ATTENDANCE MANAGEMENT SYSTEM USING FINGERPRINT AND SECURITY CODE

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ABSTRACT

In most of the institutions is taken as seriously by staff and students. Even all the institutions are growing rapidly which creates the increments in student's. Wherever, most of the institutions are using register and many other paper work to manage the attendance and enteries of student's which costs a lot of time and energy. Whether there is many alternative digital techniques which can manage and even maintain the attendance. The techniques which is used for management are RFID technology, biometrics, clocking machine e.t.c. While the clocking machine and RFID methods could not solve the problem of impersonation properly. Some people fear the health effects of the use of biometrics like iris and facial scanner. Fingerprint and security code is another method which can solve all the problems and provide benefits to both staff and student's . Therefore , this paper presents a security code and fingerprint attendance system designed to operate as a standalone and handheld system without the use of a computer.

Keywords : Fingerprint, Security code, Biometrics, RFID, Clocking machine

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1. INTRODUCTION

In any institution, monitoring of student's regularity are very necessary. One of the ways to monitor student's regularity in class is through attendance. The manual method of taking attendance in institutions cost a lot of time in writing names and signatures of students on a note book or registers. It cost a lot of time and energy of lecturer for calling names during attendance. Writing names and signatures are not enough and one may use other's identity or even assist their friends in writing attendance. Manual method is time-consuming, error prone and can lead to loss of data, duplication of data entry,lack of security, inconsistent data entry and entry of false information.[1] Hence the need for convenient, and accurate system of recording, tracking and monitoring of attendance.

Fingerprint system has successfully been applied to different areas such as security, aadhar identification, schools, government organizations and financial institutions to identify the presence of a correct person. A fingerprint is an impression left by the friction ridges of a human finger.[8]The fingerprint biometric identification technique requires the automated recognition of individuals based on their anatomical and behavioral characteristics.[1] Properties that make a fingerprint useful for identification are its unique characterstics ridges, its consistency over a person's lifetime and the systematic classification used for fingerprints.[7]

 Nowdays, security code popularity is arising day by day. Security code provide more generic security to both user and institutions. Security code is often used as in terms of barcode, OTP (one time password) e.t.c. We create self attendance using OTP. The OTP technique is a most efficient techinique where the fraud possibility became quite low.

This paper addresses the problem outlined earlier such as time wastage, inconsistent data entry, duplication of data entry and entry of false information using fingerprint of students. Application of Fingerprint and Security code attendance management system will automate and replace existing paper-based system, record, track, monitor and calculate 75% attendance and generates a report.

2.LITERATURE REVIEW

Fingerprint refers to an impression transferred from the last joint of the thumb and index finger via the fingerprint reader on the student's smartphone. If a student does not have the ability to scan their finger, they can utilise the LOGIN option alternatively. To see their details, students must enter their username and password correctly. Scanning with a finger or signing , displays student information on the screen. An obtain OTP option is available on the right side of the student's

profile. By selecting the Get OTP option, an OTP is created on the student's registered cellphone number, which is valid for 60 seconds. The OTP may expire after 60 seconds. Filling out the right OTP validates the student's attendance.
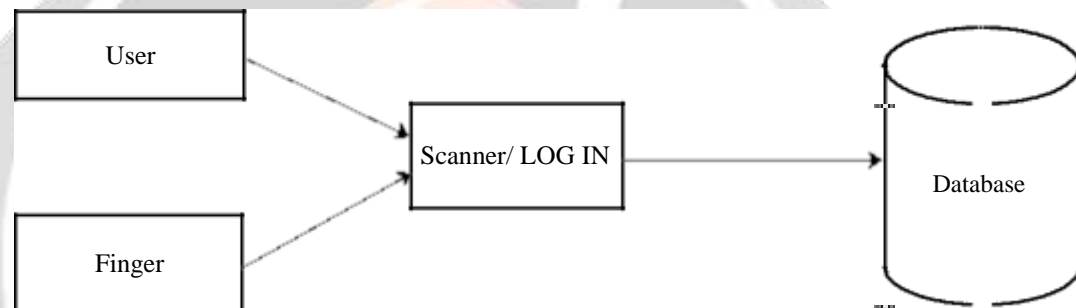

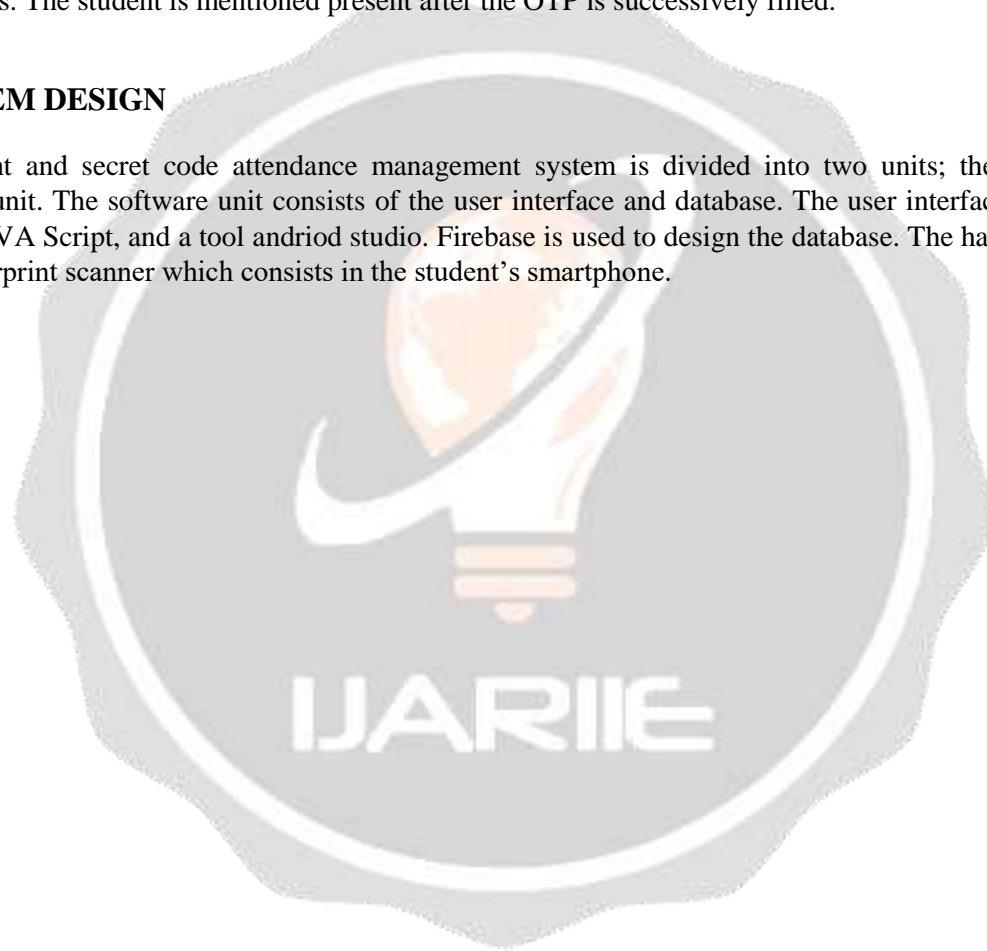**Fig**: Use Case Diagram of Attendance

3.METHODOLOGY

The fingerprint and secret code attendance management system is separated into three stages: nomination, recognition, and enquiry. The nomination procedure entails recording the student's fingerprint speciality and biodata using a fingerprint scanner, secret code generator, and keyboard connected to a computer system. The student inserts their fingerprint (right thumb/left thumb) on a smartphone scanner or external scanner, which detects the fingerprint and extracts a unique representation called template, which is then saved in the firebase database. A similar approach is used to capture a student's fingerprint using a scanner, using an application that clarifies and takes a high-contrast fingerprint of the finger, therefore picking up a unique pattern which is scanned by the finger. During these processes, a high?quality scanner is necessary. Finger quality is therefore evaluated. If the finger quality is not adequate, the system displays a not found warning and instructs the student to correctly arrange the fingerprint for rescanning.The outcome is a collection of templates, and the pattern of the finger and code are studied primarily to extract pieces of pattern that conform to the information discovered in the secret code. Students may also view their attendance records, information, and give their attendance using LOGIN, where they must correctly enter their roll number and password that was obtained upon registration. This LOGIN stage directs students to the webpage, where they may record their attendance.

The verification method certifies the student's identification after identifying a matching fingerprint template/LOGIN ID. The collected fingerprint/LOGIN ID of the student is compared to the stored specialisation in the system database. It usually entails examining the character that was captured during the nomination stage. The templates generation technique analyses and computes the similarity of the extracted characteristics, geographical coordinates, and their database point to the imputed templates. A comparison is done between the fingerprints on the scanner and the minutiae template in the database. A pattern door is established, and the door is chosen based on the required performance recognized in terms of False Accept Rate (FAR) and True Accept Rate (TAR) . If the similarity index surpasses a certain threshold, the student's fingerprint is considered to be identified. If there is no matching in the nomination template, the result will be empty. The output will be successful if a matching template is discovered. Following that, an OTP option appeared with the text Get OTP. By clicking the Get OTP button, students receive a secret code on their registered mobile phone that is good for 60 seconds. The student is mentioned present after the OTP is successively filled.

4.SYSTEM DESIGN

Fingerprint and secret code attendance management system is divided into two units; the hardware and the software unit. The software unit consists of the user interface and database. The user interface is designed using JAJA, JAVA Script, and a tool andriod studio. Firebase is used to design the database. The hardware unit consists of a fingerprint scanner which consists in the student's smartphone.
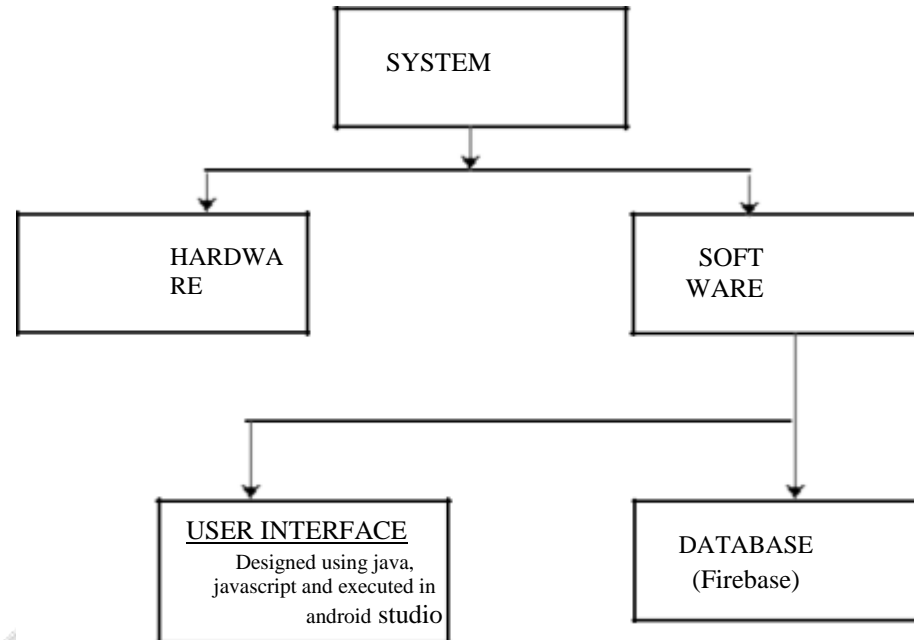
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                    ┌──────────────────┐
                    │      SYSTEM      │
                    └──────────────────┘
                 ┌───────────┴───────────┐
         ┌──────────────┐          ┌──────────────┐
         │   HARDWA     │          │    SOFT      │
         │   RE         │          │    WARE      │
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                            ┌────────────┴────────────┐
                    ┌──────────────┐          ┌──────────────┐
                    │USER INTERFACE│          │  DATABASE    │
                    │Designed using│          │  (Firebase)  │
                    │java,javascript│         │              │
                    │and executed in│         │              │
                    │android studio │         │              │
                    └──────────────┘          └──────────────┘
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Fig: System Design of Attendance

5. RESULT

To carry out the process, a fingerprint scanner, a security code, and a computer system are required. To take attendance, students imprint their fingerprints on the scanner and enter the security code at the lecture theatre's door. The biometric pattern/template captured by the scanner is recognised, confirmed, and saved in the attendance management system's repository. Admin can produce reports on a daily, weekly, or monthly basis.

6. CONCLUSION

The attendance management system for taking, documenting, and maintaining student attendance has been created and implemented effectively. It minimises the time and energy necessary to monitor, calculate, and report students' 75% attendance at the end of the semester, as well as the majority of the attendance management difficulties faced by academic institutions. The approach is applicable to any school and may be used to replace the traditional technique of taking and maintaining student attendance.

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