code

7. Performance & Evaluation

The performance of the Smart Hall Booking Management System was evaluated based on its efficiency, reliability, response time, and user satisfaction. The system was tested under different booking scenarios to ensure that it functions correctly and provides accurate results.

The system demonstrated fast response time while checking hall availability and processing booking requests. The centralized database ensured that booking information was updated instantly, which helped in preventing double bookings and scheduling conflicts.

The user interface was designed to be simple and easy to use, allowing users to quickly search for available halls, select suitable time slots, and complete the booking process without difficulty. Feedback from test users indicated that the system significantly reduced the time required for manual booking procedures.

From the administrator's perspective, the Admin Panel allowed efficient monitoring and management of booking records. Administrators could easily approve or reject booking requests, update hall details, and generate usage reports. This improved overall management and transparency in hall scheduling.

The notification system also performed effectively by sending confirmation messages and updates to users whenever a booking was made or modified. This feature ensured that users remained informed about their reservation status.

Overall, the evaluation results show that the Smart Hall Booking Management System improves efficiency, reduces manual errors, enhances resource utilization, and provides a reliable solution for managing hall bookings in institutions, hotels, and event venues.

8. Applications

The Smart Hall Booking System is a modern digital solution developed to simplify the process of reserving and managing halls for various activities and events. In many organizations and institutions, halls are used for meetings, seminars, cultural events, training programs, and other gatherings. Traditionally, hall bookings were managed manually using registers or paperwork, which often led to problems such as double bookings, scheduling conflicts, loss of records, and delays in the booking process. The Smart Hall Booking System eliminates these issues by providing an automated and centralized platform where users can easily check availability and reserve halls according to their needs.

One of the most important applications of the Smart Hall Booking System is in educational institutions such as schools, colleges, and universities. Educational institutions frequently organize a variety of academic and extracurricular activities that require the use of halls or auditoriums. These activities include seminars, workshops, guest lectures, conferences, examinations, cultural programs, and student meetings. Managing these events manually can be difficult, especially in large institutions where multiple departments may require the same hall at the same time. By implementing the Smart Hall Booking System, students, teachers, and administrators can easily check hall availability through the system and make bookings in advance. This ensures better coordination between departments and helps in the smooth execution of academic activities without scheduling conflicts.

9. LIMITATIONS

Although the Smart Hall Booking System improves the efficiency of managing hall reservations, there are some limitations associated with the system.

1. Internet Dependency - Since the system is webbased, users must have a stable internet connection to access the application and perform booking operations. Without internet access, the system cannot be used.

2. Limited to Online Access - The system is designed to operate through a web browser. Users who are not

familiar with computers or online systems may find it slightly difficult to use initially.

3. Security Risks - Like any online application, there is a possibility of security threats such as unauthorized access or data breaches if proper security measures are not implemented.

4. Server Dependency - The system depends on the proper functioning of the web server and database server. If the server fails or is under maintenance, users may not be able to access the system temporarily.

CONCLUSION

The Smart Hall Booking System is developed to provide an efficient and organized solution for managing hall reservations in institutions and organizations. In many places, hall bookings are still managed using manual methods such as registers or paperwork, which can cause problems like scheduling conflicts, double bookings, and difficulty in maintaining records. The Smart Hall Booking System replaces these traditional methods with a modern web-based platform that allows users to easily check hall availability and submit booking requests online.

The system is developed using modern technologies such as ASP.NET with C# for backend development and Microsoft SQL Server for database management. These technologies ensure that the system is reliable, secure, and capable of handling multiple booking requests efficiently. The user interface is designed using HTML, CSS, and JavaScript, which provides a simple and userfriendly environment for users to interact with the system. One of the main advantages of the Smart Hall Booking System is that it helps reduce the manual workload of administrators. Instead of managing bookings through paperwork, administrators can easily view and manage all booking requests through the

system. They can approve or reject requests, update hall details, and monitor the overall usage of halls. This improves efficiency and saves time for both administrators and users.

ACKNOWLEDGEMENT

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BIOGRAPHIES

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Rehan Yunus Shah is a final-year Diploma student pursuing Information Technology at K. K. Wagh Polytechnic, Nashik, Maharashtra, India. His areas of interest include Web Development, Database Management Systems, and Software Development. He actively contributed to the design, system planning, and implementation of the Smart Hall Booking Management System and is interested in developing efficient digital solutions for real-world applications.

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Kunal Pramod Savale is a Diploma student pursuing Information Technology at K. K. Wagh Polytechnic, Nashik. His areas of interest include Web Technologies, Network Communication, and System Development. He contributed to the development of the user interface and database integration for the Smart Hall Booking Management System.

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Kunal Ravindra Pawar is a Diploma student pursuing Information Technology at K. K. Wagh Polytechnic, Nashik. His technical interests include Software Development, Database Management, and Web Application Development. He worked on backend development and booking system functionality in the Smart Hall Booking Management System.

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Mrs. S. S. Pathare is a Lecturer in the Department of Information Technology at K. K. Wagh Polytechnic, Nashik, Maharashtra, India. Her areas of interest include Software Development, Web Technologies, and Information Systems. She has guided several academic projects and provided valuable technical mentorship for this work.