Developing A Quick Attendance System

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Abstract: Attendance taking has been a challenging and error-prone task for many organizations and educational institutions when done manually. To address this issue, various technologies have been developed to automate attendance taking, with mobile applications being a popular choice. This article suggests the creation of a speedy attendance system utilizing mobile application technology, which can automate attendance taking, minimize manual labor, and improve accuracy. The proposed system would employ mobile applications, databases, and GPS location tracking to record attendance immediately, generate attendance reports, and reduce the time and effort needed for attendance management

Keywords: Modern attendance taking system, faulty record, works without internet also, gps, Imei, wifi mesh, local server backup, captive portal

1. Introduction

Attendance taking is an essential task for institutions and organizations to ensure the presence of individuals during specific events or activities. Traditional attendance systems, such as paper-based or manual methods, are prone to errors and time-consuming. Therefore, developing a quick attendance system that can automate and simplify the process can be beneficial. Several studies have been conducted in the past to develop attendance systems that use various technologies such as biometric recognition, RFID, and QR code scanning. These systems have shown promising results in terms of accuracy and efficiency, but they require specialized hardware and software that can be expensive and difficult to maintain. In this study, we aim to develop a quick attendance system that is cost-effective, easy to use, and does not require any specialized hardware. We will use a mobile application that utilizes facial recognition technology to take attendance. The application will be designed to run on smartphones, making it accessible to a wider range of users. Our study builds upon the work of previous researchers who have explored the use of facial recognition technology for attendance taking. For instance,[1] developed a facial recognition-based attendance system for college classrooms that achieved an accuracy rate of 98%. Similarly, [2] proposed a hybrid system that combines facial recognition with RFID technology to take attendance in large events. However, our study differs from these previous works in several ways. we aim to develop a mobile application that can be used in various settings, such as schools, conferences, and workplaces. we will focus on developing an easy-to-use interface that requires minimal user interaction. Lastly, we will conduct a user study to evaluate the usability and effectiveness of our system. Overall, this study aims to provide a quick attendance system that can simplify the attendance taking process and improve accuracy. The proposed system will be cost-effective and accessible, making it suitable for a wide range of applications.

2. Literature Review

Mobile application technology has been extensively researched for attendance taking, and several studies have shown its effectiveness. According to a study by [3], mobile applications are an efficient and accurate way of taking attendance. The study showed that the use of mobile applications reduced the time and effort required for the attendance process, reduced errors, and provided real-time monitoring of attendance. Another study by [4] reported that mobile application technology has a high level of accuracy in attendance taking and can be easily integrated with existing attendance systems. The literature review suggests that mobile application technology has several advantages over traditional attendance taking methods, including higher accuracy and reduced manual effort.

3. Problem Definition

The problem is to design and develop an attendance taking system that can automate and simplify the process of tracking attendance. The system should eliminate the need for manual record-keeping, reduce errors, and save time. The system must be accurate and reliable, with appropriate security measures in place to protect the privacy of attendance data. Additionally, the system should be flexible enough to accommodate different attendance tracking methods, such as barcode scanning, biometric verification, or manual entry.

4. Methodology

The proposed quick attendance system using mobile application technology would involve a mobile application, database, and GPS location tracking. Each individual would be given access to the mobile application, which would require their unique identification information for registration. The application would then use GPS location tracking to determine if the individual is present at the location where attendance is to be taken. The data would be sent to the database, where the attendance would be marked

automatically. The system would also generate attendance reports, which could be accessed by authorized individuals. The system could be integrated with other attendance taking systems, such as biometric systems or smart cards, to enhance accuracy and security.

4.1 Design

The below flow chart Shows how this app will work.

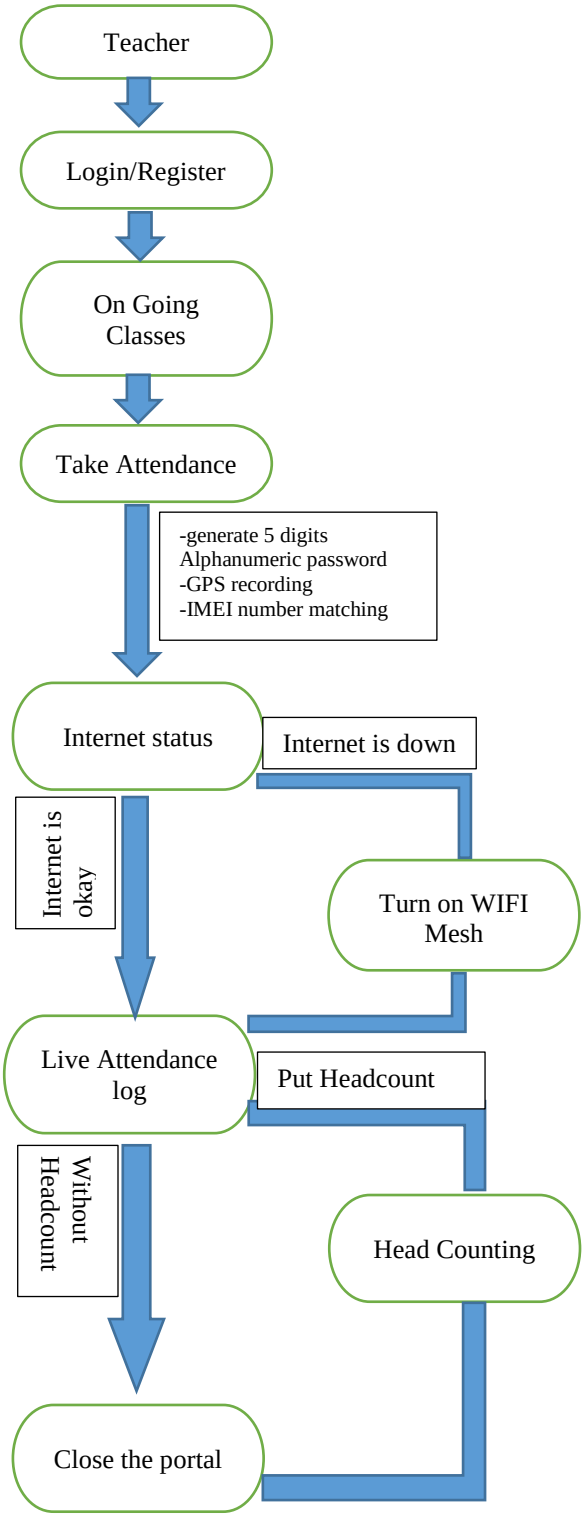

Figure no. 01

Figure no.1 explains how the application will work in teachers phone.

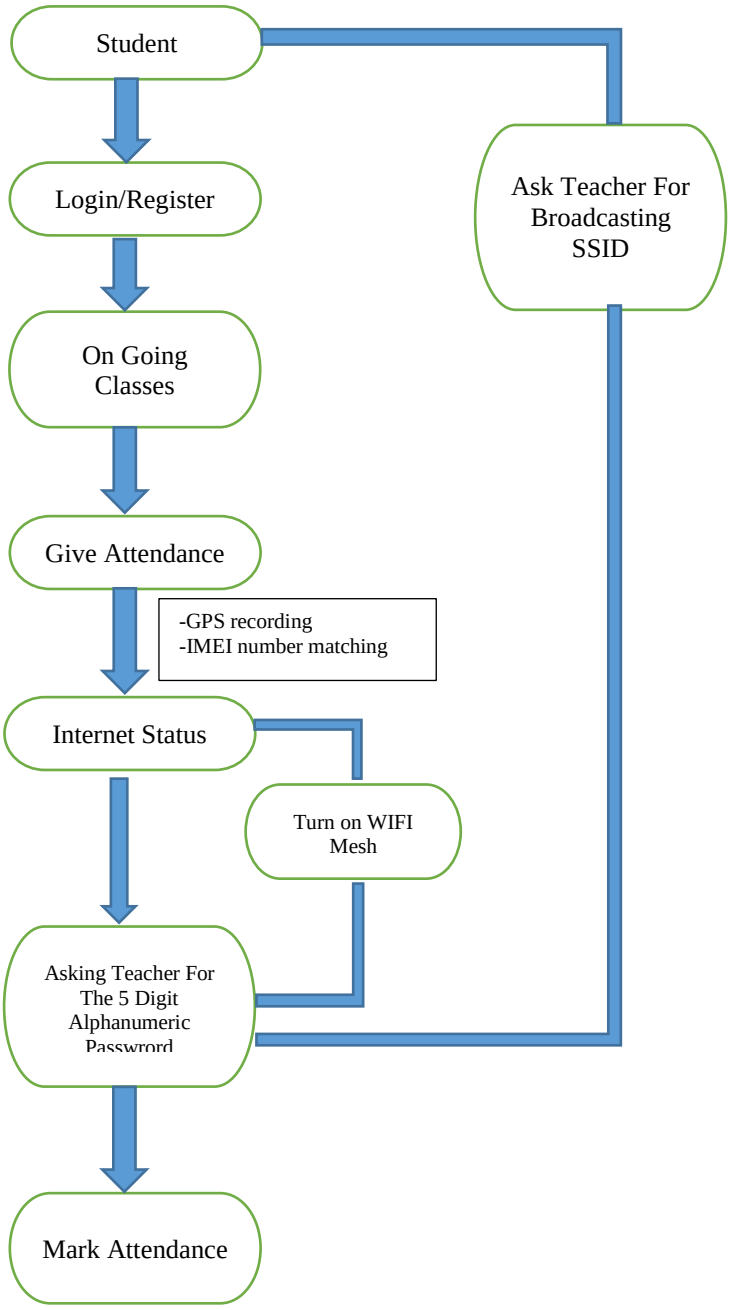

Figure no. 02

Figure no.2 explains how the student can give their attendance by doing various method

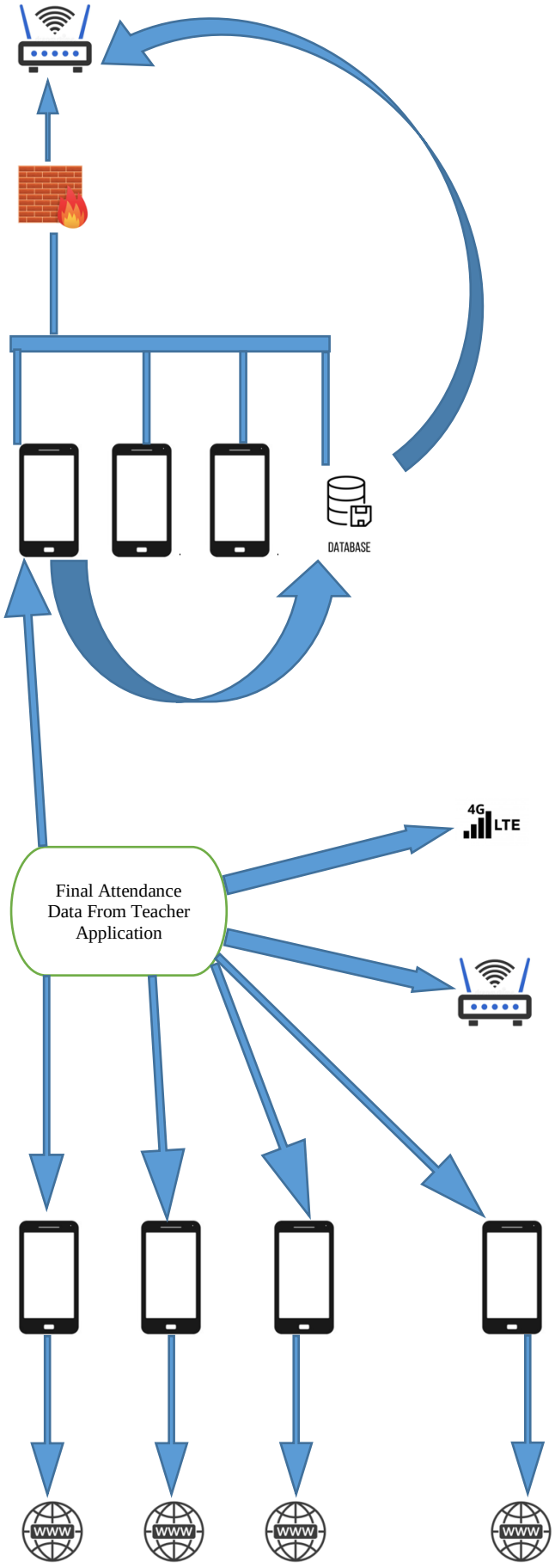

Figure no.3

Figure 3 shows how the data can pass from node to node to perform the task.

From the Figure no 1, we can see that. Teachers is going to have one portal where he's going to register and login to his account and he is going to see the upcoming classes in it. For the sections. Then he's going to enter in the Take attendance portal. Where He is going to click it. And it will generate a 5 digits of alphanumeric password. And it's going to record the GPS coordinates of the teachers device and IMEI number will be recorded also. Then the application is going to check the Internet status in the Current condition. If the Internet is OK then it's going to forward into the live attendance log page. Where the password will be written on the top of the page and there will be an option to verify the head count also, which is optional. And all the live attendance of the students or the attention is going to be reflected on the page. But if attendance Taking time if The Internet status is down then it's going to Turn on the WiFi mesh system. Besides. It's going to. Open one. Captive Portal server. Where students are going to give their attendance. By providing their credentials. And it's going to do the same like recording their Coordinate and IMEI number by the browser.

Figure no 2, we are going to see that have the students are going to perform while giving that in. They are going to login or register into their account and they are going to see the available upcoming classes. Then they are going to. Give their attendance. And. While. Giving their attendance the form will record GPS coordination and IMEI number will be cross verified. The application is going to take check the Internet status of that Time also. If the Internet is working then. Then it's going to forward to the page by asking the password which will be provided by Teacher or the host is going to share the password. Or it may be write that on the board by the teacher also. If Students Internet is not working that good. Then they are going to turn on the WiFi mesh system. And going to give attendance right there. If the student is not having that application on the system Or if the attendee is not having the application on their phone or devices, they will ask the teacher the broadcasting SSID for the Attendance Taking Portal. Then he's going to connect to that open SSID WiFi network by giving the same 5 digits of alphanumeric password and he is going to be forwarded to a Captive local server and the interactive webpage will ask his credentials to Punch his attendance right there.

Figure no.3 shows that the final attendance log data will try to reach to main online server via various way. First the Host/Teacher phone will try to send data using mobile internet. If mobile internet is down then will try to use the help of wifi network.if that also fails then it'll try all the wifi mesh connected students mobile internet individually. If that also doesn't work then we have to use our wifi connected database to record and hold the data for a backup. If the network is good after a while then it'll send the data to the online server finally

Figure no 4 shows how wifi mesh system will keep connected all the devices in a single chain. This chain can create a wide network area by which we can know the students who are currently physically present in the area

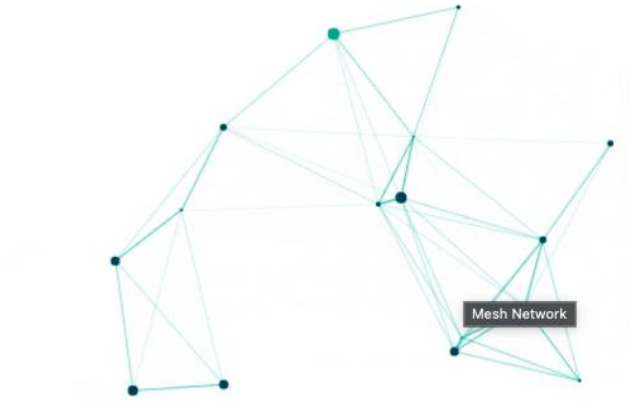

Figure no. 4

All the dots are the available devices whom are connected by wifi mesh network and they can communicate with each other and can create a wide network.

5. Results

The proposed quick attendance system using mobile application technology would offer several advantages over traditional attendance taking methods. The system would improve accuracy, reduce manual labor, and save time. The system would also generate attendance reports automatically, making it easier for authorized individuals to monitor attendance. Additionally, the system would be cost-effective and scalable, making it suitable for large organizations and academic institutions. The system's integration with GPS location tracking would ensure that attendance is taken only when the individual is physically present, reducing the risk of fraud.

6. Other recommendation

Wifi need to have a good coverage to create a wide network by which we can reach out to the database connected with it under the firewall to communicate locally and can give a good network extension.

7. Future scope

Creating the wifi mesh hopping technology to bounce the final data in different different network until the working internet connection is achieved and broadcast the data. The data packet size should be small in size so that it can bounce in different different network faster without causing delay and shouldn't take any big storage if kept locally.

8. Conclusion

The proposed quick attendance system using mobile application technology offers several advantages over traditional attendance taking methods. The system would improve accuracy, reduce manual labor, and save time. The system would also generate attendance reports automatically, making it easier for authorized individuals to monitor attendance. The system's scalability and cost-effectiveness make it suitable for large organizations and academic institutions. The use of mobile application technology in attendance tracking has the potential to transform attendance tracking in various industries, and further research should be conducted to explore the technology's full potential. The proposed system is unique and can be implemented in various organizations to improve attendance taking.

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