Smart University-Student Information Management System

Samkeet Jain
School of Computing and Information Technology
REVA University, Bangalore – INDIA
jain.sankeet2210@gmail.com

Radhika Garg
School of Computing and Information Technology
REVA University, Bangalore – INDIA
gargradhika1996@gmail.com

VaibhavkrishnaBhosle
School of Computing and Information Technology
REVA University, Bangalore – INDIA
vaibhavkrishna.bhosle@gmail.com

LilashSah
School of Computing and Information Technology
REVA University, Bangalore – INDIA
lilashsah2012@gmail.com

Abstract – SUSIMS is the most cutting-edge, innovative and robust solution for a university. In existing college datamanagement systems there are plenty of activities which are handled manually. All these activities are paper based which are expensive and time consuming. Various activities are handled by various departments. This leads to major problem in interlinking data and avoiding duplicates. Hence this becomes very hard and prolonged process for students to access information from management. In the proposed system, a better solution is defined for all these activities which are paperless, cost effective and time saving.

In 21st century with the latest technology the world is moving towards cloud computing. SUSIMS is full-fledged cloud computing based information management system. It covers every minute aspects of a universities work flow and integrates all processes into smartphones with user friendly interface. It includes all major modules like Attendance module, Placement module, Alumni Association module and many more. All modules inter-related and data redundancy is eliminated.

Keywords: Cloud; Android; IOS; Web; Virtual Server;Amazon Web Service (AWS); Google Firebase;

I. INTRODUCTION

SUSIMS is a cross platform solution supporting Android, IOS and Web. It is hosted in cloud server in AWS Elastic Compute Cloud (EC2) which provides common REST APIs to all endpoint clients. Data is stored is MySQL database and php language is used to make backend scripting language. Allusers are segregated into 3 categories which are Students, Faculties and Administrators. Each administrator is given administrative role for one or more modules. Each user will sign in with their email address and password. Google Firebase Authentication will be used for sign in process for most advanced security features. After sign in, each category of users will be routed to their respective modules. Each module contains all activities carried out by each department in a university.

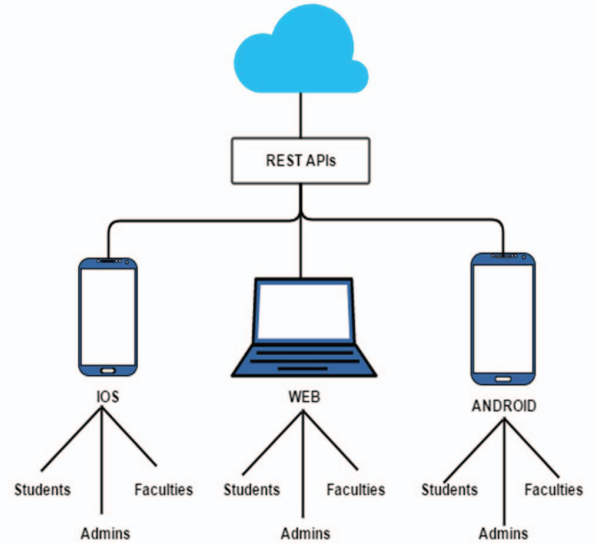

Figure 1

II. LITERATURE SURVEY

The present system or existing system of 'University management system' is either working manually or traditional file organization in a department. The data is store usually in files or excel sheets. The major problem is that data is not portable and usable by other departments. This leads to collection of same data from students from all departments. In previous systems all the departments are worked independently and separately. If anyone want to access that data collectively then it is not possible with such systems. The disadvantages of this system are a lot.

Every university has to maintain a separatemanagement system for various sections which may include performance analysis, attendance system, test wise result, student information, fee structure, academic information, transport facility, staff information and many more. Managing all these sections manually on paper becomes very time consuming and complex tasks. In such system there is high possibility of misplacement of collected data and data redundancy in the form of paper records in order to overcome these drawbacks there is a need to design and implement a better system.

In this generation of smartphones, the proposed system consists of single cloud based centralized organization for complete university completely focuses on smartphone friendly system. The system is built on one goal which is to reduce the communication and information gap between university and students. The proposed system provides single access point to all administrative system of university

III. MODULES

Methodologies in student information management system are partitioned into modules. Each module represents activities carried out by each department. The detailed information about each module is give as follows.

A. *AttendanceModule*

Existing system uses manual records to take attendance and manually calculate each time student's attendance whenever student approaches to check their status. This leads to human errors and difficult task. Our proposed system solves this task by taking attendance digitally and storing them in cloud. Notification to students whose attendance status is below 75% is automatically send. Also, periodic notification is also sent to parents about their ward's (student's) attendance status.

The purpose of Attendance Module for faculties is to enter the attendance using smartphones. As faculties sign in and select attendance module, they are redirected to taking attendance page. For taking attendance, faculties don't need specify the branch, semester or year. Instead our system can auto detect the class by faculties timetable and current time. After this session, he/she enters in to attendance page. Here lecturers make a mark on the absentees. Lecturers are only allowed to take attendance of their lecture. In case of swapping of lecture or extra lecture, Admin can allow other faculty to take attendance of students by swapping the logic of time-table permanently or temporarily.

The purpose of Attendance Module for students is to check out their attendance status per subject in real time. As students sign in and select attendance module, they are redirected to their attendance status page. The purpose of Attendance module for administrator is to generate attendance reports per class and can be exported and downloaded in excel format for any further use.

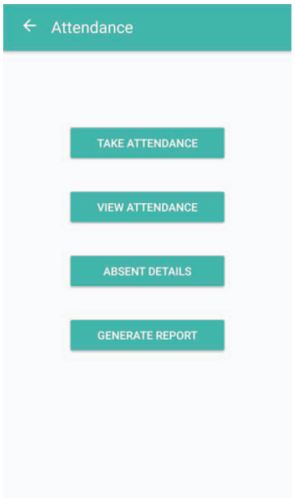

Figure 2

B. *Placements Module*

Placements in universities are a very lengthy procedure with loads of data and swift interaction is required. Existing system collects data manually from students by filling forms and then adding this data into excel sheet as database. Communication with students is usually done with group mail and notice board announcements.

In the proposed system, Placement administrator manages the complete placement module. Administrator verifies the authenticity of student data which includes their previous academic records and current graduation details.

Admin sends placement drive invitation to students based on their eligibility criteria. Periodic notification can also be sent in forms of push notification, Email and SMS to students.

For Students, they enter their data into smartphone and save it in cloud. Students receive invites for placement drives by companies which are arriving for campus recruitment. Each invite contains complete details of placement drive which includes company name, job description and other related information. Students can register for each invite they receive. Upon registration, student data is shared with recruiting partners.

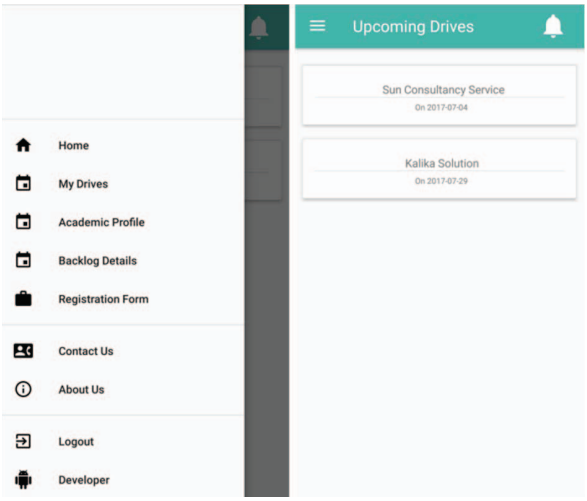

Figure 3

C. *Alumni Association Module*

Alumni Association plays an important role in helping to shape the future of any university. Organizing and managing all alumni is an important task. The proposed system helps Alumni Association to organize events and allowing alumni to register for these events. Apart from organizing events, the system contains a discussion forum for all alumni to interact with each other. The system also includes job referral system, where any alumni can post a job referral for any opening in their current company to help other alumni and graduating students to get better job opportunities.

Alumni admin controls complete module. It handles features like registration of new alumni, Organizing and managing events and managing job referral system. Alumni can use our system to participate in events, engage in discussion forum and look for job referrals posted by other alumni.

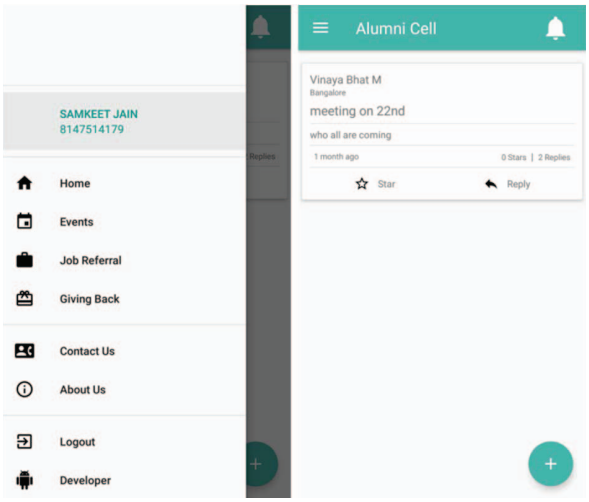

Figure 4

D. *Results Module*

In Existing system, Results are available only on university website. Only the final results of each semester are available. Our proposed system provides a way to display results on student's smart phone along with notification in form of Push notification, Email and SMS. The system not only provides final semester results but also the results of all tests and exams in the semester.

Faculties of each subject can upload an excel sheet from their smartphone or desktop which contains student's SRN and corresponding details. This excel sheet is uploaded into a cloud and the system recognizes the results and sends notification to corresponding students. Students can sign in into their application in their smart phone and select the desired subject and can view their results. Also, they can request for photocopy or challenge revaluation

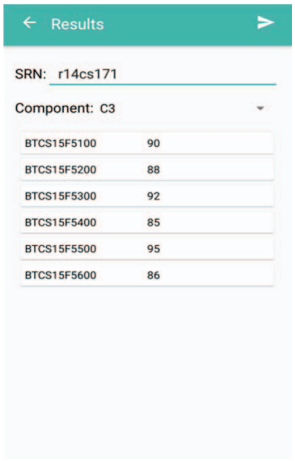

Figure 5

E. *E-Notes Module*

Study materials are circulated in every university in forms of photocopy. Photocopy not only uses a lot of paper but also it has health hazards. The proposed system is based on paperless circulation of study materials. Here soft copy of study materials is uploaded into a cloud which is circulated to corresponding students.

In proposed system, Faculties upload soft copy of study materials into our cloud. The system supports almost all formats of softcopy to be uploaded. Faculties are needed to mention the topic of study materials, small description and choose a specific class or branch of students whom this is to be circulated. These study materials are circulated through emails to specified set of students. Students can check their mailbox and find these study materials or they can sign in through our app and download them.

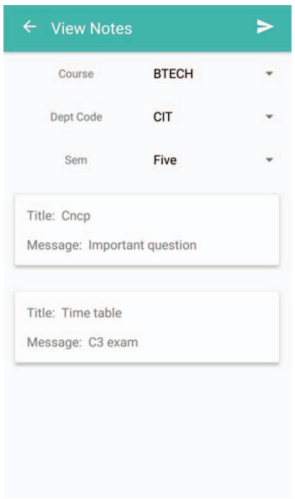

Figure 6

F. *Events Module*

Organizing and managing events in existing systems is usually done on paper. Publicizing and marketing is done with posters in and around campus. Registration is done manually or with Google Forums. The proposed system has better solution in organizing and managing this module. Here when one event is posted, it publicized to all student and faculty groups where they can view complete details of event and they can also register for the same.

The Events administrator manages this module by posting new events and it corresponding details. Any student or faculty can register to these events from their smartphone. The administrator can view list of registered students and then export the list to excel format for further use.

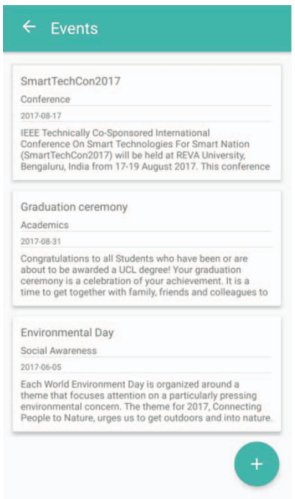

Figure 7

G. *Virtual Counseling Module*

The proposed system provides a new and unique way of counseling. University student counselor carries out virtual counseling for all students. Students can take up an appointment with university student counselor and discuss the issue with them through in-app conversation among them from their smartphone. Student can also opt to anonymous appointment where their identity isn't revealed. This kind of counseling is very much needed for growth of any university.

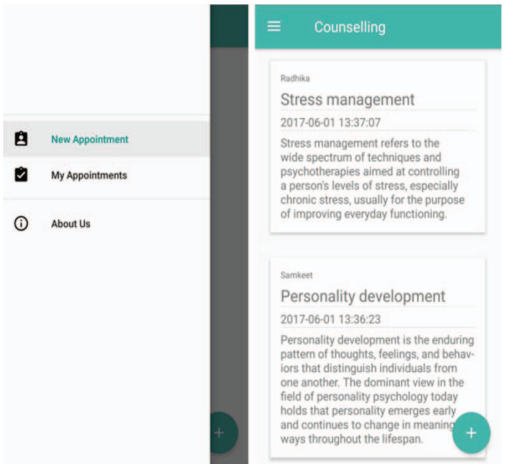

Figure 8

H. E-Library Module

E-Library is collecting of books and journals which university provides to its students and faculties. In the system, all books and journals provided by university is uploaded into our cloud. Any student or faculties can view and read these books by either selecting category or by searching through book name or author name.

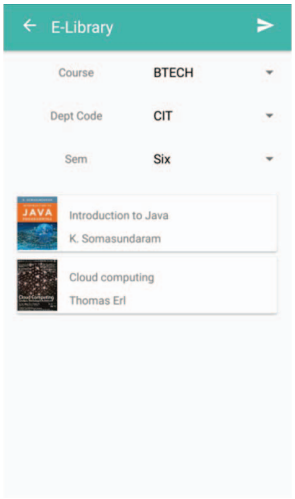

Figure 9

I. Bus Tracking Module

A lot of students and faculties travel in university buses. In existing system, there is no concept of tracking these buses. The only way to know location of bus is to contact driver and ask him. In our proposed system, student and faculties can track their buses to very precise location in real time. All smartphones are equipped with GPS chips in-built.

All drivers of university buses need to sign in to our app. The system can detect when driver sign in and starts to keep track of his location. Each driver location is send to our cloud. When students and faculties sign in and select this module, they are requested to select any bus and then view their exact location in their smartphone.

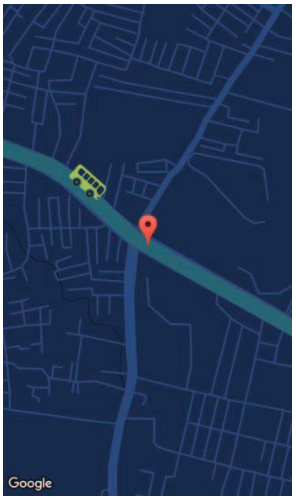

Figure 10

J. Fee Status Module

In existing system, students need to go to accounts office to get to know their fee details and fee status. In terms of fee pending, accounts office needs to call each student and remind them about their fee status. The proposed system takes care of all these. Students can view their fee status in just one tap from their smartphone. Accounts office can also send notification to students whose fee status is pending in form of Email, SMS and push notification.

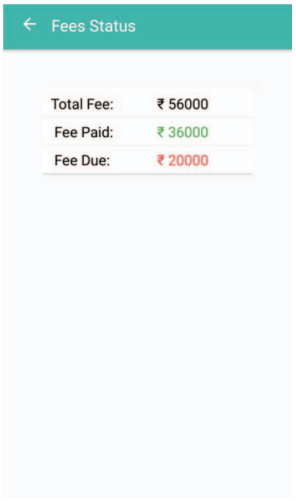

Figure 11

IV. REQUIREMENT ANALYSIS

A. *Server Requirements*

1. AWS EC2 Virtual server.
2. XAMPP Server.
3. Minimum 4GB RAM.
4. Intel xeon processor with 3.0 GHz or above.
5. Minimum 100GB SSD Hard Disk.

B. *Hardware Requirements*

1. Intel i5 2.7 GHZ Processor or above.
2. Minimum 250 GB Hard Disk.
3. Minimum 8GB of RAM.

C. *Software Requirements*

1. Windows 8 or above
2. Android Studio.
3. Android SDK.
4. JDK.
5. Mac OS 10.11 or above
6. Xcode
7. Apple SDK

V. BENEFITS OF PROPOSED SYSTEM

1. The proposed system provides one single point of contact for all administrative system of university.
2. This system will greatly simplify and speed up the organization and management process.
3. It overcomes the limitations of the desktop based system as our cloud can be accessed by Android, IOS and Web.
4. Improved communication gap between university and students with help of instant notification along with Email and SMS.
5. Student can access all his information at just one tap on his smartphone.
6. Human errors in calculation are eliminated.
7. Huge amount of papers is saved. Hence eco-friendly system.

VI. RESULTS

1. Single access point to all administrative system of university.
2. Reduced communication gap between university and students.
3. Data redundancy is eliminated.
4. Human error is reduced with high accuracy results.
5. Cost efficient and fast execution.
6. Most advanced cloud security to keep data safe.

VII. CONCLUSION

A cloud based system for university management is presented. The system offers reliability, time savings and easy control. It can be used as a base for creating and enhancing applications for all above mentioned modules. This will greatly simplify and speed up the result preparation and management process. With use of Google Firebase Authentication, our system is secured with latest security measures. It reduces the work and resources required in traditional process. The amount of time consumption is reduced and also the manual calculations are omitted, the reports can be obtained regularly and also on demand by the user. The proposed system provides the new way of computing and displaying operations with responsive and attractive user-interface on mobile devices.

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