An android application for different levels of college management

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***Abstract*—Technical and scientific development has become one of the most essential changes in every aspect of the modern day to make our work efficient and easier. The proposed Android application has been designed to efficiently process the management system of an institution at their different levels of hierarchy, to reduce the physical work and confusion. Black board is an application specifically for the faculty members and the head of departments. The application will show required content based on who is signing into the app. For instance, if the dean logs into the app, he/she can view the details of all the heads and their staff according to their departments, a HOD will be able to see the details and availability of the faculty members of their own department. The application will be able to display most of the academic information like the timetables, availability of the faculty, location of the classrooms etc. The database of the application can be modified and updated through a web portal by a specific admin. Many future enhancements can be made to the mobile application based on the institutions requirements.**

***Index Terms*—Android, Web Portal, API, Timetable, Academics, Management**

I. Introduction

In academics there are many manual time consuming tasks for day to day necessary activities like checking timetables, availability of the faculty, location of the classrooms. As a result, there is need of automated college management system for managing these activities. The automated college management system will help in the technological growth of the institution, save the time in the long run. In the present system, there is a lot of manual work involved for all the teachers regarding attendance, no way of knowing which teacher is free during which period, no provision for rectification of mistakes. Dean doesnt have access to everyones contacts in one place. Locating classes is not an easy task either. Since the management system is not digitalized, it wastes important time of teaching and learning. By keeping this reason at priority, there was a quick need to develop an efficient management system (using android platform). Firstly, there should be separate logins for different hierarchy of management , Each level of management can access information relevant only to them (and not all information). Secondly, timetables and Attendance have to be managed efficiently , which avoids manual work for attendance for class incharges.

In this college management system, more features can be added for improving the teaching and learning process.For example, chat rooms can be created for each department where the faculties can easily communicate or get notified. also the class incharge can easily track attendance of their respective class. A detailed analysis of the semester results of each department will be easily accessible to the HOD/Dean so that they can take necessary actions to improve.

In this work, an android application named Black-Board is developed for college faculty. A profile is created for every faculty who installs the application and then the faculty will be able to check his/her timetable, class location ,etc. A HOD will be able to see the details and availability of the faculty members of their own department . A Dean can check the report/performance of each department in the college. The android application is connected to an API for accessing the data as and when needed. There is a web portal for the admin to input the data such as time tables, faculty information into the online database.

II. Literature Survey

In literature, various methods are proposed for academic system. Some of them are explained as follows.

A. College Management System

Dhale et. al. [2] suggested an approach for managing colleges academic activities with a mobile application which introduced portability as mobile phone can be carried anywhere. In this work, an effective system for college management was designed wherein a profile for teacher is created and stored in central repository. An administrator has the rights to add/delete or authenticate entries of any faculty. The automated registering system generates a unique identification key for every teacher. With this key, a teacher can login into his account. Further, a teacher can update their details after login. Further, teachers can access all the information of any student .

B. Client- Server based chat application

Bamane et. al. [5] suggested a very efficient chat application for communicating with people. Server is created so as to maintain an account of number of users who wants to join this chat and servers IP addresses are sent to the clients who wish to join the chat. There is a login/logout option for the

users. Whenever, a new user wishes to sign-in then he need to register by filling necessary details. The registered users are given the joining permissions. When a connection is made with the server after the user has signed in, database is updated i.e. the newly made connection is added. A list of online users is also displayed to registered and connected users. Users are free to create their own or share chat rooms.

III. Work Done And Proposed Methodology

A. Frameworks, Tools used for development

a) Django: is used to develop the REST-API, it is a high-level Python Web framework that encourages rapid development and clean, pragmatic design.

b) Android Studio: is used for developing the android application which is the Official IDE for Android, it provides the fastest tools for building apps on every type of Android device.

c) Git: is used for a VCS which is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

d) SQLite: is used for the database since it's light-weight, self-contained, high-reliability, embedded, full-featured, public-domain, SQL database engine.

B. Open Source Libraries

a) Retrofit: is a type-safe HTTP client for Android it performs HTTP requests against an API running on a server somewhere in the Internet.

b) Glide: is an image loading and caching library for Android.

c) RxJava: is a library for composing asynchronous and event-based programs using observable sequences for the Java VM.

C. Design

Material Design is a design language developed by Google. Material design is a comprehensive guide for visual, motion, and interaction design across platforms and devices. A single underlying system that allows for a unified experience across platforms and device sizes.

D. Modules

1) Faculty Login (fig1): Every faculty whomsoever install the application will have to provide its email-id, password and phone number during its one time registration process. These informations are first matched with the online database and then stored in mobile database.

2) Faculty Dashboard (fig2): All information related to the particular person available in one application. Faculty can check his/her timetable, class location, class timetable with the click of a button.

3) Check available faculty (fig3): Hod can easily check the available faculty by selecting the day and hour.

4) Faculty Timetable (fig4): The Hod can check the timetable of a particular faculty by querying the database.

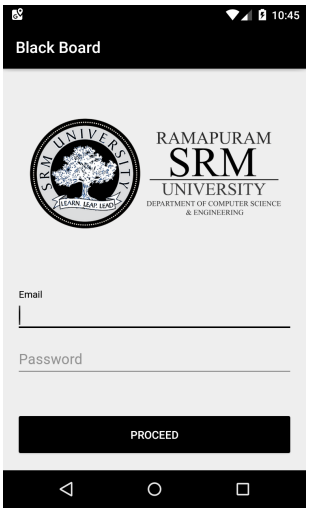

Fig. 1. Faculty Login

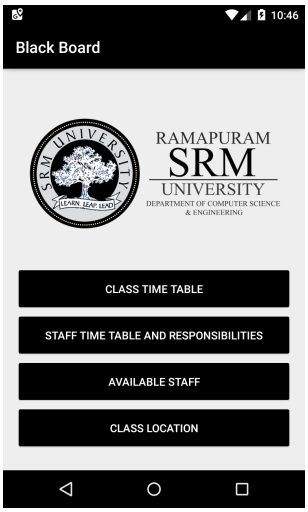

Fig. 2. Faculty Dashboard

Fig. 3. Check Available Faculty

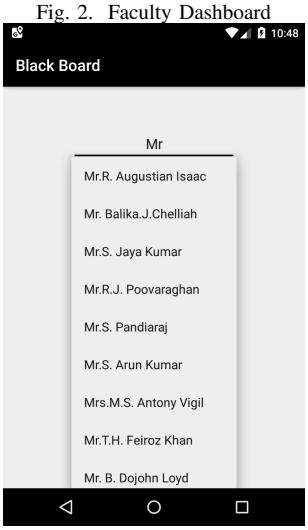

Fig. 4. Faculty Timetable

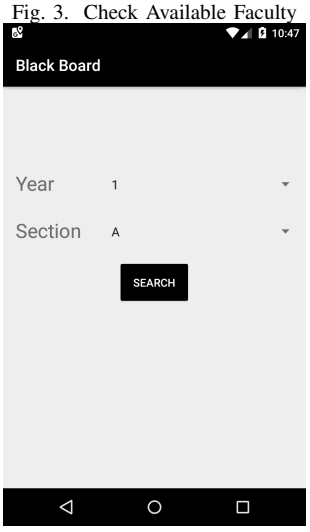

Fig. 5. Class Timetable

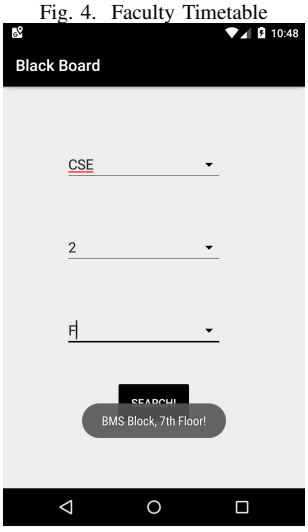

Fig. 6. Class Location

5) Check Class Timetable (fig5): The faculty can check the timetable of a particular class by selecting the year, section of the class

6) Class Location (fig6): The faculty can check the location of a particular class by selecting the dept, year, section of the class

IV. Conclusion

The mobile application, incorporating the college management system, is a very effective tool which can be used for improving the overall efficiency in a college/university. The proposed mobile application portability and ease in use increases its credibility compared to other state-of-art methods. In an experimental study, it is observed that the proposed system result in significant reduction in number of proxies and time to mark a class attendance especially of a large class. A minimum of 80improvement of reduction in time to mark a class attendance is observed (compared to state-of-art methods).

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