ANDROID BASED COLLEGE APPLICATION FOR STUDENTS

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Abstract: A mobile application by nature is easier to use and access information and this requisite encouraged the need for a college application that can be used by all the students and faculties. The features incorporated in the college application, the techniques used to implement them and the purpose of each of the functionality is described. This paper summarizes all the major segments included in the application such as sharing lecture notes , push notifications, navigation and an open forum and all these collectively assist in the ideal usability and efficacy of the mobile application designed for our college.
Keywords: Java, Android, Firebase, Navigation, Application, College, Forum.

I. INTRODUCTION

In this era of mobile technology, most of our work depends on smartphones and their applications. Mobile applications provide lucid solutions to many of day to day activities such as ordering food online, transport facility, hospitals appointments and so forth and provide comfort to users. smartphones have simplified our lives by making us experience all that we need on our fingertips. We have delineated an application to cater to the requisites of the students and the teaching staff based on the present structure of the market utilising contemporary technologies like Java, Operating System for the smartphones, Global Positioning Systems etc. to provide various solutions to needs of the students in the college campus.

"Android Based College Application for Students" is the android application which predominantly connects the students and faculties with the college using smartphones. The application has features like open Q&A forum, navigation, news and alerts, viewing lecture notes, etc. Faculties will also have added features like sharing lecture notes and broadcasting a message. The application has other facilities which include courses details, support, campus life, learning resource centre, transportation, hostel, etc.

II. PROBLEM DEFINITION

In the present scenario, all the institutions have their websites but in order to access any information, the user has to browse through the website which is time consuming whereas in mobile applications it is just a matter of few clicks. Mobile applications customarily work 1.5 times rapidly than web pages [1] and activities are accomplished very swiftly.

Applications accumulate their particulars internally on the gadget permitting reclaiming of data in milliseconds. Whereas in web pages, data has to be collected from the web servers and this is time consuming and it ranges from few seconds to a minute and is completely dependent on the momentum of the interconnected systems and the size of the datum transmitted between the end-points [2].

Different mobile phones have different operating systems but 88% of users use android phones [3]. This paper focuses on an Android application to provide students with study material, events, notifications etc under one platform. The application also supports an open Q&A forum where the students can ask any queries and it can be answered by either the students or faculties. It also provides navigation with both normal and augmented reality within the campus [4].

III. METHODOLOGY

The campus life of the students can be made unchallenging by having multi-functionalities under one platform. This application makes use of the Gmail integration using Firebase for authenticating the users which is exclusive for the institution. The app also has an open Q&A forum which helps students and teachers to interact. Using Firebase cloud messaging (FCM) live notifications are sent to the students and the targeted users. Navigation is provided using a GPS based system which helps to find routes to different locations in the campus and is implemented using Augmented Reality [5] and also through regular navigation.
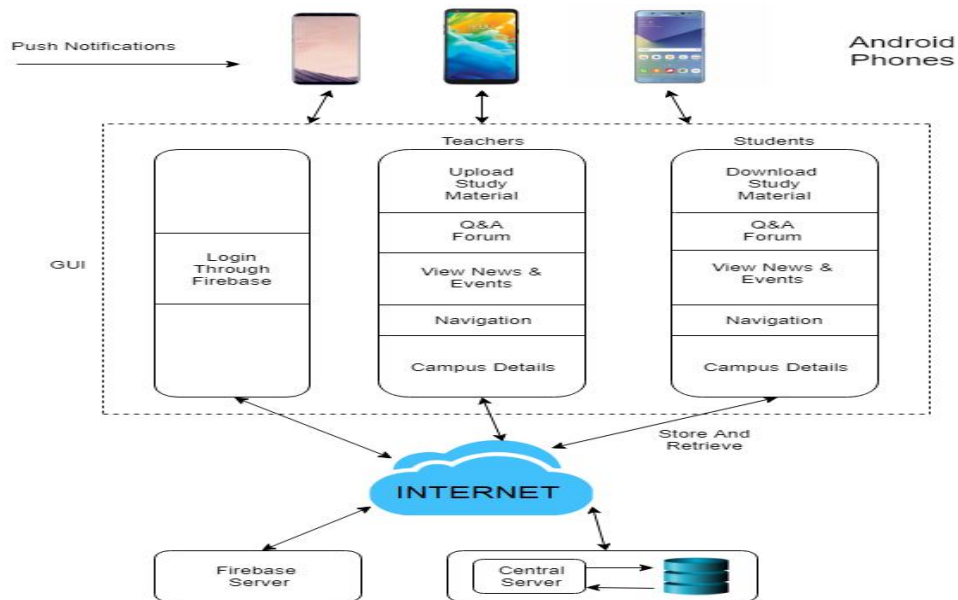

Fig 1. High Level Design of the Application

Module wise flow of the proposed system:
Login Screen: This activity follows the splash screen activity which is the initial screen of the application. In this screen, there is a sign in button which uses Gmail sign in using firebase authentication[6].

Fig 2. Firebase Authentication

Campus Life: This module provides general details about the campus facilities such as placements, sports, library, transport, hostel, canteen etc.
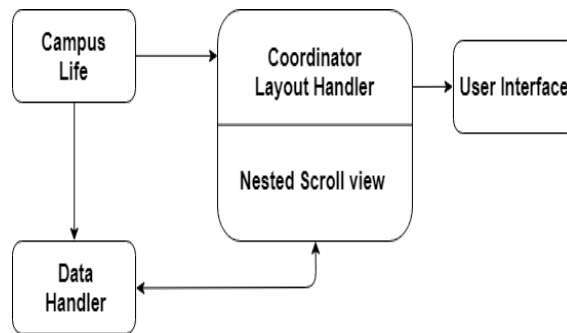
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Fig 3. Dataflow diagram for Campus Life Activity

Course Details: This module gives details about the different institutes in the college, departments and the programme they offer on the campus. It also provides the eligibility criteria for the particular courses and programmes.
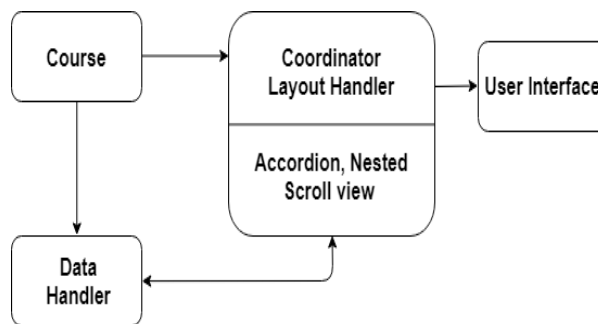

Fig 4. Dataflow diagram for Course Details Activity

Notes Uploading: This module is only accessible by the faculties for uploading the lecture notes. The faculties have to provide the title, department, semester and the file which they want to upload. The faculty can also modify their uploaded lecture notes. Push notifications[8] will be sent to the students mobile as soon as the lecture notes are uploaded.
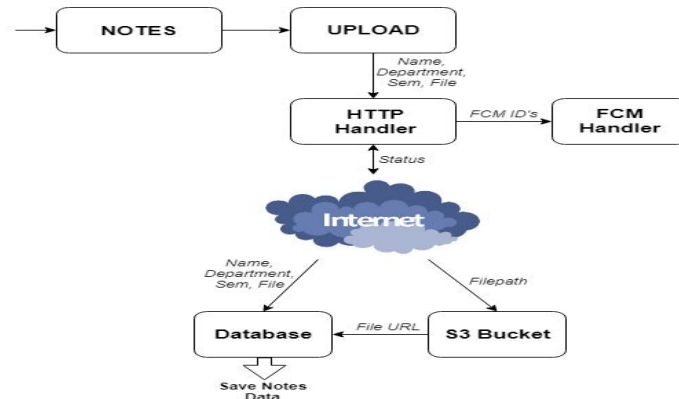

Fig 5. Dataflow diagram for Uploading Notes

Notes Downloading: In this module, students can download the lecture notes by selecting their department and semester. The lecture notes will be available for downloading. The student can also access their previously downloaded lecture notes[9].
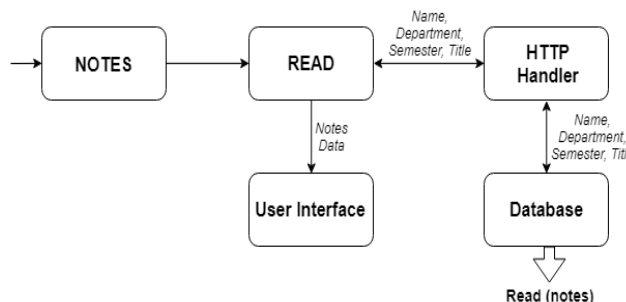

Fig 6. Dataflow diagram for Downloading Notes

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Q&A Forum: This is an open forum where users (students/faculties) can ask questions. These questions can be answered either by a student or a faculty. The forum has fields like title, category, link (optional), description of the question.

News Feed: It offers notifications and instant conveying of information to the divergent sections of the teaching staff and learners. Apart from these, pictures can also be sent along with the content of the news and the time of uploading of the content. Immediate notifications are obtained by the users.
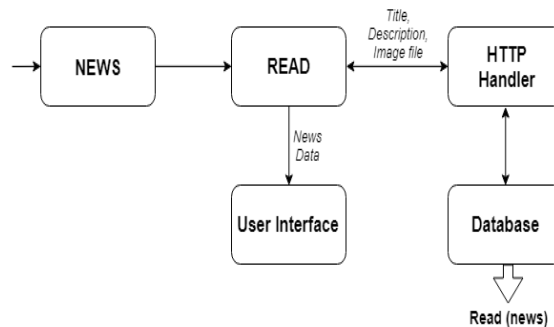

Fig 7. Dataflow diagram for News Feed Activity

Navigation: Navigation is provided by using Google maps and augmented reality. Beyond AR framework is used for augmented reality navigation. The users have to select their source and destination and select type of navigation within the campus.
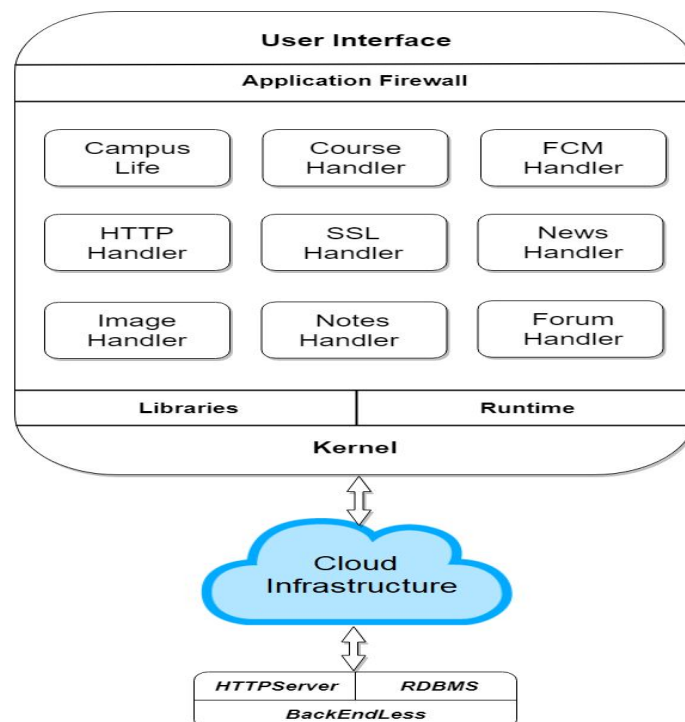

Fig 8. Application Architecture

IV. ADVANTAGES

- The benefit of mobile application facilitates accessing offline data[10].
- Ongoing college activities can be easily sent via push notifications and can also be sent to a targeted group of users or every user[11].
- The design used helps the users to use the application easily.
- The app provides study materials given by the faculty which helps in digitalization of the existing system.
- The open discussion forum allows great reciprocity between students and faculties..
- The navigation facility will help the users especially the newcomers and visitors to reach their destination within the campus without any trouble.

V. RESULTS AND DISCUSSION

The major target of this application is for the students to leverage skills pertaining to learning through their smartphones which will permit them to view the study materials[12][13]. The application also includes sections where they can get notifications and reply to the doubts of others and also consult peers and faculties for asking their doubts through the facets in the application.
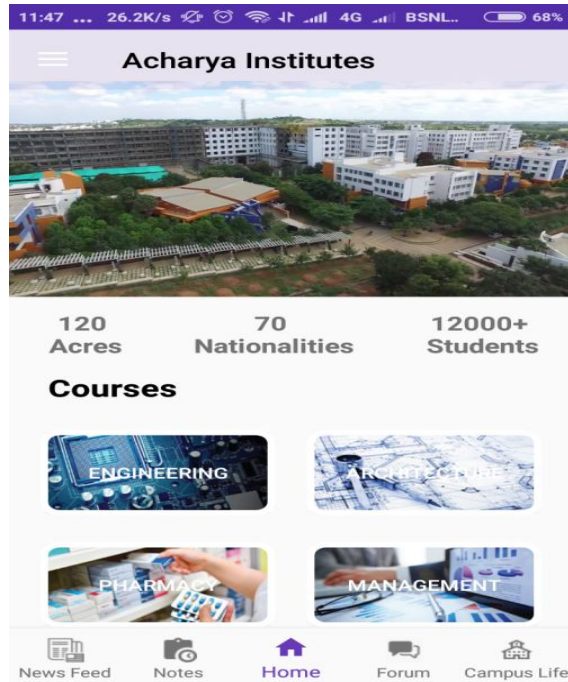

Fig 9. Subsequent Home Screen after Logging in

Fig 9 shows the home screen of the application where the details of the college and the courses it provides can be viewed by the user. It has a side navigation drawer[14][15] and bottom navigation.
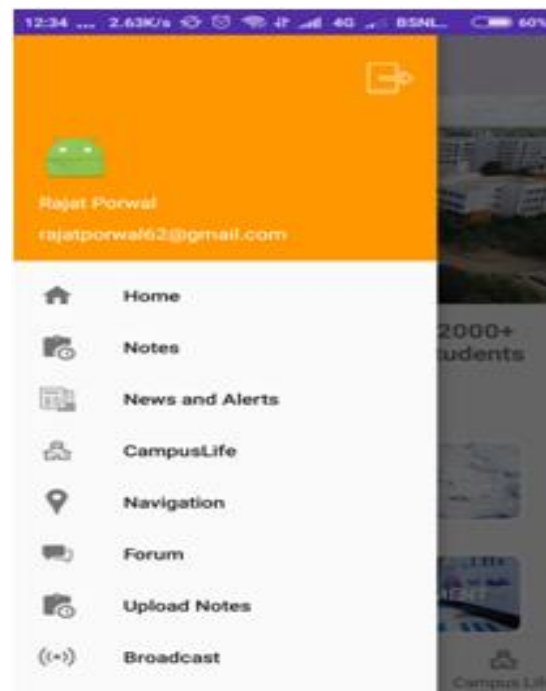

Fig 10. Navigation Drawer

Fig 10 shows side navigation drawer of the application and it includes the name and email of the user who is using the application and the user can log out using the log out button.
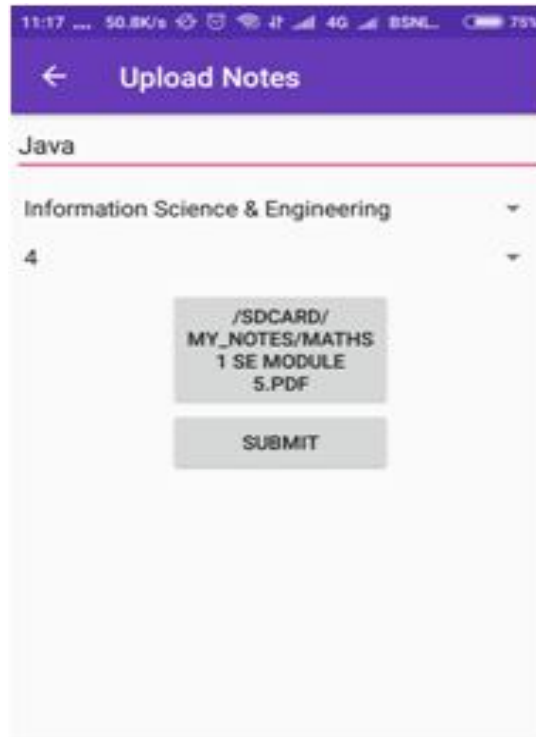

Fig 11. Upload Notes

Fig 11 shows the upload notes section where the faculties can upload lecture notes for a particular department and semester by selecting a file from their phone.
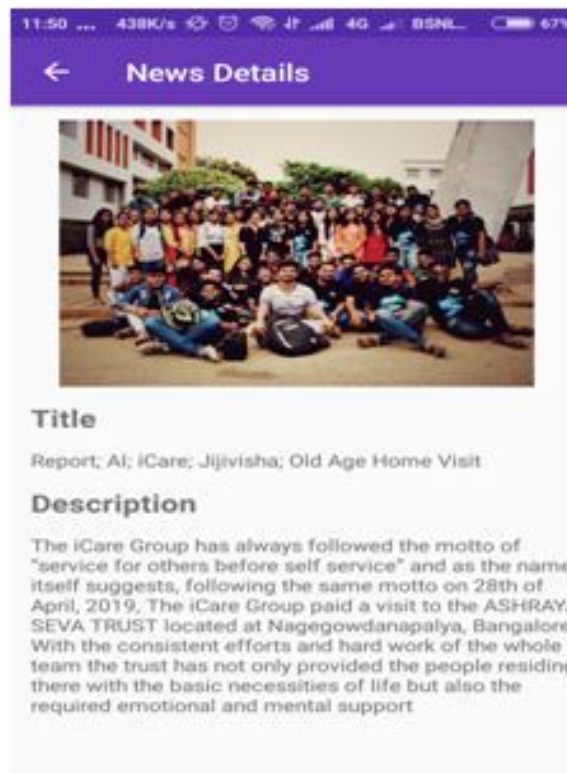

Fig 12. News Feed

The news feed(Fig 12) shared shows the ongoing campus activities and these are shown in detail when the user clicks on particular news. This helps the students to be aware of all activities happening on the campus.
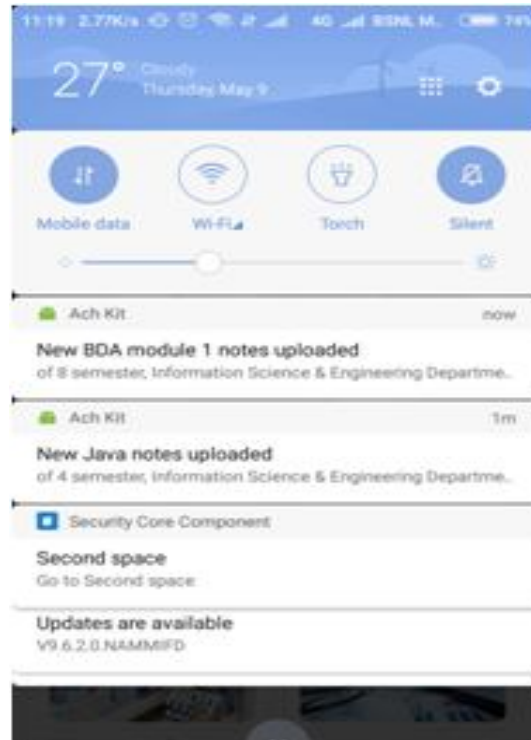
Fig 13. Push Notifications

Fig 13 shows the notification that is sent by a faculty and it can be viewed later in the notifications section by the students.

Fig 14. Q&A Forum

Fig 14 shows the question and answer forum where any user can ask any query and any question can be answered by any user. This is very helpful for student-teacher interactions.
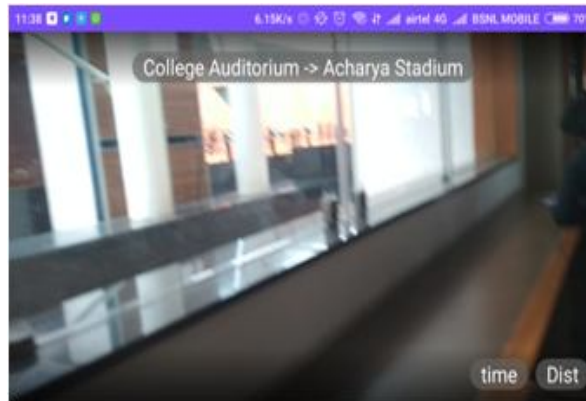
Fig 15. Navigation within campus using Augmented Reality

Fig 15 shows the navigation to the stadium[16] from the college auditorium.

VI. CONCLUSION

A mobile application is vital for easier access to information and hence an application is designed for the college and this paper includes all the functionalities that are available in the application. The functionalities include sharing lecture notes, login authentication by Gmail, push notifications, navigation, details about the college etc. All the techniques used for implementation are briefed and all the components of the application help the students and faculties to access all the details and it guides and assists them for a satisfactory life in the college campus.

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