QR Based Attendance System

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Abstract: *QR-based attendance systems leverage QR codes to identify individuals, streamlining attendance tracking in educational and other settings. They comprise a backend database for user information, classes, and attendance records, and a frontend user interface for interaction. The precision of this system prevents proxy attendance, ensuring accurate attendance records by requiring each individual to scan their unique QR code.*

QR attendance systems offer flexibility. Administrators can effortlessly add or remove participants, classes, and attendance criteria. They can also connect with other tools like student databases for a seamless experience. These systems leverage QR codes for marking attendance. Unique QR codes are assigned to individuals and scanned with a mobile device or camera. Each QR code stores data such as name, identification number, and other pertinent information.

This system replaces old-fashioned attendance methods like sign-in sheets, roll-calls, and swipe cards. It's accurate, error-free, and saves time. Attendance information is available instantly, allowing teachers, and administrators to track attendance in real-time. The QR code system is safe because each code is unique and can only be used once. Only authorized people can mark attendance, which cuts down on scams and misuse. Finally, this system is cheap and doesn't need much upkeep or infrastructure

Keywords: Attendance monitoring

I. INTRODUCTION

Attendance monitoring in schools has historically been a vital yet laborious chore. Conventional methods like physical sign-in sheets or card readers have proven inadequate and error-prone. Technological advancements have led educational institutions to adopt digital attendance tracking systems, including biometric identification, RFID (Radio Frequency Identification) tags, and QR (Quick Response) code-based solutions.

To address attendance tracking issues, automated systems have been introduced. These systems include biometric authentication, radio frequency identification (RFID), and QR code scanning. QR code-based systems are particularly popular because they are user-friendly, cost-effective, and straightforward. In a QR code-based attendance system, individuals are assigned unique QR codes. When they scan these codes with their mobile devices, their attendance is automatically recorded and stored in a central database.

In a QR code attendance system, every student has a unique QR code with information like their name and ID. For each class, the teacher creates a QR code that students can see on a screen or a printed sheet. By scanning the QR code with their phones, students can record their attendance automatically.

QR code-based attendance tracking systems offer several advantages over traditional methods: * **Accuracy and Reliability:** Data is captured in real-time, eliminating the risk of errors and inaccuracies. * **Efficiency:** Attendance can be taken in seconds, making the process highly efficient.

QR code-based attendance systems offer significant benefits over traditional methods. They save time, freeing up teachers and students for essential tasks. Additionally, they are highly cost-effective, requiring only accessible smartphones or QR code scanners, unlike expensive biometric or RFID devices used in conventional systems.

II. PROPOSED APPROACH

The QR code-based attendance system aims to simplify attendance management in educational and corporate settings. It uses QR codes for quick and easy attendance tracking using smartphones or mobile devices. The system follows a

four-step process: **QR Code Creation:** Each student or employee is assigned a unique QR code that includes their name and ID number. These codes can be printed on ID cards or shared digitally.

 QR Code Scanning:** Students or employees use their smartphones or mobile devices to scan the assigned QR code. Attendance Trackicng:** The scanned QR code data is logged in a central database to record attendance.

 Reporting:** The system generates detailed attendance reports that can be accessed by administrators or authorized personnel.

 At the designated attendance location, a student or employee scans a QR code using a smartphone or mobile device equipped with a QR code scanner app. The app extracts the information in the QR code and transmits it to the attendance system's database for recording. The system creates an attendance record for each individual, accessible and viewable by authorized personnel. Attendance data is securely stored in a cloud-based database for convenient and remote access. The system offers reporting functionality for authorized personnel to retrieve attendance records of specific individuals or generate reports for groups or departments.

he new attendance control method provides several advantages compared to traditional methods: Eliminates manual data entry: Saves time and reduces error risk. *Real-time monitoring: Allows for immediate response to attendance irregularities. Streamlined administration Can be integrated with existing systems to simplify administrative tasks.
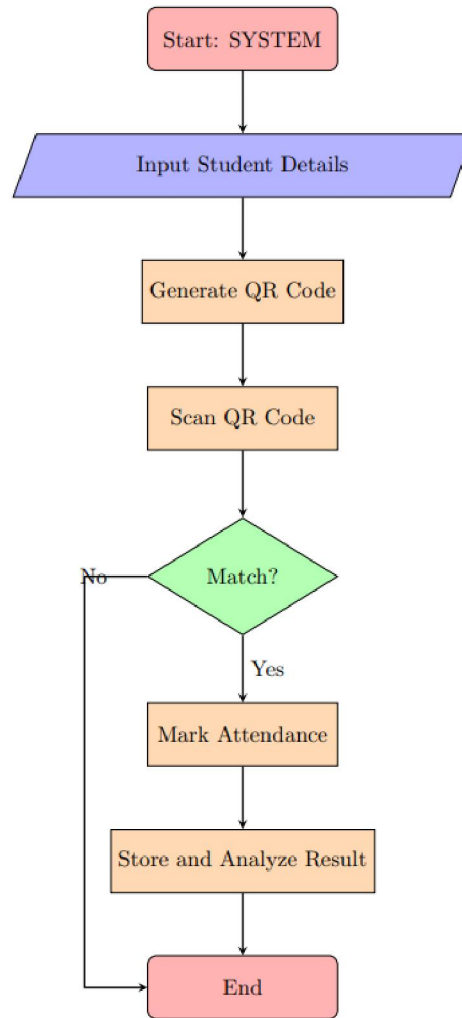
III. ALGORITHM

QR codes, the well-known two-dimensional barcodes, employ the Reed-Solomon algorithm to store information reliably. This algorithm works by adding extra symbols called parity symbols to the data stored in the QR code. This redundancy allows the code to be scanned and decoded even if some of its symbols are damaged or missing. The Reed-Solomon algorithm divides the data into blocks of symbols and uses polynomial division to generate parity symbols for each block. The number of parity symbols generated is determined by the degree of the polynomial used, with higher degrees providing better error correction but potentially making the code longer and harder to read.

IV. WORKING

A QR code-based attendance system is made up of three main modules: the admin module, teacher module, and student module. In the admin module, the administrator can set up the system and assign teachers to specific classes. They can also view attendance reports for each class and access attendance data. Usually, they can access the admin module through a web interface. In the teacher module, each teacher can create a QR code that is displayed on their mobile app. The students can scan the QR code to mark their attendance. The teacher can also see attendance reports for each student and generate reports for the entire class.

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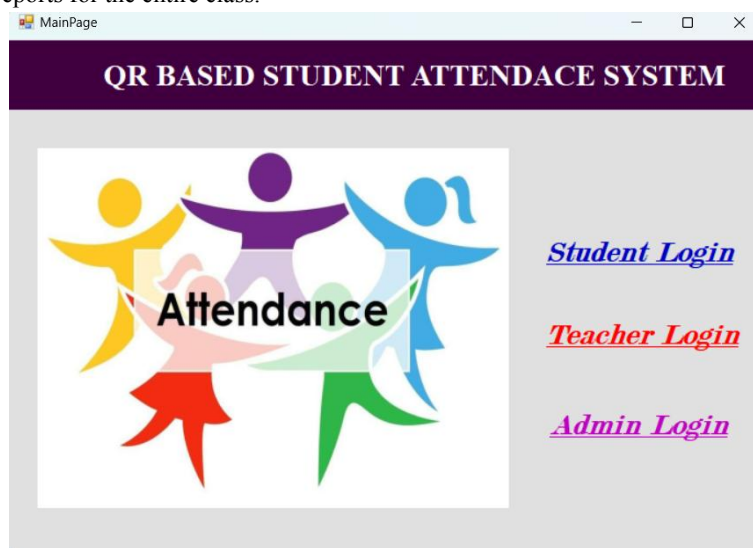
Flowchart

V. CONCLUSION

Using a QR code attendance system offers advantages such as reliability, efficiency, and convenience. It simplifies the attendance tracking process, saving time and effort compared to manual methods. Furthermore, it reduces the likelihood of errors or inaccuracies that can arise with manual attendance tracking.

By using QR codes for attendance tracking, schools can save money by not having to buy special equipment or software. Instead, they can just use mobile phones and free software. Students are responsible for scanning their own QR codes, which makes them more accountable for their attendance. This system encourages students to be on time and attend class more often.

The QR code-based attendance system offers advantages over traditional methods, including efficiency, accuracy, and cost-efficiency. While it faces challenges like connectivity and security, these can be addressed. The system has the potential to transform student attendance tracking in educational institutions.

VI. FUTURE SCOPE

The QR code attendance system is predicted to have a promising future because Increased Accuracy: This method removes manual attendance recording, minimizing errors. It guarantees precise attendance data, essential for educational institutions, public entities, and businesses. Time Efficiency: The QR code system is notably quicker than

manual or biometric attendance methods. It saves time spent on recording attendance, freeing up time for more productive tasks.

Cost-Friendly: The QR code attendance system saves money in the long run by replacing paper records and reducing costly biometric system maintenance. **Seamless Integration: It easily connects with existing systems like student databases, payroll software, and HR platforms, providing a centralized overview of attendance records.

Enhanced Security: Unlike paper systems, the QR code system reduces the risk of unauthorized attendance. It can also issue distinct QR codes for each class or group, ensuring authenticity.

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