

ATTENDANCE OF STUDENT USING BIOMETRIC FINGERPRINT RECOGNITION

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Abstract : Managing student attendance during lecture periods has become a difficult challenge. The ability to compute the attendance percentage becomes a major task as manual computation produces errors and also wastes a lot of time. For the stated reason, an efficient attendance management system using biometrics is designed. This system takes attendance electronically with the help of a finger print device and the records of the attendance are stored in a database. Attendance is marked after student identification. For student identification, a biometric (fingerprint) identification based system is used. This process however, eliminates the need for stationary materials and personnel for the keeping of records. eg. Eighty candidates were used to test the system and success rate of 94 percent was recorded. The manual attendance system average execution time for eighty students was 17.83 seconds while it was 3.79 seconds for the automatic attendance management system using biometrics. The results showed improved performance over manual attendance management system. Attendance is marked after student fingerprint identification

IndexTerms - Android OS 4.3 and greater version.

I. INTRODUCTION

In many institutions and academic organizations, attendance is a very important criteria which is used for various purposes. These purposes include record keeping, assessment of students, and promotion of optimal and consistent attendance in class. In developing countries, a minimum percentage of class attendance is required in most institutions and this policy has not been adhered to, because of the various challenges the present method of taking attendance presents. This traditional method involves the use of sheets of paper or books in taking student attendance. This method could easily allow for impersonation and the attendance sheet could be stolen or lost. Taking of attendance is time consuming and it is difficult to ascertain the number of students that have made the minimum percentage and thus eligible for exam. Thus, there is a need for a system that would eliminate all of these trouble spots. An automatic attendance management system using biometrics would provide the needed solution. An attendance management system is a software developed for daily student attendance in schools and institutions. It facilitates access to the attendance of a particular student in a particular class. This system will also help in generating reports and evaluating the attendance eligibility of a student. Rather than signing an attendance sheet, individuals will pass their thumb over the fingerprint scanner, the finger print is compared against a list of pre-registered users, and once a match is made, the individual will be registered as having attended that lecture. By using this technology, it is easier and faster to detect students handling at that time and reduce assets losses. In this system the fingerprint recognition is also adopted to enable the process of identifying of student more reliable and secure for facilities management.

Why use Fingerprint?

Fingerprints are considered to be the best and fastest method for biometric identification. They are secure to use, unique for every person and does not change in one's lifetime. Besides these, implementation of fingerprint recognition system is cheap, easy and accurate up to satisfiability. Fingerprint recognition has been widely used in both forensic and civilian applications. Compared with other biometrics features, fingerprint based biometrics is the most proven technique and has the largest market shares. Not only it is faster than other techniques but also the energy consumption by such systems is too less.

II. REVIEW OF LITERATURE

ANSI/INCITS 381-2004 Finger Image Based Data Interchange Format- This standard specifies an interchange format for the exchange of image-based fingerprint and palm print recognition data. It defines the content, format, and units of measurement for such information. This standard is intended for those identification and verification applications that require the use of raw or processed image data containing detailed pixel information.

ISO/IEC FCD 19794-3 Finger Pattern Based Interchange Format- This draft standard specifies that a fingerprint image is divided into a grid of overlapping or non-overlapping cells. At each cell, the finger pattern will be represented by a cell structure. A method to obtain the cell structure is to decompose each of the cells into a two-dimensional spectral representation such as the two-dimensional Discrete Fourier Transform (DFT). The decomposition produces spectral components, where each component can be characterized by a wavelength in the horizontal (x) and vertical (y) directions, amplitude, and a phase

ANSI/INCITS 378-2004 Finger Minutiae Format for Data Interchange - This standard defines a method of representing fingerprint information using the concept of minutiae. It defines the placement of the minutiae on a fingerprint, a record format for containing the minutiae data, and optional extensions for ridge count and core/delta information.

ISO/IEC 19794-2 Finger Minutiae Format for Data Interchange - This standard describes how minutiae points shall be determined, defines data formats for containing the data for general and smart card use, and details conformance information. Guidelines and values for matching and decision parameters are provided as an informative Annex. The standard defines three types of minutiae, including ridge ending and ridge bifurcation. The adopted minutiae determination strategy relies on skeletons derived from a digital fingerprint image.

III. PROPOSED SYSTEM

This system consist of six phases- 1) Login 2) Home 3) Attendance 4) E-sheet 5) Generating daily reports and 6) Logout.

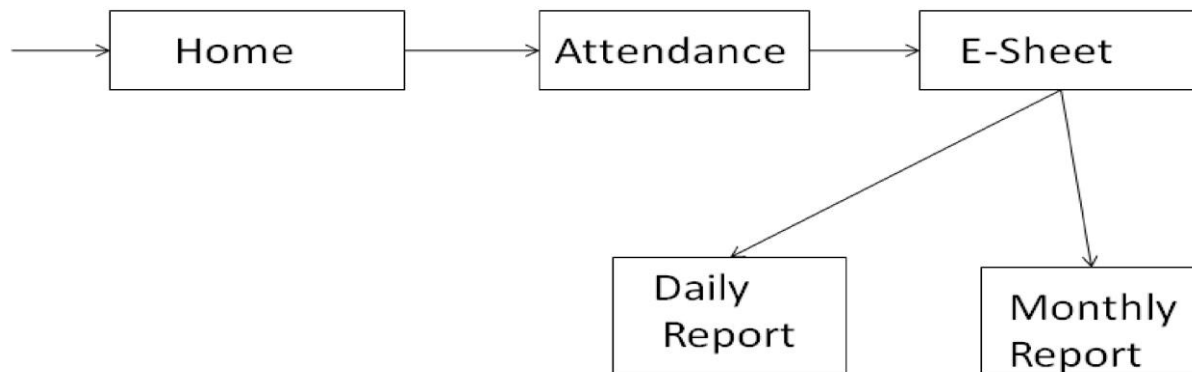


Figure 1 .System Architecture of Student's Attendance based on Biometric Fingerprint Recognition

In developing this system, some paper objectives had been specified. The main purpose of this paper is to improve the current existing student attendance system that in use by most of the colleges/universities by develop a fingerprint-based student attendance management system. Some objectives of this paper had been identified and listed below.

Objectives

- To replace the current existing student attendance system process to fully-computerized and automated student attendance system.
- To develop a desktop-based application that obtains the student fingerprint every time they attend the classes for attendance marking purpose.
- To develop a web-based student attendance system in displaying every student attendance results effectively.
- To generate reports regarding to the student attendance in order to assist the lecturer/staff in analyze and tracking the student attendance.
- To eliminate the chances for student to ask their buddy sign attendance for them through the implementation of fingerprint attendance system.

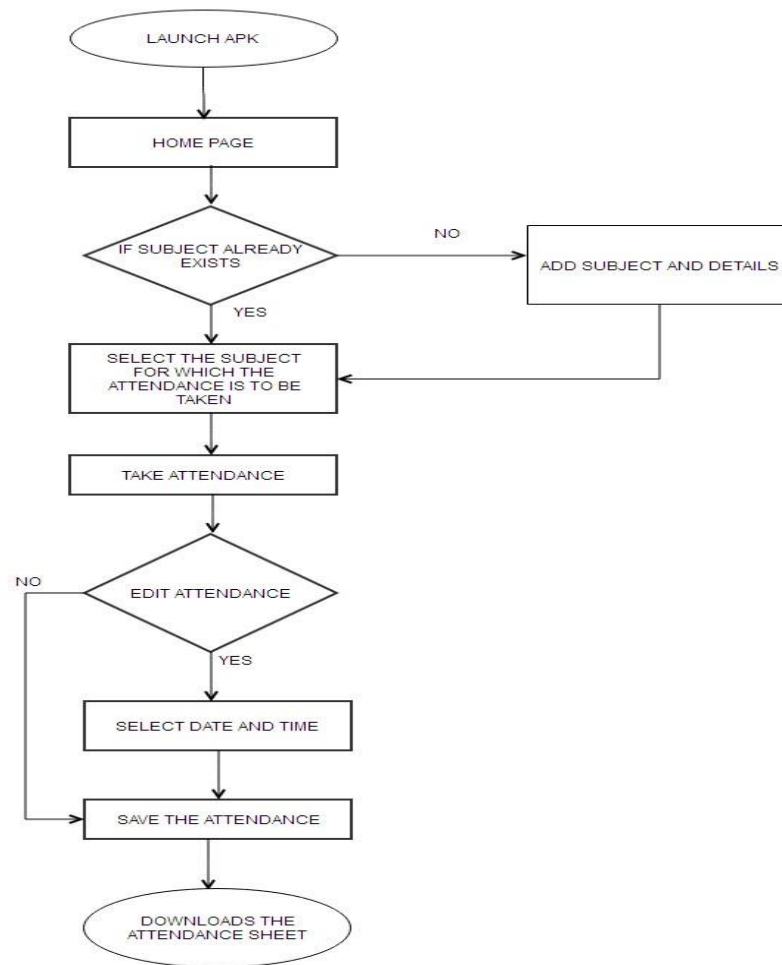


Figure 2:Flow Chart

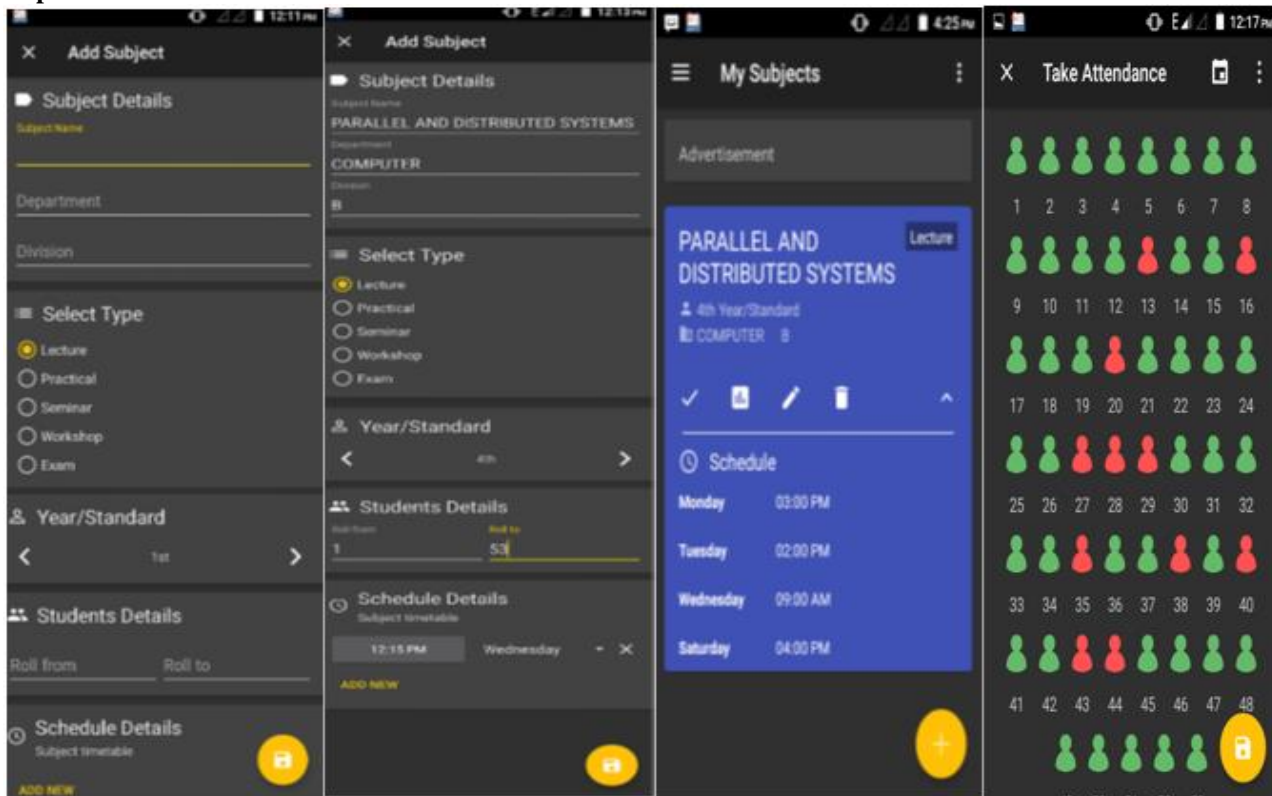
IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statics of Study Variables

SR.NO	Test Description (Input)	Expected Output	Actual Output	Result
1	Field Left Empty in Add SUBJECT NAME	Seems Like some Field remain Unfilled	Seems Like some Field remain Unfilled	PASS
2	Field Left Empty in Add DEPARTMENT	Seems Like some Field remain Unfilled	Seems Like some Field remain Unfilled	PASS
3	Field Left Empty in Add DIVISION	Seems Like some Field remain Unfilled	Seems Like some Field remain Unfilled	PASS
4	Field Left Empty in Select TYPE	Seems Like some Field remain Unfilled	Seems Like some Field remain Unfilled	PASS
5	Field Left Empty in STUDENT DETAIL	Seems Like some Field remain Unfilled	Seems Like some Field remain Unfilled	PASS

Table 4.1:Test cases

Implementation Details



V.CONCLUSION

Fingerprint recognition attendance system will be developed to replace the traditional attendance system that are currently widely using by many colleges and universities. This system is designed to make the whole attendance taking process to become more reliable, convenient, efficient, and accurate. Besides that, with the implementation of biometric technology will help in reduce errors and attendance data will be able to compile in easier way. This paper is designed to aim in eliminating spotted problems during the initial analysis. The problems spotted are includes buddy-signing, loss of attendance sheet, skip class issue, and hard in analyzing student attendance record from time-to-time. These problems are the major problems faced by most colleges and universities. Therefore, this paper is designed in effort to eliminate these problems. Some solution had been applied to eliminate these problems which includes the use of biometric technology, change the current system to fully-computerized system, provide easier way to generate report, and student lateness policy to eliminate last-minute come in take attendance kind of student. With the proposed solutions, also promote a very reliable ways in managing the student attendance record.

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