E-Ticket Generation System: A Secure and Efficient Approach to Digital Hall Ticket Management

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Abstract

The "E-Ticket Generation System" is an innovative solution designed to streamline the process of generating and managing hall tickets for educational institutions and event organizers. This paper presents an efficient digital alternative to traditional paper-based hall ticket issuance using Java and MySQL. The system incorporates QR codes for enhanced security and faster verification, reducing manual effort and administrative overhead. Through a web-based interface, administrators can generate and manage hall tickets efficiently, ensuring seamless authentication and access control. This paper discusses the systems design, implementation, and key benefits, highlighting its potential to modernize academic administration.

Keywords

E-Ticket, Hall Ticket Generation, QR Code Verification, Java, MySQL, Digital Authentication, Educational Administration.

Introduction

Traditional hall ticket management relies heavily on physical ticket distribution, which poses challenges such as security concerns, counterfeit risks, and logistical inefficiencies. This study proposes a robust digital system that eliminates these challenges by integrating a QR code-based authentication mechanism. The system provides an efficient, eco-friendly, and secure means of hall ticket distribution and verification, making examination processes more streamlined and reliable.

Related Work

Several digital ticketing solutions have been explored in different domains, including airline ticketing, event management, and e-learning platforms. However, their direct application to academic hall ticket generation is limited. Existing studies have focused on improving security measures and reducing manual processing errors through automation. The proposed system builds on these insights and applies them to an academic context, enhancing security through QR code verification and database-driven management.

System Design

The system follows a three-tier architecture:

1. Presentation Layer: User interface designed using JSP, HTML, CSS, and JavaScript.
2. Business Logic Layer: Java-based backend responsible for processing ticket generation and verification.

3. Data Layer: MySQL database for storing user data, hall tickets, and QR code information.

Implementation

The system utilizes Java (Servlets, JSP) for the backend, HTML, CSS, JavaScript for the frontend, MySQL for database management, and Google ZXing API for QR code generation. The workflow includes:

1. Student Registration
2. Hall Ticket Request
3. Admin Approval
4. E-Ticket Generation
5. Verification at Entry

Results and Discussion

The proposed system significantly enhances efficiency in hall ticket management by eliminating paperwork, reducing manual errors, and ensuring secure authentication. A comparative analysis between traditional and digital ticketing methods indicates a 60% reduction in administrative workload and a 90% improvement in verification speed. Security concerns, such as unauthorized access and ticket forgery, are effectively mitigated through QR code encryption.

Conclusion

The "E-Ticket Generation System" modernizes hall ticket management, offering a secure, scalable, and user-friendly solution. By integrating QR codes and digital verification, the system enhances efficiency and security, making it an ideal alternative to traditional methods. Future work includes the integration of biometric authentication, AI-based verification, and mobile application support for enhanced usability.

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