A Companion Application for Students: Companion App

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***Abstract*—**Students often face difficulties in managing their academic schedule, keeping track of their assignments, and finding resources to support their learning. To address these challenges, there is a need for a student companion app that can provide personalized support to students in managing their academic life, staying organized, and maintaining their motivation. The app should be easy to use and accessible to all students, regardless of their academic level or background. It should also be able to adapt to the changing needs of students and provide relevant resources and guidance based on their individual learning preferences and goals. The student companion app can provide a comprehensive solution to the challenges faced by students. The app can provide students with access to resources such as study guides, video lectures, and interactive quizzes to support their learning. The student companion app can be a powerful tool for students to enhance their academic performance, reduce stress, and improve their overall well-being. By providing personalized support, access to resources, and motivational tools, the app can help students achieve their full potential and succeed in their academic endeavors. The results and output of the student companion app would be beneficial to students in several ways such as Improved academic performance, Reduced stress, Increased productivity, Enhanced learning, Community support. The student companion app has significant potential to improve the academic and personal lives of students, and with continued development and innovation, it can become an essential tool for students of all levels and backgrounds.

Keywords—Companion App, Firebase, Card View, Flashcard, Authentication, Email, Password, Human-Computer Interaction

I. INTRODUCTION

Companion apps are designed to enhance the user's experience with a particular product or service. In the context of education, companion apps can be used to supplement classroom learning, provide additional resources, and help students stay on track with their academic goals. Student assistant apps can offer a range of features to help students manage their academic life more efficiently. For example, some apps may provide access to a library of textbooks, course materials, and study guides, while others may offer features such as note-taking, flashcards, and practice assignments[1]. Additionally, many student assistant apps offer features that facilitate collaboration among students. These features can include study groups, discussion forums, and peer-to-peer tutoring. Some apps also offer gamification elements, such as rewards and incentives, to motivate students to stay engaged and motivated. It is one of the most straightforward and well-liked sorts of HCI (Human-Computer Interaction). The design and implementation of the system is to provide service in institute and colleges. The system is to provide comprehensive student information system and user interface is to replace the currentpaper records. College Staff uploads notice, college notifications and images along with the detailed information about the campus through a secure, online interface through admin[2]. Student admission Management module explains how the college handles the admission of their student. There different Card Views of we can say modules for the Notice, Images, Faculty and E-books/Notes that will give a brief about all the facilities that college offers. The admin of the college can have and monitor the information of the student. For the data storage and retrieval of the data we have used Google Firebase. Firebase is basically a Backend-as-a Service(BaaS). We have used Firebase as real-time database with which we stored our data in the form of a tree[3].

II. LITERATURE REVIEW

In today's digital age, technology has transformed the way we communicate and access information. Educational institutions have also adapted to this

change by providing online platforms and applications to their students. We are trying to provide a solution for helping students in getting updates and information about the college or school's facilities and services. This literature review aims to explore the current state of research on similar applications and their impact on student satisfaction and engagement.

A. Study on Mobile Application for Higher Education Institutions (2019)**.** This study investigated the use of mobile applications for higher education institutions, focusing on the impact of such applications on students' engagement and satisfaction. The findings revealed that mobile applications were highly beneficial in improving students' engagement and satisfaction with the institution [5].The study further emphasized that students preferred mobile applications that provided them with regular updates and notifications.

B. Exploring the Benefits of Educational Apps for Children (2020) This study explored the benefits of educational apps for children and found that such applications were highly effective in enhancing children's learning experiences. The study also highlighted that educational apps with features like regular updates and notifications helped children stay engaged and motivated.

C. Study on the Impact of Mobile Apps on Student Engagement [8] This study focused on the impact of mobile applications on student engagement and found that mobile applications were highly effective in increasing student engagement. The study also emphasized the importance of regular updates and notifications in keeping students engaged.

D. Mobile Apps for University Libraries: A Review of the Literature[7] This study reviewed the literature on mobile applications for university libraries and found that such applications were highly effective in enhancing students' access to information and resources. The study also emphasized that mobile applications with features like regular updates and notifications helped students stay engaged with the library.

We concluded that the literature review suggests that mobile applications for educational institutions are highly beneficial in improving student engagement and satisfaction. Such applications with features like regular updates and notifications are particularly effective in keeping students engaged and motivated. Therefore, Our Companion App can significantly benefit students by providing them with regular updates and information about the college or school's facilities and services.

III. METHODLOGY

A. Target Audience

The target audience for an app that provides regular updates and information about the college or school's facilities and services would be students. This could include undergraduate students, graduate students, and potentially even high school students who are interested in attending the college or school. Within the student population, there may be specific groups or demographics that the app is designed to serve[6]. For example, international students may have unique needs for information about campus services, while students with disabilities may require specific information on accessible facilities. Ultimately, the app should be designed with the needs of the entire student population in mind, but may also include features or content that are tailored to specific groups within that population. By understanding the needs and preferences of the target audience, the app can be designed to effectively provide assistance and enhance the educational experience for all students[10].

B. Pre-Processing

An app can effectively provide assistance to students by providing them with regular updates and information about the college or school's facilities and services by incorporating the following features and strategies:

I. Push notifications: The app should send push notifications to students when important updates or events occur, such as changes in class schedules or upcoming campus events.

II. Real-time updates: The app should provide real-time updates on campus facilities and services, such as updates on library hours or computer lab availability.
III. Interactive maps: The app should include an interactive map of the campus, which allows students to quickly locate buildings, classrooms, and other important locations.
IV.Service request feature: The app should include a feature that allows students to request services from campus facilities, such as maintenance or IT support.
V.Social features: The app should include social features, such as discussion forums or chat rooms, where students can connect with each other and share information.
VI. Personalized content: The app should provide personalized content to each user, based on their preferences and interests, such as a list of recommended campus events or personalized study tips.
VII. Feedback mechanism: The app should include a feedback mechanism, such as a rating system or feedback form, where students can provide feedback on the app's features and functionality.
VIII. Accessibility features: The app should be designed to be accessible to all students, including

those with disabilities, by including features such as text-to-speech or voice commands.
IX. Regular updates: The app should be regularly updated with new features and content, based on user feedback and changing campus needs.

By incorporating these features and strategies, an Companion app can effectively provide assistance to students by providing them with regular updates and information about the college or school's facilities and services, ultimately enhancing their educational experience.

C. Testing

Testing of our Companion app that provides regular updates and information about the college or school's facilities and services is an important step in ensuring that the app is effective and useful for students. The testing process may include the following steps:
I. Usability testing: This involves testing the app's user interface to ensure that it is easy to use and navigate. Usability testing can involve observing users as they interact with the app, or conducting surveys or interviews to gather feedback on the app's design.
II. Functionality testing: This involves testing the app's functionality to ensure that all features are working as intended. This can involve testing features such as push notifications, interactive maps, and service request features.
III. Performance testing: This involves testing the app's performance to ensure that it is stable and responsive. Performance testing can involve testing the app's response time, load time, and ability to handle high traffic volumes.
IV.Security testing: This involves testing the app's security features to ensure that user data is protected. Security testing can involve testing features such as user authentication, data encryption, and protection against hacking or malware attacks.
V.User acceptance testing: This involves testing the app with a group of representative users to evaluate their satisfaction with the app and gather feedback on its usefulness and effectiveness.
VI. Bug testing: This involves identifying and fixing any bugs or errors in the app that may affect its usability or functionality. This can involve conducting automated tests and manual tests to identify and fix issues.

We conducted all these testing and now our app is refined and improved to better meet the needs of students and provide them with useful and relevant information about the college or school's facilities and services.

IV. DESIGN CONCEPT

MAIN MODULE OF THE SYSTEM:

1. *Student Module:* Student records were previously kept in this module. It includes the information listed below: i. E. Information about a student's profile, contacts, education, etc. Users can use various search criteria, including name, course, roll number, etc., to find students in the database.
2. *Admin Module:* The staff and teaching faculty must register as applicants in order to proceed with the application. Before providing their ID and password for login, they must first register..
3. *Admin Login:* The admin may log in following registration. Now, he or she has access to the admin homepage, where there are buttons for taking attendance, uploading results, and notifying students. Additionally, he has access to the results of uploaded and taken attendance.
4. *Faculty and Student Attendance:* This module for faculty and student attendance monitoring should be part of the college management system. Every student at the college will have their daily attendance and activities recorded. The database at the college will contain the attendance information. The produced information will be kept for later use..
5. *Course Module:* Each course that the college offers will have its subjects assigned by the courses and subject management module. The schedules for each subject and the lessons that cover each subject will also be bracketed by this module.
6. *Check Notifications:* Through these notifications, faculty can get important information from the HOD or admin, including meeting information.

We can see the project stages in Figure 1. The requirements are raised during the analysis of the needs of the users:

-A Person Should be able to login to the system through the first page of the Application.

-The Administrator can create users as per user requirement.

-Admin can upload the data such as notice, images, e-books, & details about faculty.

-Student (user) can use all the facilities, same as which are provided to him in the college.

Fig 1- Process flow Chart

Fig. 2- Data Flow Diagram for admin

The Admin can manage and monitor the app's functionalities using the app's interface. As Shown in Figure 2, the Admin can add or remove resources, manage user profiles, and track user progress. The Admin can also respond to user feedback, including addressing any issues or implementing suggestions for improvement.

The User can interact with the app through various inputs such as keyboard, mouse, or touch. As shown in Figure 3 the User can log in to the app using their credentials to access their profile, calendar, task manager, and other functionalities. The User can also interact with the app's resources such as study guides, video lectures, and interactive quizzes. The User can provide feedback to the Admin regarding the app's functionalities, including any issues or suggestions for improvement.

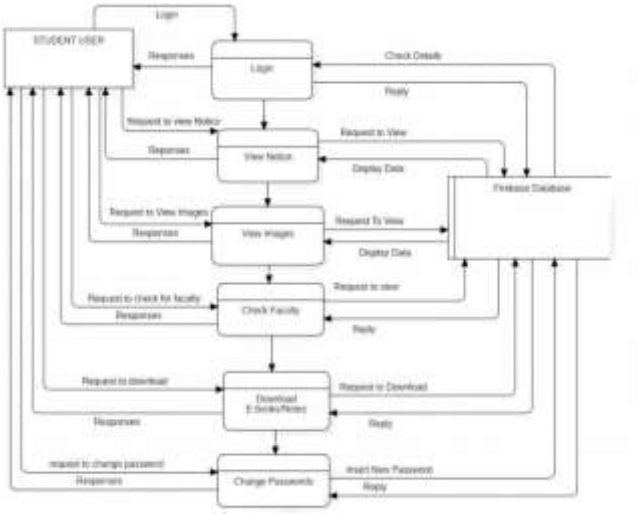

Fig.3- Data Flow Diagram for User

V. SYSTEM ARCHITECTURE

There are layers in the architecture.

I. Presentation layer
II. Service layer
III. Data access layer
IV. Database layer

I. Presentation layer:

Users can communicate with the bot at this layer by texting or speaking commands. This layer's input is sent to the service layer, which then sends back output to the user via an alert module.

II. Service layer:

This layer is made up of six separate modules all together (quiz, assignment, icloud, lms, note and calendar).

III. Data access layer:

This layer manages communication with databases. In order to insert and access data, SQL queries are utilized.

IV. Database layer:

The fourth layer, the database layer, uses the SQLite API to manage all three databases.

A. Command database
B. Credentials database
C. Notes database

Two-dimensional string arrays cannot be used to create a database for information storage. An array consists of rows and columns. All rows are involved in the request and response process. Even rows always include a request, whereas every odd row has an answer or response. In the array's columns, we keep a record of the many kinds of inquiries to which a chatbot might be subjected. Default answers are retained during a different row inside the region. Furthermore, the additional knowledge is not kept in this row. Whenever there is no pertinent question in the array, the predetermined fallback statements are used

VI. APPLICATIONS

i. It allows the scholar to be updated with school activities.

ii. It saves time for both teaching andnon-teaching staffs as well as the scholar.

iii. It offers us a readily available information source without requiring any physical exertion.

iv. It is easily accessible and saves both time and money.

VII. RESULTS

A. Registering the admin on the app

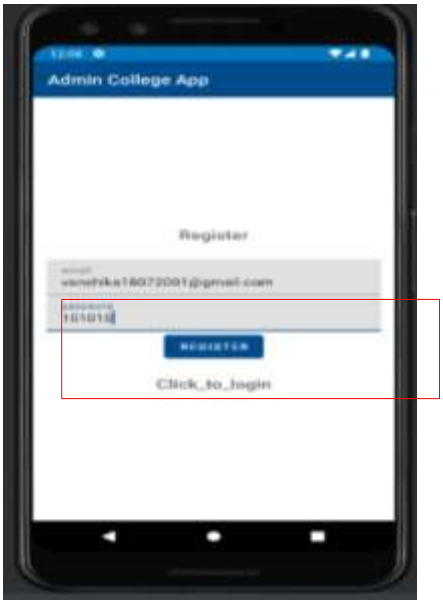

Fig 4- Login page Student Interface

B. Login page for Admin

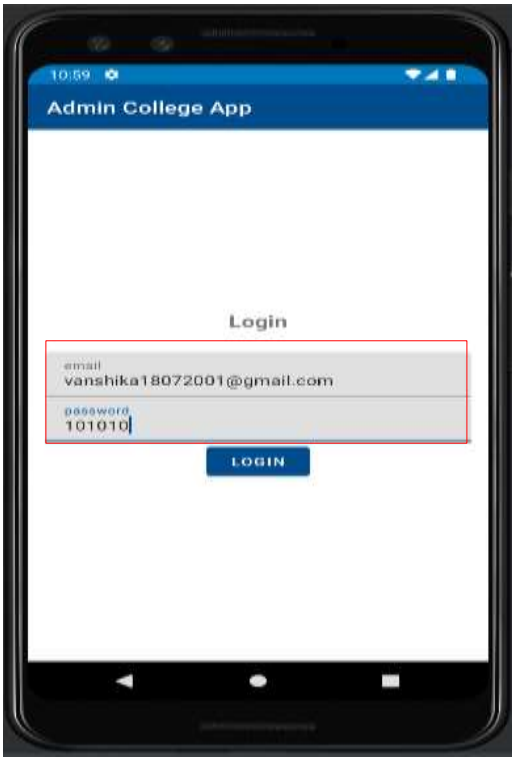

Fig 5- Login Page Admin Interface

C. App interface after logging in and the name of the user is showing on the top.

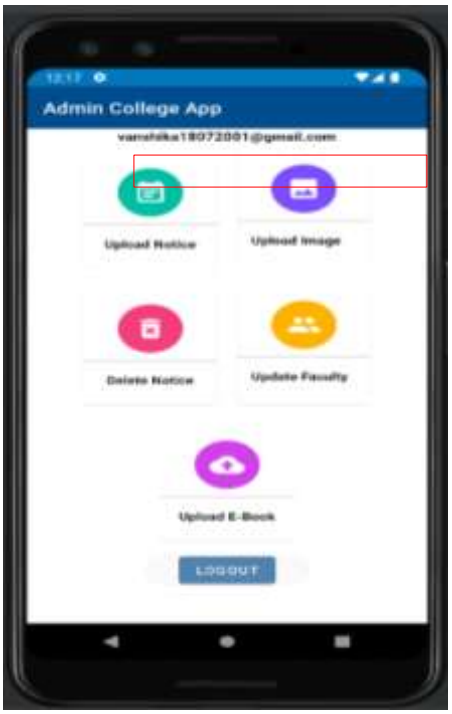

Fig 6- App Interface After Login

D. We can see the active users in the Firebase Database.

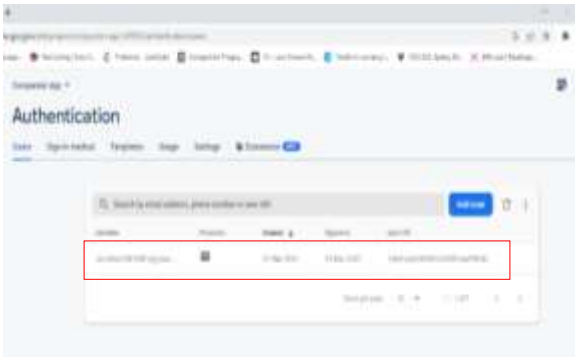

Fig 7- Authentication Interface

VIII. FUTURE SCOPE

This Android Application will be very simple and it will also simplify the and speed up the result preparation and management process. B. Students do not need to check the notice board every day and every one will stay updated. This project will cater facilities to all the existing versions of the system. After that, we can modify the form. Reusable programming lowers expenses associated with configuration, coding, and testing by dividing the labour among numerous possible designs. The possibility that the code is correct rises when understanding is streamlined and theamount of code is decreased. The two types of reusability are shared recently written code within a larger project and recently written code reused on new projects, and we will continue with these two categories. Its price is within the set spending limit and is incurred in the permitted period. Focusing on a framework with a low base cost can be appealing if it meets all the criteria. The requirements are outlined in this document, which also makes it apparent what information the client needs. We can employ AI to provide customers with precise responses that are catered to their questions. We can coordinate continuing dialogue and more thorough responses to client enquiries with the help of AI. The form can then be updated after that. Reusable programming lowers expenses associated with configuration, coding, and testing by dividing the labour among numerous possible designs. The possibility that the code is correct rises when understanding is streamlined and the amount of code is decreased. We keep track of the two sorts of reuse: using freshly written code on new projects as well as sharing it in a bigger context. Its price is within the set spending limit and is incurred in the permitted period. Focusing on a building with a cheap base cost can be appealing if it meets all the criteria. The requirements are outlined in this document, which also makes it apparent what information the client needs.

IX. CONCLUSION

The management procedure will be significantly streamlined and accelerated by the student assistant app. The paperwork will be described. The administrative staff, academic staff, or students will complete all tasks quickly and conveniently. The system provides dependability, security, efficiency, and simple control. The proposed system will outline how much time the faculty and administration spend working. The work will become more flawless as a result..

X. REFERENCES

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