

**SHREE SHANTI BHAGWATI SECCONDARY SCHOOL**

**DEPARTMENT OF COMPUTER ENGINEERING**

A Project Report On

**Web Based Smart Attendance System**

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**Web Based Smart Attendance System**

A

Final Year Project Report

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# **ABSTRACT**

This project aims to develop a web-based smart attendance system that streamlines the process of tracking student attendance while eliminating the need for paper-based methods. The system allows educators to easily record attendance through various digital tools, including student logins, QR code scanning, and manual entry. By automating attendance tracking, the system reduces administrative overhead, minimizes errors, and saves valuable time for teachers and administrators.

The application provides real-time attendance monitoring and generates detailed reports on student attendance patterns. Educators can quickly identify students with frequent absences or tardiness, allowing for more informed decision-making and timely intervention. These data-driven insights not only improve attendance accuracy but also help in fostering a more accountable classroom environment.

Designed for scalability, the system can be used in both small and large classroom settings, making it adaptable to a variety of educational institutions. By adopting this digital solution, schools can reduce paper waste, improve operational efficiency, and focus more on student engagement and teaching. Overall, this smart attendance system offers a modern, effective way to manage attendance and enhance classroom management.

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**ABBREVIATIONS**

QR : Quick Response

NFC : Near Field Communication

OS : Operating System

GB : Giga Byte

RAM : Random Access Memory

RFID : Radio Frequency Identification

# **1. INTRODUCTION**

Smart attendance refers to the use of modern technology to automate and streamline the process of tracking attendance in educational institutions, workplaces, or any other settings where monitoring attendance is required. The traditional way of marking attendance whether it's the paper register in classrooms, punching in timecards at work, or manually tracking student or employee presence is not only outdated but also prone to human errors, delays, and inefficiencies. These conventional methods can be heavy , especially in large organizations or educational institutions, where managing attendance can become a daunting task. Smart attendance systems leverage technologies like facial recognition, and mobile applications to make attendance tracking more efficient, accurate, and secure. These advanced systems are designed to make the entire process of monitoring attendance more **efficient, accurate**, and **secure**. From this Smart attendance system students will be updated about their upcoming tests, Exam, Extracurricular Activities. This helps students and teachers to sent Leave application letter from home without any problem.

## **1.1 Background**

In recent years, the traditional methods of attendance tracking, such as paper registers, punch cards, and manual roll calls, have become increasingly inefficient and prone to human error, especially in large organizations or educational institutions. These outdated methods can be time-consuming, prone to inaccuracies, and often difficult to scale. The challenges of managing attendance manually are even more apparent in settings with large groups, where it is easy to overlook discrepancies, forgetful entries, or deliberate falsifications, such as "buddy punching" or impersonation.

With the advancement of technology, there has been a growing shift towards digital solutions to address these issues. **Smart attendance systems** leverage modern technologies like **biometrics, mobile applications, NFC (Near Field Communication), QR codes,** and **facial recognition** to provide more efficient, accurate, and secure alternatives to traditional attendance tracking methods. These technologies have revolutionized the way attendance is managed and monitored, not only improving accuracy but also reducing administrative workloads and enhancing security.

## **1.2 Problem Statement**

In traditional attendance systems, taking and managing attendance can be time-consuming, prone to errors, and often lacks transparency. This issue is particularly prevalent in educational institutions, businesses, and organizations, where manual attendance tracking can lead to inefficiencies and inaccuracies. Current methods of attendance tracking (such as paper-based registers, manual entry into spreadsheets, or basic digital systems) fail to efficiently handle large numbers of individuals, are susceptible to errors, and are time-consuming. In addition, these systems often lack real-time reporting, are prone to manipulation, and do not provide detailed insights into attendance patterns. These challenges lead to wasted administrative time, reduced productivity, and can contribute to issues like low accountability.

A smart attendance system could greatly reduce human error, save time, and improve the accuracy of attendance records. By implementing a web-based smart attendance system that utilizes technologies such as biometric recognition (facial recognition), institutions and organizations can streamline attendance tracking. This system would allow for real-time data capture, automated attendance logging, instant notifications, and comprehensive analytics.

1.3 Objectives

The objective of this project are :

* To provide administrators and teachers with **real-time updates** on attendance patterns, including absences, subject wise tests and presence.
* To help teachers **save time** on attendance and use that time to **teach** and interact with students.
* To provide an organized way to keep track of student absences, making it easier for teachers to review and maintain records.
* To make student and teacher update about upcoming Tests and Exams.
* To allow students to **submit leave requests** digitally through the same platform, meaning teachers don’t have to manage paper-based leave applications or manually approve absences.

1.4 Application

The application of this project are explained below:-

* This project is mostly beneficial for the teachers having the large number of students.
* It can be used to eliminate the traditional attendance system which is based on pen and paper.
* It can also be used in different large and small organization to keep the attendance Record Of Their Employee.

1.5 Features

* Allows for quick access to attendance reports.
* Students can submit leave requests through the system.
* Accessible on **mobile devices** for attendance and can check leave requests anytime, anywhere.
* Simplifies leave management and reporting.

1.6 Feasibility Analysis

The Smart Attendance project uses web based interface to track attendance through websites. It works well with current systems and can handle more users without needing extra hardware. The system is easy to use, so people won't need much training. Repair and Maintenance is simple. Students are likely to use it because it's convenient and reliable. The project is cost-effective since it doesn't require buying hardware. The main costs are for developing, deploying, and maintaining the software. The project will save time and improve accuracy in tracking attendance, making it a good investment.

1.7 System Requirements

After the extensive analysis of the problems in the system, we are familiar with the requirement that the current project needs. For the implementation of this project we need a laptop having windows 10 OS, 8 GB RAM, Processor of latest generation. Since this project is web based, user have to access this through internet so, internet connection is most.

# **2. LITERATURE REVIEW**

Plenty of research has been conducted so far on the various available methods for implementation of an effective attendance monitoring system. These methods vary in terms of the types of input method used, the types of data processing employed and the controllers used to implement the systems. In this section looking for the various available solution with the advantages and disadvantages of each system. First system, “Attendance System Using NFC Technology with Embedded Camera on Mobile Device” (Bhise, Khichi, Korde,Lokare, 2015). Near field communication is a type of short distance wireless communication that takes place between two devices, one active and the other passive. The two devices are basically inductor coils which can respond to an electromagnetic induction. The active device is utilized to produce an electromagnetic field of a given radius and strength. Which used to implement an attendance system. In a school setting for example, students can be given NFC tags that are uniquely programmed with their unique identification numbers. Upon attending the classes, the lecturers bring the NFC readers and a student is required to swipe their NFC tags near the reader, say the lecturers’ phone. This information is then transmitted to the school database to mark the attendance of the student. However this system is vulnerable to impersonation where one person can sign in for someone else. The other related systems that use biometrics (Fingerprint recognition RFID, etc) to identify end user are time management systems used in many colleges, institutions and schools. However, these system introduce further privacy concerns. These systems are also subject to physical damage from their users. Therefore they need additional maintenance costs. The idea proposed by us, Removes physical access from anyone to the automated system.

# **3. METHODOLOGY**

This project will developed in groups and under the supervision of engineering teachers at Shanti Bhagwati. While developing this project many meetings will conducted among the group members and will also receive feedback from the teachers as well as the senior students of computer engineering department.

This project will be made using different software during development phase, they are given below: -

* **VS Code** : VS Code stands for visual studio code. It is the most popular IDE in the world. It will used to perform most of the task like coding.
* **XAAMP**: XAAMP is a free and open-source cross-platform web server solution stack package developed by Apache Friends. The acronym stand for Cross-Platform(X), Apache(A), MariaDB(M), PHP(P), and Perl(P). It will mostly used for running PHP code and a local server.
* **Github**: It is a web-based platform for version control and collaborative software development. It uses Git to track changes in source code and allows multiple developers to work on projects simultaneously.

While developing this project some programming language will also be used such as :-

* **HTML** : HTML stands for Hyper Text Markup Language. It provides the basic structure of the web.
* **CSS** : CSS stands for Cascading Style Sheet. It is the only things that adds the beauty to the webpage.
* **JS** : JavaScript (JS) is a versatile, high-level programming language primarily used for creating interactive and dynamic content on websites. It allows developers to implement complex features such as animations, form validations, and real-time updates
* **PHP** : PHP (Hypertext Preprocessor) is a widely-used open-source scripting language designed for web development. It is embedded within HTML and is particularly suited for creating dynamic web pages and applications

Some other framework will also used while developing this project.

* **Bootstrap** : Bootstrap is a popular open-source front-end framework used for designing responsive and mobile-first websites. It provides a collection of CSS and JavaScript tools, including pre-designed components and templates, to streamline web development.