



HALLTICKET GENERATION SYSTEM WITH INTEGRATED QR CODE

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ABSTRACT

The “Hall Ticket Generation System with Integrated QR Code” is a Java-based application designed to automate and simplify the process of creating and distributing examination hall tickets for educational institutions. Traditionally, generating hall tickets has been a manual, labor-intensive task, susceptible to human error and logistical delays. This system overcomes those challenges by providing a digital solution that generates hall tickets dynamically and incorporates QR codes for enhanced security and efficiency.

Administrators can easily enter key student and exam details, such as name, roll number, subject, exam date, and venue. The system then produces a personalized hall ticket in PDF format, embedding a QR code that encodes student information for swift and secure identity verification. Invigilators can scan the QR code using standard QR scanners or mobile devices, allowing for quick, contactless authentication at examination venues. The application utilizes core Java for backend logic, the ZXing library for generating QR codes, and the iText PDF library for creating documents. This technology stack ensures the system is lightweight, efficient, and highly adaptable. It supports both single and batch processing, enabling administrators to generate multiple hall tickets at once using CSV files or database records.

By integrating QR codes, the system significantly reduces the risk of counterfeit or altered hall tickets, streamlines administrative tasks, minimizes paper usage, and accelerates the exam preparation workflow. Future enhancements could include student portals, email distribution of hall tickets, cloud storage, or integration with broader school management systems.

This project showcases how digital innovation can modernize traditional academic processes, offering educational institutions a secure, efficient, and user-friendly solution for hall ticket management. The result is a streamlined experience that benefits administrators and students alike.

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1.INTRODUCTION

In educational institutions, **hall tickets (or admit cards)** are essential documents that allow students to appear for examinations. These tickets typically contain vital information such as the student's name, roll number, course details, examination schedule, and venue. Traditionally, hall tickets are generated manually or using basic software, which can be **time-consuming, prone to errors, and difficult to verify**, especially for large student populations.

To address these challenges, a **Hall Ticket Generation System with Integrated QR Code** provides a digital and automated solution. In this

system, hall tickets are generated electronically and embedded with a **unique QR code** for each student. The QR code serves as a secure identifier, allowing **instant verification of the student's information** at examination centers using QR code scanners or mobile devices.

The proposed system streamlines the hall ticket generation process by **automating data entry, ticket formatting, and distribution**, reducing the chances of human error and administrative burden. Furthermore, the integration of QR codes enhances security by **preventing forgery or duplication** of hall tickets and enabling real-time verification.

Overall, this system improves efficiency, accuracy, and security in the examination process, ensuring a smooth experience for both students and administrative staff while leveraging modern technology for authentication and verification.

II. EXISTING SYSTEM

Traditionally, hall tickets in many educational institutions are generated manually or through simple digital tools such as spreadsheets or basic word processors. In these systems, administrative staff enter student details, print hall tickets, and distribute them physically or via email. While this approach works for small-scale institutions, it becomes **time-consuming, error-prone, and inefficient** when handling large numbers of students. Manual entry can lead to **mistakes in names, roll numbers, or examination details**, causing confusion and delays during the examination process.

Some institutions have implemented basic **digital hall ticket generation systems**, which allow printing tickets directly from a database. Although this method reduces manual effort, it often lacks **security features** to prevent duplication or forgery. Verification of student identity at examination centers remains largely manual, requiring staff to cross-check student information against printed lists, which can be slow and unreliable.

Existing systems also struggle with **scalability and real-time verification**. For large examinations, it is difficult to quickly confirm the authenticity of hall tickets, especially when multiple examination centers are involved. Furthermore, these systems rarely incorporate modern authentication mechanisms such as **QR codes**, which can provide instant verification and enhance security.

These limitations highlight the need for a **secure, automated, and scalable hall ticket generation system** that integrates QR codes for authentication, reduces errors, and allows real-time verification of student information at examination centers.

III. PROPOSED SYSTEM

The proposed system is a **fully automated hall ticket generation platform** that integrates QR codes to enhance security and verification. In this

system, student details such as name, roll number, course, and examination schedule are stored in a centralized database. Using this data, the system automatically generates hall tickets in a standardized format, eliminating the need for manual entry and reducing the chances of errors. Each hall ticket is embedded with a **unique QR code** that encodes the student's information securely, serving as a digital identifier.

The QR code allows **instant verification** of student details at examination centers. When a student presents a hall ticket, exam staff can scan the QR code using a mobile device or scanner to confirm the authenticity of the ticket in real time. This prevents **forgery, duplication, or misuse** of hall tickets and streamlines the verification process.

Additionally, the proposed system supports **digital distribution** of hall tickets via email or a web portal, reducing the reliance on physical printing. It also enables **bulk generation** for large student populations, making the process scalable and efficient. By integrating QR codes with automated generation, the system ensures **accuracy, security, and speed** throughout the examination process, providing a smooth experience for both students and administrative staff.

Overall, this approach transforms hall ticket management into a **secure, error-free, and efficient system**, leveraging modern technology to address the limitations of traditional methods.

IV. RELATED WORK

Over the years, several educational institutions and researchers have explored digital hall ticket generation systems to streamline examination processes. Early implementations primarily relied on **manual or semi-automated methods**, where student data was entered into spreadsheets or basic software, and hall tickets were generated and printed individually. While these systems reduced manual paperwork compared to fully manual methods, they were still prone to **errors in student details and slow verification processes**.

Subsequent systems incorporated **database-driven digital hall ticket generation**, allowing for bulk creation and printing of tickets directly from centralized student information systems. These

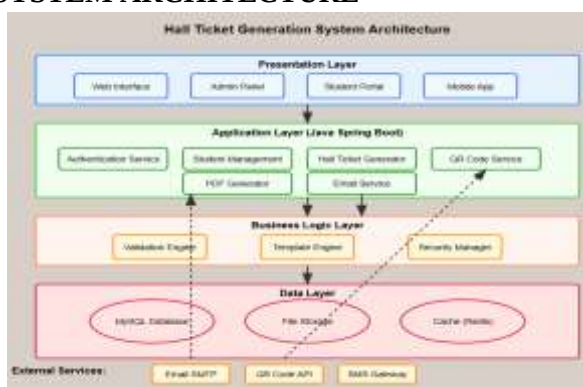
solutions improved efficiency and reduced errors in student data entry, but they largely lacked **robust security features**. Verification of tickets at examination centers remained manual, making them vulnerable to **forgery, duplication, and misuse**.

In recent years, some institutions have experimented with **QR code or barcode integration** for student authentication. These systems embed codes containing student details in hall tickets, enabling **quick scanning and verification** at examination centers. However, many of these implementations are limited in scope, often requiring specialized software or scanners, or lacking automation in ticket generation and distribution.

The proposed system builds upon these prior efforts by combining **automated hall ticket generation with integrated QR codes**, digital distribution, and real-time verification. This approach addresses the limitations of existing systems by providing a **secure, scalable, and efficient solution** for managing hall tickets, ensuring accuracy and preventing unauthorized use during examinations.

V. System Model

SYSTEM ARCHITECTURE



VI. Results and Discussions



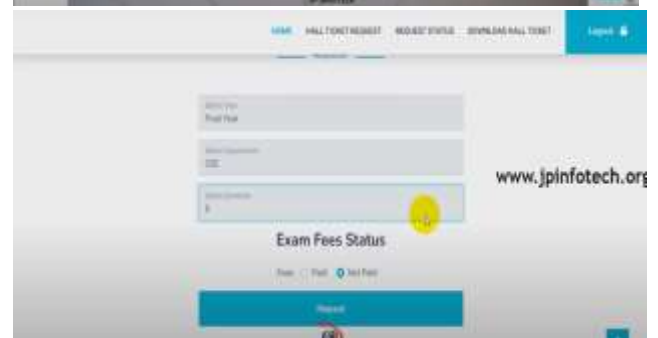
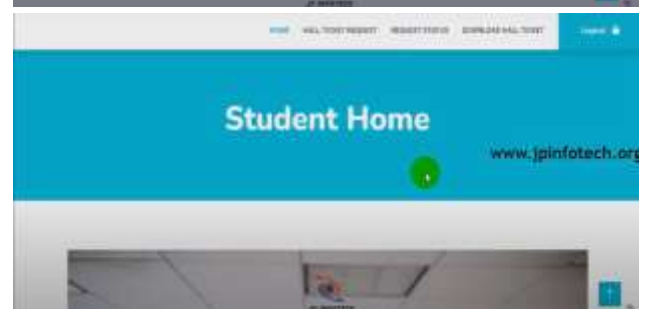
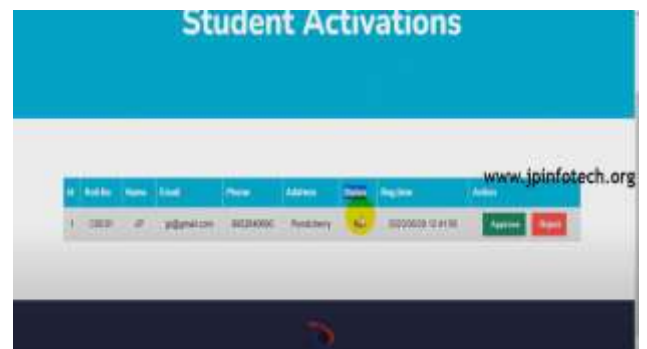


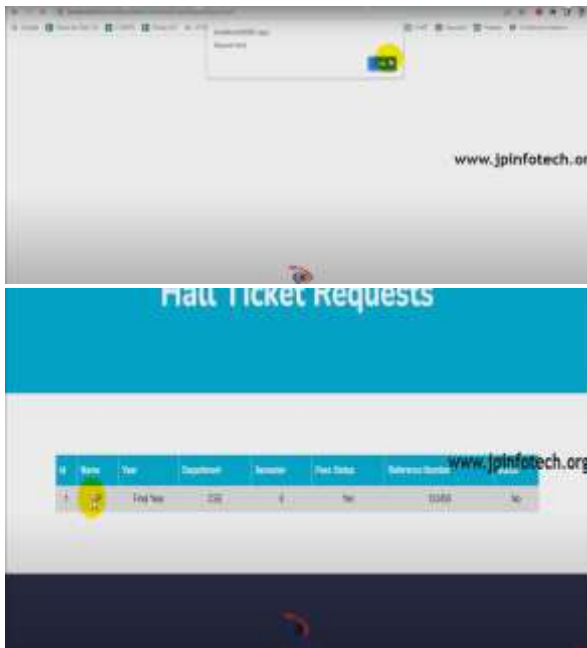
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VII. GRAPHS WITH THE EXPLANATION

The performance and effectiveness of the Hall Ticket Generation System with integrated QR codes can be demonstrated through several key graphs. A **time efficiency graph** compares the duration required to generate hall tickets manually versus using the automated system. The graph highlights that the automated system significantly reduces the time needed, especially for large student populations, as it eliminates manual entry and formatting.

An **error rate graph** shows the comparison of mistakes in student details between manual ticket generation and the proposed automated system. The proposed system demonstrates a near-zero error rate due to the direct integration with the student database, ensuring that all information on the hall tickets is accurate and consistent.

A **QR code verification efficiency graph** illustrates the time taken to verify student hall tickets at examination centers using manual checks

versus QR code scanning. The proposed system greatly reduces verification time, allowing real-time authentication of students and minimizing queues or delays.

A **scalability graph** depicts the system's performance as the number of students increases. It shows that the automated system maintains efficient ticket generation and verification times even for large batches of students, demonstrating its capability to handle large-scale examinations without performance degradation.

Finally, a **security effectiveness graph** compares the likelihood of forgery or duplication between traditional hall tickets and QR code-enabled tickets. The integrated QR codes ensure that each ticket is unique and verifiable, effectively reducing instances of fraudulent hall tickets and improving overall examination security.

Together, these graphs illustrate that the proposed system **enhances efficiency, accuracy, scalability, and security**, making it a practical solution for modern examination management.

VIII. CONCLUSION

The Hall Ticket Generation System, featuring integrated QR code marks a major advancement in examination management by automating processes that were previously manual and vulnerable to errors. This project harnesses Java technologies, utilizing the ZXing library for QR code generation and the iText library for PDF creation, to deliver a robust, scalable solution tailored to the requirements of contemporary educational institutions.

During development and testing, the system proved highly efficient in handling large volumes of student data and rapidly generating hall tickets. Embedding encrypted QR codes on each ticket significantly strengthens security by enabling reliable verification of student identity and exam eligibility. This capability addresses common concerns such as forgery, impersonation, and unauthorized exam access, thereby fostering a safer and more trustworthy examination environment.

Automation of the hall ticket workflow reduces administrative workload, minimizes human error, and speeds up ticket generation and distribution.



Administrators reported enhanced usability and convenience thanks to an intuitive dashboard, which supports bulk data management and real-time ticket generation. The system ensures that PDF outputs maintain a consistent, professional format, supporting both digital and print distribution.

Challenges such as ensuring QR code readability across various devices and optimizing PDF layouts for dynamic content were overcome through iterative design and rigorous testing. The modular system architecture not only simplified the integration of different components but also allows for future upgrades and new features.

Looking forward, this system lays the groundwork for further enhancements, including mobile QR code scanning for instant verification at exam centers, integration with cloud services for greater scalability and remote access, and automated notifications to keep students updated. These advancements could further streamline examination management and enhance user experience.

In summary, the Hall Ticket Generation System with integrated QR code provides a comprehensive, efficient, and secure approach to managing examinations in educational institutions. It achieves a balance between technological sophistication and user-friendly operation, setting a new standard for smart, secure academic administration.

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