Information Management System for Higher Educational Institutions

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---ABSTRACT---
Mobile technology has introduced a new environment among upcoming generations that can be used to improve the management process. The proposed system will improve interactivity, accessibility, and convenience in the college management process. It is a simple yet powerful integrated platform that connects the various entities. It is a handy application that can be used by the students and the administrator to facilitate communication. The main motive of the project is to provide full automation to the user. This IMS system can also be used in academic institutes. This will help the institution to utilize its resources in an efficient manner. This system is capable of greatly atomizing work. Since human memory cannot store too much data and is volatile there are chances for errors but with the help of a system that can store huge amount of data systematically. IMS system is capable of integrating different sections in an institution like general, fees, attendance, library, exam section. The application is portable as it is used on a mobile device and improves connectivity between the students and the institution, thus helping the institution to provide a more transparent system altogether. The application also reduces a substantial amount of paperwork that is otherwise needed for the daily tasks in an institution.
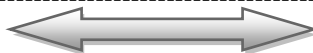
I.   INTRODUCTION

Information Management System (IMS) is a planning philosophy enabled with software that attempts to integrate all the business processes of different departments and functions across an organization into a single system. The use of smart-phones which comes along with the excessive use of mobile applications is becoming more and more common, especially in the university domain. Before IMS implementation, each department has its own computer system optimized for the requirement that a department needs. Each department use to maintain separate databases and design applications according to their functionalities. This lead to an overall poor results across all the departments. Many educational sectors in Asian countries in the past few decades have witnessed massive growth in a number of institutes and students. The information technology tools have offered pretty promising solutions to enable effective management of these functions. Enterprise Resource Planning combines all the important requirements of the organization together into a single, integrated mobile application that runs off a single database.

II.   RELATED WORKS

Mobile phones and android applications [1] play a major role in human lives, from being an ordinary talking device to a human companion. College management system focuses on helping the staff's, lecturers who are working in the institution. The android application is focused to help the staffs for the progression and the academic development of the institution. i.e., by reducing the manual labor, checking the performance of the students. It maintains a database of all the information that are recorded and received. It helps the staffs to help students who need individual attention for their academic performance and also in case of any personal grievance. This application proposes of a student – staff interaction, it tends to be a beneficiary application to everyone involved in the institution. i.e. attendance, Schedule changes or alteration, Latest updates, Marks of the students, Photos, information and video's related to the subject's, internal marks of the students, etc. It reduces the paperwork that is involved in carrying out confidential works, and it provides sufficient accessing for the students. It is aimed on reducing the workload given to the staff's. Altogether it is a simple, yet a necessary, efficient tool for the staff's involved in this organization. In a college there are various sections [2] and each section handles all student information and college database. These sections are linked with each other. Current System of college is having problems of interlinking and data repetition. To overcome these problems, we present College ERP System which is automated and centralized. This system has easy user interface and have

powerful data management system which makes this system very useful. The College ERP system now computerized all the details that are maintained manually. Once the details are fed into the system or computer there is no need for various persons to deal with separate sections. Only a person is enough to maintain all the reports and records. ERP provides an integrated view of business processes, often in real-time, using common databases maintained by database management systems. Every college has to maintain a management system for various sections which may include performance analysis, attendance system, test wise result, student information, fee structure, academic information, transport facility. Enterprise Resource Planning (ERP) [3] is a planning philosophy enabled with software that attempts to integrate all the business processes of different departments and functions across an organization into a single system so that it can serve the particular needs of the different departments. Before ERP implementation, each department has its own computer system optimized for the requirement that a department needs. Each department use to maintain separate databases and design applications according to their functionalities. This lead to an overall poor

results across all the departments. Many educational sectors in Asian countries in the past few decades have witnessed massive growth in a number of institutes and students. The associated policies and procedures related to various educational functions like admittance, pedagogy, interaction and examination have grown manifold and been streamlined. Also, it is seen that the information technology tools have offered pretty promising solutions to enable effective management of these functions. Enterprise Resource Planning combines all the important requirements of the organization together into a single, integrated software program that runs off a single database so various departments can share and communicate information more easily with each other.

ERP is software used for Business Management [4]. Company uses ERP software to collect, store, manage and interpret data from many business activities, including - Product planning, development and cost. Manufacturing, sales and marketing, inventory management, shipping and payment. Taking into consideration the popularity of Android Application and efficiency of ERP, this project involves the insertion as well as retrieval of data through Android application, which would be beneficial for the employee to insert data and for director to retrieve data at remote location once the application is installed their Android device as-well-as an active internet connection. The scope of this project is for decision making process in the large Organizations. This can be achieved by developing an android application which will insert and retrieve data. There will be a centralized server for storing the data. It will consist of four ERP modules they are Sales, Purchase, Stock, CRM.GPS is used for tracking the sales person. Sales module will allow the preparation of reports to track sales trends over different periods, drill down for the aggregated data, allow for sales estimation and give a bird's eye view of the sales activities of the company. Purchasing management consists a group of application that controls purchasing of raw materials needed to build products and that controls the inventory. It helps creating Purchase orders contracts, supplier tracking, good receipt and payment and reporting. Customer relationship module helps to provide superior customer service and enhanced customer relationship management. Stock Module is nothing but the inventory management. Efficient inventory management should be able to rapidly respond to customer requirements; at the same time should be flexible enough to undertake any corrections according to requirement, and do this without affecting operational efficiencies. A good sales and marketing ERP module is an essential feature of ERP software. GPS is used for tracking the sales person. PS is used to determine the exact position or location of a vehicle, person or any other asset.

Enterprise Resource Planning (ERP) college web application is [5] the one kind of web application which integrates all the modules and functionalities of college system on a single system that can be handled by the administrative head and access by the students and faculties with valid user id and password. A college consists of different departments, such as course departments, fees management, library, event management etc. Nowadays applications and uses of information technologies is increased as compared to before, each of these individual departments has its own computer system to do their own functionalities. By having one main system they can interact with each other from their respected system by having valid user id and password. The main goal of the entire system is to provide a user friendly interface and powerful data system which make this system more useful. The College ERP system computerize all the details of the college system which are updated by admin only can access by the students and faculties. ERP on college management system reduces the most of the human work that are done earlier to managing the college system. Once the details are entered into the system by the authorized person then there is no need for other users to deal with separate section. Only a person that is having an administrative authorization is enough to maintain all the reports and records of the system. The security can also be provided as per the requirements. ERP systems way from the manufacturing sector [6] are entering rapidly into universities and colleges. ERP now is experiencing the transformation that will make it highly integrated, more intelligent, collaborative, and web-enabled. Reason for choosing ERP for education are accessing information from paper files is difficult task, lack of means to access old records,

wastage of hundreds of hours by staff each month manually entering information or performing task that could be handled automatically like evaluation & generating results. E-college will solve these lacunas and help educational institutes to save their valuable time. This paper provides a limited set of modules and their implementation which are required by educational institutes to function smoothly. This paper deals with the implementation of E-college ERP, the technology used and why every higher educational institute should opt for an ERP. Higher education factors of quality assurance in higher education. ERP provides a unified enterprise view of the business that encompasses all functions and departments as well as an enterprise database where all business transactions are processed, monitored, and reported. But implementing an ERP system requires careful exercise in strategic thinking, precision planning, and negotiations with all stakeholders. Environments are extremely dynamic, where the education system has been fundamentally changed. Higher education institutions and the state should leave behind the question of Information support for business processes and should focus on informatics as one of the key.

Android based Mobile Campus application [7] for advancement of institution and educational system. The application will be used by students, teachers and parents. In the previous system, all the information has to view in a hard file, or in website. At the same time while searching any information it is too difficult to access and takes a lot of time to search the particular website. Hence, in order to overcome this problem a smart phone based application using Android can be used to make this process easier, secure and less error prone. More efficient information's will be achieved through this system. When sensitive data is stored on the device, apps can ensure that they are stored securely using encryption. Apps also exchange sensitive information with remote servers. The Android platform provides a number of algorithms for encrypting sensitive information. Some of these algorithms provide stronger cryptographic guarantees in protecting data than others. A way of introducing unpredictability in Android is to use the Secure Random class. The need for encryption is twofold. Firstly, encryption makes it difficult to read and use any sensitive information that an app stores on a device. Secondly, encryption adds an additional layer of security to sensitive information that is exchanged between apps and remote server

Mobile technology has introduced a new environment [8] among upcoming generations that can be used to improve the management process. The proposed system will improve interactivity, accessibility, and convenience in the college management process. It is a simple yet powerful integrated platform that connects the various entities. It is a handy application that can be used by the parents and the administrator to facilitate communication. The application is portable as it is used on a mobile device and improves connectivity between the parents and the institution, thus helping the institution to provide a more transparent system altogether. The application also reduces a substantial amount of paperwork that is otherwise needed for the daily tasks in an institution. Android has a large community of developers writing applications ("apps") that extend the functionality of devices, written primarily in a customized version of the Java programming language. Fastest growing telecom network in the globe is in India, with many users moving towards Smart Phones and greater part by students. Other than India all over the world has roar in mobile with loads of application that are useful in day to day life such as Shopping Apps, video calls, games apps, photograph apps etc. The use of smartphones which comes along with the excessive use of mobile applications is becoming more and more common, especially in the university domain. So, we can design the product related to college information system.

Marking attendance in the class meeting session [9] and recording the marks of the students are the prime tasks of the subject handlers, since marking the attendance can regulate the students to attend the classes. Moreover, it verifies number of students present in the conducted classes. The purpose of recording the marks is to analyze the performance of the students in terms of curricular activities. Earlier, the tasks of marking attendance and recording the marks are handled manually by pen and paper method. This method consumes more time and adds more workload to the subject handlers and sometimes the data may prone to error. To avoid these problems, this paper presents a mobile application for student attendance and mark management system. This application is mainly designed for the faculties and other staff members of the organization who maintain attendance and marks regularly. Using this system, the subject handlers, staffs or the authorities can verify the number of students present or absent in the class meeting sessions. This application allows the users to mark attendance through mobile devices and to keep in touch with students. Furthermore, this application allows the teachers to mark and edit the attendance and also to add the marks in the system database for further retrieval. It gives a prior intimation to students as soon as their attendance goes below the specified percentage through an alert message. Changes in Information Technology (IT) allow schools to utilize databases [10] and applications such as Student Information System (SIS) making the accessing of records centralized. One of the changes that came about is the online-based applications. These applications are an improvisation to the traditional-transaction processing systems.

The proposed system is an Android application to manage student details on mobile and keeping them updated about latest events in college. The application will be used by students, teachers and parents. The utilities provided by the application are-student details maintenance, discussion forum, notice board, attendance and report generation. The main objective of this project is to add mobility and automation to the process of managing student information in an institute. The Student Information System(SIS) would be a new way of record management and transaction processing that would achieve efficiency on processing student information. It would be a great help to the administrative personnel, academic personnel or stakeholders and students in updating, retrieving and generating student data. The developed android application will be used by teachers, students, parents and the administrator who maintains the system. The students will use the application to enter their personal and academic details, post their queries regarding a particular subject on the respective discussion forum and for viewing notices broadcasted by the teachers/admin. The teachers can verify the details entered by the students and after the placements, the teachers can enter the placement details for each student. They can broadcast the changes in schedules or any new upcoming events to the students. Also, the students as well as their parents will be informed about the attendance percentage periodically through the application. The administrator has the authority of modifying the student details, adding or deleting teachers as and when they get admitted to the college or leave the college. Thus, this application will automate the manual student information maintenance process in colleges. It will also reduce the amount of paperwork done and time invested in manual process by the teachers.

III. PROPOSED SYSTEM

The Student's Information Management system which contains up to date or accurate information of the student on mobile based approach. This should improve efficiency and flexibility of student management system and to provide a simple platform for everyone like staff, students, admin to access the student's information. Students can login to the system by entering roll number as username and then password and it can be validated by matching through database. It consists of attendance details, general details, library details, fees detail exam results and grade details. It is often a strenuous task for students while seeking help from their staff members, especially when they need their support in their academics. Sometimes when a latest change happens in the present schedule, the circular regarding the schedule change is intimated by the non-teaching staffs in the respective classes of the college. Not everyone might be present in the classroom, it limits the student's knowledge regarding the schedule change. Not all the students really remember their internal marks in the present semester. Students may have certain difficulties, either in their academics or other personal related ones which are often difficult to be expressed, this app shall help them overcome these types of obstacles.
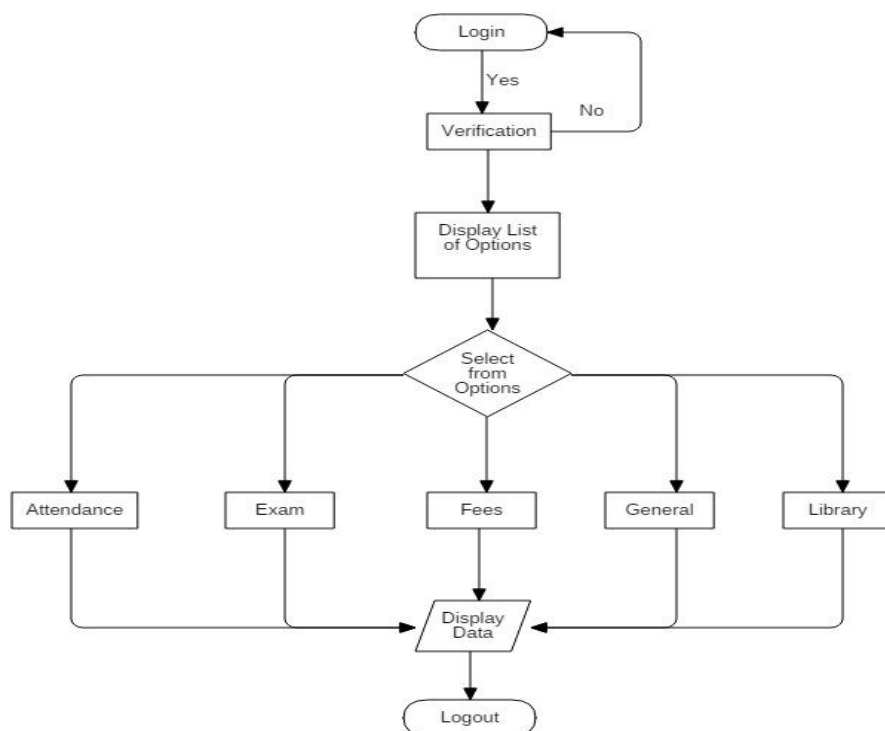
The student should first login to the application by entering roll number and password. If the given data is true the student can enter into the application, else it goes back to login screen. It shows list of options like General, Attendance, Exam, Fees, Library details. The user student needs to select from those modules to display his data. Finally, after completing the work the student can logout the application.

IV.   IMPLEMENTATION AND RESULT

Fig. 4.1 Student Login

In the Login page, the student has to enter his roll number as username and password to enter into his account. The username and password will be authenticated through database.
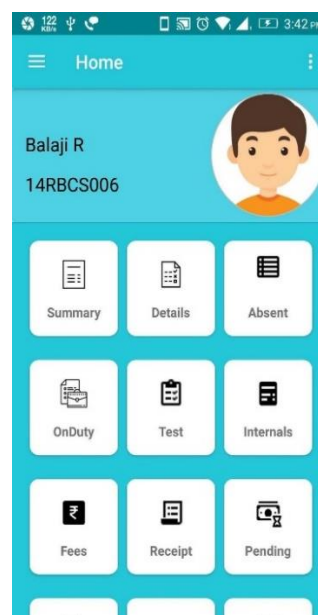
Fig. 4.2 Home Page

The home page containing list of options are shown to the user through which he can navigate to the desired page.
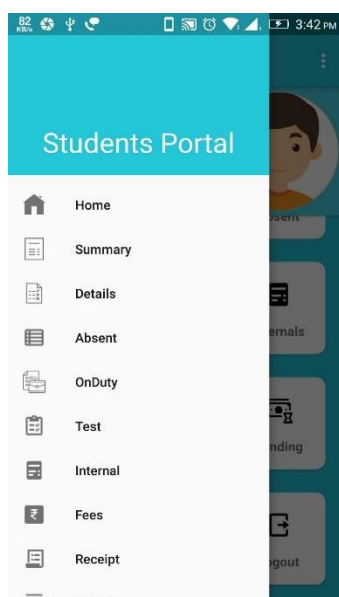
Fig. 4.3   Side Bar

The side bar displays the same list of options Which are easy to navigate and quicker to access.

Fig. 4.4   Attendance Summary

The attendance section displays the attendance status of the user throughout his academic.

Fig. 4.6 Test
The test section displays the marks which has been obtained in the test and also the mark status i.e. whether the student is passed or failed.

Fig. 4.7 Fees
Students can view the fees details in this page. It also provides course fees details, student payment, mode of payment and balanced information.

Fig. 4.9 Library
The library section displays the list of books which is borrowed from the library. It also gives a details description of the borrowed books.

Fig. 4.10 General
The general module contains the personal details of each student. The student can view this information just by clicking the general tab on the home screen.

V.   CONCLUSION

Android Based Information Management System (IMS) for College Institution a Mobile-application based approach which is developed for viewing the student's details. The college IMS provides appropriate information to users based on their profiles. It is very useful to student for easy access of finding their details. No modification can be done by students of their own. This application is helpful to students who can view their details without any staff co-ordination. This application provides appropriate information to users according to the chosen options.

By this system the user can view the details anywhere, anytime as per their own convenience. The students can enter to their profile by simply logging on, by entering roll number and password which will be validated. This project is successfully implemented with all the features and modules of the college management system as per requirements.

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