ALPHABET – A COMPLETE ACADEMIC SOLUTION

Kavitha Sooda,
Associate Professor,
Department of Computer Science and Engineering,
BMSCE,
Bengaluru,India.

Archana Naik,
Associate Professor,
Department of Computer Science and Engineering,
NMIT,
Bengaluru, India.

Sanjana Vagle,
Department of Computer Science and Engineering,
NMIT,
Bengaluru, India.

Sathwik Shetty,
Department of Computer Science and Engineering,
NMIT,
Bengaluru, India.

Srinidhi B R'
Department of Computer Science and Engineering,
NMIT,
Bengaluru, India

Shivakumar R,
Department of Computer Science and Engineering,
NMIT,
Bengaluru, India.

Abstract: My Gurukul , a web-based student-faculty knowledge portal, is aimed at handling the various college activities and providing all relevant information for the respective user. As it is a generic approach to satisfy the college needs of not one but many other institutions, the requirement for a customized digital solution paved the way for the making of solution – *Alphabet, a Complete Academic Solution*. This solution is android based and is destined to be used as an Android application. Henceforth, it is developed using Android Studio backed up with XAMPP as a local server and MySQL as a database. The student as well as the faculty logs in the application using their unique identification (USN for students and Employee ID for faculty) and password. This work explains how the application is a one stop customized solution for college. Google's Firebase Cloud Messaging [2] is actively used for the purpose of sending notifications. This app is more convenient for both student and faculty. The entering/viewing the attendance, marks, library book checking, ordering the photocopy of notes and books is developed in this application.

Keywords: ***Class Attendance Update, College events, CO mapping, Virtual library***

I. INTRODUCTION

My Gurukul being a generic solution has had a positive effect on the institution with most of the manual paper work being scraped off and automated at server, such as selection of electives for the upcoming semester by the student is made online, providing faculty feedback is made online. However there is still a gap between the students and the faculties in the sense that for viewing important information such as attendance shortage or what is happening in the college, the user has to log in the website. Apart from this, the provision for exchanging classes for faculties or to automate the work of course-outcome mapping done by lecturers is missing from the website. Being a generic approach, the lack of college specific virtual library is also felt in the website. Viewing from the perspective of the drawbacks of such a portal makes the idea of having a customized solution more amazing. To alleviate such drawbacks, the design supports two separate Android applications- one for student and one for faculty. Additionally, a design of an application to handle orders for photocopy of notes or books by students is made available from the student's application is developed. The project is based on the assumption that there is persistent network connectivity to the local server. This paper is organized into following section; Section II will give an overview of *Alphabet-A Complete Academic Solution*, Section III will highlight the challenges in the existing solution – My Gurukul , Section IV suggests solution to the challenges in the customized solution and Section V will conclude the paper.

II. ALPHABET- A COMPLETE ACADEMIC SOLUTION

Recent trends shows that mobile phone have become a vital component to be opposed by any individual.

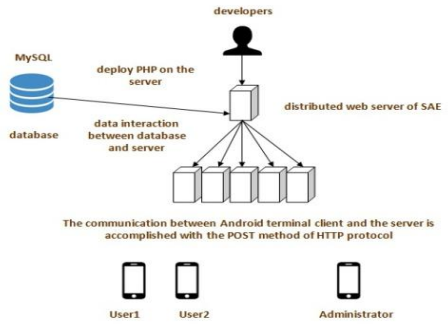

Figure1: Technical Structure

Phones play an important role for utilizing college resources effectively. The application introduces

portability as it is used on a mobile device and can be carried anywhere. Since the application is used on a mobile device with Android OS, it improves connectivity between the students and the faculty, thus helping the institution to provide a more transparent system altogether.

Figure 1, shows the technical structure of the proposed system from the base paper [4]. It consists of end users mobile phone devices. MySQL database is used to store all the data of students and faculties. A distributed web server and PHP is deployed on it for data interaction between web server and the database.

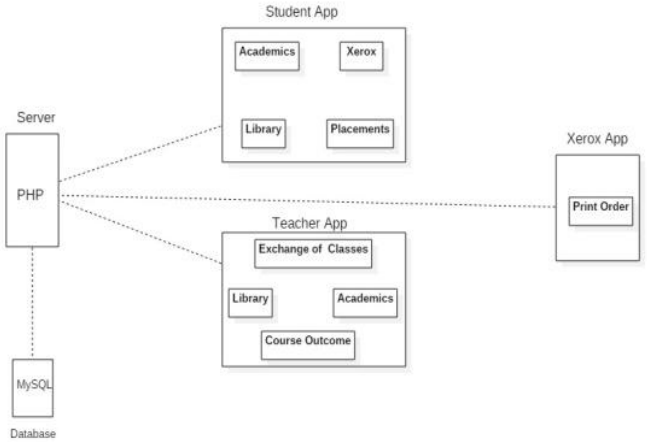

Figure2: Block diagram of Alphabet-A Complete Academic Solution

The block diagram of the proposed system is shown in Figure 2. The different android applications created are for Students, Faculty and for photocopy centre at college who are the end users. On the other hand, PHP is used for server computations and MySQL as database. The modules in Student app are photocopy, virtual library, placements and details regarding academics such as student results, attendance, upcoming and trending events. The modules in teacher's application are provision for teachers to exchange class, virtual library, and academic details such as to mark attendance and upload student marks and also to upload Course Outcome parameters. The only module in Photocopy Application is to view and print the photocopies ordered by the students. The data from all three application flows from the Android device to PHP script on the server side and gets stored in the database. The data flow in the diagram is bidirectional, ie data flow from user to server and server to user.

III. CHALLENGES IN MY GURUKUL

When the point comes to being user friendly, My Gurukul [1] lacks in it in a way that students are not notified about their attendance shortage, upcoming exam or upcoming class and what is happening in the college. Even though generic solution, it fails to avoid the unnecessary clicks to navigate within the portal.

The usability of the web portal decreases further due to lack of its responsiveness in terms of its design i.e. the website does not resize itself to different browser size. Henceforth, when viewing the portal on smart phones or tablets, the layout of website is not a pleasant scene. The absence of automatic generation of Course Outcomes (CO) for all the subjects is one of the main reasons for proposing a customized solution for faculty. Although My Gurukul serves obediently to the college, the placement department is however left out from the portal. As a result, the placement department maintains its own database. Apart from this additional requirements emerged from the usage of My Gurukul; Availability of virtual library that tells the number of available books in the library for the book searched. Facility to order photocopies rather than waiting in queue.

IV. OVERCOMING THE DRAWBACKS OF MY GURUKUL

The customized solution, *Alphabet-A Complete Academic Solution*, provides all the basic academic functionalities for both the students and faculties. For example, students can view their performance over current semester and over the course by just opening the application. They can view upcoming class or exam and trending events in the college. Students can view their attendance in each subject and also students are notified of attendance shortage. As for the faculties, they also can view the upcoming class they need to teach or what is trending in the college. Services such as virtual library are kept common for both the students and the faculty.

Apart from the best solution provided by My Gurukul, Alphabet provides the following:

1. One time log in during installation of application.
2. Application always refreshes itself whenever opened.
3. The customized solution has integrated placement department so as to notify students about the upcoming placement drives and to view any other relevant information.
4. The ability to order photocopies from student's application and also to delete the order before it is serviced is made available.
5. The faculty application is also backed up with services to calculate course outcome by simply entering the required parameters (CO) [3].
6. A student's website for non- Android users which is responsive to different browser size is developed in contrast to My Gurukul [1]. It provides the capability to view all the academic details as is displayed in the student's application.

V.IMPLEMETATION

The user interface is designed using Android. Figure 3 represents the diagrammatical representation of the connection between Android, PHP and Database.

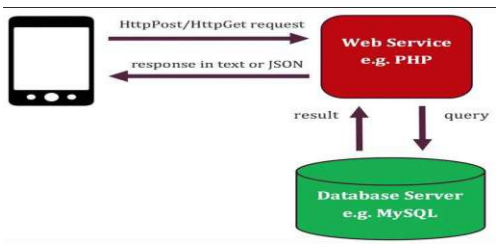

Figure3: Communication between mobile user and server

The data flows from android to PHP and is stored in database. It is retrieved using PHP and displayed on android. Android app calls a PHP script in order to perform a data operation using HttpPost/HttpGet request. There are two ways to connect to PHP page via Android.

Student App: Student app start with sign up and login activity to continue. Students can find their personal details, academic details such as attendance details, performance in internals and other tests. They can find their details of score card report of all semesters. Also the app displays information on upcoming classes, trending events such as fest activities, seminar, debate events and details on upcoming drives for campus recruitment. Students can search for required books and find number of copies available. A search engine has been developed for the client where in he/she can type the book name to get the result. Picture of the book is also displayed for better recognition. Students can directly order for multiple notes of different subjects simultaneously in the app in Xerox section. The app also provides a provision for students to contact placement department for any queries regarding placements. Student can upload their internal marks which are of 30 marks component and their other 20 marks component further CO attainment calculation.

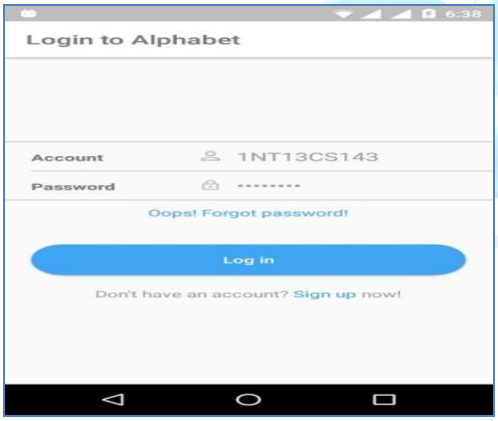

Figure4: Login Page

The user can login or signup through the Login Page as shown in figure 4. Students are identified by their USN and faculty are identified using the EmployeId.

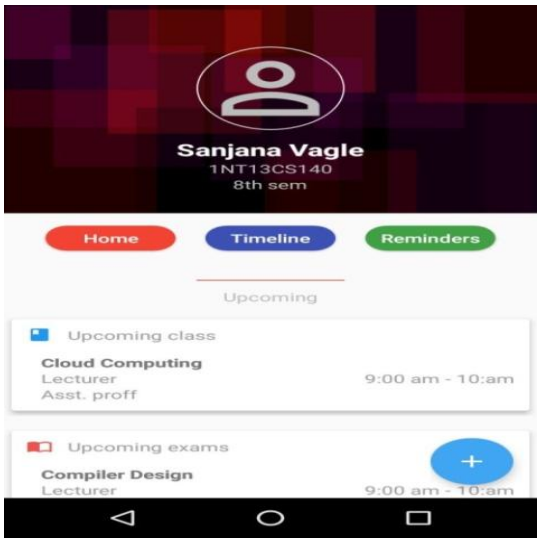

Figure5: Student Home Page

Figure5 shows the home page of student which displays upcoming classes, exams and trending activities. Students can view marks, attendance and other features.

Teacher App: Similar to the student app, faculty app starts by signup or login activity for the faculty. The user can login and mark attendance. The student list is retrieved from the database and displayed on the android application. The data (attendance marked) will be saved to SQLite database in mobile phone, from where it is then saved to MySQL database. Faculty should enter the maximum marks allotted for each question, the CO's mapping to those question. These data are entered into database and are retrieved from the database for the computation of CO attainment. Faculty also has the provision of virtual library as students.

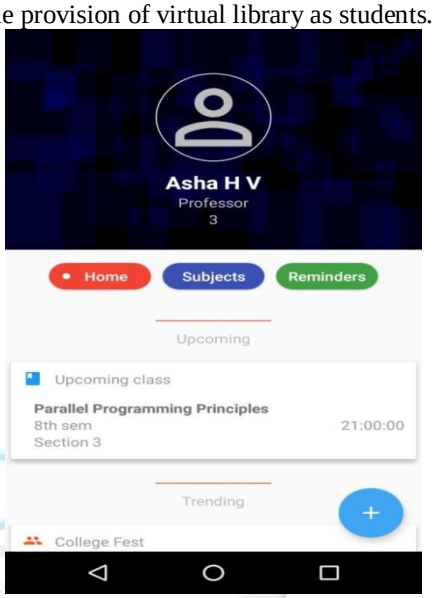

Figure6: Faculty Home Page

Figure6 shows the faculty home page which displays upcoming class, subjects, timetable and attendance.

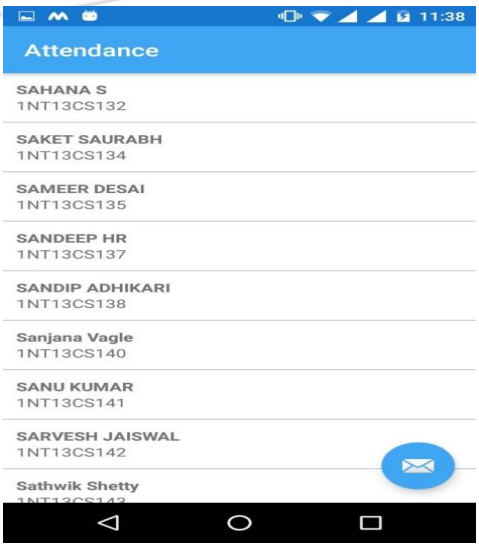

Figure7: Attendance Marking

Attendance can be directly marked via teacher application, page display is given in figure 7.

Xerox App: Xerox app is designed for people in the photocopy center. Once the orders are placed by the students from the student app, it is notified to in the Xerox app. Now

the photocopies for the order can be printed. This activity is then notified to students after the photocopies are printed.

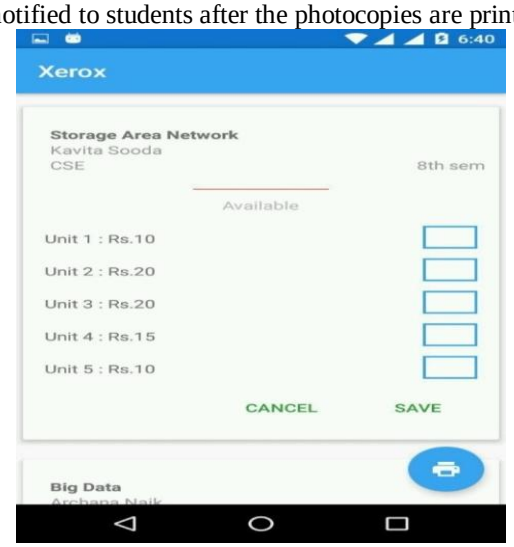

Figure8: Photocopy Order

Figure8 shows the page through which student can order for the copy.

Library App: Library app is designed to view the available copies of the books in the library and allows to search books based on text entered

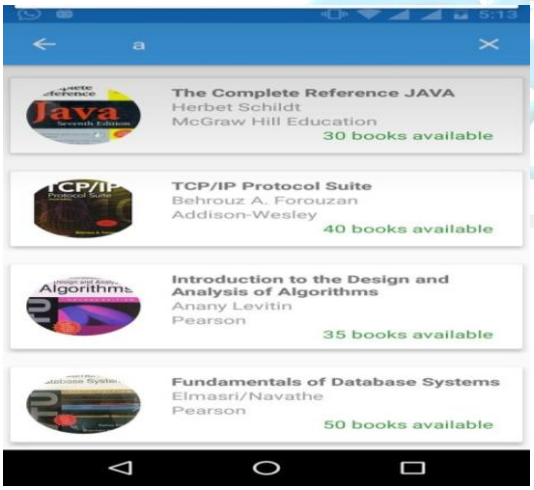

Figure9: Books available

Figure 8 shows the available copies of the books in the library are displayed.

VI. CONCLUSION

The app , *Alphabet-A Complete Academic Solution*, is more convenient for both student and faculty to use.

This app intends to introduce more user friendliness in various activities such as attendance calculation, library maintenance, CO [3] mapping, Score card reported. This application is been developed for students and staff to support better functionality of the college. The application has been developed for engineering students and faculty of NMIT. The content is focused on the basic knowledge of the NMIT community because it is the first step of preparation to be a part of the community. This will be the first step in digitalizing the college environment.

This app provides features such as order notes for photocopies and virtual library which provides provision for the students to directly get information about the available books and order for the photocopies from the phone and it is not time consuming and useful for the students. It also automates attendance and CO calculation which reduces the work of the faculty.

Two key aspects considered while designing the application are:

Security: Since we do not intend to provide other applications with access to our ContentProvider, we have mark them as android:exported=false in the application manifest. We have specified permission for reading and writing.

- **Simplicity:** The application is designed keeping simplicity in mind and can be operated easily.

The application can be further enhanced for online submission and Firebase can be used as database.

VII. REFERENCES

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[2]. http://www.my-gurukul.com
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