A Project/Dissertation Review-2 Report

on

ATTENDLY

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Under The Supervision of
Ms. J. Angelin Blessy
Assistant Professor

Submitted By

PREKSHA NIGAM

(19SCSE1180042)

MOHAMMAD RAGIB

AHMAD

(19SCSE1010848)

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
GALGOTIAS UNIVERSITY, GREATER NOIDA
INDIA
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Self Declaration Form

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled "ATTENDLY" in partial fulfillment of the requirements for the award of the B.Tech. submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during September to December,2021, under the supervision of Ms. J. Angelin Blessy, Assistant Professor, Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

Preksha Nigam , 19SCSE1180042
Mohammad Ragib Ahmad , 19SCSE1010848

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Abstract

At any University, instructors manually take attendance in every class each day. They spend time to do that during class time. The Automatic Attendance System will help them do this process in an easy way.

Attendance Management System named as ATTENDLY is a software developed for daily student attendance in schools, colleges, hostel and institutes. It facilitatesto access the attendance information of a particular student in a particular class. The information is sorted by the operators, which will be provided.

The main scope of this project is to make attendance process more organized in every class. This project will help instructors take the attendance automatically without spending some time during the class. It will provide the instructor who is/isn't present an early-warning of high levels of non-attendance through the attendance page. There are also many benefits for students: they can manage their attendance, absences, and late walk-ins by checking the Application. They will also know the current grade in their reports. It makes it easier to have a clear picture of every student's attendance throughout the academic year.

In any classroom, a QR Code will be shared on the screen by the teacher at the end of the session and students will have to scan the code and attendance will be marked automatically and the number of code scans should be equal to the number of students physically present. It will save much time of the session.

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CHAPTER-1
Introduction

At any University, instructors, professors and teachers manually take attendance in every class each day. They spend the time to do that during class session. Taking students' attendance by university instructors during each class is a time-consuming process largely when classes are considerably huge. Some faculty policies even require this task to be performed by the instructor in each lecture.

This project addresses the problem of such an uncultivated lecture time and proposes a system that offers to reduce it by approximate 90%. The proposed solution offers a QR code for the students to scan it via a specific smartphone application. The Automatic Attendance System will help the teachers, professors and instructors do this process in an easy way.

As attendance checking in today's setting is defined by many elements such as maintaining contactless operations, the use of QR code attendance is a tremendous help for the institutions. Using QR codes in checking the attendance, the impeccable scan to acknowledge people's presence means is viable. The code along with the student identity taken by the application will confirm the students' attendance.

As RFID-based attendance may seem to levy more when applying it to the wireless attendance checking, we will glace on to the cost-efficient and easy to apply wireless means. And that means is by applying the use of QR codes.

But before we dive into incorporating the use of a QR code attendance system into our office or classroom, we must first create a blueprint of the project.

Formulation of Problem

If we count all of the various attendance checking systems that teachers and employers use for the students and clients, there are three systems that they can ply. The system lies between online learning and traditional learning as a facilitation for the attendance record-keeping process, in a way that enriches the lecture time so that it can better be utilized in giving useful materials rather than wasting the time taking attendance.

 And these systems range from the traditional form of manually taking the attendance in an attendance sheet to the biometric attendance examining configurations.

But as these systems are remarkable for seamless yet organized attendance checking prompt, its touch and go aspect can potentially start a health crisis as in today's world and can cause a disease outbreak. Though, people before didn't see the threat physical interactions could do to them, the use of a biometrics system was deemed to be perfect. But since the start of the COVID-19 pandemic, our health security is jeopardized. Because of that, a COVID-19 attendance checking system is what schools and offices need during the COVID-19 outbreak.

Tool and Technology Used

Technologies that we need to create a working QR code attendance system are

1. Google Spreadsheet
2. Google Forms
3. QR code generator

Google Spreadsheet

The spreadsheet is Google's counterpart of Microsoft's Excel program. While they hold similar uses, Microsoft's Excel and Google Spreadsheet have different operating schemas. While the Google Spreadsheet is a part of Google's web-based online software offers in which it can only be accessed and updated online.

Google Spreadsheet is great to use when you plan to keep updating your data without the need to manually opening the Sheet that you are working on.

Google Forms

Google Forms is a free online survey administrator software that is part of Google's Google Docs Editor Suite. This online survey creator is perfect for creating surveys, quizzes, and online event registrations.

In terms of powering a scan and check attendance system, the use of Google Forms is great for easy data input and tracking.

<u>QR code generator</u>

As we are making a QR code-powered attendance system for our business or classroom, it is important to have a QR code generator that can help maintain working and scannable QR codes.

In choosing one, there are various key factors that we need to consider such as credibility to secure your sensitive information and GDPR compliance of usage, ability to create editable and trackable codes, and more.

Through this, we can ensure that your QR code attendance for students and employees is created with a safe and worry- free QR code generator.

CHAPTER-2
Literature Survey

<u>Introduction</u>

This chapter reviews on existing system, attendance tracking technologies, technologies and development methodologies.

<u>Review on Existing System</u>

Most of the universities and colleges still record attendance on attendance sheets. Attendance system is missing out evolution. According to Hsarena (2017), University Malaysia Sarawak (UNIMAS) was the first in Malaysia to use QR Code to record attendance in October 2017 followed by University Technology Petronas (UTP) in January 2018.

Similar system has implemented on University Technology Petronas and Multimedia University as well. Lecturers will sometimes give a pop quiz to prevent cheating. No further prevention was done.

<u>Review on Attendance Tracking Technologies</u>

Some of the examples of attendance tracking technologies (The Hans India, 2018). Some of the low-cost setups are using polling, geolocation, and QR code. Polling required students to enter the answer that asked by lecturers during the class or enter a special unique code.

This however is easy to cheat because students can send out the code or answer to their friends who are not in the class. Next, tracking attendance by using geolocation. When students enter into class, the system will detect and record attendance. However, GPS often suffer with accuracy in indoor condition. This will make the attendance not accurate. Thirdly, QR code. Students required to scan the QR code that displayed during class to confirm 24 attendances. This method also can be cheat easily, by sending the QR code to friends who are not in the class. We could enhance the security by adding few mechanisms. QR code should be refreshed at fast as 10 seconds, so that when the QR code is sent to students who are not in the class, the code will be invalid. The system also needs to allow one device to login at student account at a time. This will prevent cheating on attendance as well.

Project Design

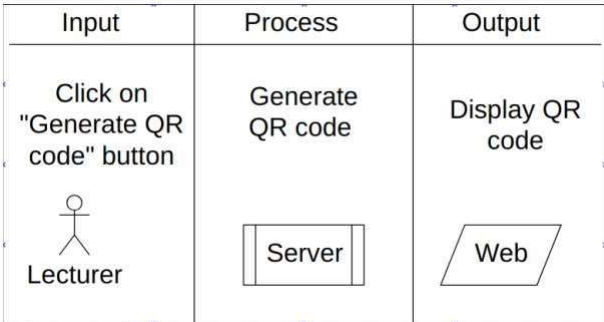System Flow-

Diagram of Generating a QR code

Input	Process	Output
Click on "Generate QR code" button	Generate QR code	Display QR code
Lecturer	Server	Web

FIGURE 2.1

Diagram of Scanning a QR code

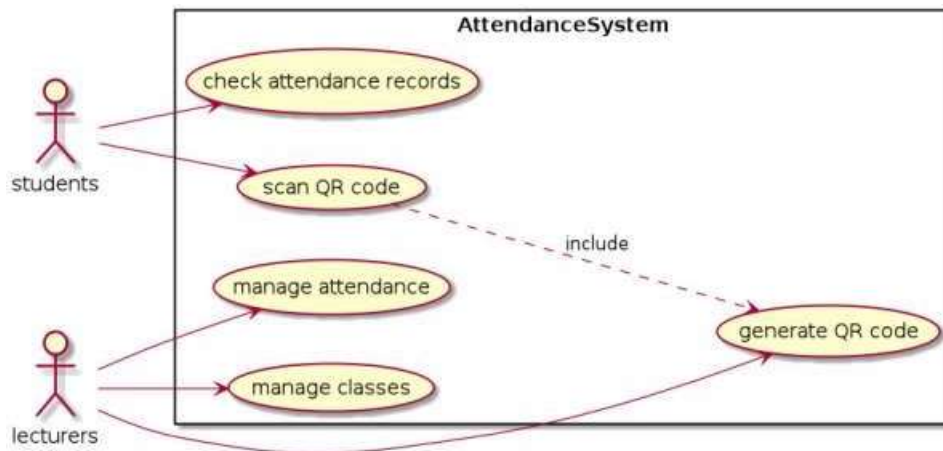| Input	Process	Output
Scan QR code	Validate QR code	Display success/failure message
Student	Server	Mobile

FIGURE 2.2

Use Case Diagram

FIGURE 2.3

CHAPTER-3
Functionality of Project

The system facilitates the attendance record keeping process between online learning and traditional education, which is better utilized in providing useful material than wasting time in attendance, as it enriches lecture time.

The system requires a simple login process by a class instructor through its server module to generate encrypted QR code with specific information. This can be done anytime before class. During or at the beginning of the class, the instructor displays an encrypted QR code to the students. Students can display the QR code displayed using the system mobile module provided to them by the university through the smartphone market. The mobile module communicates the collected information to the server module to confirm attendance, along with the facial image of the student captured by the mobile application during the scan. The whole process takes less than a minute for any student as well as the entire class to complete their attendance verification. Smartphones can communicate with servers through local Wi-Fi coverage provided by the company or via the Internet.

As mentioned earlier, the system consists of two modules: a server and a mobile module. The server module can be integrated with the e-learning platform used by the company or it can be a separate application depending on the developer preference. The following subsection describes the functions of each module.

A. Server Module

The Server Module performs the following tasks:
- Mediates students' attendance requests with the eLearning system.
- Generates a QR code for the instructor
- Runs Identity check
- Runs Location check

An example of an eLearning platform, which is an open source application that has become very popular in recent years, is Moodle. Moodle is used by many institutions worldwide. Among its features is Taking Attendance. It allows the instructors to take attendance online by calling names and checking online the appropriate checkbox next the student name. The checkboxes or radio-buttons offered are marked by P for Present, L for Late, and A for Absent. One of the Server Module jobs is to automatically mark the right radio-button on the attendance sheet list.

	QR Code
Developer (country)	DENSO (Japan)
Numeric	7,089
Alphanumeric	4,296
Binary	2,953
Kanji	1,817
Major Features	Large capacity Small printout size High speed scan
Standards	AIM International JIS ISO

Fig. 3.1 Capacity, Features, And Standards For QR Code

This module can be developed as a plug-in module to Moodle. When a student sends his/her information via the Mobile Module to the server, as shown in Figure 3, the server in turn sends the Student ID, the lecture date and time, the attendance status, and a small size image of the student face captured by the Mobile Module to the eLearning platform. This way, the Moodle plug-in will save the transaction as well as register the appropriate attendance status. To generate the QR code, the instructor logs in the Server Module or the eLearning system (if the Server Module is developed as part of the eLearning system), to enter the information needed by the system into the QR code

The instructor may choose then to encrypt this code depending on the level of protection needed. The QR code, with or without encryption, will include the following information:
- Course and section ID
- Date and beginning time of the lecture
- Instructor name
- Some random passcode

Instructor Copy and paste this QR code into the first slide displayed in the lecture. If it is the instructor's policy to allow students to identify students who are late for their class as current or late, the QR code should also be copied to one of the four corners of the slide as desired by the instructor. When students are in class, the first task is to pull out their smartphone, open the mobile module, and scan the QR code.

The third function of the server module is to run an identity check on registered students. This is done by comparing the *facial image sent to each transaction and the image stored in the file for the skeptical student. A matching score is added to the attendance sheet so that the instructor can check manually during or after the lecture. Identity checks or image comparisons can be made after receiving or registering attendance transactions. Although it is recommended that the task be performed after the student has signed in with a system that recognizes the current, if the number of students and the number of simultaneous lectures is high compared to the server speed, then the task can be completed in one. Random instantaneous in the second part of the lecture. The purpose of this task is to allow the instructor to verify the identification test results before the end of the lecture, if he / she wishes to do so.

B. Mobile Module

The mobile module is the component that students usually install on their smartphones. It can also be integrated with the mobile component of the e-learning platform or with a standalone application that communicates with the server module. As mentioned earlier, communication may be via a local Wi-Fi network or via the Internet.
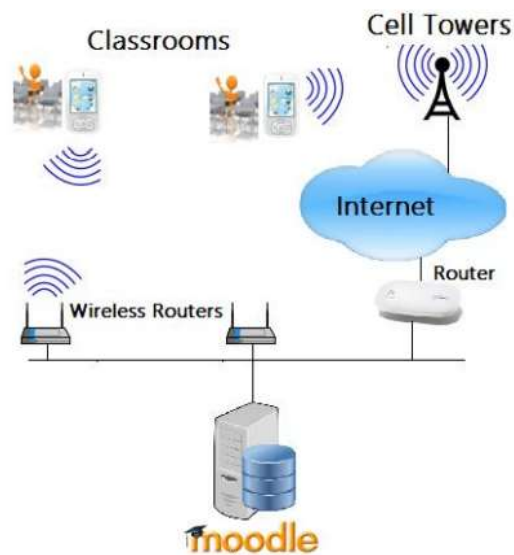

Fig. 3.2 The Proposed System Infrastructure

After the student sees the QR code on the screen, he/she will open the mobile application. If this is the first time since restarting the smartphone, the system will ask the student to enter the username and password. After logging in, the system prompts the student to click on the Start button. The system captures the student's face. The facial image is checked to identify standard skeptical images such as eyes. Once the image is approved, the system requests the user to scan the QR code in the shortest possible time.
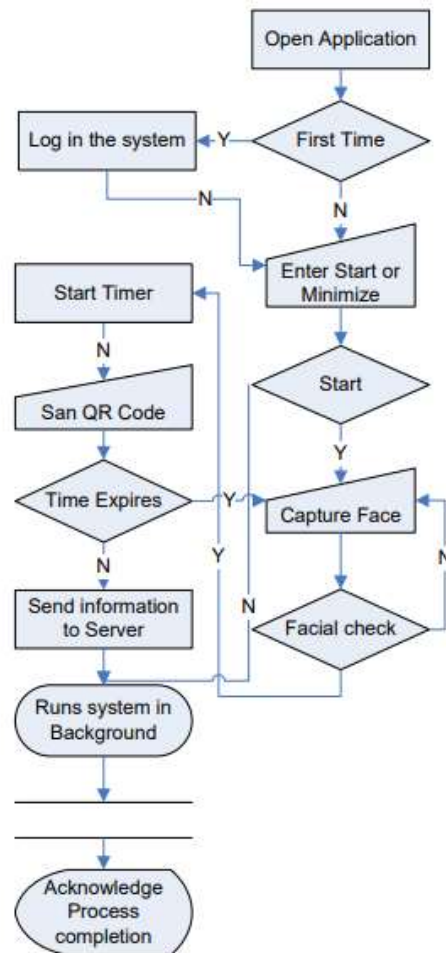
Fig 3.3 Data Flow Diagram for QR Attendance System

After scanning the code, the system sends the information to the server and starts working in the background. With this, the process is considered complete. The server sends a receipt that the process is complete.

As stated in the previous section, the server verifies the identity of the students by running a facial match. The matching weight along with the facial image will be stored against the presence status of the student. The instructor may recheck any of the student's presence during the lecture by manually checking the updated attendance list that shows the matching weights during or after class.

CHAPTER-4
Conclusion

After reviewing online surveys and reviewing daily life experience, the challenge for attendance is to ensure that such a process actually takes place in the classroom and not outside.

A fraudulent activity that occurs only when a student sitting outside the classroom receives a picture of the QR code displayed from the student sitting inside through a communication medium such as email. It suffices to simulate this process as it did in the classroom. To prevent this, the information sent to the server comes with the location of the mobile phone.

The application named "Attendly" is a collective solution for every problem faced by any human being in the present time related to time taking Attendance management. It is time-saving as it displays the qr code on the screen and with a few simple steps the student can simply scan and mark their attendance.