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Android Application for College Events

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Abstract – *Today's generation is highly responsive towards smartphone applications. Research shows that smartphone application usage grew by 165% in India in the last two years. The following project proposes a smartphone application on the Android platform, which will alert students about latest happenings and upcoming events in their college in real-time with the help of push notifications. The respective coordinators would be able to update the "virtual notice-board" inside the application with various events, seminars, notices and various other inter-college events. Professors and other college faculties would be able to issue urgent notices to students of a specific department, class. This eliminates the need for students to constantly check the college website for updates, by providing them instant notifications right on their smartphone. This application will act as a centralized platform for all event alerts right from the ones on the website to the physical notice boards placed in college.*

Key Words: Android, Application, College, Events, Management

1. INTRODUCTION

For an organization to succeed in its work, good management is a key element. For an educational institute, communication between students and the faculties serves as an important factor to establish good management. Currently, the only way for the college faculties to relay updates to students is through the college website or physical noticeboards placed throughout the college campus. This is an extremely inefficient way to convey messages that might be important or time-sensitive, since there is no way to ensure that it reaches majority of the intended students. This leads to lack of order among faculties and students which, in the long run, might affect students' performances.

Now-a-days, every organization relies on various digital applications that ensure constant communication among its people. This avoids mis-communications and hence boosts productivity tremendously. In an educational institute like a college, this productivity refers to students' performance in curricular, co-curricular as well as extra-curricular activities. Being up-to-date with the events in their college, students can never miss out opportunities to represent themselves, and college events will see a huge participation. Instant communication will also be useful for conveying emergency and urgent messages to the students.

Currently, Android is the highest used platform for applications in the world. Every major organization has one or more applications on the Google Play Store that helps them manage their people and resources more efficiently. For a college, an android application would serve majority of the students. It would increase the number of receivers of messages and might also indicate the exact number of receivers which might help anticipate participants for events. The applications currently on the market are poorly designed with an unfriendly UI as well as less functionalities. There is a need for a better application so that students can live their college life with more choices, and faculties can have a better time managing the students along with their work.

2. LITERATURE REVIEW

One of the papers [1] suggests a similar implementation of android application for trainings and placements of the college. This application organizes its placement events and students' details in the form of a list and displays event details on a new page. The disadvantages in this implementation is that users are not notified of the latest events on their smartphone. The users are required to check the application at various intervals to be updated. This makes it no different from the websites [4][7] and hence does not utilize the full potential of an android application. Another drawback is the registration process is not secure as offline registration is implemented. Many applications use Google Login as feature to provide security to their users and it would provide better user authentication.

Some other papers [2][3] suggest primitive versions of an android application for college events management. The authors suggested use of SQLite Database for storage of user data [4]. This is not efficient as the size of data estimated cannot be stored in an SQLite based database due to memory restrictions. It was also suggested that Bluetooth technology should be used for transmitting of events and notices to the user's device. Although Bluetooth is reliable for accurate transmission of data, it cannot be used over a long distance, say, from the college office to the students' devices at their homes. Using a cloud-based database and transmitting over the internet clearly is a better alternative to this solution.

3. PROBLEM STATEMENT AND OBJECTIVES

3.1 Problem Statement

Currently, the only way to provide event alerts is through notice boards in the college or on the website. Unfortunately, both of these sources require students to check them from time to time. Due to this, a lot of students miss out important alerts of events that they would've liked to participate in. Another widely used method to deliver alerts is via third-party messaging applications. This, too, isn't a compatible way since, due to a large amount of messaging applications available, every student and faculty cannot be expected to use the same application for communication. More-over, there is no way to verify delivery of these alerts. There is a need for a centralized system that can ensure delivery of every college alert to respective students and faculties in real-time from within a common application.

3.2 Objectives

The main objectives are following:

1. To solve the problem of prompt event notification delivery to a maximum number of students.
2. To create a platform dedicated to college alerts which present details about all the upcoming events.
3. To provide means for the college faculty to deliver quick notices to concerned students of the college.
4. To increase students' interests in various college events by providing them an easy access to the details about all events.

4. PROPOSED WORK

The proposed system has three important features:

4.1 A Virtual Board (Events)

Events tab provides information to all users of this application which include students, teaching staff as well as non-teaching staff, regarding all upcoming events in the college. All users can get detailed information about all events posted in our application. Only coordinators can post an event in the application or make necessary changes in posted event. Other than coordinators, all users can just access the information about events.

4.2 Urgent Alerts (Notices)

Notices tab is used for sending urgent messages among students. Coordinators can send important notices to groups of students with the help of this feature. Whenever any new notice is posted by coordinators, a push notification is sent to all registered users. This is new feature implemented in our application as compared to existing systems. Advantage of this feature is all registered users will surely get notified about all important notices posted by coordinators.

4.3 Bookmarks

Bookmarks, a third tab, can be used by users to save notices and events that s/he is interested in. This saves time and provides an easy access to messages that are important to the user. Every user can save events as per their interest and does not depend on any other user's choices.

This application is designed with a user point-of-view in mind. The latest features are successfully implemented using Dart along with Flutter framework which is user friendly and helps the users in accomplishing all tasks with ease. Firebase has been used for database management.

5. TECHNOLOGIES USED

5.1 Firebase

Firebase is a mobile app development platform which offers a huge variety of tools and services to its users to make app development easier. Firebase manages the backend aspect of the applications, giving users more time to work on interface and other features of the application.

Firebase can be easily used with a single Software Development Kit (SDK), which is embedded right into Android Studio. Hence, users do not need to create their own server-side program using PHP and MySQL or similar technologies. Firebase is a 'Backend as a Service' (BaaS). This indicates that a user can freely make their own dedicated application. Firebase is compatible with Android, iOS as well as web applications, free of cost.

A disadvantage of firebase is that it depends on third-party storage hosts for its functions. Currently, Google manages all of Firebase's operations. But if Firebase is transferred to another company in the future, users might face the inconvenience of moving their data to the new company's storage servers.

5.2 Flutter

Flutter is a mobile application Software Development Kit for designing iOS and Android apps from a single codebase which has high-performance and fidelity. The main motive behind using Flutter is to let the designed application feel natural, irrespective of the platform used. No mobile development experience is required to work with Flutter. While Flutter acts as a backend, Dart is the programming language used to devise the logic for the apps. Dart is an object-oriented language

like Java. Experience in Java coding is definitely useful while designing apps with Flutter and Dart. Flutter includes many functionalities like ready-made widgets and development tools, modern react-style framework, and even a 2D rendering engine. These components can be used together to design, build, test, and debug apps. Unlike other frameworks that separate views, view controllers, layouts, and other properties, Flutter has the 'widget' which acts as a unified and consistent object model.

6. IMPLEMENTATION

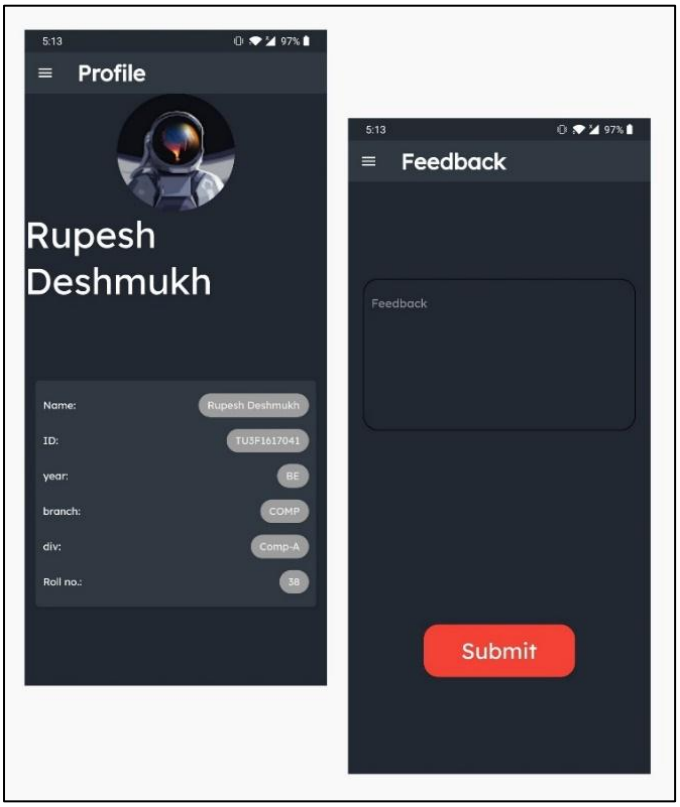

Fig -1: Profile and Feedback Pages

6.1 Secure Google Login

Our application uses secure Google Login i.e. users can use the application with their Google accounts.

6.2 User Profile

Every user will have a profile assigned which will display user details like id, study year, department, etc.

6.3 Feedback Page

Users can submit feedback from within the app which will be received by the administrators. This can be used to make the app even better in the future.

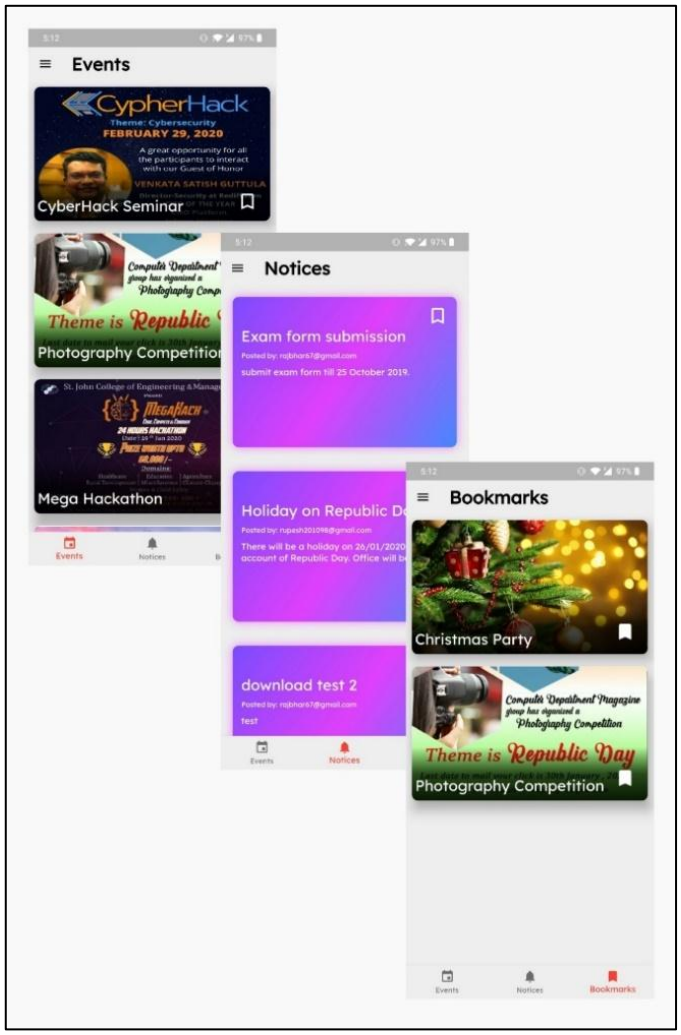

Fig -2: Events, Notice and Bookmark Pages

6.4 Main Interface

The main interface contains of a bottom navigation bar which gives access to the three prominent features of the application.

Events and notices posted by the faculties can be viewed in the respective tabs. Users can save these messages by tapping on the bookmark symbol on the bottom-right corner of the message. The saved messages appear in the Bookmarks tab at the extreme right, so users can easily access them when needed.

The authorized faculties will have a button on the bottom-right corner of the Events and Notices screens to post new events or notices. This button will be hidden from the students and other application users that are not authorized.

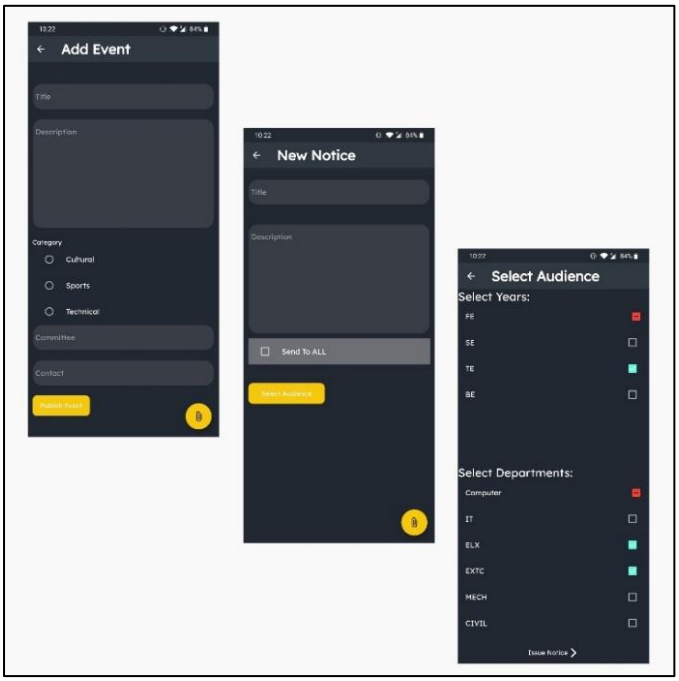

Fig -3: Add Event, New Notice and Select Audience Pages

6.5 Adding New Events or Notices

Authorised faculties can add new notices or events to a particular group of students based on their year, department and division. Adding a new Event requires a title, description, category of the event as well as name and contact of the hosting committee. Adding a new Notice only requires title and description. Notices can be filtered for a group of students. Besides this, attachments such as images or files can be added with events and notices that can be accessed and even be downloaded by students.

6.6 Light and Dark Themes

Last but not the least, we implemented two different themes throughout the application so the users can use it comfortably irrespective of the lighting conditions around them.

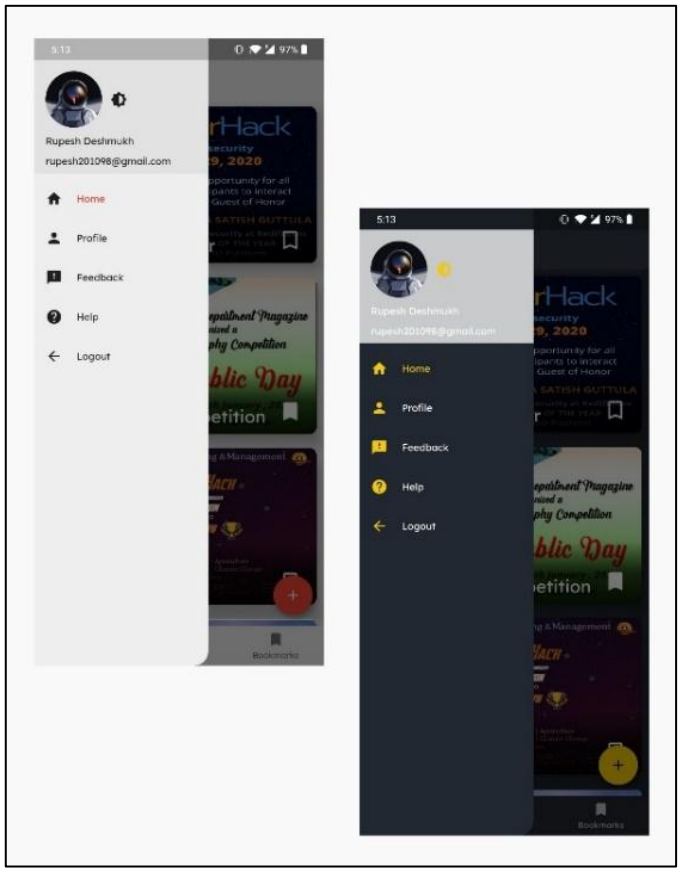

Fig -4: Light and Dark Themes

7. RESULT ANALYSIS

Table -1: Comparison between Features of Previous Applications and our Application

Previous Applications	Our Application
Unfinished UI with basic elements.	User Friendly UI with aesthetic appeal.
Uses SQL DB which does not support more than 1k users.	Uses Firebase DB by Google which supports more than 10k Users.
Uses Bluetooth technology to transmit messages to users.	Uses internet to transmit notices to users' devices.
Does not support notification feature in case of emergency deliveries.	Supports notification to users' devices for emergency notices delivery.
Has only one theme over the whole application.	Light as well as Dark Themes are available.
Does not have a bookmark feature to save messages.	Contains a Bookmarks tab to view saved messages.
Does not offer additional messaging features.	Offers attachments as well as feature to categorize messages.

Use of this application will have great impact on students. As use of android apps is popular now, students will be fascinated towards use of this application. It will keep users up-to-date with the events in their college as well as increase participation in the events. It will also ensure delivery of urgent notices to students and help in better management of students by their faculties.

8. CONCLUSION

This application performs much better than existing Android or web-based applications in terms of features, requirements of the students, technology and interface element-placements used in design, development and usability of application.

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