AN APPLICATION ON AMS USING FINGERPRINT AND SECURITY CODE

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ABSTRACT

As we all are living in 21st century, infact most of the institutions are using the same manual system for taking the students attendance. However, there are many attendance management software and techniques has been introduced for taking the attendance. The old techniques which are used to maintain the attendance causes a lot of time and efforts for attendance. Now, in present time there are many attendance system that are securely and effectively taking attendance. The attendance management system that are used in present time is basically based on hardware techniques like RFID technology, IRIS scanner e.t.c. But using this kind of technology cost a lot of money, but they really perform well and effective. To remove these old techniques and the hardware techniques that we are presently using, we introduced a Attendance Management System using Fingerprint and Security Code for taking attendance of students. This system is generally free from external tools and uses only a software i.e our AMS application.

Keywords - *RFID Technology, IRIS Scanner , AMS, Fingerprint, Security Code*

1. INTRODUCTION

From ancient to modern era, monitoring of students and regularity is an essential part of the institutions. Institutions uses the manual register techniques for the monitoring of students and these techniques evaluate the details of students regularity. Whether these techniques is used for many decades but the main disadvantage of these technique is that it causes a lot of time and efforts . Also, it has one main problem that, it require a lot of paper to manage the report of students. This manual technique put a lot of burden on teacher. The teachers or professors become too much panic during exams or semesters time when they have to generate the attendance deatils. To reduce the worlkload of the teachers many attendance management system has been introduced in the market. One of the most famous attendance management system is RFID technology ,IRIS scanner and Fingerprint technology. Another well-liked technique for

monitoring attendance is RFID (Radio Frequency Identification) technology. A microchip and antenna are found in small tags or cards used in RFID attendance systems[1]. To identify a person, the technology takes a picture of their fingerprint and compares it to a database of previously registered fingerprints[3].

Attendance management System using fingerprint and Security code is one of the most unique techniques for taking the attendance and managing it. In this system there is an admin panel for the teachers who uses it to genertae the O.T.P for taking attendance[5]. In this AMS system, students have to firstly sign up in the application during starting session and then after they got a userid and password. Infact there is another method for sign in and that is via fingerprint. We have implemented most of the technology so that the attendance times must be reduced.

2. RELATED WORK

The term "fingerprint" describes an imprint made by the student's thumb and index finger's last joint and transmitted through the fingerprint reader on their smartphone. Students can use the LOGIN option instead of scanning their finger if they are unable to do so. Students must correctly enter their login and password in order to view their details. Student data is displayed on the screen after finger scanning or signing.

On the right side of the student's profile, there is an acquire OTP option. By choosing the Get OTP option, a 60-second OTP is generated on the student's registered mobile number. 60 seconds may pass before the OTP expires. The student's attendance is verified when the proper OTP is filled out. The person enters the OTP into a specific device or piece of software to validate their attendance and record it. Computers, tablets, and smartphones can all be used to complete this process. After then, for tracking and analysis, the attendance data is kept in a centralised database.The simplicity and ease of use of OTP's attendance system is one of its benefits. People do not need to carry any specialised tools or devices, and a mobile phone, a widely used technology, can be used to access the system.

Fig: Working Structure of AMS
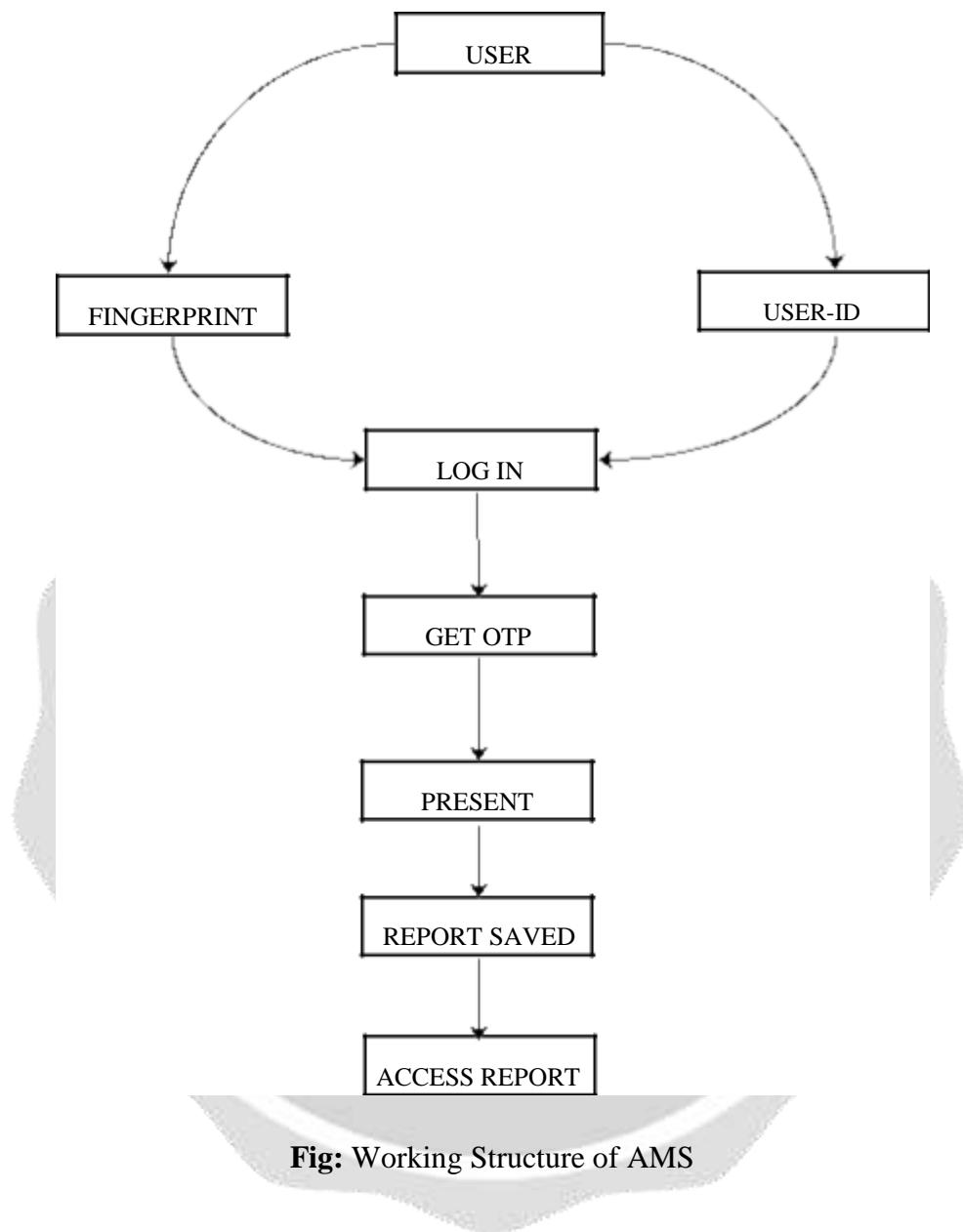
3.PORPOSED MODEL

The three stages of the fingerprint and secret code attendance management system are nomination, recognition, and inquiry. The nomination process comprises using a fingerprint scanner, secret code generator, and keyboard connected to a computer system to record the student's biodata and fingerprint specialism.[3]The student places their thumbprints (right or left) on a smartphone scanner or an external scanner, which recognises the prints and extracts a

special template that is subsequently saved in the firebase database. An application that clarifies and takes a high-contrast fingerprint of the finger, thereby picking up a distinct pattern that is scanned by the finger, is used in a similar manner to capture a student's fingerprint using a scanner. Students can also use LOGIN to view their attendance records, information, and report their attendance. To do so, they must correctly enter their registration ID and password.
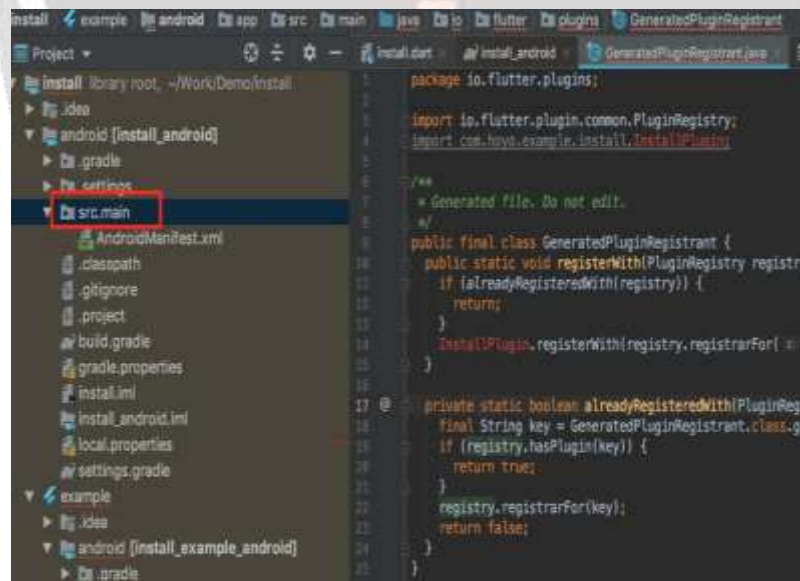
After locating a fingerprint template or login ID that matches, the verification method validates the student's identity. The collected fingerprint/LOGIN ID of the student is compared to the stored specialisation in the system database. In most cases, it entails analysing the persona that was discovered during the nomination process. The fingerprints captured by the scanner are compared to the database's minutiae template. The door is selected based on the needed performance as measured by the False Accept Rate (FAR) and True Accept Rate (TAR) of the pattern. The student's fingerprint is regarded as having been identified if the similarity index rises above a particular threshold. An OTP option with the wording "Get OTP" then showed. Students can get a secret code that is valid for 60 seconds on their registered mobile phone by clicking the Get OTP button. After each OTP is filled out, the student's presence is noted.

4.METHODOLOGY

This AMS application uses the Android Studio environment for development of the project. The U.I part of the AMS application is designed through XML(Extensible Markup Language). The backend of the AMS application is written in Java language. To implement the fingerprint recognition, we uses the Neurotechnology's VeriFinger SDK. Implementing OTP in Java can be done using the Time-based One -Time Password (TOTP) algorithm and the Google Authenticator library. To store the results we uses real time Firebase database, which is a NoSQL database that stores data as JSON.

5..RESULTS AND DISCUSSIONS

The framework of the AMS application seems like as mentioned in figure

Fig: Coding Part of the AMS

Fig: Output of the AMS

The AMS application uses the One Time Password for taking the attendance using Time-Based One Time Password (TOTP) .After taking the attendance it matches and stores the information in the database i.e real time cloud based database (Firebase).

6. CONCLUSION

The Attendance Management System using Fingerprint and Security Code solves the many problem of the teachers and professors. It is very effective way to take the attendance within a minute of time. The main of this system is to take attendance through O.T.P . But, it also has a disadvantage and that is its ranging power. The minimum bluethooth range is around 20m distance but as calculating according to the range room makes too much difficult. Creating the attendance management syem within bluetooth range is possible but minimizing the range of bluetooth is difficult task. But, overall we got a healthy and effective application that create exact information and it also saves a lot of time and energy.

7. REFERENCE

[1]. Abubakar Adamu ,Department of Computer Science, Ibrahim Badamasi Babangida University, Lapai, Niger state, Nigeria using Fingerprint and Iiris scanner techniques.

[2]. Ahmed, A., Olaniyi, O.M, Kolo, J.G. and Durugo, C. (2016). A Multifactor Student Attendance Management System Using Fingerprint Biometric and RFID Techniques.ICTA, 2016, FUT Minna, Nigeria. PP 69.

[3]. Hemlata, P. And Pallavi, A. (2012). Employee Attendance Management System Using Fingerprint Recognition. International Journal of Electrical Electronics. 1(1). PP 37- 39.

[4]. Rumana, A. And Vijaya, K. (2017). Student Tracking and Attendance Monitoring System Using RFID. International Journal of Scientific Research in Computer Science, Engineering and Information Technology 2(2).

[5] A. Abbasi and H. Bamakan, "Automation Attendance Systems Approaches: A Practical Review," BOHR Int. J. Internet Things Res., vol. 1, no. 1, pp. 7–15, 2022.

[6] Techopedia, "What is a Biometric System?," Techopedia, 2012. https://www.techopedia.com/

[7] B. K. P. Mohamed and C. V. Raghu, "Fingerprint Attendance System for Classroom Needs," in 2012 Annual IEEE India Conference, INDICON 2012, doi: 10.1109/INDCON.2012.6420657.

[8] Manish Kumar Pandey , Nihal Ram Tripathi, Suraj Singh, Vaibhav Srivastava "Attendance Management System using Fingerprint and Security Code" published in the International Journal Of Innovative Research and Engineering, volume 03, issue 06.