Android Application Based MIS to Monitor and Manage Students Attendance

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Abstract

Management information system or MIS broadly refers to a computer-based system that provides managers with the tools to organize evaluate and efficiently manage departments within an organization. In order to provide past, present and prediction information, a management information system can include software that helps in decision making, data resources such as databases, the hardware resources of a system, decision support systems, people management and project management applications, and any computerized processes that enable the department to run efficiently. In this paper we mentioned about an android application based MIS to manage attendance of students of any educational institute. Now a day's people using android smart phone vastly. Lots of android application making us dependable on android based system and that is logical due to a small computing device, we focused on this matter and developed an android based MIS. Typically people use "RF-Tag" ID card or finger print scanner for time-attendance management system. There have some common difficulties in existing system that the "RF-Tag" reader and finger print scanner need high price and strong technical efficiency to setup. As we are thinking about educational institute, we see some times students can punch their friend's ID card for fake attendance. To reduce this common difficulties we work on a new attendance monitoring system. Most of people using smart phone so there have no such initial cost because, that device will be a vital part of our developed system. Using a software any android [1] mobile phone will replace "RF-Tag" reader. Also the attendance will be submitted directly by teachers so here have no option of miss management. The new system will make a virtual management link between students, teachers, and administration using some common used device. Also our developed MIS will send SMS notification to parents about their child progress. Our work will results an effective management system with help of familiar device and technology in reasonable automation cost.

Keywords: MIS, Android, E-Management, Automation.

1. Introduction

We can find many existing computerized student attendance management system, but it requires some costly hardware like RF tag card reader, finger print scanner to input attendance data or recording attendance at a register book then input it manually to MIS software. In our work we converted a commonly used android [1-3] smart phone as an attendance register and many things more. This will make the total system paperless. We made android mobile software and PC (Personal Computer) based online software that can collect daily attendance of an educational institute and produce some desired report of percent of attend/absent students. Teacher will use the android application at class room to input attendance of his class and simultaneously the data will be uploaded at online server using internet connectivity, he does not need to carry an attendance register book or any related papers. From the online database, higher authority will be able to monitor attendance details, generate various reports like daily attendance, class wise attendance, and statistics of attendance. The android application has some features like, teacher can find absent students name list from his previous submitted data and with students & guardian's contact number and teacher can call directly by a simple click. Also has a progress reporting option where the call duration with absent students list will be saved and uploaded at online with status of students. Similarly management can evaluate effort of teacher and observe his conversation details (Calling time, number, duration, etc.), there could be call record and remark writing option. The MIS is flexible according to requirements. Another useful option that any time authority will be able to send SMS notification to guardian to inform them about student's status. Our system will replace the current costly attendance management system and a daily used android mobile phone can brings MIS in palm. This system will be an enhancement of MIS.

2. Limitation of Existing Systems

From our observation we find out that the existing common attendance management system is use of "RF" tag ID card. In this system sometimes students punch another's card which is a common deception in the system and it become difficult to monitor that where has large number of student transaction. Another problem is technical difficulties due to maintenance and pricing. To overcome this limitation and making a low cost management system using the available resources of an institute we designed this management system.

3. Android Based MIS system design

Basically our designed system has three parts, an android application [1], and online database and a web application. This three component will work together and we are calling consist of this android based MIS. The technological support and resources that required in our system, those are mostly available at any institute. Personal computer is commonly used at any educational institute. Now a day most of people using android smart phones so we need only an internet online database server. Our implemented system has following components shown in "Fig:1"
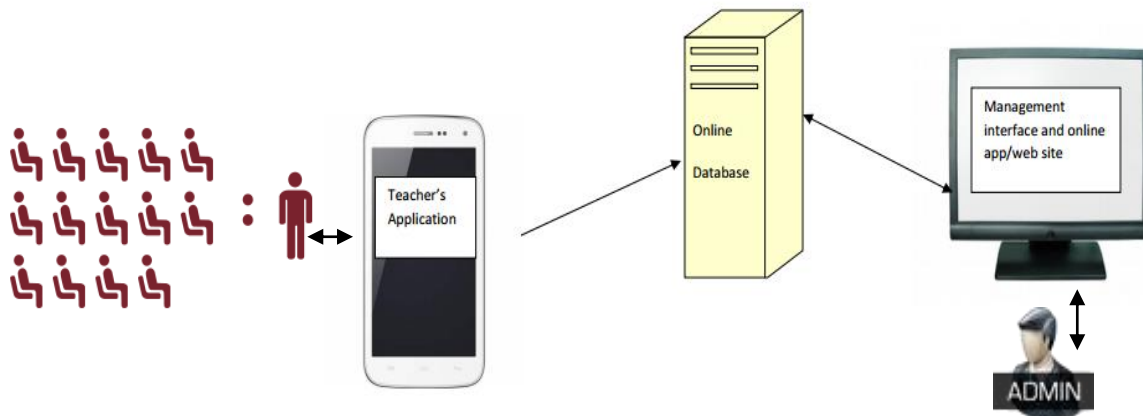

Fig. 1. Basic System Configuration

4. Required skill, tools for development and technique

From technical sense it required some skills on programming, data structure, web design, android app development and debates management system. In development process of this system we used common web programming techniques to develop online database and web application to handle database from personal computer. To develop android app we can use "Android Studio" or "Eclips". This two development studio mostly used for android programming. First of all it needs to design the database schema, flow chart and data structure of probable software. After doing this we developed the logic of android app and web site. Here also need to design a web site, it depends on user what will be the design and whatever user want. Android app development growing very fast and many programmer switched their skill in this sector. Despite it is new but in future android application will replace current pc based application. We used a bridge between data entry and data processor which is an android operating system powered smart phone. The smart phone access the online database using internet connection and transects data over there. So the processing online software get data which came from "RF-Tag" reader in traditional system. To setup SMS notification system we used bulk SMS service of mobile network operator. We connected their SMS sending API with our web application.

5. Working Procedure

We made this system user friendly as possible. First all information of students will be stored at online database which is only hard work needs to operate this system. After that the authorized person will be able to access web application and get all required report, attendance statistics, progress repost etc. Teachers will use our developed android app as replacement of traditional attendance register book. He will get all students data according to his selection and assigned subject at classroom by using internet connection. From his application he will check the name list of attend students. From this simple task the system will process a lot of report which mandatory for an educational institute. Teacher also can call the absent students from using android app and that data also will

upload simultaneously to online server. Managing authority will access the web application and observe all those desired report.
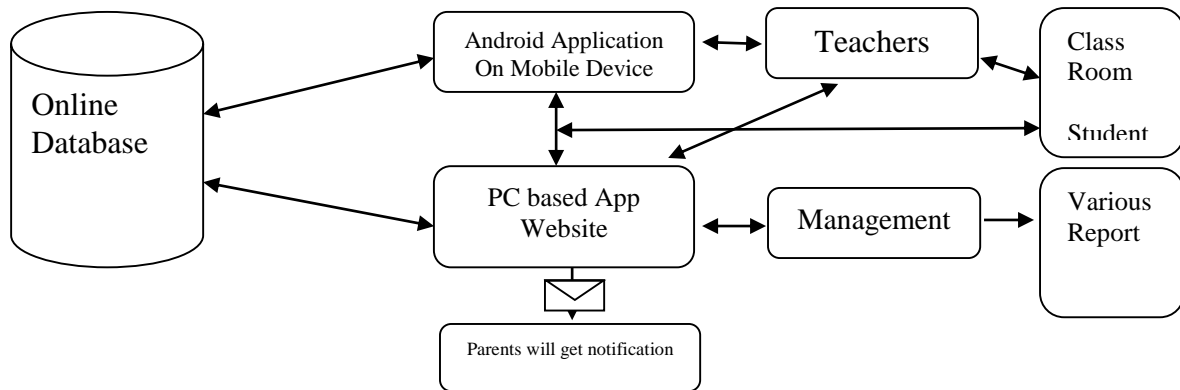

Fig. 2. System Architecture

6. Inputs of the system

Input at online database: (1) Student's basic information form PC. (2) Students and parents contact number. (From PC) (3) Teacher's authentication data to get access from android app. (4) Daily attendance from android apps. (5) Progress and communication report from android app. (6) Notice board data. (General notice, news, event) (7) Basic information of college Like: department information, teachers list and their contact, others contact information.

7. Output of the System (Web Application)

Output/Reports from Online Data using web application: (1) Department wise daily attendance and absent report. (2) Date to date or Monthly & Weekly attendance report with statistical curve. (3) Progress and phone call communication report submitted by teachers. (4) Printable various reports from online data that often need for various official purpose. (5) Semester migration. (6) Teachers routine, assigned subject list. Fig.-2 showing the real view of our developed online web application software which could be access from anywhere in the world. It needs only any web browser and internet connection.

8. Functionality of Android Application

All students will be able to access (Notice board, contact numbers of teachers and others, basic information of college) and they don't need any authentication. Teacher will be able using authentication (Password/ IMIE/Mobile Number) or any other method but very much secure. He can select and input daily attendance. He will be able to search date wise absent and attend students name list with their contact list. From that list he call make call by a click. When teacher will select progress report option and start calling students from absent list the app will record call time number and duration and save it to database have a remark field if teacher fail to reach those number.
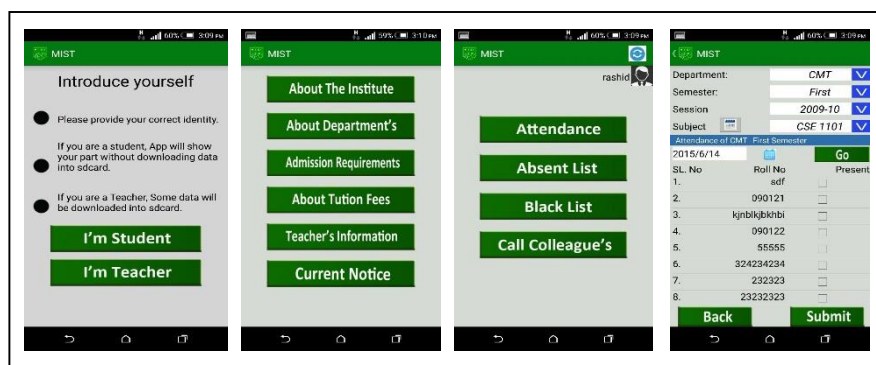

Fig. 3. GUI (Graphical User Interface) of Android Application

9. Technical Requirements and Costing

This android based attendance automation and management system has a few technical requirements like some personal computers, smart/android OS based mobile phone, internet connectivity, online database hosting. In this requirements list PCs and mobile phone almost on hand so we need only purchase a online hosting and have internet connectivity. Spreading of internet facility is a growing sector in Bangladesh so in very low cost it is possible to manage internet connection. Rather than "RF" tag, finger friend scanner our system is very low cost and has less maintenance requirements. We calculated that our android based MIS can reduce 50% of cost than a typical automated management system.

10. Advantages
As we mentioned previously that our projected cost and user friendly system will replace a large time attendance related problem and also the following advantages
- No extra device needed, a personally used phone will be a part of this system.
- User friendly software to use.
- Using of a familiar device in management will make users mind, less pressurized than a new hardware.
- After installing once, no further maintenance required.
- Very low operational cost.
- Easy to configure and training of users.
- Teachers, Parents, Management will be able to monitor student's status by a single click.
- Faster management and increase decision making capability.
- Stop corruption and less working tendency of staff.

11. Limitation and Recommendation
Despite some good features and low cost user friendly system it has some limitation like, to run this system we need all time internet connectivity and better Wi-Fi coverage else everything is perfect according to cost analysis. We also recommend and planed to include integrate this system with mobile messaging alert service to guardian.

12. Application & Implementation
One of a reputed private engineering college agreed with our system and they have already started using our "Android Based MIS for students attendance management" That college has 2000 students and 50 faculty members. They have already inputted their data and using the currently developed system as test user. We are getting very positive feedback from them.

13. Conclusion
We can strongly say that once people will be depended on small computing devices. From that sense we developed this management, based on android mobile and also based on electronic management. We can call that it is a futuristic management thinking that will today or tomorrow implemented all over the world. We integrated e-management and mobile computing together which is the future computing system for any management.

14. References
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