Secure Online Examination using QR code and Random Question paper generator

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Abstract : The "Hall Ticket Generation System with Integrated QR Code" is a robust and innovative solution made with Java and MySQL that attempts to enhance and speed up the process of creating and managing hall passes for various tests and events. This system aims to replace manual hall ticket distribution methods in a way that is safe, efficient, and practical for administrators and attendees by utilizing a dynamic QR code function. By using the flexibility of MySQL database administration and the power of the Java programming language, the system produces a seamless and user-friendly experience. A hall pass with a unique QR code that includes all of the exam's relevant information is provided to each participant. By scanning this QR code with the Android Scanner app, the invigilator can easily and swiftly confirm the legitimacy of the participant IDs and hall ticket. When comparing the technology to traditional methods, several advantages become apparent. It reduces paper waste and administrative expenses by eliminating the need for hall passes to be physically distributed and collected. Additionally, the QR code function enhances security by preventing counterfeiting and unauthorized access, ensuring a quick and secure check-in process. The traditional method is the manual creation of exam questions. This process is quite labor-intensive and time-consuming. Our proposal to address this problem is the Automatic Question Paper Generator System. For the purpose of creating question papers, we have incorporated a secure, fast, and randomized keyword-based shuffling method with randomization. The strategy steers clear of both question repetition and redundancy. To ensure that the complete curriculum is covered, the system can also generate exam papers for the classes. Exam evaluations are frequently of a higher caliber as a result of this system.

Index Terms **- QR Code, Android based Scanner, Randomization technique Shuffling Algorithm**

I. INTRODUCTION

With the launch of the "Hall Ticket Generation System with Integrated QR Code," ticketing and event management systems have made major strides. Traditional paper-based tickets are gradually being replaced by digital ones due to their improved security features, effectiveness, and user-friendliness. In this introduction, the key features and benefits of that type of system will be enumerated. In the current digital era, event organizers are constantly searching for innovative ways to enhance attendees' experiences, speed up the ticketing process, and provide robust security measures. Using QR code form hall ticket we can solve the problem. A unique QR code containing encrypted information about the attendee and the event is inserted in each hall ticket. This method significantly reduces the likelihood of ticket fraud and unauthorized access. Event planners can review attendance data, ticket validation success rates, and other important metrics for future planning and optimization with the use of the system's comprehensive post-event reporting services. Every educational establishment needs a working infrastructure to generate automated test questions and arrange pertinent information. An automated integrated system that prints question papers in compliance with the curriculum and syllabus and keeps track of a course-specific questionnaire is presented in the following paper. A role-based structure that restricts user access has been established. The device contains a safety mechanism to stop questions from being asked again. Users only need to supply the syllabus, semester, courses, and pattern to access the system, which allows them to enter and modify data suitable for any educational institution.

It allows educational institutions to create question papers while ensuring the safety and uniqueness of the questions. It is quite beneficial for institutions with a small workforce and few resources. Data storage, security, and quick operations for all tasks are the goals of this system. It is a time-consuming and tedious task for teachers to create question papers. In order to develop future question papers, teaching staff usually have their own questionnaire. In any educational institution, teachers must follow certain rules when creating question papers. The solution is this system, which removes the need to repeat questions and makes it simple to construct question sheets with only a single click. Additionally, it operates in a very simple manner. Using SQL queries, this system handles the question randomization. We developed our Automatic Question Paper Generator method in order to meet our criteria, which required more resources. This system differs from all other question paper generators. The ability of Microsoft SQL to produce the test has been enhanced. There are already a number of questions in the database; more can be added if necessary. The power of this technology is enough to create a question paper in a few seconds. Automating the question paper generating process while significantly reducing the requirement for human labor is its main objective. It is primarily used to create university question papers. The Automatic Question Paper Generator System is a Java-based application that provides reliability and

usefulness when it comes to question paper creation. The administrator has the power to update the database to meet institutional standards and can view the sets of generated test questions. It makes technology use better. Because the Administrator is fully empowered to alter the database. The administrator can review and change the questions from anywhere at any time. Only authorized staff can access the database thanks to the system's security measures, which include a login ID and password. This project has been developed with the present period's goals in mind.

II. EXISTING SYSTEM

The majority of the present process for making and distributing hall passes is manual and paper-based. Even though these traditional methods are still widely used, they usually have shortcomings and are ineffective. The traditional system requires administrators to manually design and print hall passes for each participant, which can be time-consuming and error-prone. Giving attendees their actual hall tickets also requires a significant investment of time and funds. Administrators typically use forms and databases to gather participant data, which may not be accurate or current. When making hall tickets, this could lead to misspelled names or erroneous information. Additionally, participants can have trouble getting their hall permits, especially if they live far away or if the exam or event is held at a different site. Additionally, unauthorized or fraudulent entrance could occur from a lack of a secure identification mechanism. Admission tickets printed on traditional paper lack features that effectively prevent fraud or misuse. Why? The manual nature of the existing process exacerbates environmental issues because tickets are printed and distributed using a lot of paper. Using paper tickets also makes it more likely that they will be stolen or damaged, which would be troublesome for attendees who would have to replace them. As the number of participants and events/examinations rises, the manual technique may become more time-consuming and error-prone in terms of scalability. It becomes challenging for administrators to maintain accurate data, generate tickets rapidly, and ensure effective distribution for large-scale events. Despite being reasonably functional, the current system has several drawbacks, such as inefficiency, error-proneness, a lack of security safeguards, and environmental issues. The proposed "Hall Ticket Generation System with Integrated QR Code" was developed using Java and MySQL since it is evident that a more effective, accurate, and secure approach is required. Given how challenging it is to create a well-balanced question paper by hand, technology will unavoidably be included into the teaching and learning process. There is a simple and efficient way to write exam papers available. The model of this framework is three-tiered. Exam paper production is managed by the Syllabus Engine, Pattern Com positor, and Question Aggregator. The generated question paper is based on the course plan or structure. In another system, questions are entered using the Question Aggregator. Kind, markings, and complexity are three related characteristics of questions. All of these qualities are effectively used in the development of question papers. Based on pattern and complexity, the paper generator selects a question. This engine also features a marking system that marks each selected question so that it may not be selected again. Another study has used a complex yet incredibly successful Ant Colony Algorithm. The paper's requirements require the construction of a mathematical model of constraint. Their methodology is used in this study to suggest a workable solution. The advantages of automation are well documented in task engineering literature.

III. PROPOSED SYSTEM

Maintaining a rapid and secure process for the creation and validation of hall tickets depends on every company. In addition to other required information, students can register for the proposed system by providing their roll number, name, email address, phone number, address, and password. Students must first obtain permission from the Controller of Examination before they can log in as new registrations in order to prevent unauthorized access.. By completing the necessary forms, students can seek a hall pass. The examiner can allow to deny student for attending the exam based on the result of QR code scanning. After being accepted, students can download their hall permits. Under the proposed system, the Controller of Examination has the administrative power to oversee and manage system operations. Since the Controller has access to student data, such as the last login date and time, transparency and security are ensured. Along with defining exam dates, start and end times, topic codes, and subject titles, they can also add new test subjects. To ensure accurate and up-to-date information, the hall ticket is updated with all pertinent facts. Before accepting or rejecting a student's request for a hall pass, the Controller checks the information they have submitted. During the exam, the invigilator's role is to confirm that hall passes are legitimate as part of the proposed system. Using an Android application, the hall ticket's QR code is scanned. After scanning QR code if all correct details are found the examiner will allow student for the exam. The invigilator is alerted and can take appropriate action if the scanned code does not match a valid QR code from the system. By combining many entities and features, the proposed system offers a safer and more effective process for creating and validating hall tickets. It enhances security, reduces administrative burdens, and provides participants with a modern and easy experience by restricting access to the event/examination venue to only qualified students with authorized hall tickets. We are using shuffling algorithm for generating unique question paper. The main purpose of the shuffling algorithms in AQPGS is to offer a randomization technique that guarantees the creation of unique sets of questions devoid of repetition. AQPGS is the name of the system that offers capabilities for storing test bank questions and created exam papers. In this method, the creation of exam papers and answer schemes is automated. Levels or categories are further distinctions in this domain. The language used and the questions asked may encourage and foster the growth of critical thinking, especially at the higher levels. This is a really useful system for instructors. There will be no need for instructors to compile all of the questions into a single exam question paper. Teachers can create excellent exam questions that correspond with the learning objectives of each course with the help of the learning outcome measurements that are included into the AQPGS functions. With a single click, lecturers can create several sets of question papers from the same database by choosing all the conditions. The shuffling algorithm's simplicity makes it a good option.
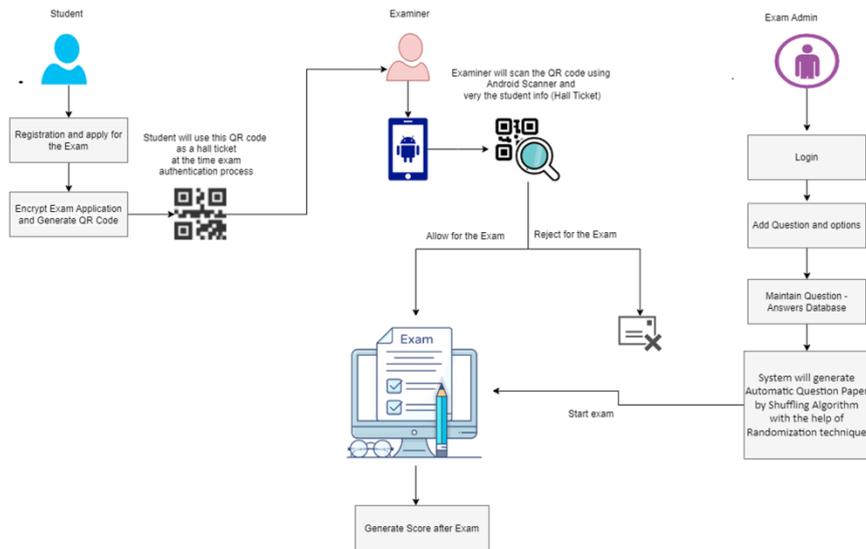
Steps:

Step 1: In order to take an exam, each user or candidate must register during this registration phase.

Step 2: Following registration, a QR code image containing encrypted user data will be sent to the user. For administrator/examiner records, the same data will be kept on the server side.

Step 3: When attending the exam, the user will bring that QR code image.

Step 4: Using the user information that is saved on the server or examiner record, the examiner will scan the QR code image to determine whether or not the authenticated candidate has arrived for the exam.

Step 5: The user will start the exam in the system.

Step 6: Using the Shuffling Algorithm, our system will create distinct question papers for every student.

IV. BENEFITS OF PROPOSED SYSTEM

Error-free and Simplified Procedures: The automation of the system significantly reduces the requirement for human interaction. By eliminating the chance of errors during human data entry and hall ticket preparation, this guarantees accurate and error-free tickets.

Advanced Security Measures: The use of QR codes adds an additional layer of security. It is extremely difficult for unauthorized individuals to duplicate or falsify hall tickets since the data included in these dynamic QR codes is encrypted.

Efficient User Management: Users can register and authenticate themselves easily and efficiently. Administrators, invigilators, and students may all readily access the system in their designated roles, which speeds up the user experience overall.

Real-time Verification: By operating in real-time, the QR code-based verification technology rapidly verifies the authenticity of hall passes. This prevents anyone from attempting to use fictitious tickets to gain entry without permission.

Reduction of Administrative Work: Automated processes remove a significant amount of administrative work. This frees up administrators' time for more strategic work by doing away with the requirement for manual distribution, verification, and ticket management.

Efficient Event Admission/Inspection: The QR code validation expedites the inspection procedure, particularly for major events. Consequently, there is less waiting at door.

Physical hall tickets, manual processes, and paper-based documentation are all eliminated to reduce costs. The amount of paper used, administrative labor, and printing costs are all significantly reduced.

This could be helpful to examiners when they are developing question papers that are based on the elements of learning outcomes.

Randomization is facilitated by shuffling algorithms, which choose questions from the database to prevent duplication and recurrence.

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