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# Campus Connect

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**ABSTRACT:** Technology has revolutionised student life, necessitating a smartphone app for schools, colleges, and universities. Campus Connect, developed using Android Studio with Flutter, facilitates digital access to college information. It features event calendars, placement notices, daily timetables, and a chatbot for peer-to-peer communication. Students, managing various projects alongside academics, often miss deadlines and seek class representatives' assistance. Connecting with peers from different classes is crucial for staying updated on emerging trends. Campus Connect streamlines student interaction, ensures vital information accessibility, and enhances the learning process, providing a comprehensive platform for academic success

**KEYWORDS:** Android Studio, Flutter, Firebase, College Management, User Engagement

## I. INTRODUCTION

Campus Connect simplifies the digital management of various events. The design and implementation of the system are geared at offering services to institutes and colleges. The university community encourages student communication and promotes a healthy learning environment. Students can demonstrate their accomplishments to their peers, inspiring them. The manual method of alerting students about various competitions and events can be chaotic, and there is a potential that some students will receive the information late; thus, with the calendar feature, all students can be told about the same at ease, and reminders can be sent to them. Communication with students from various sections might be difficult at times due to a lack of contact information; therefore, with the addition of the chat option, students can quickly connect with their batchmates. Attendance and grading can be monitored by students and teachers and regular time table updates will ensure that students do not miss out on important lectures.

## II. PROBLEM STATEMENT AND OBJECTIVES

### A. Problem Statement

To develop an application that allows students to interact with the college community, participate in activities, and notify about forthcoming events.

### B. Objectives

The main objectives are as follows:

1. Develop a user-friendly and intuitive college management application to streamline administrative processes and enhance communication between students, faculty, and administrators.
2. Implement features such as attendance tracking, timetable viewing, and grading functionalities to improve efficiency and accuracy in academic operations.
3. Enhance student engagement and participation by integrating interactive notice boards, event updates, and club management features into the application.
4. Provide personalised profiles for students and faculty members to manage personal information, academic records, and communication preferences.
5. Incorporate a chatbot interface to offer instant assistance, answer queries, and provide required details to users.
6. Utilize Firebase for data storage and scalability to ensure user authentication and a seamless Login and Sign Up process for students and faculty alike

## III. LITERATURE SURVEY

[1] College Management Android Application by Shwethashree A et.al This paper proposes an app where all college administrative tasks are handled using one particular system, including admission, payment submission, scheduling, and result announcement. The admin can simply examine or change statistics and information on students and staff with

our app. This application includes modules like Login. The user becomes the college administrator as soon as they register their institution. Every piece of information is safely kept in a database that the college administrator oversees.

[2] Mobile Web Based Android Application for College Management System by A.J.Kadam et.al This paper emphasises the importance of encryption in ensuring the security of sensitive data stored on devices and exchanged between apps and remote servers on the Android platform. Encryption and strong cryptographic algorithms make it challenging for unauthorised parties to access sensitive information and give protection against data breaches. Additionally, it mentions the Secure Random class as a means of introducing unpredictability in encryption processes.

[3] Android Application for College Management System by Pawan Kumar et.al The ideas used here follows all the prerequisites for a college app and additionally has a Communicate Module: in which student or Staff can convey a message or communicate with each other through the app. In this, the ordinary text can be sent as well as the various files like in format of Word(.doc,docx),Pdf(.pdf),text(.txt) are can be sent as well and they have added an Image Gallery where images related to institute can be seen here. All the images are uploaded by web server or admin

[4] Developing a New Android App for College Management System by Dr. Jaswanti et al The diverse login methods stand out in this app. In addition to allowing Facebook and Google logins, it provides secure login options. One special and useful element of this app is the inquiries section, where students can post their questions and receive any number of responses. An additional feature of the report is to alert the administrator to posts that are deemed inappropriate so that appropriate action can be done.

[5] Mobile Application for Creating Presence Lists by Zuzana Pella et al In this paper, the main motivation was to provide a secure and reliable way of evaluating student attendance on specific lectures. In order to accomplish this task, they utilised the NFC technology on a smartphone and student ID card through which attendance was recorded.

[6] An Android Application for Campus Information System by DP Gupta et al In this application the students are also able to view their placement details based on the information updated by the college administration apart from the features of attendance management and parents are able to stay up to date with their child's performance and administrative officials able to issue certificates to a student without any issue.

#### IV. EXISTING SYSTEM

In traditional university systems, manual interactions are predominant, leading to inefficiencies and dissatisfaction among students and faculty. These systems often rely on administrative staff stationed at various departments to assist students, who must navigate campus with physical schedules and paperwork. However, this manual approach poses several challenges:

1. Administrative Burden: Stock management, in this case, refers to academic resources, course schedules, and student records, which are labour-intensive to manage manually and prone to errors.
2. Operational Costs: High reliance on administrative staff increases operational costs for college administrators.
3. Inefficiency and Errors: The manual process is slow and ineffective, leaving room for human error in data entry and management.
4. Congested Processes: Queues at administrative offices can be congested due to time-consuming manual processes like enrollment, registration, and record-keeping.
5. Students have to personally reach out to individual subject teachers to check their grades and attendance every semester which is a very tedious and inefficient process

To address these challenges, modern college management systems leverage technologies such as their own websites and automated processes. However, existing systems still face limitations:

1. Limited Functionality: Many university websites offer basic functionalities such as course information and contact details but lack features for interactive communication, academic resource management, and student engagement present in our college management app.
2. Outdated Design: Most university websites may have outdated designs and user interfaces, making navigation and information retrieval cumbersome for users.
3. Poor Mobile Optimization: Smaller university websites may not be optimised for mobile devices, making it challenging for users to access information on smartphones and tablets. Our app is designed to be mobile-friendly, allowing users to access features and resources seamlessly on any device.

## V. METHODOLOGY

**1. User Interface (UI) Design:** Utilising Figma, a modern and widely-used creative tool, to create the UI design. Employ up-to-date frameworks to ensure the design is attractive and simple to use for users.

**2. App Framework Selection:** Flutter is used as the frontend framework for developing the phone app. It offers efficient component-based programming for the creation of lively and engaging user interfaces. After conducting a comparative analysis of alternative frameworks to justify the selection of Flutter based on factors such as performance, cross-platform compatibility, and developer productivity.

**3. User Authentication:** Integration of Firebase Authentication for user authentication purposes. Firebase Authentication provides a secure and reliable authentication system, streamlining the user login process. It has options such as, including user management, social media login integration, and authentication security measures.

**4. Backend Development:** Utilising Firebase for backend development, leveraging its cloud-based infrastructure and database management capabilities. Designing the backend architecture to store and manage user data, including login details, attendance records, and user profiles. Since it is scalable, reliable as the backend solution for the app.

**5. Database Management:** Implementing Firebase Realtime Database or Cloud Firestore for storing and retrieving user information. Defining the database schema and data structure to effectively organise and manage user data. Utilising Firebase features such as offline support, and security rules for data integrity and accessibility.

**6. Integration Testing and Validation:** Conducting comprehensive integration testing to ensure seamless communication between the frontend and backend components. Validation of user authentication, data retrieval, and database management functions to verify the correctness and reliability of the system. Address any issues or discrepancies identified during testing through debugging and refinement processes

**7. User Training and Support:** Providing user training to educate users on the characteristics of the mobile app. Offering technical assistance to address user queries effectively.

**8. Continuous Improvement:** Continuously evaluate user feedback, monitor application usage metrics, and incorporate new features and enhancements based on user needs and market trends. Adopt an iterative approach to keep up the relevance and competitiveness in the long term.

## VI. PROPOSED SYSTEM AND FLOWCHART

"Campus Connect" is a revolutionary product in the field of college administration apps, utilising cloud computing and Android app development to enhance the educational experience for both instructors and students. Our recommended solution overcomes the limitations of conventional college management systems by seamlessly integrating all of the proposed features, offering unparalleled scalability, security, and usefulness.

- **Notice Board**  
Students will be able to view details and posts regarding the current club events, seminars and meetings taking place in their department so that they can participate in activities of their interest
- **Explore/Search page**  
The Explore page will be a platform that allows the user to explore and connect with students and mentors of other departments, it will also provide an efficient way to form a Cross Functional Team if and when needed.
- **Timetable**
- This page will show the user his/her personalised time-table including events the user has enrolled for, it will also show all the subjects the user is enrolled for and send a notification to the user 15 minutes before the lecture or the event commences.
- **Profile**
- User details will be displayed here including academic details, details required for administrative purposes. The user will be allowed to update certain fields but certain admin related fields will be editable only with admin access.
- **Attendance**
- User attendance will be tracked and a record will be maintained and will also calculate cumulative attendance (percentage).
- **Grading**
- The Grading feature allows professors to enter and manage grades for students' assignments, tests, and semester exams directly within the app. This functionality streamlines the grading process, while students can view their grades and overall academic progress in real-time.

• **Chatbot**

The Chatbot feature provides users with an interactive and conversational interface to seek assistance, ask questions, and receive instant responses related to various aspects of college life.

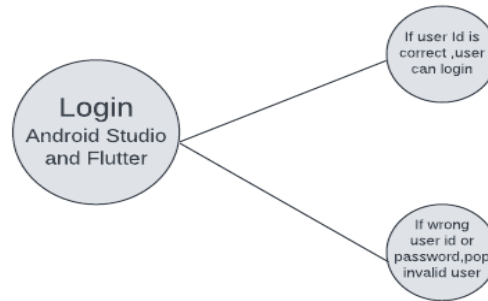


Fig 6.1 login flow

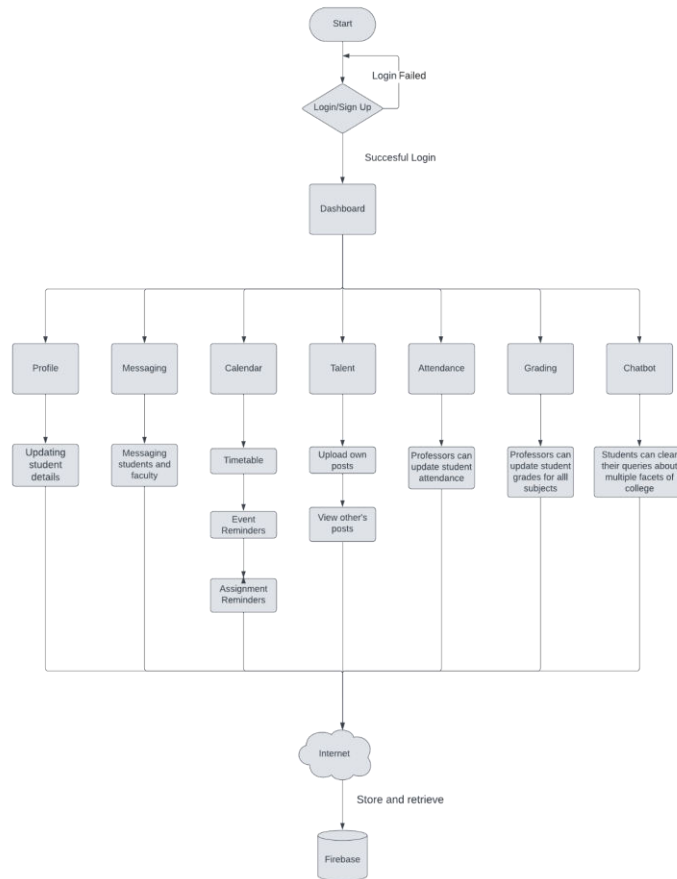


Fig 6.2 workflow of proposed system

VII. IMPLEMENTATION

A. Software Requirements

Software that is essential in our University Management System is:

- **Flutter:** Using a single codebase, developers can create stunning natively built applications for desktop, web, and mobile devices using Flutter, Google's portable UI toolkit. Flutter is free and open source software that integrates with existing code and is utilised by developers and organisations globally.
- **Firebase:** Google offers a suite of backend cloud computing services as well as platforms for developing applications. It supports many different applications, such as Android, iOS, JavaScript, Node.js, Java, Unity, PHP, and C++, and hosts databases, services, authentication, and integration for them.
- **Figma:** Figma is a collaborative web application for interface design, desktop programs for Windows and macOS provide further offline features in this collaborative online interface design tool. With the help of Figma, you may develop a wide range of content, including logos, websites, applications, and much more.
- **Android Studio:** With a full array of tools and capabilities to expedite every step of the development process, from coding to testing and deployment, Android Studio is an integrated development environment (IDE) created especially for creating Android apps.

B. Front end

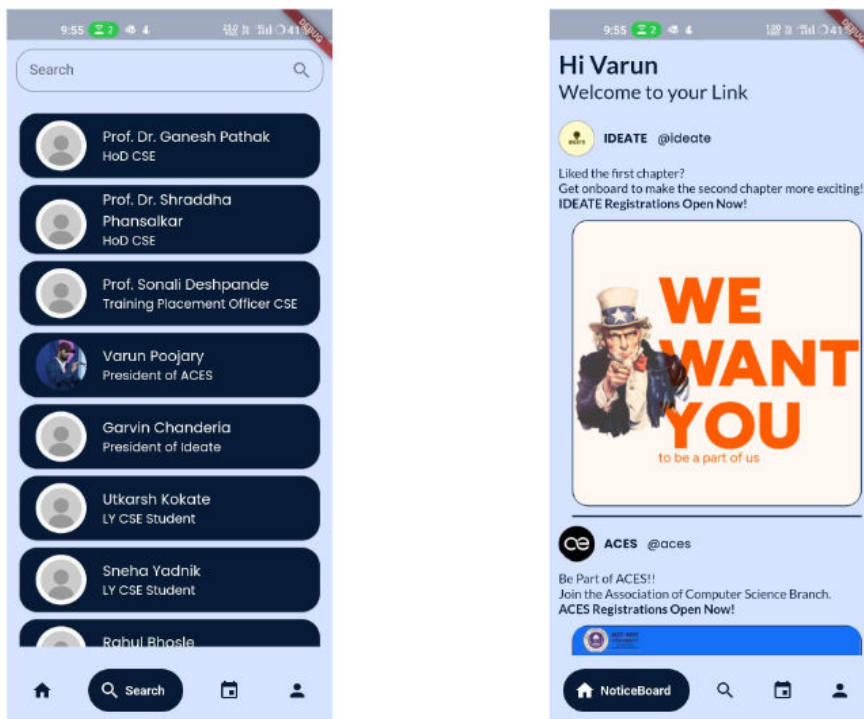


Fig 7.2.1 Notice Board and Search Screens

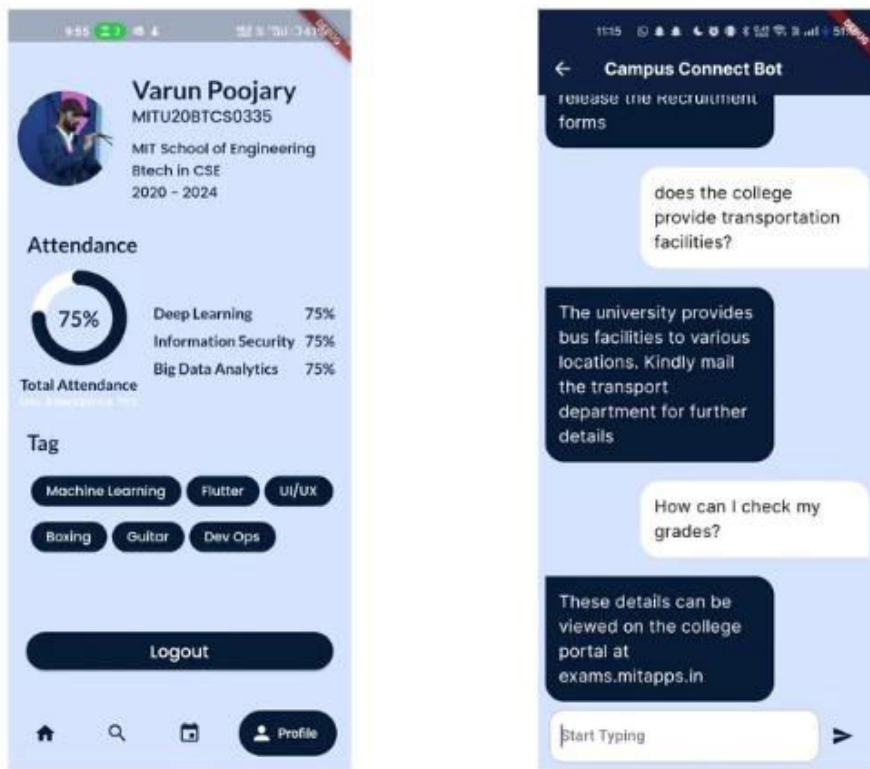


Fig 7.2.2 Profile and Chatbot Screens

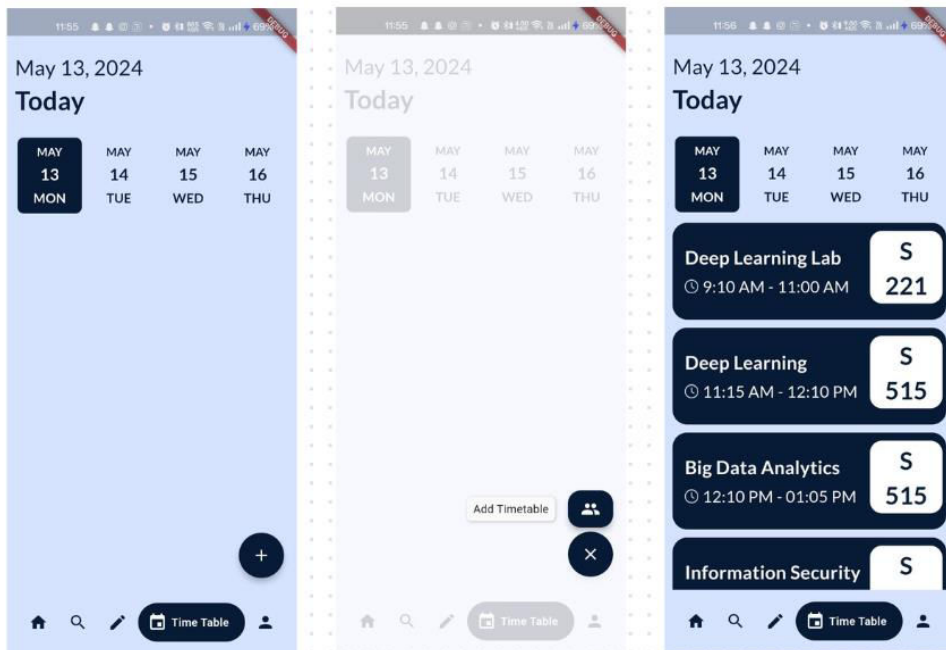


Fig 7.2.3 Timetable Screens

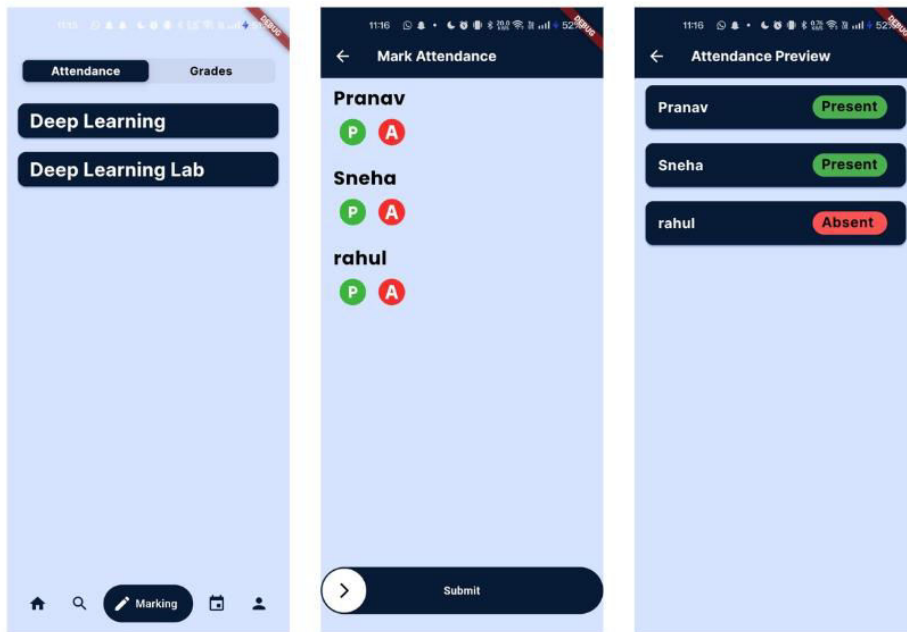


Fig 7.2.4 Attendance Marking Screens

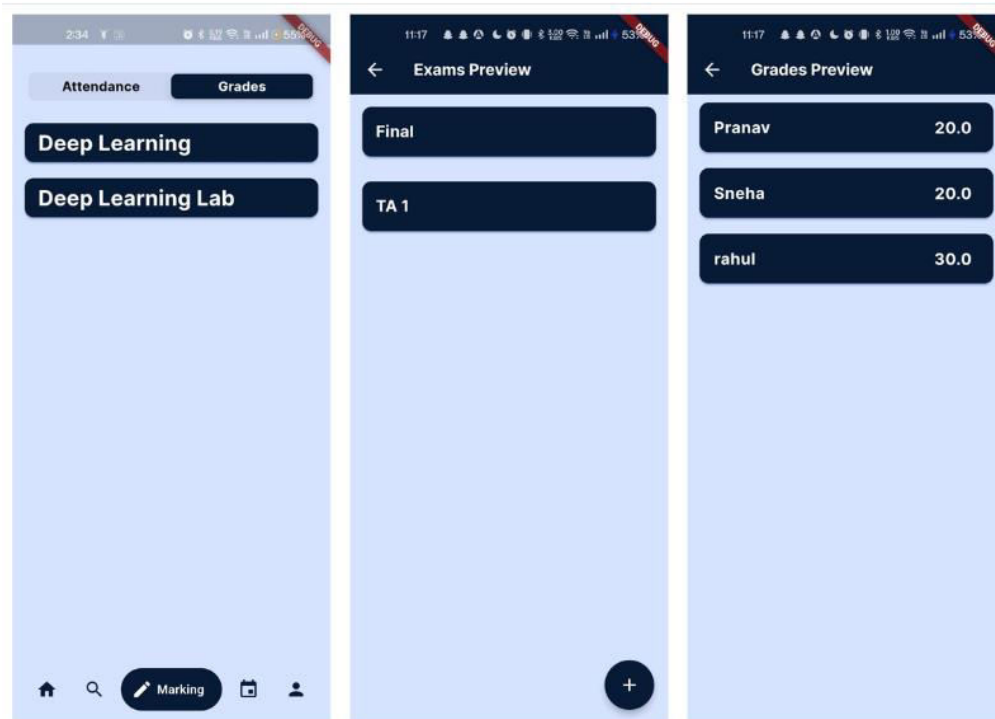


Fig 7.2.5 Grading Screens



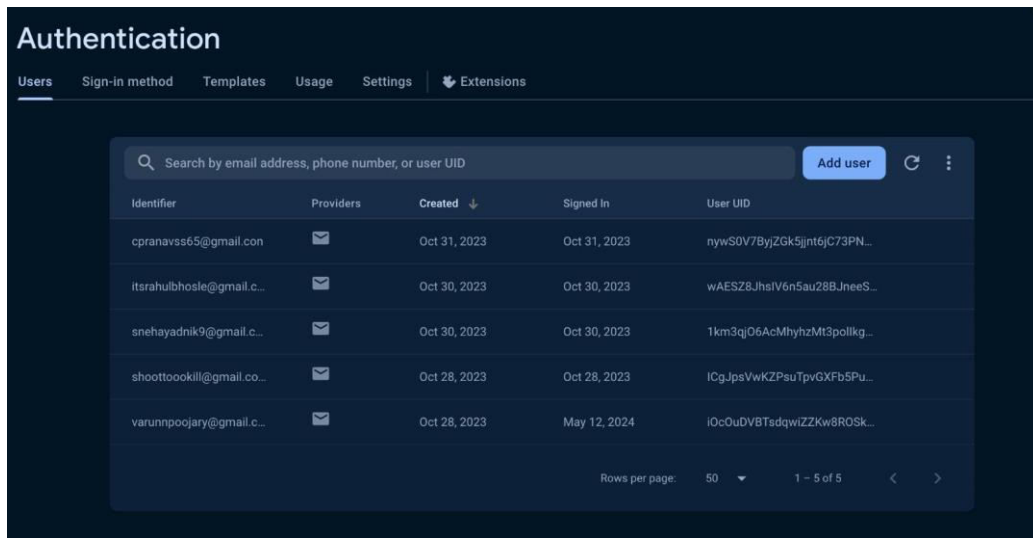


Fig 7.2.6 Firebase Authentication Database

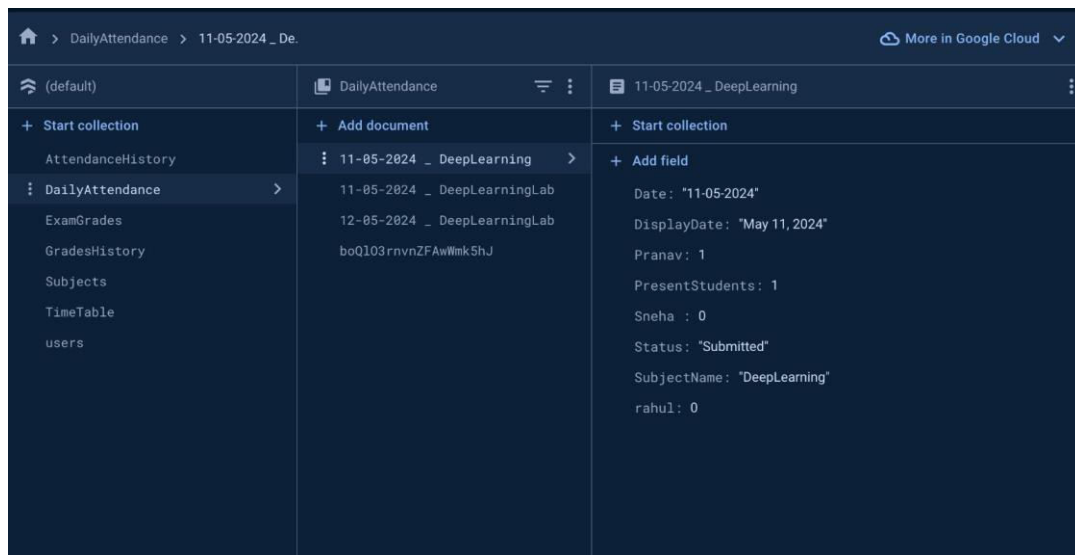


Fig 7.2.7 App Database

### VIII. RESULTS AND DISCUSSION

Campus Connect revolutionises college management through technology, seamlessly integrating into existing systems while offering insights into student progress. It streamlines administrative processes and boosts student engagement, fostering unity across departments. By providing a centralised platform for communication, collaboration, and talent display, Campus Connect nurtures a vibrant campus community. With features like clubs, events, and profile pages, students can explore interests and form connections beyond academic boundaries. Ultimately, Campus Connect optimises efficiency and productivity while creating an inclusive environment for holistic student development.

### IX. FUTURE SCOPE

The future scope of our college management project is vast, with opportunities for expansion and enhancement:

1.Feature Expansion: Continuously evolving with new functionalities like academic advising, career services, alumni networking, and integration with emerging technologies such as AI and ML.

2. IoT Integration: Exploring IoT devices and sensors for optimised campus operations, enhanced security, and improved experience, like attendance tracking and environmental management.
3. Analytics and Insights: Utilising data analytics and predictive modelling for valuable insights into student performance, campus trends, and data-driven decisions.
4. Mobile Learning: Offering mobile learning and personalised education experiences through interactive modules and digital platforms.
5. Community Engagement: Fostering collaboration among students, faculty, alumni, and stakeholders through communication, networking, and knowledge sharing.
6. Globalization Support: Enhancing international student experiences and global collaboration through multilingual support, cultural features, and tailored collaboration tools.

## X. CONCLUSION

In conclusion, our college app offers an innovative solution for new university students, utilising AI and natural language processing in a chatbot to provide prompt and accurate responses to various inquiries about academics, campus life, and services. Through extensive research, we've identified common student concerns and demonstrated how a well-designed app can effectively address these queries. By improving accessibility and user experience, the app not only assists students in finding information but also promotes engagement with the university community. As universities prioritize digital innovation, investing in such a robust app enhances the overall student experience and facilitates a smooth transition to university life.

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