

VishwaHub: Chatting App

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Abstract

VishwaHub is a ground-breaking mobile application designed specifically for college students in a digitally connected age. It breaks down traditional barriers to education and fosters a dynamic, collaborative learning environment. VishwaHub is a learning revolution platform that focuses on solving the basic problems faced by college students. VishwaHub is a multifunctional platform that facilitates effective communication, doubt resolution, and collaborative learning among students. It does this by smoothly integrating real-time talking, doubt-sharing, and collaborative problem-solving functionalities. Furthermore, by providing tools and functionalities, VishwaHub functions as an incubator for both personal and educational growth. Students can broaden their views and follow their dreams by taking guidance through VishwaHub, which offers a comprehensive platform for everything from academic talks to industry experiences sharing and internship information. Through the utilization of modern technologies like Firebase for authentication and real-time data storage, VishwaHub guarantees its user's privacy and trustworthiness. VishwaHub enhances college students' entire learning experience by helping them develop a sense of social connection and inclusion.

Keywords: Mobile development, android studio, java, firebase, VishwaHub

INTRODUCTION

There is a rapid evolution in digital platforms and they are inculcated into our lives. We use applications on a daily basis for various purposes, from grocery shopping to education, many of our works are done on the digital platforms [1]. Application development marks a very significant position in the spectrum of services available for it and to be provided through it. One of the most significant uses of the application is, chatting. Being able to chat with another person on another device on a social platform allows a personal one-to-one individual platform. It provides privacy and security and a nice alternative platform for situations where calls are not an option.

This is provided by VishwaHub, an application made for VIT students for better communication with each other and have a safe digital platform to ask doubts over academics, college activities, further studies, as well as internships; and also to connect and find mentors and guides [2].

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LITERATURE REVIEW

The article 'Development of mobile application through design-based research' written by Jayatilleke *et al.* in Asian Association of Open Universities Journal, concentrates on mobile applications in which design-centered methods of study are used [3]. By going through the agile logic loops of this model, as mentioned by Cowling and Birt, enables the process of consistent reflection and polishing of the design which finally turns into a successful mobile device [4]. What assessment shows is that it is going to be a time-consuming

process with high production costs and technical problems arising as well as the need for support structures. In the article in the journal titled "Study of Mobile App Development Industry" by Syeed *et al.* in the International Journal of Scientific Research in Computer Science Engineering and Information Technology, the authors briefly introduce mobile applications using implications in the digital arena [5]. It introduces us in a brief way to this IT industry along with the conditions that surround this industry in India. Further, SWOC analysis helps us to see the app development, as well as development in India against other countries.

Kotlin assigns an important role and it justifies various functions in the novel including relevance and emotion of reading. The authors of the article "Effectiveness of Kotlin vs. Java in android app development tasks" Ardito *et al.* give a brief but needful comparison of languages Kotlin and Java considering their variation, and implementation, among others in the reference of android studio [6].

Following this, 'Evolution of Mobile Applications' from MATEC Web of Conferences written by Phongtraychack and Dolgaya, which are in the essence of what one may consider as software and the services that it can provide along with the development software and also the advantages and disadvantages that the software may create [7]. Both of these studies are complemented by a case study from this city, which is the largest global mobile market.

The paper titled "Research on Development of Android Applications" published in the National Conference on Recent Trends in Computer Science and Information Technology by Sasankar and Kosarkar introduces the android platform, features of Android apps, and analysis of the Android apps framework with a developer's Android view [8]. A minimal demo of a music player is used to depict the routine process each of these app components carries out. This document describes in full detail the two mechanisms of android apps and the process of developing the Android platform and the development process of apps. Therefore, this acts as a reference for understanding the whole process.

This article "Android Application Development using Android Studio and PHP Framework" which was published by the International Journal of Computer Applications and was prepared by Singh *et al.*, discusses no scenarios where the hardware is more influential than the software development [9]. Its concentration is on Android which is based on the open-source Linux 2.6 and can be considered an application platform. This shows that Java can be used to build Android apps and it has a collection of APIs and Android Studio is the platform for building them. Thus finally, in addition to that, the similarity of the paper will examine known information in mobile app platforms that are effective and reliable in giving users an experience on the latest hardware.

"A Study on Android Application Development", written by Kapse *et al.* and published by IJSR in ST has concentrated on Android as a mobile OS by Google and its open-source nature as well as an integrated development model for touch screen devices [10]. The Android open-source project informs of public access to code and a large community of developers. A lot of people decide to go with Android due to its flexibility where applications can be transferred from one of the many kinds of devices to another without losing any data. The Android Development Studio IDE is being emphasized in this paper for its simplicity just like in the previous papers. This is to show the process of development in which it is accessible to developers. To come to the end, the authors admit the attractiveness of mobile app development since it is the opportunity to bring the result to life: you are coding and so this is a powerful motivational engine as well as a good reward.

In the Application of Firebase in Android Development paper dubbed "Application of firebase in android app development-a study" and written by Khawas and Shah, the authors examine how Firebase can be integrated with Android apps [11]. It explains what the database on Firebase is used for and what are the reasons to consider it as a better choice than other available alternatives with the help of the comparison table.

The article “A study and overview of the mobile app development industry” by Thomas and Devi investigates how the development of the mobile app has changed the software industry, especially in India [12]. It mentions the key expansion of the sector of health and technological devices and attributes the bulk utility of the devices to the phone's wide availability. The topic is examined through a holistic process of SWOC analysis by use of academic resource materials and secondary data sources that present a business sector that has a high potential and is resilient. While mobile app development is essential in a world that is dominated by pandemics, it is a very incredible field that industries must have. The study is different from others because it does not only analyze the industry (from various points of view) but also tells two stories: how the industry is performing now and what could be possible in the future if the current approach is changed.

This paper titled “Developing Useful Mobile Applications in Cross-Media Platforms” by Hermansson *et al.* shoulders the project regarding 'The Time Machine' as the prism through which meaning found in the development of mobile applications can be inferred [13]. These are the findings of the research that encompasses literature review, expert evaluation, and user assessment. It provides a point that is of great value: please provide the issue, come up with an imaginative idea, and convince the users of the usefulness of the app. Features like user affinity, horizontal connectivity between platforms, and user-friendly interface design are the pillars that can make up a strong mobile application. The smartphone software development emphasizes that technological advancements, the right design, and building a cross-platform, in general, are the main success factors and the reason that users may adopt it quickly.

METHODOLOGY

In our study, we have developed a messaging app, for VIT Pune that is specifically designed for .edu email addresses. We have taken a campus-focused approach to shape our methodology [14]. To begin with we conducted an assessment within the VIT Pune community actively involving students, faculty and staff to understand how they communicate with each other. This initial phase was inspired by studies conducted in environments and aimed to uncover not only the challenges they face but also their specific preferences in communication. This formed the basis for customizing our app [15]. To ensure that our app meets the requirements of VIT Pune we collaborated closely with students and took their feedbacks, and what problems they are facing. Our focus was on creating features that streamline updates, improve communication about campus events, and cater to department announcements [16]. The goal was to develop a messaging app that truly caters to the needs of our community.

The app is created using Android Studio taking advantage of the features offered by the Android platform to provide an optimized user experience. We have integrated Google Firebase for storage purposes as it is known for its reliability and scalability, in storing and retrieving data. Moreover, to enhance the user experience and ensure handling of multimedia content, we have incorporated the Picasso library for image downloading and caching [17].

In summary the methodology encompasses an approach specifically designed to meet the communication requirements of VIT Pune students. By integrating the Picasso library for downloading and caching images, the apps functionalities are enhanced, ensuring an immersive user experience, on the academic and campus-oriented messaging platform. Moreover, by implementing a 7-digit password during the sign-in process, an extra level of security is added to uphold our commitment, in safeguarding user account privacy and confidentiality [18].

Tools Used

Android Studio: Android Studio is a powerful IDE developed by Google specifically for Android app development. It provides a comprehensive set of tools and features to streamline the entire app development process. Android Studio comes with a sophisticated code editor that supports Java, Kotlin, and XML. It offers features like syntax highlighting, code completion, and code refactoring to enhance

productivity and code quality. VishwaHub app is built using the Java programming language, known for its versatility and robustness in Android development.

User Interface Design: Android Studio's visual editor is used to design the app's user interface, making it intuitive and visually appealing for VIT Pune students. Users can easily navigate through the app's features, including connecting with seniors and accessing helpful resources.

Authentication with VIT Email: Students can securely log in using their VIT Pune email address and password, ensuring the privacy and security of user data.

Realtime Database: Firebase Realtime Database is used to store and sync data relevant to student problems and connections with seniors. This includes features such as discussion forums, Q&A sections, and peer-to-peer mentoring.

Cloud Messaging: Push notifications are sent to students to notify them of new discussions, responses from seniors, or upcoming events within the app.

Testing and Deployment: The app is thoroughly tested on various devices and screen sizes using Android Studio's testing tools to ensure compatibility and usability.

By focusing on addressing common student problems and facilitating connections with seniors, the app aims to provide valuable support and guidance to VIT Pune students throughout their academic journey.

APPLICATIONS AND DISCUSSION

The VishwaHub Chatting app is specifically crafted for the educational sector, catering predominantly to students who seek a reliable and effective platform for communication. It serves as a multifunctional hub where students can resolve academic doubts, seek guidance from peers and instructors, and share information about campus events and other relevant activities [19]. This tailored focus makes it an integral tool for enhancing student engagement and collaboration within the educational environment.

One of the standout features of VishwaHub is its commitment to security. Access to the app is restricted to verified individuals who possess an email ID ending with '@vit.edu'. This verification process ensures that all interactions within the app are confined to students, faculty, and staff of the institution, thereby maintaining a secure and closed community. This exclusivity adds a significant layer of trust and reliability, as users can be confident that they are communicating within a safe and controlled environment [20].

The app leverages Firebase, a powerful platform known for its robust authentication systems and scalable data storage solutions. By utilizing Firebase for both authentication and storage of user details, including email IDs, photos, statuses, and names, VishwaHub aligns with best practices for secure data management. Firebase not only offers comprehensive security features such as SSL encryption and compliance with privacy standards but also provides real-time data syncing across all user devices, enhancing the user experience by ensuring that data is always current and accessible [21].

The design and user interface of VishwaHub are intentionally straightforward and user-friendly, acknowledging the specific needs of its educational user base. The interface is designed to facilitate easy navigation, allowing students to seamlessly move between different features such as chatting, event notifications, and academic forums. The intuitive layout minimizes the learning curve and encourages even those less familiar with digital technologies to engage confidently with the app. This accessibility is crucial in educational settings, where the primary goal is to encourage widespread participation and ensure that technology enhances the learning experience rather than becoming a barrier [22].

Need of a Social Communication App

Community Engagement

College life is not just about attending classes; it is also about being part of a community. VishwaHub provides a digital platform for students and alumni to engage with each other, fostering a sense of belonging and community spirit [23].

Information Sharing

Important announcements, event updates, academic resources, and extracurricular activities can all be disseminated efficiently through the app. It serves as a centralized hub for sharing information relevant to the college community [24].

Networking Opportunities

Connecting with alumni can provide current students with valuable insights, mentorship, internship opportunities, and potential career paths. VishwaHub facilitates networking among students and alumni, enhancing professional development opportunities [25].

Collaborative Learning

The app can be used to facilitate peer-to-peer learning and collaboration. Students can form study groups, share study materials, and discuss academic topics, thereby enriching their learning experience [26].

Alumni Engagement

Maintaining a strong connection with alumni is beneficial for both the college and its graduates. Alumni can contribute back to their *alma mater* through various means such as guest lectures, career guidance, and donations. VishwaHub serves as a platform for alumni engagement, allowing them to stay connected with their *alma mater* and contribute to its growth [27].

Event Management

Organizing and managing events within the college community becomes more streamlined with VishwaHub. Students can RSVP for events, access event schedules, and receive updates and reminders, ensuring better attendance and participation [28].

Feedback Mechanism

The app can serve as a channel for students to provide feedback on various aspects of college life, including courses, facilities, and campus events. This feedback loop can help the college administration in making informed decisions and improvements [29].

Enhanced Communication

Traditional communication methods such as emails and noticeboards may not always be effective or accessible to all students. VishwaHub provides a modern and interactive communication channel that is more engaging and accessible to the college community [30].

Flow Chart

1. *Flow chart of development process of Vishwahub*: The development process of Vishwahub involves a systematic flow: Idea Generation → Requirements Gathering → Design Phase → Prototype Development → App Development → Testing Phase → Maintenance and update to ensure a robust and user-friendly platform, as shown in Figure 1 [31].
2. *Flow chart for user interface of Vishwahub*: A flowchart for the Vishwahub user interface visually outlines the user journey, starting from login/registration to accessing features like dashboard navigation, content uploads, and support services. It ensures a seamless, intuitive experience with clearly defined pathways for user interactions, as shown in Figure 2 [32].

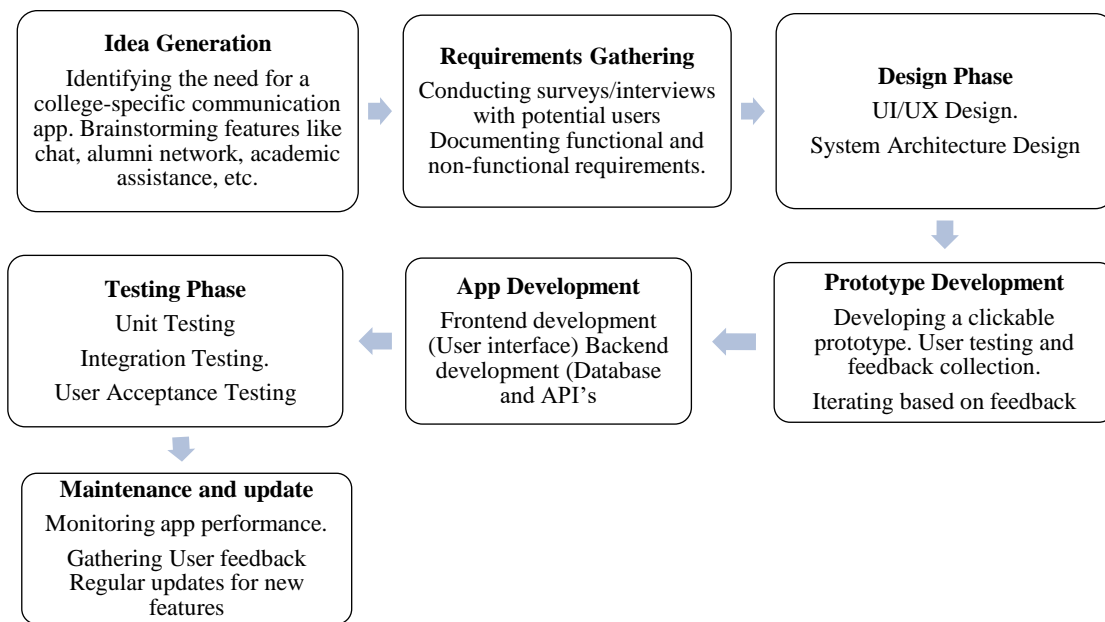


Figure 1. VishwaHub involves a systematic flowchart.

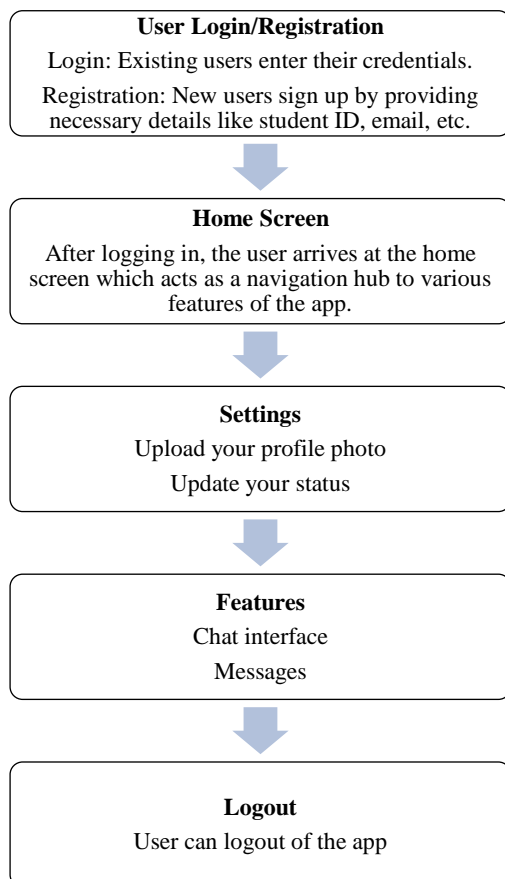


Figure 2. VishwaHub user interface.

RESULT

The development process of VishwaHub begins with idea generation and planning, followed by design, development, testing, and deployment, ensuring a user-friendly platform. Feedback and iterations help refine and enhance the system, as shown in Figures 3–6 [33–35].



Figure 3. Login Page.

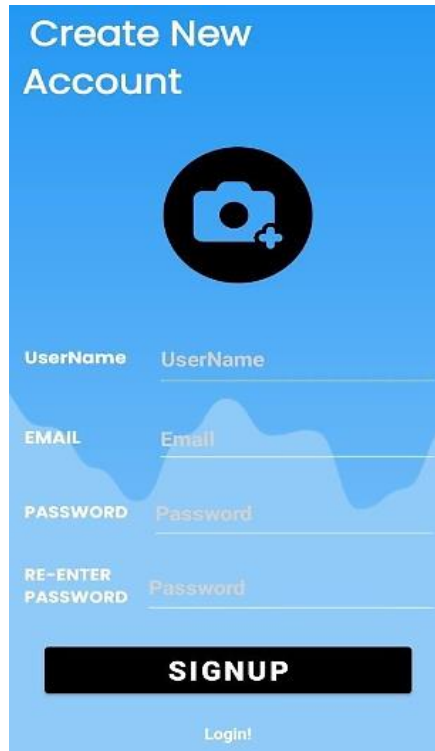


Figure 4. Home Screen.



Figure 5. Setting.



Figure 6. Chat Window.

CONCLUSION

In summary, VishwaHub marks a significant milestone in the advancement of educational technologies, specifically tailored to meet the unique needs of college students. By harnessing the formidable capabilities of digital connectivity, VishwaHub effectively breaks down the conventional barriers to learning, facilitating a vibrant and cooperative educational atmosphere. Its suite of innovative features, including real-time communication, a platform for sharing and resolving academic inquiries, and tools for collaborative problem-solving, directly addresses the fundamental challenges that impede student success, such as the need for efficient information flow and effective collaborative learning opportunities.

As we navigate through the evolving landscape of digital education, platforms like VishwaHub are instrumental in enriching the student learning experience, offering tools that empower students to thrive in an increasingly networked global environment. VishwaHub not only enhances everyday learning interactions but also integrates cutting-edge technology to streamline educational processes and foster academic excellence.

Looking to the future, it is clear that ongoing research and development in educational technology will continue to redefine the contours of higher education. As such, VishwaHub is poised at the forefront of this transformative wave, paving the path for innovative educational practices and setting new benchmarks in student engagement and academic performance. The continued enhancement and expansion of VishwaHub will undoubtedly inspire further innovations in educational technology, catalyzing significant improvements in how education is delivered and experienced worldwide. This commitment to continual improvement and adaptation is essential as we strive to meet the evolving demands of the educational sector and ensure that students not only keep pace with the changing world but are also equipped to lead it.

Future Scope

The VishwaHub adoption plan at VIT involves targeted awareness campaigns, onboarding sessions, and system integration efforts. Strengthened security measures will safeguard user privacy, while integration with event management systems will enhance communication about campus activities. A feedback mechanism will be established to gather input for continuous improvements, ensuring relevance and usability. Surveys and user forums will be implemented to collect feedback tailored to the VIT community's needs. Regular updates and enhancements will be driven by user input, fostering ongoing adaptation and improvement.

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