**Employee Attendance System using QR Code**

Ranjana Yadhav, Vishal Singh

*Department of Information Technology & MCA*

**Abstract – Attendance system is the process of identifying an employee’s attendance as one the company's foundation in paying them a compensation based on their status. Working from home to preserve the health protocol of the new normal period of the covid-19 in the industrial world while avoiding crowds in the office is the subject of this study. The employees will have unique QR code and by using that QR code the employee can scan their attendance and get salary. The result of writing framework for the employee attendance system using a personal smartphone through detection from a QR code.**

# INTRODUCTION

Nowadays, it is critical to complete tasks quickly, learn new skills, and achieve higher results as quickly and efficiently as possible. Every sector, particularly in the education and commercial worlds, requires management systems that will allow them to maintain proper control and management over the development of their products, learning or work. With all these advantages and benefits in mind, we believe that the university education process needs an online system to track student attendance. Regular attendance, among other things, is a fundamental and crucial condition in the educational system.

As a result, if the attendance condition is not reached, the student may lose the ability to take an exam. Moreover, if students exceed the number of allowed absences, they might lose the right also to exams. As a result, the manual method now in use allows for more calculation errors. To help overcome such challenges, we conceived and constructed a superior web-based system. It is entirely responsive to users of smartphones, tablets, and a variety of computer systems. The proposed model provides data security and whole class or

Individual student attendance data may be obtained quickly and conveniently, and the professor's report is prepared automatically. The goal of the internet-based attendance system is to computerise the old method of registering attendance and to give a more convenient and intelligent approach to track institutions' attendance today, using a unique identifier for each professor and student known as a QR code Users (professors and students) must scan their unique QR code provided to them during or at the beginning of each lecture, utilising QR reading devices within the classrooms, to validate their attendance at the start of each course. The lecture and student attendance records, as well as other pertinent information, will be kept on file because of this. The system will significantly improve student attendance in specific classes and save time. This paper is divided into three sections: the first deals with related works, the second with a proposed framework, and the third included an implementation strategy based on the proposed framework.

# RELATED WORKS

In the beginning, a punch card system, also known as Hollerith cards, was utilised for data storage, with companies being able to save and access data by inserting the card into the computer system [1]. It is currently widely utilised in educational institutions as an attendance system. Employees validate their presence by waving their individual cards near a reader to punch in and out [2]. Several earlier studies in the field of computer science established a student attendance monitoring system to improve record keeping in class utilising various technologies. RFID [3] or near-field communication (NFC) technologies [4] are two examples.

One tool that Jainetal has created is a desktop programme that displays a list of all enrolled students in a certain course when the class begins. Attendance is registered by clicking off a checkbox next to student’s name that are present, and then for marking their presence a register button is clicked [5Based on [6,] the authors chose to create a student attendance tracking system using QR codes, as well as Google Forms and Google Sheets, which are more user-friendly for instructors and do not require technical or computer programming experience.

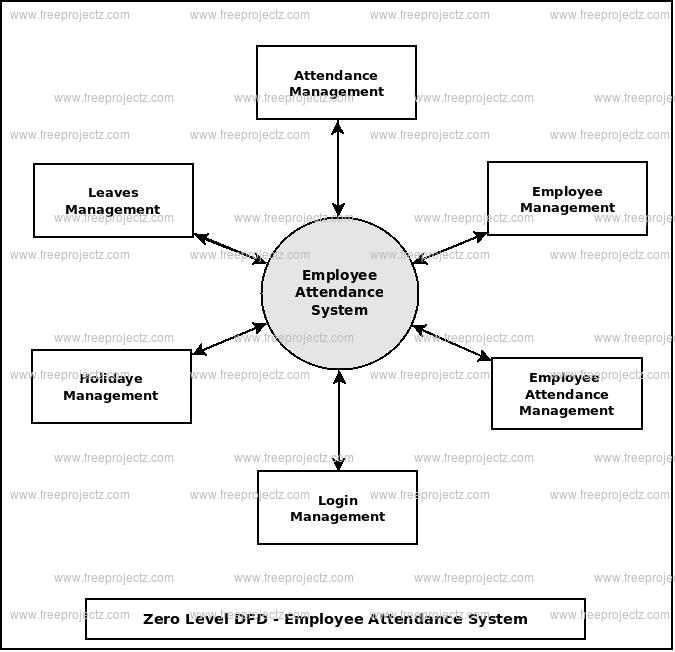
The suggested method [7] uses a unique QR code created for each course for each class day to track all student involvement. The teachers then copy and paste the QR code into the lecture's first slide. The QR code should be copied on one of the four corners of the board if the instructor's policy is to welcome late pupils in his class and mark them as present or late. When students arrive at class, the first thing they should do is take out their smartphones and access the Mobile App.Module, and scan the QR code, then the Server Module runs an identity check on the pupils who have registered. This is accomplished by comparing the face image transmitted per transaction with the image saved on file for the student in question, after which the system controls the student's whereabouts. After that, a location check will be carried out.

By focusing on establishing a simple student attendance monitoring system that can be used to take attendance that is both fast and affordable in contrast to other techniques, our proposed model varies in a way that should be easy to install and rapid in recording attendance during a class session.

# ARCHITECTURE PROPOSED MODEL

This section covers the tools and techniques required to create an online attendance system with QR codes, as well as the system's overall functionality. A QR Code is a two-dimensional barcode that can store over 4000 characters in a two-dimensional space and is readable by smartphones. QR codes can be used to show text to a user, access a URL, store a contact to an address book, or create text messages. The trademark "QR Code" is a registered trademark of Denso Wave Incorporated.

The proposed model (Fig.1) is organised into three modules: the first is the administrators' module, which includes three types of administrators: admin, head of study programme, and study program administrator. The main Administrator's responsibilities include backing up the system and database, editing it, managing, and inserting professors, students, faculty, and study program, as well as creating heads of study program and administrators for each study program. The head of the study program, on the other hand, has the chance to build a timetable for the professors for the semester by setting the time when the class will be held, adding departments to the respective programme, and the study programme administrator is responsible for selecting the courses.



## **Fig 1. Proposed Model Architecture**

The second module is the attendance record, which will be kept on a gadget in each classroom that is linked to a camera and the internet. The system will read the QR code that carries the unique professor or student ID, using the Instascan JS library. The professor first reads the code, which allows him to register the lesson given by that professor inside a specific time interval, based on the timetable provided by the study program's head. The system then starts the class that the professor is supposed to attend that day, depending on the day and time interval, and it immediately records the class as completed, and for that day, all students enrolled in that course are marked as 'Absent.' The camera opens to read the QR code on the next page, but the student must now read his code to the device. The entire list of students enrolled in the course is displayed, and each student reads their unique QR code to alter their status to 'Present.' With each code reading, the system examines the database and shows a message about the current state, depending on whether the status will change or not, whether the student is assigned the course or not. The class ends successfully when the professor reads his QR code again.

The third module, professors, and students, allows professors and students to log into the system using data obtained by the administrator. The professor can keep track of the pupils' attendance in class. As a result, the system calculates the total number of absences and the number of attendances, in percent, for each student, based on the course. As a result, the professor can see and read the value without having to calculate it manually. It can also provide monthly reports for the professor's classes, as well as information on student attendance. The student has the option to review his or her active engagement in all her classes by counting how many times he/she was absent and present during the classes.

IV. SYSTEM INSTALLATION

Data management and attendance records are the two key functions of the suggested implemented system outlined in this study. The development is done in stages, with tiny packages being coded first, then larger software packages being merged and tested to see how they operate together. The entire interface is responsive to all devices we use, making it plain and understandable regardless of which browser we use or which devices we use to access it, such as a PC, mobile phone, tablet, or other device.

The registration of study programme leaders, study programme administrators, professors, and students are the system's primary activity. As a result of their registration, they have access to the system. The administrator has the choice of recording the courses the student is taking that semester, and the head has the option of registering the professors' schedules for the respective courses in the current semester. After logging in, each user will be presented with a separate dashboard depending on their function.

**The code that controls the logged user's role is as follows:**

*def login():*

*print(Back.CYAN+ 'Please Enter Password :')*

*print(Back.MAGENTA+"QR Code Attendace System")*

*password = getpass.getpass()*

*if password =='aka':*

*for i in tqdm(range(4000)):*

*print("",end='\r')*

*print("------------------------------------------------------------------------------------------------------------------------")*

*print(Back.BLUE+"QR Code Attendace System")*

*afterlogin()*

*if password != 'aka':*

*print("Invalid Password")*

*login()*

Graphical user interface, text

Description automatically generated

## **Fig 2. Dashboard interface**

A screenshot of a computer

Description automatically generated

## **Fig 3. Example of data management interface**

Professors can use the Generate Report activity to create reports based on the month and year they choose. As a result, they have the option of selecting a course and generating a student report for that course.A screenshot of a computer

Description automatically generated with medium confidence

**fig 4. Employee attendance for course**

A screenshot of a computer

Description automatically generated with medium confidence

## **Fig 5. Generated report for chosen course**

Another major activity of this proposed system is keeping track of attendance. This activity allows the professor to scan his QR code; if there are classes scheduled for that day and time interval, the system will advance to the next page; if not, an error notice will appear. When the professor scans his code, the next page displays all the students enrolled in that subject as 'Absent,' and when the student scans his code, his status changes to 'Present.' Students who have more than the allowed number of absences for a course receive a warning email from the system.

The method for reading the value of a QR code that was used to record attendance is as follows.

*def scan():*

*i = 0*

*cap = cv2.VideoCapture(0)*

*font = cv2.FONT\_HERSHEY\_PLAIN*

*while i<1:*

*ret,frame=cap.read()*

*decode = pyzbar.decode(frame)*

*for obj in decode:*

*name=obj.data*

*name2= name.decode()*

*nn,ii,pp,dd = name2.split(' ')*

*now = datetime.now()*

*db = sqlite3.connect('EmployeeDatabase.db')*

*c = db.cursor()*

*c.execute(''' Select \* from Record where iid=? or TimeofMArk=? ''',(ii,dd))*

*result=c.fetchone()*

*if(result):*

*print(Back.MAGENTA+"Attendence is already submitted ")*

*db.commit()*

*else:*

*c.execute('''CREATE TABLE IF NOT EXISTS Record(name TEXT, iid TEXT,phone\_no TEXT, dept TEXT, TimeofMArk TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL )''')*

*c.execute("INSERT INTO Record(name, iid, phone\_no, dept,TimeofMark) VALUES (?,?,?,?,?)", (nn,ii,pp,dd,now))*

*db.commit()*A screenshot of a computer

Description automatically generated with medium confidence

**Fig 6. Course attendance record**

In terms of the implementation of our system, it is an implementation that will replace the current method of manual monitoring and recording, as it is meant for our university. There has never been an electronic system to manage student attendance at the University before, and we believe that adoption will take some time and effort.

A person with clear responsibility and time for the system is required. The first duty is to create a reference document that will show all the work that the system accomplishes, and then to begin teaching system users based on this document, as this will save time.

Everything has been thoroughly documented and discussed. Then, for each professor and student, a card should be issued that includes their name as well as a unique QR code that can be used to track attendance. Then, in each class, a gadget with a camera open to read QR codes must be installed. As a case study, this will contribute significantly to our university's technological advancements.

V. CONCLUSION

It is necessary to stay up with the latest technologies these days, particularly in the realm of education. Educational institutions have been exploring for methods to use cutting-edge technology to improve the educational process. We believe that this system is vital for the University, especially when everything is moving towards digitization.

To take student attendance, a technique that integrates QR codes and internet-connected gadgets is used. This study demonstrates how the QR code, a multi-faceted and widely utilised feature of smart devices, may be used to efficiently record attendance, replacing the old, inefficient approach of calling name lists in class. This system was created after evaluating and assessing the previous manual system as well as other universities' systems.

This low-cost QR code-based attendance system allows lecturers to save critical teaching time by speeding up the process of registering attendance, especially in big classrooms. The proposed solution is more secure than existing ways, as it eliminates the possibility of students signing up for those who aren't there. Even though similar platforms have already been developed, we believe the proposed platform will be more appealing for several reasons: Among all types of code scanning technologies, the QR Code attendance system is the most precise and efficient method of storing attendance in a database and operating it from any intelligent device, rather than wasting paper.

The students' and instructors' acceptance of QR codes is critical to the technology's success. As a result, it's critical to grasp the factors that influence students' and lecturers' intentions to utilise QR codes. The students' and instructors' acceptance of QR codes is critical to the technology's success. As a result, it's critical to grasp the factors that influence students' and lecturers' intentions to utilise QR codes.

VI. Acknowledgment

I would like to thank faculty of college for giving me the opportunity to make a project on the topic of attendance-based system. This was quite a great experience, and I learned a lot from it. It helped me to explore my skills and increased my interest in the field of face recognition. Special thanks to Ranjana Yadha mam for being so accommodating and understanding. She supports me a lot and also supports my field of interest. She encourages me a lot and I am very grateful to her.

VII. Future Scope

This Attendence management system is used by school teachers

for taking a record about the attendance of the teachers.And in the many vast fields it is going to used in the future. Basically once an individual goes through it for the first time it is difficult but it can be get easily expertised through this system .This system can be also be used in the medical field also there is also a scope about this system

# VIII. REFERENCES

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