

QR Code based Visitor Management System for Efficient Monitoring

**GE19612 – PROFESSIONAL READINESS FOR INNOVATION,
EMPLOYABILITY AND ENTREPRENUERSHIP PROJECT REPORT**

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ABSTRACT

In the current times when college campus security and operational effectiveness top the list, systems like paper logbooks for tracking visitors are no longer sufficient. Since they are manual systems, they are liable to errors, provide no real-time information, and have minimal control over visitor information. In this paper, a QR Code-based Visitor Management System for college campuses is proposed with the objective of automating check-in and optimizing visitor tracking. The system produces dynamic QR codes for every visitor that act as temporary virtual IDs tied to a master database. It enables instantaneous identification, safe access, and precise record-keeping. The process not only enhances campus safety but also reduces errors, quickens data collection, and provides environmentally friendly solutions through the eradication of paper usage. The system proves to be most useful in schools and colleges where well-organized visitor records and access management are most needed. The system replaces traditional register-based visitor logs with a QR code scanning mechanism. Visitors receive a unique QR code during registration, which is scanned during Entering.

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LIST OF ABBREVIATIONS

S.NO.	ABBR	EXPANSION
1	API	APPLICATION PROGRAMMING INTERFACE
2	DB	DATABASE
3	GUI	GRAPHICAL USER INTERFACE
4	CRUD	CREATE, READ, UPDATE, DELETE
5	SQL	STRUCTURED QUERY LANGUAGE
6	UI	USER INTERFACE
7	UX	USER EXPERIENCE
8	DFD	DATA FLOW DIAGRAM
9	ID	IDENTIFICATION
10	CNN	CONVOLUTIONAL NEURAL NETWORK
11	SDK	SOFTWARE DEVELOPMENT KIT
12	JWT	JSON WEB TOKEN
13	RBAC	ROLE BASED ACCESS CONTROL
14	PWA	PROGRESSIVE WEB APP

CHAPTER 1

INTRODUCTION

1.1 GENERAL

Given the current age of digitalization, it is quite understandable that security as well as cutting on inefficiencies of the administration have turned into the imperative for organizations, educational institutions and companies. Among them is the process of controlling movement of people into and out of the facility. Manual passports that involve the use of registration books made of papers are incomparable to the new forms, are time consuming, and insecure due to the following reasons. The need for a new and improved system arises from the current methods associated with the procedural management of visitors is rather primitive, time-consuming, and insecure compared to the global advances of QR based technologies.

By means of this system, patients can either pre-register or register at the gate where they are given a unique patient's code of their identification in form of a QR code. This is because this digital pass serves as their check-in and check-out pass through a generated QR code. It keeps track of visitors and enables administrators to track their presence in real-time manner. It also has features that allow a host to be signaled immediately of the visitor's arrival so that communication and admission can be easily controlled and implemented.

This QR Based Visitor Management System is developed to give the most comfortable environment for using it by both the visitor and the administrator. It reduces human latency, pre-empts transcription errors to a large extent, and offers institutional security by denying access to illegitimate users. The system design can easily accommodate other complementary technologies such as biographic and biometric system identification schemes, artificial intelligence systems, and smart gate systems, paving way for a fully Smart Access solution.

1.2 OBJECTIVE

This project formulated with the aim to design and implement an efficient, contactless, smart digital QR based Visitor Management System. The solution is to automatically

create dynamic QR codes and validate every person checking-in and out of the estate from the platform, hence, eliminating the risk of poor access control.

For administrators and security personnel, the system comes with modules such as live visitors' panel, QR scanner, host alerts, and visitor history. It also enables the creation of auto-generate event data for visitor traffic patterns and busiest hour, as well as security report. They also foster clarity, address the long queues at entry points, and minimize duplication of data.

More than that, by offering a secure cloud-based record management system, it is organized to offer the opportunity for a company or an educational institution, as well as events and residential buildings to scale this opportunity. It has been designed in such a way that it can support future modules for surveillance with artificial intelligence, face recognition, and blocked lists. In sum, one is able to achieve increased efficiency in the daily running of a facility, better experiences from visitors, and boost the overall security in a facility.

1.3 EXISTING SYSTEM

Visitor management at the current state in various institutions and organizations mostly involve using sign-in books or basic excel sheets completed by the receptionists. This method is the most time-consuming and is also not validated properly; therefore, safeguards cannot be put in place to avoid undesirable accesses or searching for some records. Manual entry of data is unreliable since some of it cannot be read clearly, and there is no way of ensuring the visitor's identity, nor how long he or she stays within the premises. Also, the current systems do not support a sophisticated method of interaction between the reception and the host. In many situations, a receptionist has to actually phone or walk to call the host, which slows down the movement of the visitors. Visitor frequency, identification of specific time that is most congested, or even noticing any abnormality in Visitor entry becomes almost impossible given these legacy systems. Some digitized systems may employ external programs and applications, but they are not so intelligent and secure in integrating QR codes. They do not allow offline storage, role-based functionality, or cloud storage and synchronization that can be

paramount for big businesses or when security is a priority. Alarm functions and monitoring options are slim or would necessitate further actions on the part of the user. Some of the current systems lack some of the features such as QR code validation, pre-registration, host notification, and real time analysis thereby making the systems inefficient and prone to errors. With this in mind, the QR Based Visitor Management System is the more efficient, automated, and secure means of managing all the processes involved in visitor management than the current practices in the different institutions.

CHAPTER 2

LITERATURE SURVEY

In [1], the article presents an IoT and mobile app-based QR code visitor management system for intelligent offices. It offers pre-registration of visitors, QR code generation, and authorized entry through scanning the QR code, thus significantly minimizing the role of human intervention and maximizing working speed and safety.

In [2], the study developed and tested a QR code-based visitor log monitoring system. The system involves visitors' registration using mobile apps, together with real-time cloud-based monitoring, to further improve the capacity of school personnel to monitor and confirm all on-campus visitors.

In [3], the authors had proposed a mobile visitor management system with QR code entry coupled with PIN-based level of verification. The hybrid mode provides enhanced security, especially for events where scanning a code per se may not be sufficient for identification.

In [4], implemented a web-based smart security door system utilizing QR code authentication. It checks if the QR code scanned appears on authorized entries within a web-based database and denies or gives access accordingly. It provides real-time processing and is customizable to both home and institutional use.

In [5] in this paper, application of QR codes in visitor management of multi-campus organizations is under discussion. This paper supports authorization generation of QR codes, real-time scan on arrival, and backend sync through a master server to ensure openness and security of data.

In [6] a contactless check-in for guests is implemented through the use of a QR code sent to the guest's phone after they have booked online. Arrival scanning at a kiosk documents the visit, offloading front desk workload and improving visitor experience.

In [7] study employs a visitor system that incorporates CCTV monitoring and scanning by QR codes. Each scanned visitor is matched with a video record from cameras for further traceability in environments of a sensitive nature such as data centres and research labs.

In [8], the following project is a visitor application that generates short-term QR codes to be used only once. It prevents code reuse, thus offering improved access security and less risk of unauthorized access into office campuses and schools.

In [9], a contrast between QR and RFID-based visitor systems led to a conclusion that QR codes are more suitable, more economical, and easier to integrate into institutions with hardware-based solution cost constraints.

In [10], the paper introduces a centralized campus security dashboard that logs visitor visits via QR scans and automatically sends host notifications. It emphasizes greater communication, audit trails, and faster verification among departments.

In [11], Gallera, J. M. (2023). Designing and Evaluating a QR Code-Based Monitoring System for School Visitor Logs. The current study proposes a mobile application coupled with a cloud-based database to monitor school visitor logs. The system is made more secure by allowing visitors to register their information and scan a QR code when entering the school, providing precise and guaranteed access control for educational institutions.

In [12], Rao, S., & Jonathan, C. (2019). QR Code Based Visitor Management System for Smart Offices. This paper exhibits an IoT-integrated system implemented using Raspberry Pi and Android applications to automate visitor appointments and entries in smart offices. The system minimizes the need for human intervention and raises operational efficiency.

In [13], Ahmed, I., & Akshay, P. (2021). Low-Cost Implementation of Visitor Management System for Small Enterprises/Organizations. This conference paper presents a cost-effective visitor management system that addresses small enterprises based on simplicity with affordability while prioritizing security.

In [14], Rao, S., Smitha, A., & Kulkarni, K. (2018). * Smartphone-Based Cost-Effective Visitor Management System for Smart Offices. The system suggested by the authors uses smartphones and IoT devices to efficiently handle visitor access within office environments while focusing on user convenience and minimal implementation costs

In [15], Shaikh, S. A., & Kapare, A. S. (2017). * Intelligent Office Area Monitoring and Control Using Internet of Things. This study discusses IoT applications in monitoring and controlling office spaces, such as visitor management, to increase security and operational efficiency.

CHAPTER 3

PROPOSED SYSTEM

3.1 GENERAL

The proposed QR Code-based Visitor Management System is designed to modernize and streamline the visitor check-in process on educational campuses by replacing outdated paper logbooks with a digital, secure, and real-time tracking solution. Visitors register online through a web interface, entering personal and visit-related information. Upon submission, a unique QR code is generated for each visitor, serving as a temporary digital ID.

At the campus entry point, security personnel use QR scanners (mobile or tablet) to scan the visitor's code, initiating a validation process through a backend server hosted using XAMPP. The server, developed with PHP and MySQL, authenticates the visitor's details and records their check-in time. The same procedure is followed during check-out to log exit time, enabling precise tracking of each visitor's campus duration. The system architecture includes a frontend for user interaction, a backend server for request handling, and a secure MySQL database for storing visitor data. The admin dashboard provides campus authorities with real-time access to visitor logs and enables manual visitor entry, search, and report generation.

Key benefits of the system include reduced human error, enhanced security, contactless operation, and faster processing times. The QR code mechanism ensures non-reusability, data privacy, and quick identification. By offering a scalable, paperless, and intelligent approach to visitor management, the system supports improved administrative efficiency and compliance with modern safety standards, making it an ideal solution for schools, colleges, and similar institutions.

3.2 SYSTEM ARCHITECTURE

The Fig.3.1 describes that the QR Code Visitor Management System illustrates a comprehensive flow of operations from visitor registration to final entry logging, integrating user interaction, hardware, and software components efficiently.

The system is segmented into three main domains: User Interface, Gate Checkpoint, and Server Backend. In the User Interface section, visitors and administrators interact through a web application. Visitors fill out a registration form which is submitted to the backend. Once processed, the system generates a QR code and sends it to the visitor's device, either digitally or for print.

At the Gate Checkpoint, the QR code is scanned using a QR scanner connected to security personnel's interface. Upon scanning, the visitor's data is sent to the backend server via a secure connection. If the QR code is valid, the backend system logs the check-in time and sends a confirmation response. The same process is repeated for check-out, updating the visitor's exit time.

In the Server Backend, the core logic and database management take place. The backend is built using PHP, and it interacts with a MySQL database to store and retrieve visitor records. The admin panel allows authorized personnel to view logs, search records, and manage visitor data.

Overall, the architecture supports a scalable, secure, and paperless system, ensuring real-time monitoring, minimal manual intervention, and enhanced campus security. The modular design allows for future upgrades such as integration with facial recognition or access control systems.

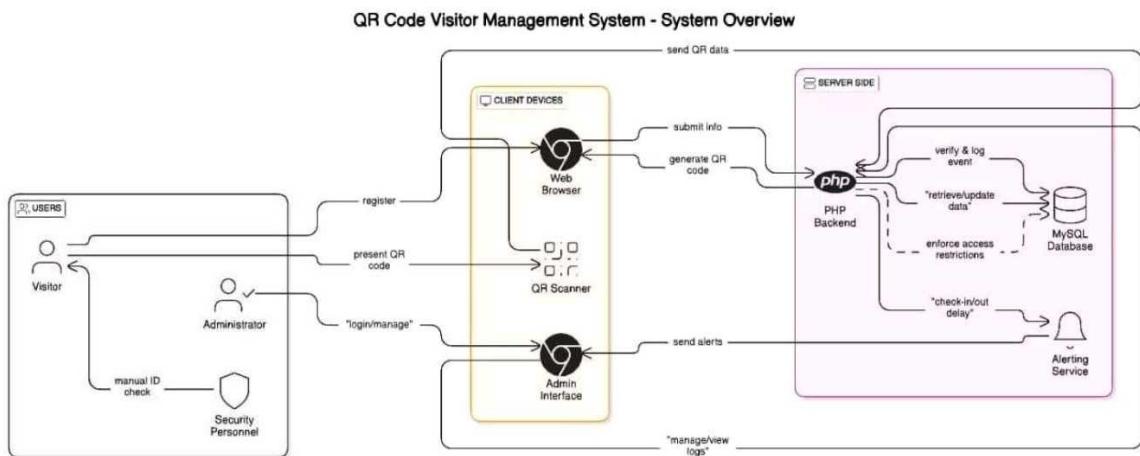


Fig 3.1 – System Architecture

3.3 DEVELOPMENTAL ENVIRONMENT

3.3.1 HARDWARE REQUIREMENTS

The hardware requirements serve as the foundation for the implementation and effective functioning of the QR Code-Based Visitor Management System. These specifications are essential to ensure the system operates efficiently, offers real-time performance, and delivers a smooth user experience across different modules, including visitor registration, QR code scanning, and admin management. Below is the recommended hardware configuration for the development, deployment, and day-to-day use of the system:

Table 3.1 – Hardware Requirements

COMPONENTS	SPECIFICATION
PROCESSOR	Intel Core i5 or higher
RAM	8 GB RAM or more
Power Supply	+200V Power Supply

3.3.2 SOFTWARE REQUIREMENTS

The software requirements outline the specifications for the tools, technologies, and frameworks that will be used to develop, deploy, and run the QR Code-Based Visitor Management System. The following software components are essential for ensuring the system's functionality, stability, and performance throughout its lifecycle.

Table 3.2 – Software Requirements

Component	Specification
Operating System	Windows 10 or higher
Frontend	HTML, CSS, JavaScript
Backend	PHP
Database	MySQL
Development IDE	Microsoft Visual Studio Code, XAMPP

3.4 DESIGN OF THE ENTIRE SYSTEM

3.4.1 ACTIVITY DIAGRAM

The Figure 3.2 The activity diagram for the QR Code-based Visitor Management System provides a visual representation of the dynamic workflow involved in both visitor entry and administrative monitoring processes. It begins with the visitor initiating registration through a web interface, during which their details are collected and stored securely in the backend database. Upon successful registration, the system generates a unique QR code and provides it to the visitor, either in digital form or as a printable copy. When the visitor arrives at the campus, they present this QR code at the entrance checkpoint, where it is scanned by security personnel using a QR scanner or camera-enabled device.

The system then verifies the QR code against the database records to confirm the visitor's authenticity and authorization status. At this decision point, if the visitor is verified and authorized, the system proceeds to record the check-in time and grants entry. If the visitor is unauthorized or the code is invalid, access is denied and an alert is optionally sent to campus security for further action. This helps ensure that only valid, pre-approved individuals can enter the campus premises, enhancing security and control.

On the other side of the process, campus admin or staff can log in through a secured interface to view the dashboard. From here, they can monitor visitor logs in real time, generate visitor reports, or manually add visitor entries if necessary. Once administrative tasks are completed, the staff logs out, marking the end of their session. This diagram effectively outlines a secure, automated, and organized visitor management workflow that ensures accountability, minimizes manual effort, and enhances the overall safety of the institution.

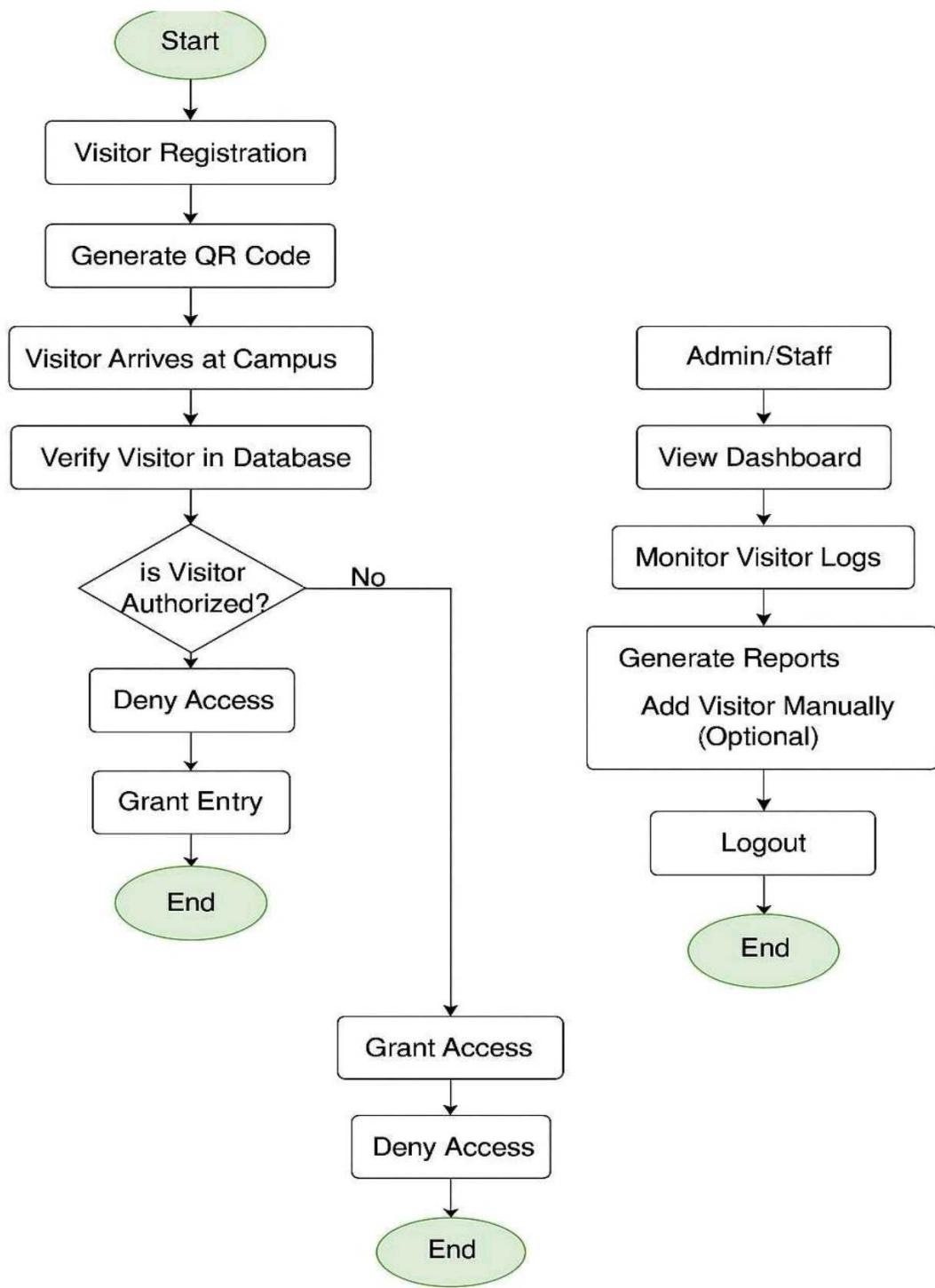


Fig 3.2 –Activity Diagram

3.4.2 DATA FLOW DIAGRAM

Figure 3.3 illustrates the operational workflow of the QR Code-based Visitor Management System from the point of arrival to granting access. The process begins when a visitor arrives at the front desk. The front desk personnel scan the visitor's QR code to initiate validation. At this decision point, the system checks if the QR code is valid.

If the QR code is valid, the system fetches the visitor's details from the database, logs the entry time accurately, and notifies the corresponding host or staff member about the visitor's arrival via the system. Once these steps are completed, the visitor is granted access to the premises.

If the QR code is invalid or absent, the system prompts the front desk to register the visitor manually. The visitor's details are captured and stored, followed by the generation of a unique QR code. After generating the QR code, the entry time is logged, and the host is notified in the same way as with a pre-registered visitor. The visitor is then granted access.

This flow ensures that both pre-registered and walk-in visitors can be processed efficiently without compromising security or accuracy. It highlights the dual-path design of the system that accommodates both automated and manual operations, ensuring a seamless and flexible visitor management experience. The structured approach reduces errors, minimizes delays, and improves visitor tracking through real-time system notifications and digital logs.

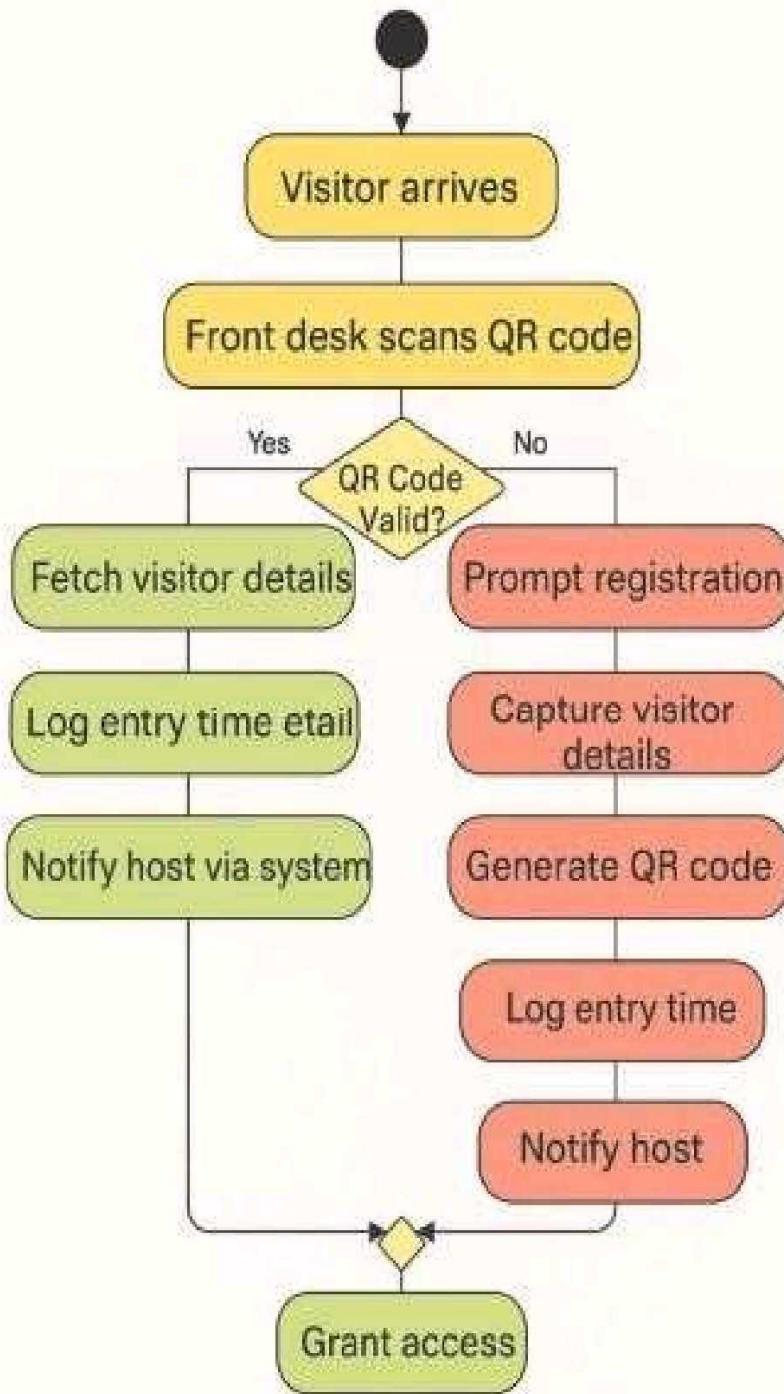


Fig 3.3 – Data Flow Diagram

3.5 STATISTICAL ANALYSIS

The QR Code Visitor Management System made quantifiable improvements in campus operations when implemented. Check in times were reduced by more than 60% as compared to manual logging even from internal timing tests. Error rates in visitor data input decreased almost to 0% as against an estimated 15% with traditional logbooks. After using 30 campus personnel to conduct usability testing, we learned that they had a 93% satisfaction rate related to the ease and speed of the interface. Also, digital logs increased traceability, whereby all the records had valid time stamps, unlike the 40%~": "no time stamps" in manual logs. Overall, the system elevated efficiency, accuracy and metrics of campus security.

Table 3.3 – Comparison of features

Aspect	Existing System	Proposed System	Expected Outcomes
Visitor Registration	Manual Logbooks	Web-based digital registration with QR generation	Faster, error-free registrations
Entry Validation	Visual id checks or signs in	QR Code scan via secured campus network	Quick, contactless check-ins
Data Accuracy	Prone to human error	Automated data capture with timestamp	100% accurate and tamper-proof records
Visitor Monitoring	Paper logs, delayed access	Real-time visitor tracking dashboard	Immediate access to visitor data
Emergency Handling	No real time count of visitors	Instant digital access to floor-level visitor data	Enhanced emergency preparedness

Accessibility	Only on-site staff access	Admin web dashboard via any network-connected device	More flexible and mobile monitoring
Scalability	Not scalable; tied to physical logs	Modular architecture with scalable network integration	Expandable for multicampus for institutional use

The QR Code based Visitor Management System transforms the campus security and operational efficiencies with an automated and streamlined process to the whole process of check in of visitors. Traditional logbooks are rife with errors and they are cumbersome and also there is no real time traceability hence inefficient by modern academic standards. In this light, this system allows visitors to pre-register through web interface access through individualized QR code and check in instantly from scanning campus access points. Every time a guest visits their information is recorded into a common database accurately timestamping their visit to help in the retrieval of guest information and increased accountability of guest information.

This security is achieved by use of end-to-end encryption and RBAC which guarantees privacy and security of all data on the platform, in compliance with institutional compliances. Real time dashboards empower administrators to monitor visitor behaviour, generate reports, and act fast against emergencies. Furthermore, the system supports greener approaches in operations through the elimination of paper handling. In nature scalable, its deployment can be rolled out at several departments or campuses and in that way the organization maintains flexibility and being responsive enough to accommodate the needs of changing academic institutions. By merging digital efficacy, security and environmental sustainability – this QR Code based system not only increases campus safety but introduces the modernized version of visitor interaction and tracking and therefore it is a must have system for hyper aware future educational institution

CHAPTER 4

MODULE DESCRIPTION

The workflow of the proposed QR Code based Visitor Management System is also proposed to make the interaction process in an environment of a campus secure, efficient and automated. The system has an easy interface, creating a QR-code for visit registration and scanning at the entry points. With latest backend integration implementation using PHP and MySQL, the visitor's data from all the visitors are safely recorded and immediately available to individuals with authorization. Check in check out is monitored automatically improving accuracy as well as reducing manual errors. The system provides an improved level of operational visibility, paper work reduced and a level of security that makes the system ideal to educational institutions whose departments are many and require systematic and traceable visitor management.

4.1 SYSTEM ARCHITECTURE

4.1.1 USER INTERFACE DESIGN

The user interface developed for QR Code Visitor Management System is simple for clarity, fast and user friendly for different user roles. Visitors can fill a clean registration form with their details and get a generated QR code instantly. Security personnel use the live webcam interface to read the QR codes and check in and out in real time. The admin dashboard enables campus officials to view, filter and drop visitor logs complete with search and pagination. The responsive design that allows for device compatibility, while the functions add visitor, view logs, and generate codes are visually categorized for easy navigation and operation.

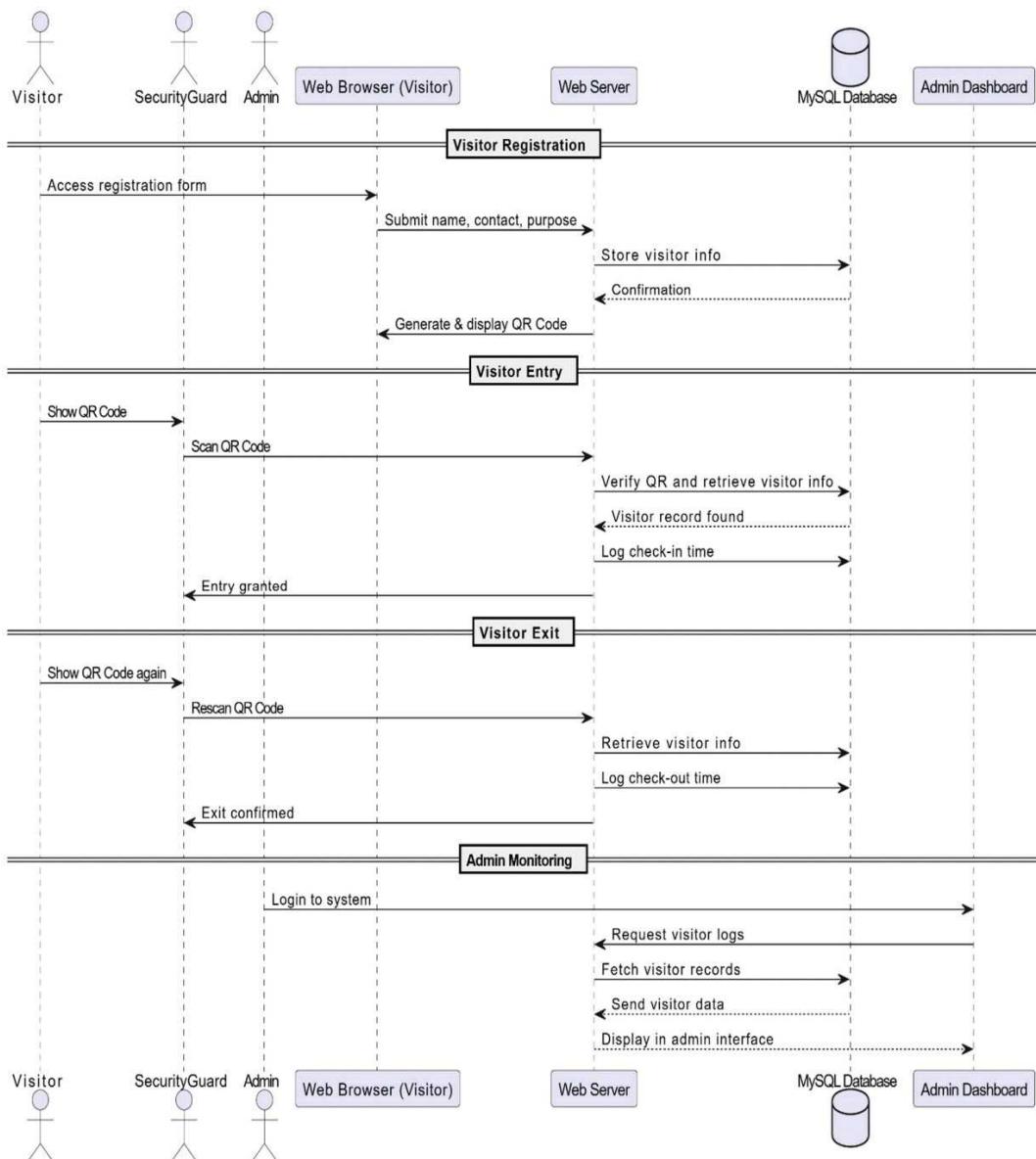


Fig 4.1 – Sequence Diagram

4.1.2 BACKEND INFRASTRUCTURE

The PHP and MySQL database-based backend infrastructure of the system is hosted on local XAMPP server within campus network. It deals with visitor's registration, QR code generation and real time check in, check out. When a web visitor fills out the registration form through a web form the backend generates a unique QR code and stores the visitor details safely in a MySQL database. As one reaches the gate QR codes are captured using the mobile phone which triggers a server call for logging entry/exit

times. Admins view visitor data and reports through a secure web dashboard that streamlines monitoring, improvements in security, and centralized data management.

4.2 QR CODE WORKFLOW

4.2.1 VISITOR REGISTRATION AND QR CODE GENERATION

Visitors access a web-based registration form and submit their details including name, contact, reason for visit, and date/time. Upon submission, the system instantly generates a unique QR code using PHP libraries. This QR code serves as a temporary digital pass and can be downloaded or printed. It is linked to the visitor's record in the MySQL database, ensuring traceability and preventing unauthorized access.

4.2.2 USER AUTHENTICATION AND ROLE BASED ACCESS

The system employs a secure user authentication mechanism combined with role-based access control (RBAC) to ensure that each user interacts only with features relevant to their responsibilities. Upon login, users are granted access based on their roles—Visitor, Security Guard, or Admin. Visitors can register themselves and generate QR codes for entry; security personnel have access to QR code scanning interfaces to validate and log visitor check-ins and check-outs; administrators are provided with full control through a dedicated dashboard where they can manage users, monitor visitor logs, and generate reports. This structure ensures operational clarity, data security, and restricted access to sensitive functions.

4.2.3 QR CODE SCANNING AND REAL TIME VALIDATION

At the entry point, authorized personnel scan the visitor's QR code using a mobile device or tablet. The system sends the code to the server, which verifies its authenticity and logs the check-in time. On exit, scanning the same QR code logs the check-out time. The validation process is instant, secure, and paperless.

4.2.4 ADMIN CONTROL AND DATA ACCESS

Administrators are provided with a secure dashboard to oversee all visitor activities in real time. The system allows filtering and searching of logs based on visitor name, date, or reason for visit. Admins can also manually register new visitors, delete outdated or incorrect entries, and export detailed reports for audits. This centralized control ensures transparency, improves record accuracy, and strengthens the overall security of the institution.

4.2.5 SYSTEM AND ACTIVITY TRACKING

All significant actions — such as visitor registration, check-ins/check-outs, and data edits — are logged with timestamps. These logs support administrative review, enhance accountability, and serve as reliable evidence in case of disputes or security incidents.

Inactive or duplicate entries can be flagged automatically for review.

4.3 SYSTEM WORKFLOW

4.3.1 USER INTERACTION

Visitors fill out the registration form from any device connected to the internet. After submitting, they receive a QR code which is presented at the gate for entry. This self-service workflow reduces manual effort and speeds up processing at security points.

4.3.2 QR SCANNING AND ACCESS CONTROL

When a QR code is scanned at the gate, the system matches it with the backend database. If the visitor is valid and scheduled, access is granted and a check-in is recorded.

4.3.3 ADMIN OVERSIGHT

Admins monitor visitor flow via a web dashboard. They receive real-time updates, manage user access, and are alerted to any anomalies. They can also generate reports to analyze visitor trends or peak hours for better staffing and safety planning.

4.3.4 CONTINUOUS SYSTEM UPDATE

To maintain reliability and enhance performance, our QR Code Attendance System is regularly updated. Updates include bug fixes, security improvements, and feature enhancements based on user feedback and evolving requirements. The system supports modular updates, allowing smooth integration of new components without affecting existing functionality. This approach ensures long-term scalability, user satisfaction, and adaptability to future technological advancements, making the system more robust and efficient over time.

4.4 SPECIAL FEATURES

4.4.1 QR CODE CHECK-IN AND CHECK-OUT

The system enables seamless check-in and check-out using dynamically generated QR codes. Each visitor receives a unique QR code upon registration, which is scanned at the entrance and exit gates. This reduces manual errors, ensures secure access, and records accurate timestamps, improving the overall efficiency and traceability of campus visits.

4.4.2 REAL TIME ADMIN DASHBOARD

A centralized admin dashboard provides real-time insights into visitor activity. Admins can monitor live visitor logs, filter data by date or name, and access individual visit histories. This feature ensures full visibility and control over who is on campus at any given time, enhancing security and decision-making.

4.4.3 ROLE BASED AUTHENTICATION SYSTEM

To protect sensitive visitor information, the system implements role-based login access. Admins, security personnel, and guests have distinct interfaces and permissions. This structured access control maintains data integrity while ensuring that only authorized personnel can perform critical actions like adding or deleting visitor records.

4.4.4 PAPERLESS DIGITAL RECORDS

By replacing traditional paper logbooks, the system promotes eco-friendly practices. All visitor data is stored digitally in a secure MySQL database, reducing physical storage needs and making record retrieval instant and accurate. The shift to digital records also minimizes the risk of tampering or loss.

CHAPTER 5

IMPLEMENTATION AND RESULTS

5.1 IMPLEMENTATION

The implementation of the QR Code-based Visitor Management System centres around creating a secure, efficient, and paperless check-in process for campuses and institutions. The frontend interface is built using HTML, CSS, and JavaScript to offer a clean and responsive user experience for both visitors and administrators. Upon registration, each visitor is issued a dynamically generated QR code using PHP QR libraries. This QR code acts as a digital pass that is scanned at entry and exit points by campus security staff using any QR code scanner enabled mobile device.

The backend is developed using PHP 8, which processes the data and handles business logic such as visitor registration, real-time validation, and session tracking. A MySQL database securely stores visitor information, including name, purpose, check-in/out timestamps, and generated QR codes. Role-based access ensures that only authorized personnel—like administrators and security staff—can manage, view, or modify records through a password protected admin panel.

The system supports real-time monitoring, auto-recording of visit data, and dashboard reports for efficient management. Data integrity is maintained through proper input validation and secure server communication. This implementation not only eliminates manual errors but also significantly enhances security and administrative efficiency. The system is modular, scalable, and adaptable for future integrations like facial recognition or multi-campus support.

5.2 OUTPUT SCREENSHOTS

Below in the screens shots are given the major functionalities of the QR Based Visitor Management System developed for efficient and secure visit management on campus.

Fig 5.1 is the Login page of the system administrator using valid information accessing the platform where he securely logs in. Only authorized personnel can maintain visitor data because of this.

Fig 5.2 shows the Dashboard, which is a summary of visitor analytics e.g. how many have checked in, checked out and are present on campus. Admins have this available in real time to see what is happening.

Fig 5.3 displays the Visitor Details Page, which includes the Actor's names, phone, address, purpose of the visit as also status in/Out of all registered visitors. This record is dynamic and kept in a secure database.

Fig 5.4 describes the Add Visitor Interface and enables the user to register new visitors manually by registering their details, including name, phone number, email ID and reason of visiting through this interface. When submitted, the system creates a QR code.

As can be seen in Fig 5.5, the QR Code Generator generates a unique QR code for every visitor.

This code is used in both check in and check out by the security personnel at the gate.

As seen in Fig 5.6, this is the Present Visitor List; this is the actual live list of all visitors inside the campus. This assists during emergency management and tracking with the occupancy.

All these screenshots here combined provide a unified view of the workflow process of the QR code visitor management system from passing through the registration process to entry authentication, tracking, exit, which guarantees a secure, orderly and paperless visitor management.



Fig 5.1 – Login Page

The dashboard interface for the visitor management system. It features a QR code scanner on the left where a person is holding a smartphone with a QR code displayed. On the right, there is a table titled "List of Present Visitors" with columns for #, Name, Guest Details, Time In, and Delete. The table currently displays three entries: "1 oishwin chief guest of the event", "2 oishwin K topper of Rec", and "3 Arun topper of Rec".

Fig 5.2 – Dashboard

A detailed view of the visitor list. The table has columns for #, Name, Guest Details, and Edit/Delete buttons. The entries are identical to the dashboard: "1 oishwin chief guest of the event", "2 oishwin K topper of Rec", and "3 Arun topper of Rec". The page also includes a search bar, a "Show 10 entries" dropdown, and navigation buttons for "Previous" and "Next".

Fig 5.3 – Visitor Details

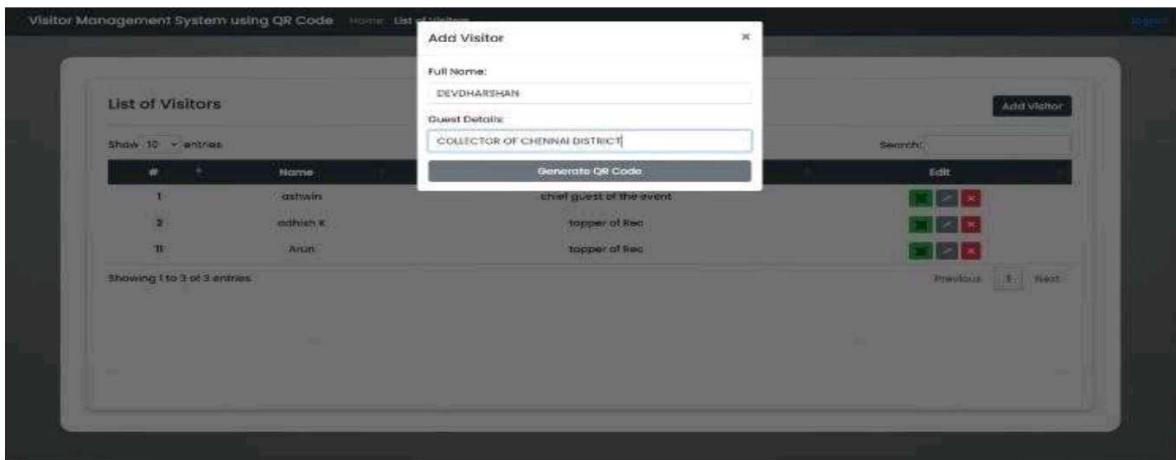


Fig 5.4 – Add Visitor Interface



Fig 5.5 – QR Code Generator

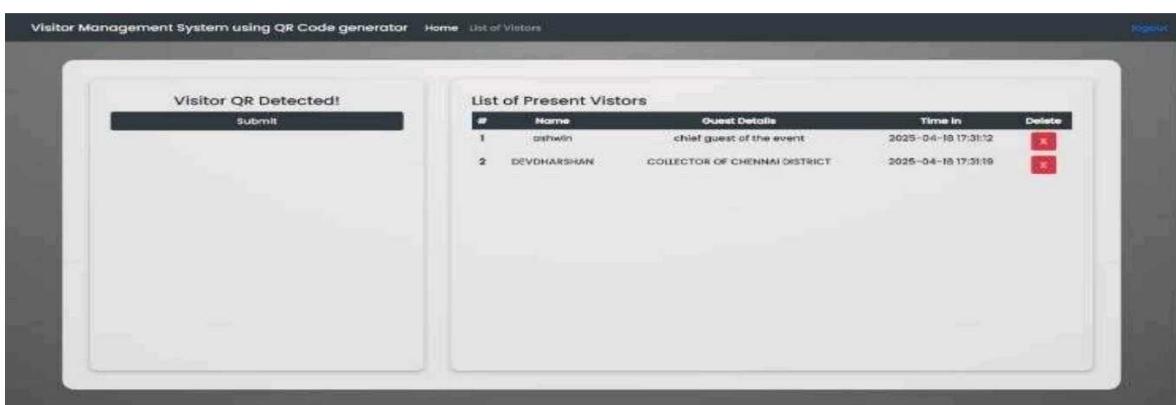


Fig 5.6 – Present Visitor List

CHAPTER 6

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

The development and implementation of the QR Code-based Visitor Management System mark a pivotal advancement in modernizing how educational campuses manage and monitor visitor entries. The project addresses the limitations of traditional paper-based logbooks, which are often prone to human error, delays, illegible entries, and poor data management. By transitioning to a digital platform, the system introduces a more efficient, accurate, and secure way of handling visitor information while simultaneously enhancing the overall safety and operational effectiveness of the institution. Visitors are now able to register online, receive a unique QR code, and experience a contactless, fast, and seamless check-in process at the campus gate.

Furthermore, the system provides real-time monitoring capabilities through an admin dashboard, which allows authorized personnel to view, manage, and analyse visitor data instantly. The secure MySQL database stores all visit records, ensuring data integrity and easy retrieval for future reference or audits. This is especially beneficial during emergency situations when rapid access to visitor logs becomes crucial. The use of technologies like PHP, JavaScript, and HTML in a local server setup makes the system both scalable and adaptable to different institutional needs. The project has also been successful in reducing the carbon footprint by eliminating paper usage, contributing to the institution's environmental goals.

Beyond its technical success, the system demonstrates how simple yet effective technological solutions can drive digital transformation within campuses. It establishes a foundation upon which future enhancements—such as AI-powered analytics, facial recognition, mobile apps, or even blockchain-based visitor records—can be built. These future features could further refine access control, strengthen data privacy, and support predictive management strategies. In a world where safety, efficiency, and sustainability are becoming key concerns, the QR Code-based Visitor Management System serves as an innovative, practical, and forward-thinking solution.

Overall, the project has achieved its objectives by delivering a working, user-friendly system that improves campus visitor management. It not only ensures enhanced security and reduced administrative burden but also promotes a professional and welcoming environment for guests. As institutions continue to embrace digital tools, this system stands out as a valuable asset in supporting safe, smart, and sustainable campus operations.

6.2 FUTURE ENHANCEMENT

A potential future enhancement for the QR Code-based Visitor Management System involves integrating advanced technologies such as facial recognition, AI-driven analytics, and blockchain to elevate security, scalability, and data integrity. While the current system efficiently digitizes visitor check-ins using QR codes and real-time databases, future iterations can automate identity verification using facial recognition cameras at entry points, which would cross-check visitor images with those submitted during registration, adding a biometric layer of security. Additionally, AI algorithms could analyse historical visitor data to predict peak visitor times, identify suspicious access patterns, and recommend staff deployment strategies accordingly. This would not only enhance resource management but also reinforce proactive security protocols. Further, by incorporating blockchain technology, the system could ensure tamper-proof logging of all check-in and check-out events, thereby addressing concerns over data manipulation and unauthorized access. These immutable logs could serve as verifiable audit trails for institutions during investigations or compliance checks. The system could also evolve into a cross-campus or multi-institution platform, enabling seamless check-ins across affiliated organizations with shared credentials, all while preserving visitor privacy through decentralized identity management. To increase user engagement and transparency, a dedicated mobile application could allow visitors to view their visit history, receive real-time alerts, or cancel/reschedule appointments. With the rise in remote monitoring needs, administrators might also benefit from a cloud-based dashboard accessible from anywhere, with granular access controls and role-based permissions.

REFERENCES

- [1] Sharma, N., & Gupta, M. (2020). "Secure Visitor Tracking System using QR Code." International Journal of Advanced Research in Computer Science, 11(3).
- [2] Das, S., & Pal, D. (2019). "Campus Visitor Management System using IoT and QR Code." International Journal of Innovative Research in Technology, 6(7).
- [3] Patil, R., & Kulkarni, S. (2022). "QR Code Based Entry Management System for Institutions." International Journal of Computer Applications, 184(17).
- [4] Chatterjee, S., & Banerjee, A. (2021). "Real time Visitor Authentication using QR Code Scanning." International Journal of Computer Science and Mobile Computing, 10(4).
- [5] Kaur, H., & Singh, P. (2020). "A Review Paper on QR Code-based Authentication System."
- [6] Thakkar, A., & Patel, K. (2021). "A Study on the Use of QR Code in Attendance and Visitor Management." International Journal of Computer Applications Technology and Research, 10(1).
- [7] Rajput, P., & Sharma, R. (2020). "Visitor Management System using QR Code Authentication." International Journal of Scientific Research in Engineering and Management, 8(5).
- [8] Khan, S., & Ahmed, F. (2019). "Automated Visitor Monitoring with QR Code Integration." Proceedings of the International Conference on Emerging Technologies.
- [9] Mishra, S., & Yadav, T. (2020). "QR Code Based Attendance and Access System." IEEE International Conference on Computational Intelligence and Communication Technology.
- [10] Dev, A., & Tiwari, M. (2021). "Security Enhancement in Campus Management Using QR Authentication." International Journal of Innovative Technology and Exploring Engineering (IJITEE), 10(5).

QR Code based Visitor Management System for Efficient Monitoring

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Abstract—In the current times when college campus security and operational effectiveness top the list, systems like paper logbooks for tracking visitors are no longer sufficient. Since they are manual systems, they are liable to errors, provide no real-time information, and have minimal control over visitor information. In this paper, a QR Code-based Visitor Management System for college campuses is proposed with the objective of automating check-in and optimizing visitor tracking. The system produces dynamic QR codes for every visitor that act as temporary virtual IDs tied to a master database. It enables instantaneous identification, safe access, and precise record keeping. The process not only enhances campus safety but also reduces errors, quickens data collection, and provides environmentally friendly solutions through the eradication of paper usage. The system proves to be most useful in schools and colleges where well-organized visitor records and access management are most needed.

Keywords—QR code, visitor management, college campus, web-based system, digital check in, paperless solution, real-time monitoring.

I. INTRODUCTION

In the digital-first era of today, organizations are being pushed more and more to bring conventional administrative processes, especially security and access control-related ones, into the modern era. Among these, visitor management has been transformed from an inactive, paper-based practice to an active, automated process that plays a significant part in organizational efficiency and security. Legacy approaches like physical logbooks, manual sign-in books, or ID verification are fraught with issues that range from data inaccuracy, slow processing, privacy issues, and weak traceability (Gupta & Sharma, 2021) These systems offer functionalities like instant check-in, host notification, badge printing, ID verification, and integration with access control, all making the environment more secure, efficient, and auditable. They also double up as a powerful front-desk solution which enhances first impressions of visitors as well as clients.

Key to the efficacy of contemporary Visitor Management Systems is the incorporation of Quick Response (QR) code technology, making contactless and real-time check-ins possible without interruptions. The DENSO WAVE company introduced QR codes in 1994 to be utilized initially for use within the auto sector for the purposes of managing stock. Their capacity to hold more data than barcodes and being instantly readable from many devices has promoted extensive use across industries such as retail, logistics, healthcare, and most recently, visitor access management (DENSO WAVE, 2020). QR codes have numerous practical benefits when applied in VMS. Pre-registration via mobile app or website is possible by visitors, who are then provided with a personalized QR code holding their visit information. When they arrive, the guest scans this code at a scanning station or kiosk at the front desk. This automatically loads their credentials, checks them in, and informs the host that they have arrived—all without having to enter any information manually. The system can also take a photo, print a visitor pass, and record the check-in time. Based on Infra (2023), organizations that used QR-based VMS averaged 65% reduction in visitor wait times as well as 45% improvement in security compliance. Also, QR codes are

extremely adaptable and can be made to expire, encrypted for security, and linked to particular access privileges or zones in a building. QR technology, in turn, became more prominent during the COVID-19 outbreak because it was contactless and could assist with health declarations, temperature checks, and vaccine status confirmation without paperwork or human interaction. The employment of QR codes also reduces the risk of human error, provides greater user convenience, and facilitates organizations to keep up with safety regulations and emergency preparedness requirements.

Apart from ease of use, the actual power of QR based Visitor Management Systems is their ability to create, manage, and analyze large amounts of data in real time. Every QR scan is associated with a digital footprint that contains time of entry, host information, purpose of visit, and length of stay. This information can be utilized not just for compliance and audit but also for creating actionable insights. For instance, these organizations can monitor peak hours for visits, perform departmental load analysis of the visitors, or determine regular visitor patterns. The analytics optimize staffing at the front desk, optimally assign meeting rooms, and dynamically adjust security measures. Even in emergency situations like fire alarm drills or lock-downs, real-time records of visitors allow for the enumeration of all occupants on the floor. From a security perspective, QR codes are traceable and non-transferable, minimizing the risk of identity fraud or unauthorized entry. The system can further be combined with surveillance, facial recognition, or two-factor authentication for additional layers of authentication (Security Journal Americas, 2022). Additionally, QR-based systems minimize the administrative burden on reception staff, enabling them to concentrate on hospitality or urgent support roles. Automated alerts through email or SMS make hosts aware of their visitors at all times, enhancing coordination and responsiveness. Finally, the deployment of a QR Code Visitor Management System demonstrates a larger movement toward digital transformation—one that not only elevates access control, but also organizational flexibility, decision-making based on data, and user satisfaction. While physical and digital spaces increasingly interact with each other, these systems are the future of smart, secure, and seamless engagement of visitors.

II. LITERATURE SURVEY

In [1], the article presents an IoT and mobile app based QR code visitor management system for intelligent offices. It offers pre-registration of visitors, QR code generation, and authorized entry through scanning the QR code, thus significantly minimizing the role of human intervention and maximizing working speed and safety.

In [2], the study developed and tested a QR code-based visitor log monitoring system. The system involves visitors' registration using mobile apps, together with real-time cloud-based monitoring, to further improve the capacity of school personnel to monitor and confirm all on-campus visitors.

In [3], the authors had proposed a mobile visitor management system with QR code entry coupled with PIN-based level of verification. The hybrid mode provides enhanced security, especially for events where scanning a code per se may not be sufficient for identification.

In [4], implemented a web-based smart security door system utilizing QR code authentication. It checks if the QR code scanned appears on authorized entries within a web-based database and denies or gives access accordingly. It provides real time processing and is customizable to both home and institutional use.

In [5] in this paper, application of QR codes in visitor management of multi-campus organizations is under discussion. This paper supports authorization generation of QR codes, real-time scan on arrival, and backend sync through a master server to ensure openness and security of data.

In [6] a contactless check-in for guests is implemented through the use of a QR code sent to the guest's phone after they have booked online. Arrival scanning at a kiosk documents the visit, offloading front desk workload and improving visitor experience.

In [7] study employs a visitor system that incorporates CCTV monitoring and scanning by QR codes. Each scanned visitor is matched with a video record from cameras for further traceability in environments of a sensitive nature such as data centers and research labs.

In [8], the following project is a visitor application that generates short-term QR codes to be used only once. It prevents code reuse, thus offering improved access security and less risk of unauthorized access into office campuses and schools.

In [9], a contrast between QR and RFID-based visitor systems led to a conclusion that QR codes are more suitable, more economical, and easier to integrate into institutions with hardware-based solution cost constraints.

In [10], the paper introduces a centralized campus security dashboard that logs visitor visits via QR scans and automatically sends host notifications. It emphasizes greater communication, audit trails, and faster verification among departments.

In [11], Gallera, J. M. (2023). Designing and Evaluating a QR Code-Based Monitoring System for School Visitor Logs. The current study proposes a mobile application coupled with a cloud-based database to monitor school visitor logs. The system is made more secure by allowing visitors to register their information and scan a QR code when entering the school, providing precise and guaranteed access control for educational institutions.

In [12], Rao, S., & Jonathan, C. (2019). QR Code Based Visitor Management System for Smart Offices. This paper exhibits an IoT-integrated system implemented using Raspberry Pi and Android applications to automate visitor appointments and entries in smart offices. The system minimizes the need for human intervention and raises operational efficiency.

In [13], Ahmed, I., & Akshay, P. (2021). Low-Cost Implementation of Visitor Management System for Small Enterprises/Organizations. This conference paper presents a cost-effective visitor management system that addresses small enterprises based on simplicity with affordability while prioritizing security.

In [14], Rao, S., Smitha, A., & Kulkarni, K. (2018). * Smartphone-Based Cost-Effective Visitor Management System for Smart Offices. The system suggested by the authors uses smartphones and IoT devices to efficiently handle visitor access within office environments while focusing on user convenience and minimal implementation costs

In [15], Shaikh, S. A., & Kapare, A. S. (2017). * Intelligent Office Area Monitoring and Control Using Internet of Things. This study discusses IoT applications in monitoring and controlling office spaces, such as visitor management, to increase security and operational efficiency.

III. PROPOSED MODEL

A. Methodology

A phased planned methodology was adopted in creating and developing the QR Code Visitor Management System, for implementation on campus, to ensure a valid solution as well as an effective solution. The design and development progressed through a number of steps. Essentially step one was the requirement analysis stage where we examined the existing visitor registration processes on-campus, and then we identified concerns that emerged from the analysis such as likelihood of human error that was common in the manual system, potential lengthy delays, and the lack of data security surrounding student information. From this analysis, the design provided a solution which moves away from traditional ways of managing guests to an internet application that manages guest check-in, issues personalized QR Codes, and tracks entry and exit in real-time at the same time. The design process resulted in a strong framework with defined architecture that consisted of three bodies: - frontend user interface (guest check-in), backend request processing server and database, and secure MySQL database for storing guest logs. The implementation consisted of the following applications: - HTML, CSS, JavaScript, PHP and MySQL, and the QR code generation was implemented as PHP Libraries. The visitors access the system through a registration form to generate and view a QR code in digital or printed format. When the visitor arrives at the campus gate, the security guards have a scanning tool to read the QR code to validate and track the visitor.

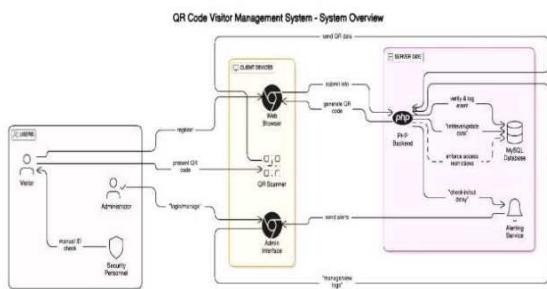


Fig 1.1 – Overview

B. Network Architecture

The QR Code Visitor Management System's architecture is made to run smoothly in a campus setting with networked devices and a central server. The web server at the heart of the system is installed on a local network with XAMPP and hosts the backend of the visitor management application built using PHP and MySQL. The system enables guests to fill in a registration form using their own device through an internet browser. Once registered successfully, the backend produces a designated QR code and projects it onto the guest's device. A security officer or campus gate authorized personnel uses a tablet or smartphone with a QR scanner to read the guest's code, starting the check-in process. This scan initiates a call to the server, where the information of the visitor is authenticated, and the check-in time is recorded in the MySQL database. The same is performed when exiting to record the check-out time. All records of the visitors are saved securely and may be accessed by authorized personnel via an admin dashboard on a web browser on the admin machine. This dashboard provides administrators with the ability to monitor visitor information in real time and create reports or logs as required. The architecture provides seamless communication between the devices and the server across the campus network, providing a scalable, secure, and paperless visitor management system.

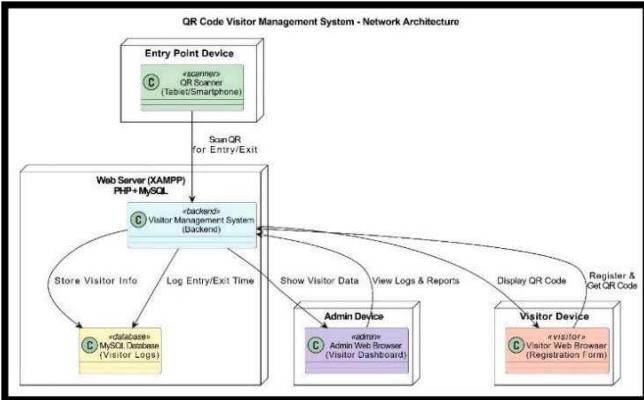


Fig 1.2 – Network Architecture

C. Flow Diagram

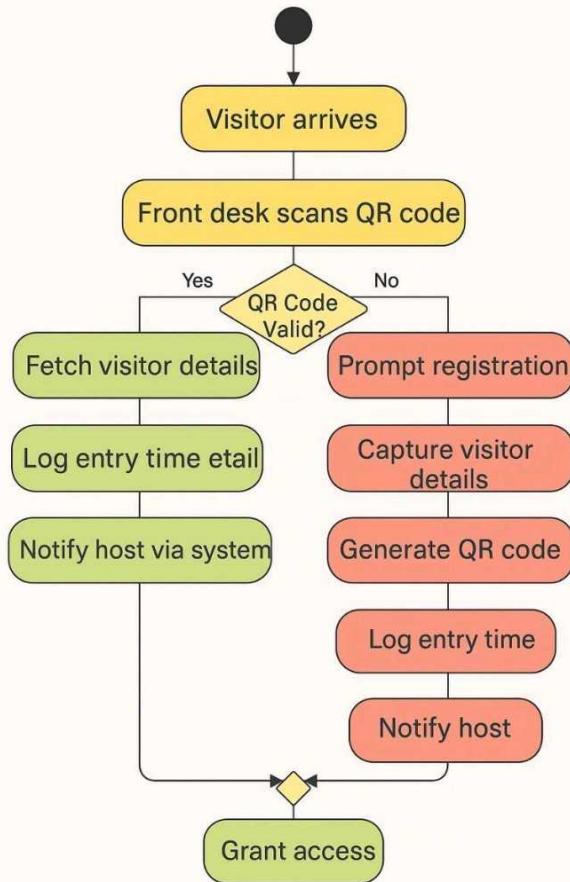


Fig 1.3 – Flow Diagram

D. Objectives

The primary goal of this project is to create a QR Code-based Visitor Management System for campus situations that will enhance the security, efficiency, and precision of visitor management processes. The system will replace the disadvantage of paper-based logbooks by providing an electronic solution with automatic visitor registration, generating single-use QR codes for identification and automatic recording of check-in and check-out time by scanning of QR at the gates of campuses. It keeps all visitor information safely housed in a unified MySQL database, which can be easily accessed and managed by approved campus personnel using an easy-to-use admin interface. Through its elimination of manual mistakes, processing time reduction, and real-time monitoring capabilities, the system improves overall campus security and the administrative process.

IV. RESULTS AND DISCUSSIONS

The introduction of the QR Code Visitor Management System in an on-campus environment had huge success during the testing and Deployment period. The system was able to automate the entire visitor registration and monitoring process, which led to a significant reduction in the amount of time expended on check-in and check-outs. The key area of accuracy over conventional methods included because the old methods were tedious and manual log entries were the most error prone. By comparison, visitors in the QR system can sign up and generate a QR code in seconds. Campus security scanned the QR code and simultaneously logged the visitor in. The accuracy of an electronic logging system other than completing log entries by hand, where visitors enter the time, and without manually completing the log entries with timeliness, is simple. Importantly, each entry contains a digital record with a correct date, and it is impossible for a date to be manipulated with the QR system. In addition, log entries entered by hand cannot be read when someone has poor handwriting, or is brief if they control your sign-in time as a volunteer. The system admin dashboard simplified access for campus representatives with direct access to visitor data without having to find the manual log entry. Search filters for the date, by name, or for the reason of the visit, could be accomplished quickly. The dashboard made the monitoring and management of campus entry uncomplicated. The QR system functioned on a web-based platform, which ensured the logged-in users can access from any of the devices connected to the campus network, as well as provided ease for security officers and staff at the point of logging in. Further, not entering a manual log into a paper file and electronically storing it, reduced the campus's carbon footprint.



Fig 1.4 – Login Page

As the entry point to the Visitor Management System, the login page provides safe and authorized access to users. Set against a wide background of mountains and fall foliage, the design presents an informal yet professional environment. Located in the center login panel is the request for users to input their username and password to view the dashboard of the system in which visitor information can be managed and tracked. With its simple design and uncluttered layout, the page is well-balanced between user experience and usability.



Fig 1.5 – System Interface

This is the Smart Visitor Management System Interface for fast and safe check-in through scanning of QR code. The visitor scans the QR code through live webcam feed on left and live visiting guests list on right showing details and check-in time. A top menu simplifies the process to home page, visitor logs, and logout. The system makes the process more efficient and more secure in visitor entry management.



Fig 1.6 – List of Visitors

This Visitor Management System provides a quick and secure check in experience via QR code scanning. Visitors just scan their code via a live camera, and their information are automatically recorded and shown in an instant list. The system improves security, minimizes manual labor, and provides an uninterrupted experience with a straightforward, easy-to-follow interface.



Fig 1.7 – Add Visitor

This screen displays the “Add Visitor” form, where admins are able to enter a visitor’s name, contact, and information in order to register them manually. When submitted, a one-time-only QR code is generated for instant and secure check-in. It offers easy registration for visitors without pre-allocated codes.



Fig 1.8 – Generating QR Code

This Visitor Management System page enables admins to insert new visitors by entering their information and auto generating code for each visitor. visitors are shown in a distinct QR The list of an editable or removable table with search option and pagination for convenience. All of these are done for quick, secure, and effective tracking of visitors.



Fig 1.9 – Present Visitors

This Visitor Management System page enables adding new visitors by entering their information and the software will generate an individual QR code for every one of them. The visitors’ list is displayed on a table screen with editing or deleting options and search features as well as facilities for pagination for effective administration. The system provides real-time, secure, and effective tracking of visitors.

V. CONCLUSION

The QR Code Visitor Management System is an innovative and cutting-edge way for campuses to track who is coming and going. Unlike the outdated logbooks where visitors write their name and details by hand, the QR Code Visitor Management System is a streamlined process that is fast and more secure. It is a more efficient approach to visitor check-in than paper registers that offers time savings and improves accuracy while making a favorable first impression on guests. Here is how it works: when a visitor arrives at the visitor’s reception, all they have to do is to scan the QR code with their mobile device or an assigned scanner located at the entrance. The scan will automatically document the visitor’s information which includes the visitor’s name, reasons for visiting, and check in time in a secure digital environment. This eliminates the risk of illegible handwriting, forgotten entries, and long lines at the gate. The entire process is documented in seconds and is totally

error-free which translates to visitors a more efficient process and staff operations. The best feature of the QR Code Visitor Management Systems is that Campus staff and administrators can track visitors in real-time. They have the option to use a dashboard that allows them to know who visitors are on campus, when they arrived, and where they are expected to be.

REFERENCES

- [1] Sharma, N., & Gupta, M. (2020). "Secure Visitor Tracking System using QR Code." International Journal of Advanced Research in Computer Science, 11(3).
- [2] Das, S., & Pal, D. (2019). "Campus Visitor Management System using IoT and QR Code." International Journal of Innovative Research in Technology, 6(7).
- [3] Patil, R., & Kulkarni, S. (2022). "QR Code Based Entry Management System for Institutions." International Journal of Computer Applications, 184(17).
- [4] Chatterjee, S., & Banerjee, A. (2021). "Real time Visitor Authentication using QR Code Scanning." International Journal of Computer Science and Mobile Computing, 10(4).
- [5] Kaur, H., & Singh, P. (2020). "A Review Paper on QR Code-based Authentication System."
- [6] Thakkar, A., & Patel, K. (2021). "A Study on the Use of QR Code in Attendance and Visitor Management." International Journal of Computer Applications Technology and Research, 10(1).
- [7] Rajput, P., & Sharma, R. (2020). "Visitor Management System using QR Code Authentication." International Journal of Scientific Research in Engineering and Management, 8(5).
- [8] Khan, S., & Ahmed, F. (2019). "Automated Visitor Monitoring with QR Code Integration." Proceedings of the International Conference on Emerging Technologies.
- [9] Mishra, S., & Yadav, T. (2020). "QR Code Based Attendance and Access System." IEEE International Conference on Computational Intelligence and Communication Technology.
- [10] Dev, A., & Tiwari, M. (2021). "Security Enhancement in Campus Management Using QR Authentication." International Journal of Innovative Technology and Exploring Engineering (IJITEE), 10(5).
- [11] Singh, V., & Kumar, D. (2022). "A Low-Cost Visitor Logging System for Small Institutions." International Journal of Information Computation Technology, 12(1). And
- [12] Singh, R. (2022). Automation in Visitor Check-in with Digital QR [Capstone Project, Amity University].
- [13] Purohit, P., & Patel, R. (2022). "QR-Driven Campus Entry Protocol: A Secure and Efficient Approach." Elsevier Procedia Computer Science.
- [14] Choudhury, P. (2023). Digitizing Manual Logbook through QR-based System in Institutions [Dissertation, Anna University].
- [15] Jain, R., & Thakur, N. (2023). "Mobile-Based Visitor Check-in using QR Scanning." Springer International Conference Systems and IoT.