

Android Mobile Application for Students Class Attendance

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Abstract

Marking attendance has been one of the most important ways to record and track the presence of students in schools, colleges. Attendance marking in different forms has been in use in various organizations to record the presence of their students or workers. This helps the organization or institution in generating their month-end payroll or list of student that reached the minimum percentage of attendance, and other activities. Such systems may be manual or automated. Biometric-based system, card-based systems are some of the examples of automated attendance system.

The aim of the project is to create an Android mobile application for attendance system that can be used by all lecturers for their respective courses. This Application allow the lecturers to input student's information, details of the courses allotted to the respective faculty and stores it in the mobile database called Tiny DB. This application runs on android OS. Android is a Linux-based operating system developed for smart phones or tablet computers. The Android application is developed in Java-like language using the Android software development kit (SDK). The integrated development environment (IDE) which is officially supported for Android apps development and used in this project is App Inventor 2.

Keywords: Tiny Database, Android Operating System OS, Software Development Kit SDK, Integrated Development Environment IDE,

1.0 Introduction

In many institutions and organizations, the attendance is a very important factor for various purposes and its one of the important criteria that is to follow for students and organization employees. The previous approach in which manually taking and maintains the

attendance records was very inconvenient task. After having these issues, an automatic attendance system is being developed which automates the whole process of taking attendance and maintaining it. Saraswat, L. (2010).

Biometrics techniques are widely used in various areas like building security, forensic science, ATM, criminal identification and passport control. Jain, L. (2004). The fingerprint recognition is widely used for many other purposes and it is widely popular technique. Lee, E. (2007).

Organizations of all sizes use time and attendance systems to record when employees start and stop work and department where the work is performed. However, it's also common to track meals and breaks, the type of work performed, and the number of items produced. In addition to tracking when employees work, organizations also need to keep tabs on when employees are not working. Vacation time, compensation time, FMLA time, and jury duty must be recorded. Some organizations also keep detailed records of attendance issues such as who calls in sick and who comes in late.

A time and attendance system provides many benefits to organizations and Schools. It enables an employer to have full control of all employees working hours. It helps control labor costs by reducing over-payments, which are often caused by transcription error, interpretation error and intentional error. Manual processes are also eliminated as well as the staff needed to maintain them. It is often difficult to comply with labor regulation, but a time and

attendance system is invaluable for ensuring compliance with labor regulations regarding proof of attendance. Companies with large employee numbers might need to install several time clock stations in order to speed up the process of getting all employees to clock in or out quickly or to record activity in dispersed locations. Depending on the supplier, identification method and number of clocking points required, prices vary widely. A time and attendance system protects a company from payroll fraud and provides both employer and employees with confidence in the accuracy of their wage payments all while improving productivity. Lin, H. (1992).

In many Institutions or Universities, attendance is a very important criterion which is used for various purposes. These purposes include record keeping, assessment of students, and promotion of optimal and consistent attendance in class. In some Universities, 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.

An automatic class attendance system through mobile devices would provide the needed solution. A mobile class attendance application is android application 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.

2.0 Related Works

Different methods and principles have been applied to effectively monitor the attendance of the students. A system providing an improvised electronic card and card reader serially interfaced to the digital computer system was proposed, which is an embedded computer based attendance management system (Shoewu, O. O. M. Olaniyi, and Lawson et al, 2011) A wireless attendance management system used the iris of the individual for authentication (Kadry, S. and M. Smaili et al, 2010). All processes like capturing the image of iris recognition,

extracting minutiae, storing and matching used an off-line iris recognition management system.

Authentication of the individuals for attendance management has also been carried out with the help of passwords. A system that uses passwords for authentication was designed and implemented (Cheng, K., L. Xiang, T. Hirota, and K. Ushijima et al, 2005), but, this type of system allows for impersonation since the password can be shared or tampered with. Passwords can be forgotten at times thereby preventing the user from accessing the system.

Attendance monitoring systems are also developed using biometric system as a mode of authentication and marking the attendance of the students. Authors in (Shoewu, O. and O.A. Idowu et al, 2012) designed and implemented a system that uses fingerprints to mark the attendance and generate the reports at the end of the semester.

3.0 System Overview

The proposed system provides solution to lecture attendance problems through the use of AMS that is interfaced to the server. The lecturer will have to install the respective APK files developed for them on their android devices. At first, the lecturer will input all student information that enrolled to a particular subject with respect of their level and course code once at the beginning of the semester. After this, the lecturer can mark attendance for each student whether the student is present, absent, or clinic (not well) by one click and save the attendance list with respect to the date of the day. At the mid or end of the semester the lecturer can view and generate attendance reports of all student with respect of their status. The teacher can then generate reports by a single click. The lecturer will also have the access to the list of students attending the lecture and can even modify the list if required.

4.0 System Design

4.1 Software Architecture

The software architecture consists of: The Tiny Database, and the application program

4.1.1 Database

Tiny DB is a non-visible component that stores data for an app. Apps created with App Inventor are initialized each time they run: In contrast, Tiny DB is a persistent data store for the app, that is, the data stored there will be available each time the app is run. An example might be a game that saves the high score and retrieves it each time the game is played.

4.1.2 Application Program

The application program is developed with Android programming language using App Inventor 2 as tool for the development of the software. The application program provides user interface for the lecturer to input student information and mark student attendance.

4.1.3 Hardware Architecture

The basic requirement of the AMS is an android device or any device that support android operating system, which will run the application, with the help of which lecturer will mark student attendance.

5.0 Methodology and Flow Chart

5.1 Methodology

The student's data is collected at the beginning of each semester by the lecturer that is the information of all students that enrolled a particular course. The main module pulls all the system components together. Once the student's information is saved, the lecturer can mark student's attendance in every period of his lecture, and the application gives the lecturer the right to mark each student either the student is present in the class, absent, or clinic. After successful marked, the collected data is stored in the TinyDB. At the end of each semester the lecturer can generate student's attendance report so that he/she can assess those students' that reach minimum percentage of attending class. The result obtained shows the efficiency of the system in eliminating problems associated with paper-based attendance systems.

5.2 Flow Chart: - The figure below explains the flowchart of how the application works:

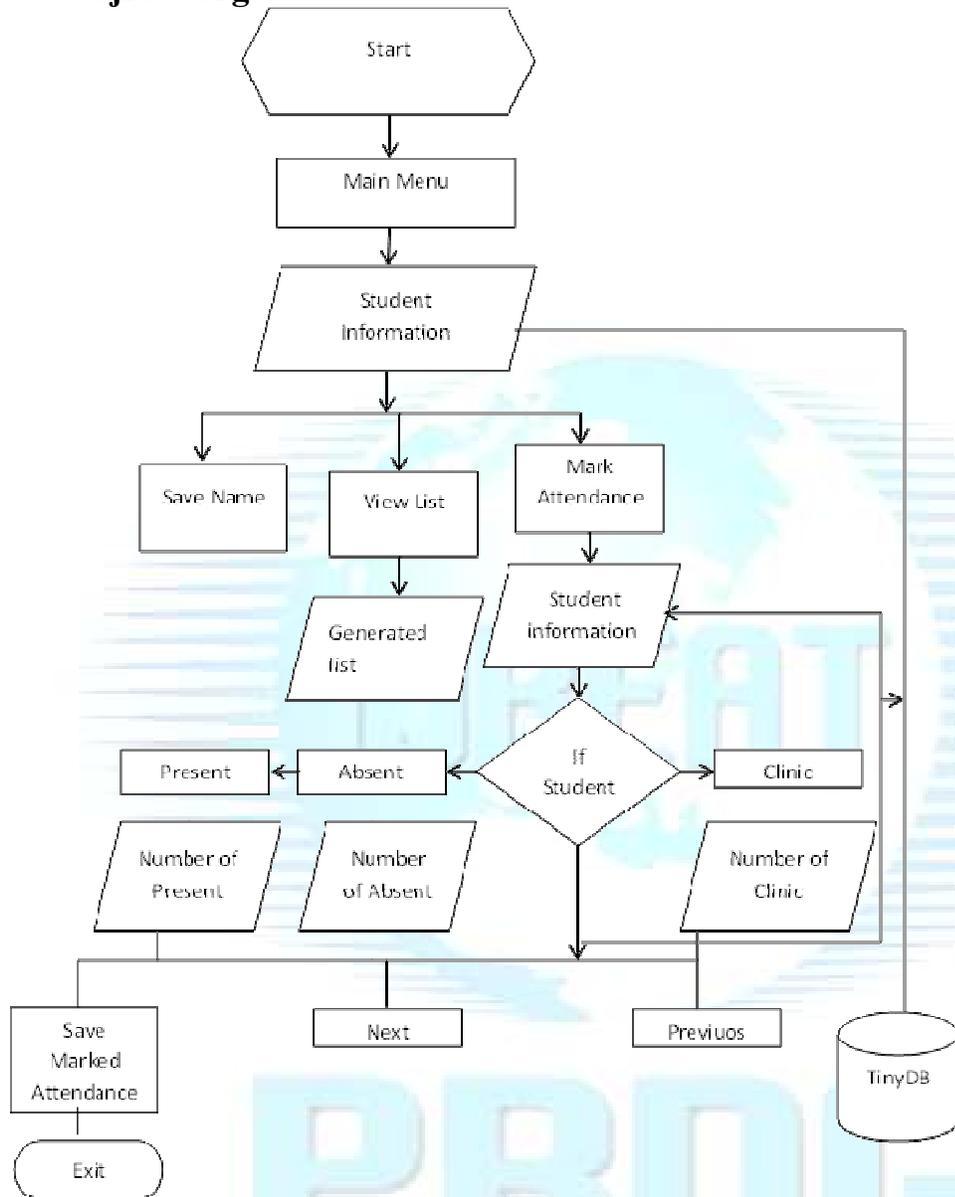


Fig: 1 - Application flowchart

6.0 Graphical User Interface

The application GUI is developed using App Inventor 2 and the various forms are as shown below.

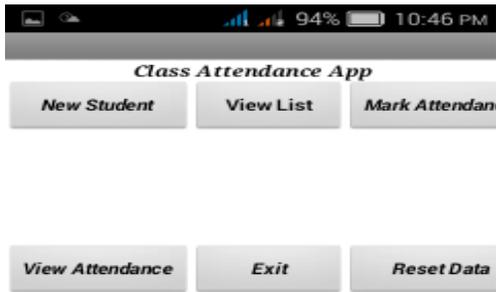


Fig: 2

INPUT STUDENT'S INFORMATION AND SAVE SCREEN

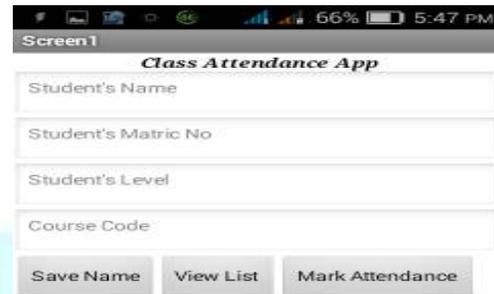


Fig: 3

VIEW STUDENT LIST SCREEN

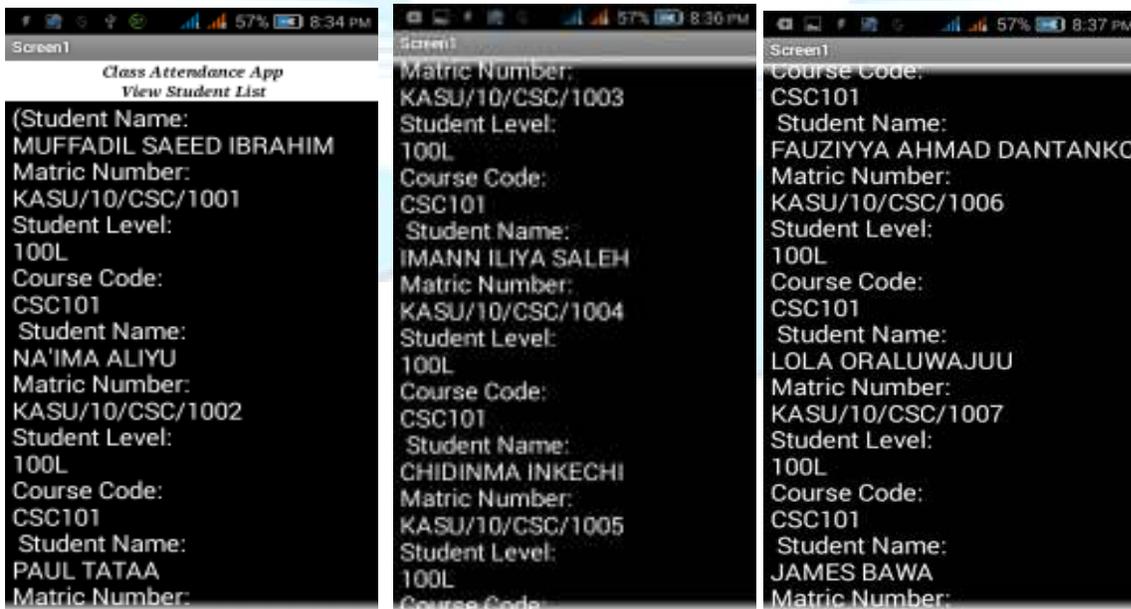


Fig: 4

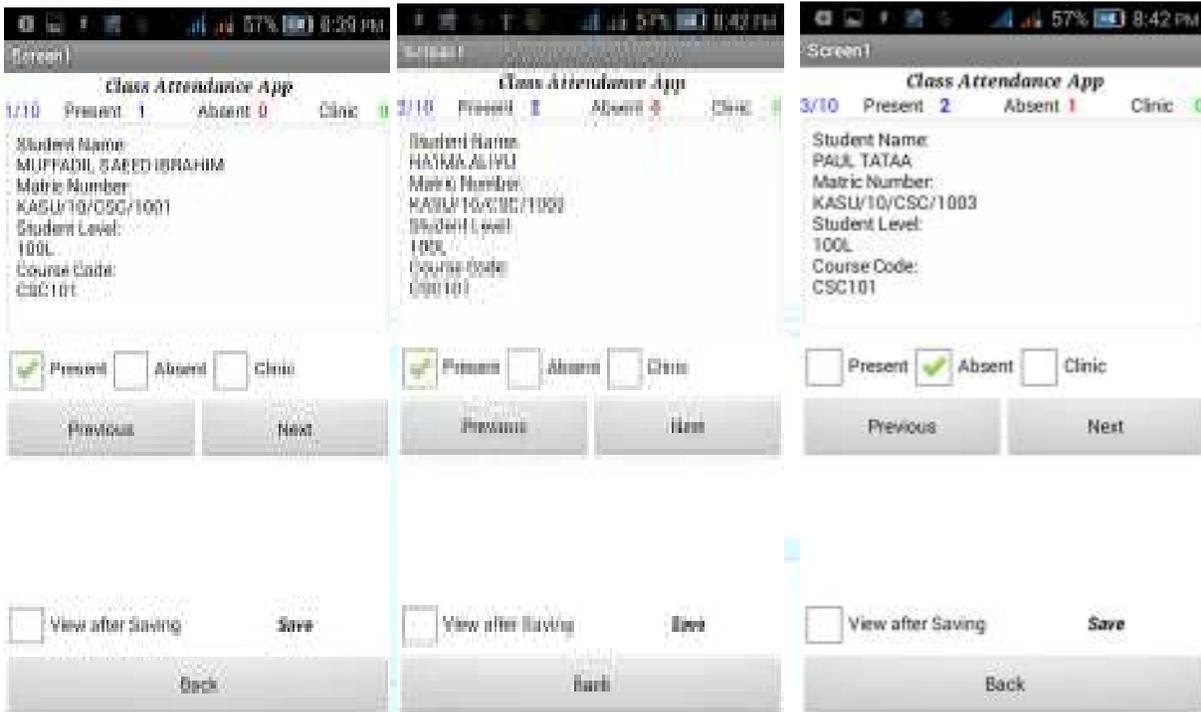


Fig: 5

MARKED ATTENDANCE LIST SCREEN



Fig: 6

APPLICATION

This Android Application can be used in Universities, Colleges, Schools, Training institutions Industries, Organizations, even Secondary level etc.

CONCLUSIONS

Mobile Android Class Attendance Application software system provides a new, efficient and easy approach of managing student's attendance. In this paper, we proposed a new system for monitoring attendance of the students using android platform. The results showed improvements in accuracy as compared to using user-based paper-based approach. Moreover, the proposed technique provides an easy way for generating reports.

RECOMENDATIONS

With the obtained results, we can therefore say there's room for further enhancement because among the limitation of this software application is an offline application therefore, it will be very encouraging to see this project being improved, revised to be an online application in such a way that generated list of student will be generated automatically direct from the student's portal website. Every system must be subjected to alteration; therefore, this project can be

improved or built with more specifications and requirements.

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