

Research Article

Attendify : QR based Attendance Management System

Manthan Pande¹, Harshit Jangra², Bhupendra Bhujade³, Chaitanya Nile⁴, Ruchi Kadwane⁵

^{1,2,3,4} Student, ⁵ Assistant Professor, Department of Computer Science and Engineering, G H Raisoni University, Amaravati, Maharashtra, India

I N F O

Corresponding Author:

Manthan Pande, Department of Computer Science and Engineering, G H Raisoni University, Amaravati, Maharashtra, India

E-mail Id:

pandeym112000@gmail.com

How to cite this article:

Pande M, Jangra H, Bhujade B, Nile C, Kadwane R. Attendify : QR based Attendance Management System. *J Adv Res Info Tech Sys Mgmt* 2025; 9(1):1-4.

Date of Submission: 2024-12-25

Date of Acceptance: 2025-01-05

A B S T R A C T

Attendify is an advanced, QR-based attendance management system designed to streamline and secure attendance tracking for educational institutions. Developed with HTML, CSS, Python, and local area networking (LAN) technologies, Attendify provides an efficient, modernized approach for tracking students' presence, minimizing manual errors, and preventing instances of proxy attendance. With an automated, real-time record-keeping system, Attendify transforms the traditional attendance process into a seamless and reliable experience for both students and educators, ultimately enhancing institutional efficiency and record accuracy.

Keywords: Attendance Management System, CSS, HTML, Local Area Network, Python

Introduction

In any learning program, the whole attendance of individuals is vital to make sure that the targets of the system are finished. This is closely associated with the coaching process in instructional institutions, where complete attendance may be very vital to make certain that no pupil is left at the back of.¹ A minimum percentage of class attendance is required in maximum institutions. However, such guidelines are now regularly not complied with due to the diverse demanding situations faced with the aid of current attendance recording methods.

The traditional system for recording attendance is to gather each student's signature manually. Besides wasting time in getting signatures, as well as within the system of getting ready the shape hard copy, other visible risks encompass potential loss or harm to the sheets.

Objective

The main objectives of the project are as follows:

1. To streamline attendance management
2. To enhance security and accuracy in attendance

3. To improve accessibility and usability for instructors
4. To automate data logging and secure storage
5. To provide backup options for attendance submission
6. To increase operational efficiency and scalability
7. To support efficient data maintenance and storage optimization

Related work

Numerous structures were advanced for attendance-measuring reasons. The use of clickers and swipe identity playing cards are some of the methods used in tracking student attendance. In the same context, many initiatives were executed. Among them, one solution is the RFID-Based Student Attendance Management System.² RFID can be used to document scholar attendance; the main cause of that is to lessen the time wasted in recording attendance.³

There is likewise an Android-based totally smart student attendance machine,⁴ which has been proposed as a cell online way to document attendance faster, less expensively, and with computerized attendance reviews. Another RFID gadget integrated with face popularity⁵ has additionally

been proposed to track authorized and counted college students as they enter and depart the lecture room. The system⁶ may be very beneficial, taking into consideration the present-day trend wherein Android is more and more deployed.⁷ Referring to the validity of the statistics gathered, the techniques⁸ described above still have loopholes that permit abuse to arise.

Since a person's real presence may be very important, a crucial approach that may be used to locate the real presence is face recognition. Usually, this face recognition technique⁹ is a challenge to biometric verification while used for safety functions. Biometric information is specific to each individual and might, for this reason, be used to discover each individual. Face popularity has numerous benefits when compared to conventional card popularity, fingerprints, or iris popularity.

Based on the troubles mentioned above, as well as some of the targets we need to obtain, the overall consciousness of this mission is on growing a QR-primarily based attendance control device¹⁰ for streamlined and steady attendance monitoring for educational institutions.

In this paper, Attendify provides an efficient, modernized approach for tracking student presence, minimizing manual errors, and preventing instances of proxy attendance. With its automated, real-time record-keeping system, Attendify transforms the traditional attendance process into a seamless and reliable experience for both students and educators, ultimately enhancing institutional efficiency and record accuracy.

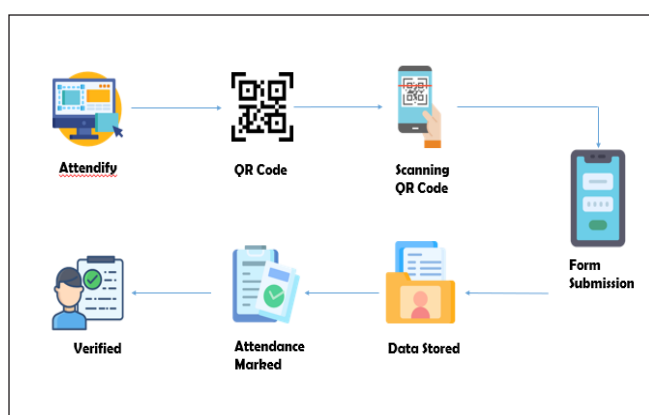


Figure 1. Flow diagram of proposed system

Proposed method

The system operates through a straightforward, user-friendly process. The flow diagram of the proposed system is as shown in Fig. 1. At the beginning of each class, teachers initiate the application on their device, which generates a unique QR code linked⁹ to that specific session. This QR code, displayed on the teacher's screen, starts a one-minute timer as soon as it's activated, creating a brief window

during which students are permitted to scan the code with their smartphones. When students scan the QR code, they are directed to a web interface where they are required to enter their name and student ID, followed by taking a live photo for verification purposes. This live photo feature ensures that only students who are physically present in the classroom at the time of the scan can complete the attendance submission, further reducing the risk of proxy attendance. If students fail to submit their details within the set one-minute timeframe, the session expires, and a new QR scan becomes necessary, guaranteeing a secure, time-bound submission process.

Once students submit their attendance, the system automatically records and organizes the data in a CSV file, capturing key details such as the student's name, ID, submission timestamp, and the accompanying live photo. This data is easily accessible from a user-friendly dashboard, specifically designed for teachers to manage attendance records efficiently.

Similarly, on the dashboard, teachers can view the entire attendance log for each session, verify individual entries, delete records as needed, and even free up storage by clearing older QR codes. For cases in which a student encounters technical issues or is unable to submit independently, the teacher has the option to manually add entries directly into the system without requiring a live photo, providing additional flexibility in the attendance management process.

Result and discussion

The step-by-step process and the generated dashboard/displays will be as follows:

Step I: System Initialization by Teacher

In the first step, the user/teacher opens the Attendify web app on their computer or laptop and starts the attendance system. The main dashboard displays, showing options to view attendance records and generate new QR codes, as shown in Fig. 2 below.

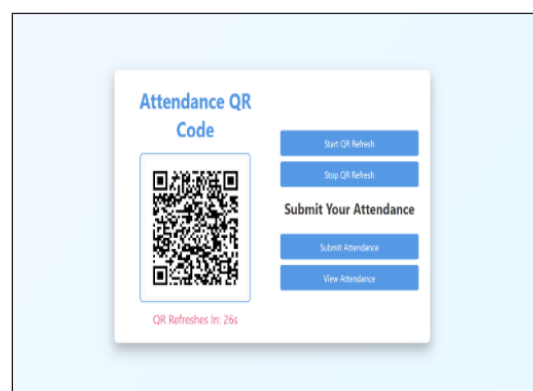


Figure 2. System initialization by the teacher

Step II: QR Code Generation

In the second step, a unique QR code (Fig. 3) is generated on the instructor's/teacher's dashboard. The teacher will start a 1-minute timer, during which students have to scan the QR code to access the attendance submission page.

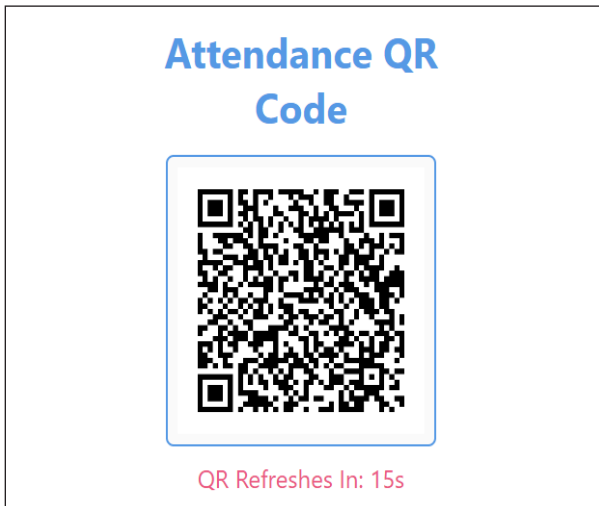


Figure 3. QR code generation

Step III: QR Code Scanning by Students

In this step, students will scan the displayed QR code using their smartphones. After scanning, students are directed to a web form, shown in Fig. 4, for attendance submission

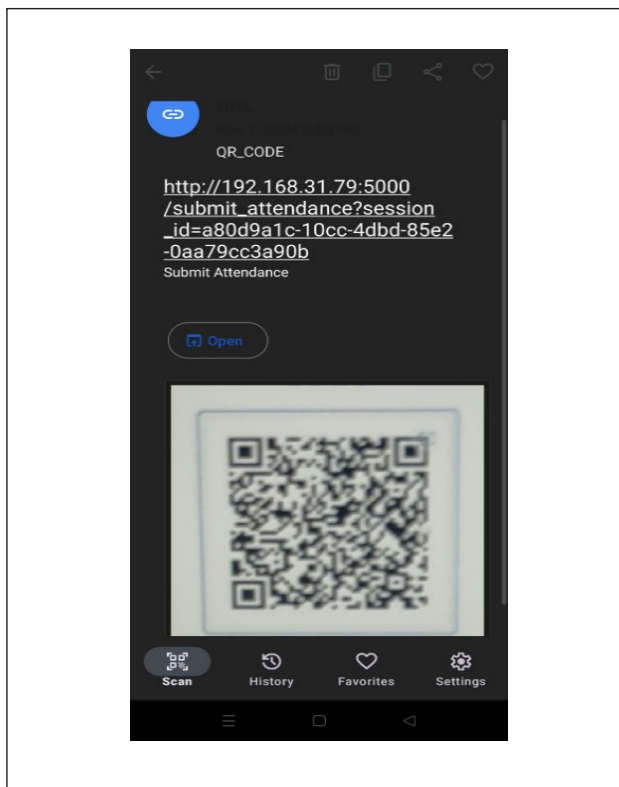


Figure 4. QR code scanning by students

Step IV: Student Attendance Submission

In step IV, In the form, student has to enter his/her name and ID number, and then he/she will capture a live photo for verification of his/her presence in particular class and submit the form within the active 1-minute session.

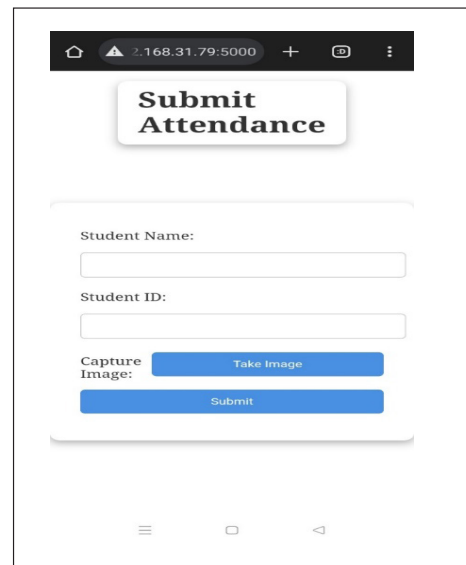


Figure 5. Student attendance submission

Step V: Attendance Data Storage

After submission of the form, the system logs each student's details (name, ID, time, date, and image) in a CSV file. This file will be accessible by the teacher from the dashboard, and it allows easy data management as shown in Fig. 6.

	A	B	C	D	E
1	Manthan Pande	28 3b4af442-4544-4b6e-9335-0c2765b3c29b	02-10-2024 00:10		
2	Manthan Pande	90 072922cf-2a73-479b-9279-9775cf3a84c3	02-10-2024 00:54		
3	Grihe	28 9efe7b14-fb91-484c-8ad9-543ad5b57321	02-10-2024 01:01		
4	Harshit Jangra	21 53b5ef74-8610-4576-a466-62df8c9f4a2f	02-10-2024 01:23		
5	Manthan Pande	12 17dabb9a-b83b-46f3-adf6-4a3057c88853	02-10-2024 01:29		
6	Manthan Pande	28 fca8649-f89a-4d08-b93e-9ab6372638a2	07-10-2024 13:50	28_fca8649-f89a-4d08-b93e-9ab6372638a2.png	
7	Rushikesh Pande	16 00ad8402-89e7-4fab-8aeb-a3dab35999dc	07-10-2024 14:04	20241007_140416.png	
8	Rushikesh Pande	16 00ad8402-89e7-4fab-8aeb-a3dab35999dc	07-10-2024 14:05	20241007_140559.png	
9	Manthan Pande	28 3d35a635-528f-40a2-acb0-a4fe21d1273c	07-10-2024 14:29	20241007_142906.png	
10	Rushikesh Pande	12 3d35a635-528f-40a2-acb0-a4fe21d1273c	07-10-2024 14:29	20241007_142952.png	
11	Manthan Pande	28 64269c3e-d3da-40f8-ab48-0a39f61abc96	07-10-2024 14:37	20241007_143734.png	
12	Manthan Pande	28 3fb9e0e6-8a58-4fc4-b380-3868316baf3d	20-10-2024 18:06	20241020_180659.png	
13	Manthan Pande	28 9555f1a0-d5c3-4779-b45c-687bf138cd77	25-10-2024 19:37	20241025_193712.png	
14	Shreyan Ghodmare	35 658cc6d5-a6ac-48e9-b1a3-a60fe687ed20	25-10-2024 19:43	20241025_194341.png	

Figure 6. Attendance data storage

Step VI: Teacher's Dashboard

In this step, the teacher's dashboard (Fig. 7) provides the following options for attendance recording:

- One can view attendance records by date and student's name.
- He/she can clear all saved QR codes to free up storage space.
- One can directly add attendance entries if a student is unable to submit independently.

Select	Student Name	Student ID	Session ID	Timestamp	Image
☐	Marthan Pande	28	9555f1a9-d5c3-4779-b45c-987d1138cd77	2024-10-25 19:37:12	
☐	Shreyan Choudhary	35	655cc6d5-af8c-48e6-b7e3-ae3d6e857ee2f0	2024-10-25 19:43:41	

Figure 7. Teacher's Dashboard

Step VII: Session Renewal

This step describes the session renewal process. If the timer expires before the student's submission process, the QR code will expire, and as per the requirement, the teacher can generate a new QR for attendance.

In summary, Attendify represents a cutting-edge solution to attendance challenges in education, setting a new standard in educational technology management. By combining security, convenience, and flexibility, Attendify transforms attendance tracking into an optimized, real-time, and reliable system, addressing longstanding issues in student attendance management and paving the way for a new era of digital educational solutions.

Conclusion and Future Scope

Attendify presents a modern and reliable solution for attendance management, moving away from traditional methods and face recognition in favor of a faster, more secure, and proxy-free QR-based approach. By automating attendance logging and providing real-time data accessibility, Attendify simplifies administrative tasks for teachers, allowing them to focus more on teaching. With fast internet availability, a large number of students can mark their attendance without failure.

Future expansions, such as geolocation verification or attendance analytics, could further enhance its utility, making Attendify a scalable solution for attendance tracking in academic institutions.

References

1. Arulogun OT, Olatunbosun A, Fakolujo OA, Olaniyi OM (2013) RFID-based students attendance management system. Int J Eng Sci Res 4(2)
2. Bhuiyan, M M Khushbu, SA, Islam, MO (2020) A deep learning based assistive system to classify COVID 19 face mask for Human safety with YOLOv3. 2020 11th international conference on computing, communication and networking technologies (ICCCNT), 1–5

3. Hameed MAJ (2017) Android-based smart student attendance system. Int Res J Eng Technol 12:2395–2356
4. Ashwin Rao, Attenface: A Real Time Attendance System Using Face Recognition, IEEE Conference On Information And Communication Technology (CICT), 2022, pp. 1-5.
5. Pavitra S Hegde, Smita, Afshin, Face Recognition Based Attendance Management System, International Journal Of Engineering Research & Technology, 2020, pp. 1-3.
6. Dr. A. Manjula, D. Kalpana, Sanjay Guguloth, Facial Recognition Attendance Monitoring System Using Deep Learning Techniques, International Journal For Innovative Engineering & Management Research, 2023, pp. 1-9.
7. Dr. V Suresh, Facial Recognition Attendance System Using Python And Open CV, Quest Journal Of Software Engineering And Simulation, 2020, pp. 1-6.
8. Amey Mohite, Online Attendance System Based On Facial Recognition, Maharaja Sayajirao University Of Baroda Faculty Of Science, 2022, pp. 1-4.
9. Aparna Trivedi, Face Recognition Based Automated Attendance Management System, International Journal Of Scientific Research In Science And Technology, 2022, pp. 1-8.
10. Nirmala Kar, Mrinal Kanti Debbarma, Ashim Saha, And Dwijen Rudra Pal, Study Of Implementing Automated Attendance System Using Face Recognition Technique, International Journal Of Computer And Communication Engineering, 2012, pp. 1-4.