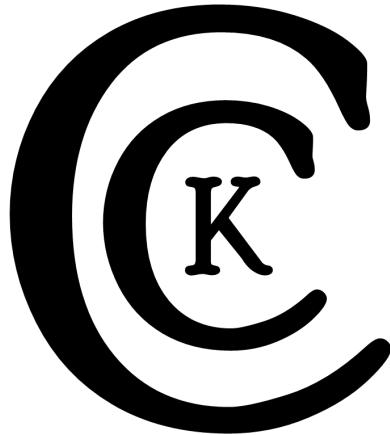


CSE - 2216: Application Development Lab

App name:
CSEDU Campus Kin

Team name:
Final Masquerade



Submitted by
**Meherun
Farzana** **Himel Chandra
Roy** **Aniket Joarder**
Roll no - 05 Roll no - 13 Roll no - 48

**Second Year
Batch - 27**

**Department of Computer Science & Engineering
University of Dhaka**

Submission date:
Nov 06, 2023

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1. Introduction

1.1 About The App

This app, “CSEDU Campus Kin” is a social platform to connect all the current students along with the alumni of the Department of Computer Science and Engineering, University of Dhaka.

1.2 Motivation

From the very beginning of our journey with CSEDU, we found that there is no general platform for the students of the department where we can be connected, share our thoughts, fields of interest on study and research or industry jobs, and express our necessities within our department even if there are many social networking apps like Facebook, Twitter, Instagram, etc. where people coming from the same department can be brought together. Because the existing social media apps are distracting; also they do not provide some necessary features that could help us socio-academically.

While thinking about this app, we found that other apps lack in enhancing the student experience, have very poor alumni engagement systems, and have very little opportunity to build strong networks with the people of the same department. Moreover, the existing apps mentioned above cannot help to find the most suitable person to work with our department-related task easily, which is one of the prime features included here.

1.3 Features

The app named “CSEDU Campus Kin” is mainly designed to be a comprehensive platform that brings together past and present students of our department. It offers a range of features to facilitate networking, collaboration, and communication. The main features of this app include:

- **Registration to the app:** It is strictly limited to the students of the students of our department. We tried to ensure that no one outside the department could register here. To do that, we used the existing student registration numbers in a database and checked if there was any ID already created for that registration number.
- **Profile of the students:** To use this application, one has to create an account first. The profile of that person includes some information about them. We added the working place, fields of interest, preferred working environment, LinkedIn profile link, bio, phone number, etc. information in the user profile.
- **Kins (Followings and Followers):** Whenever a person creates an account, they can follow other people already registered to the application. We call them Kins. They can see each other's profiles and posts, chat between themselves, and make audio or video calls.
- **Posts and Photos:** We added an environment for posting thoughts, job details, and photos to the profile. People can like and comment on other's posts according to necessity.
- **Review on Universities, Companies, and People:** We often want some reviews about some companies before joining there or applying for higher studies abroad. There is a feature of university and company review here. People who have already experienced working with a certain

company or studied in at a certain university can write reviews in this app. This review section is kept anonymous so that one can give honest reviews.

- **Chatting:** This is one of the most used features of this app. Two people can chat with each other here. Each message can be distinguished by already seen or unseen by the opposite person.
- **Voice Call and Video Call:** There are wonderful interfaces with various features for voice call and video calls between two people.
- **Notification:** Notification helps us to be reminded about important events. When someone sends a message or likes or comments on our posts, a push notification is sent to our device to remind us about those events. There is a notification page where we can see all the notifications all together and access to related posts from there.

1.4 Tools, Technologies, and Frameworks Used

Framework	Android - Java (JDK - 17)
UI/UX Design	Java XML
Database	Firebase Firestore & Realtime Database, Fireauth and messaging service
APIs	Zegocloud API, Picasso, OkHttp, Socialview
IDE	Android Studio
Code Language	Java

1.5 Individual Responsibilities

This whole project is a result of great teamwork. So, everyone has more or less contributed to each part of the project. Yet, all of us had some major contributions in some areas than others. Here is a summary of it:

Meherun Farzana

- UI/UX Updated Design
- Searching users (The search bar implemented here can search by up to seven different fields)
- Searching reviews (multifield search)
- Chatting, chat time, voice calls, video calls
- Anonymous Review
- Notification Page and Push Notifications for messages, likes and comments
- Profile page (Creation and Updating)

Himel Chandra Roy

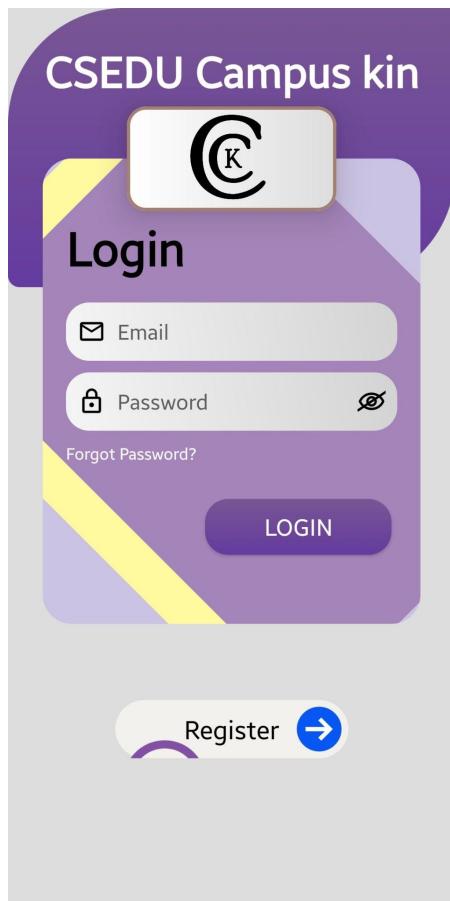
- Options page
- Firebase user authentication
- User profile data storing and editing
- Save post
- Shifting posts to profile
- Firebase data validation system

Aniket Joarder

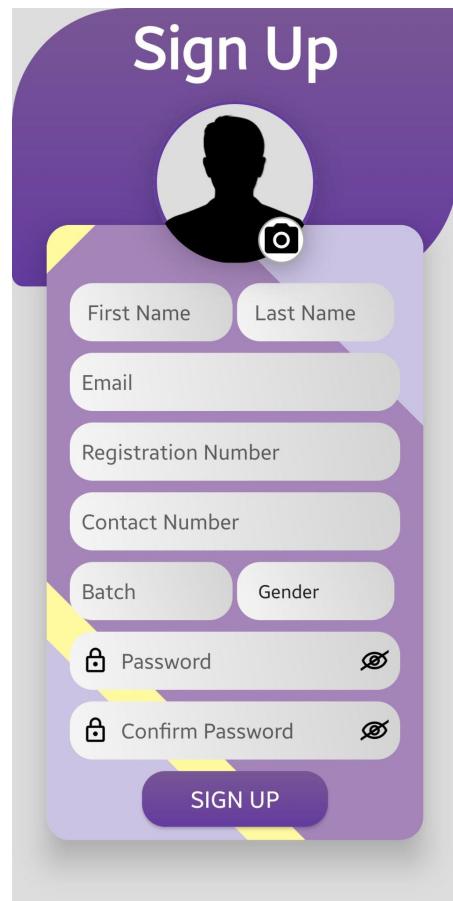
- Mail verification
- UI/UX basic design
- Kins feature implementation
- Forgot password implementation
- Connecting database to the application
- Homepage system (creating, editing and deleting posts, likes, comments)
- Log out

2. Design and Implementation

2.1 UI Development



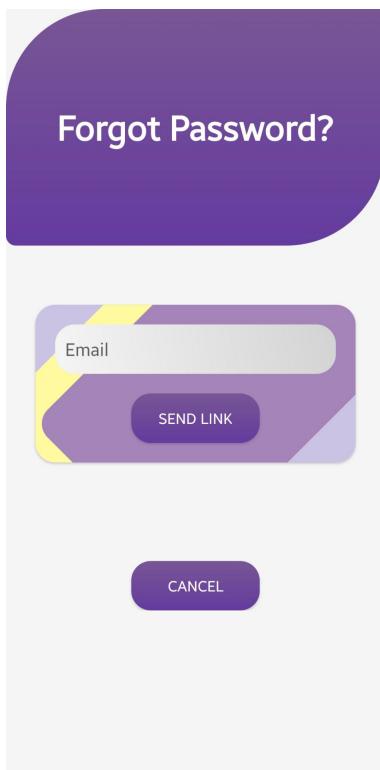
Login Page



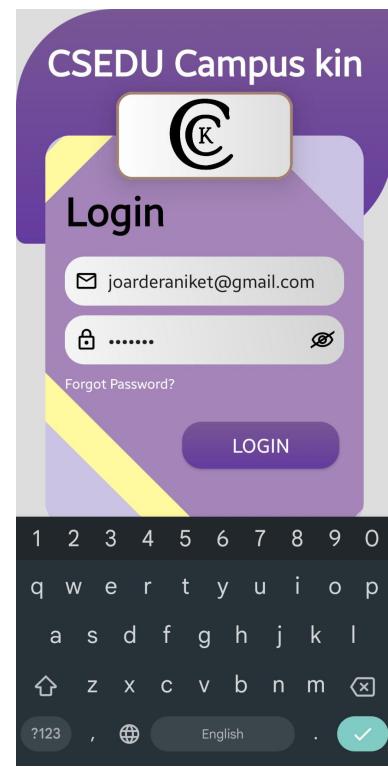
Sign Up page

This is the initial page of the app. Anyone with an existing account may log in to their account from here. Some other options are also introduced here for recovering forgotten account passwords and registering into this app by signing up.

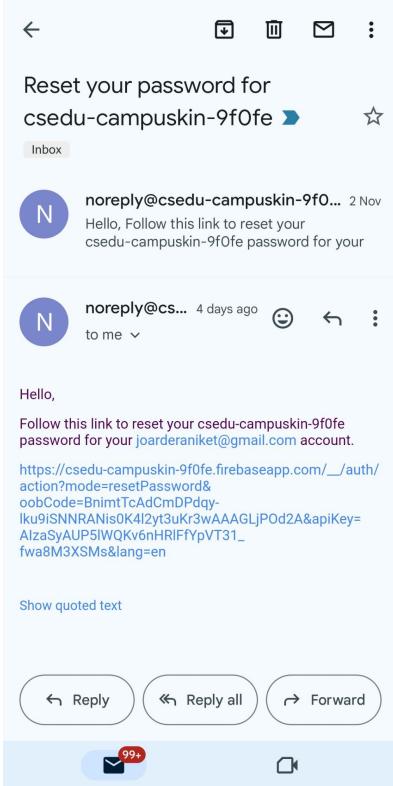
This page is for creating a new account for this app. One can submit their information here and thus create an account.



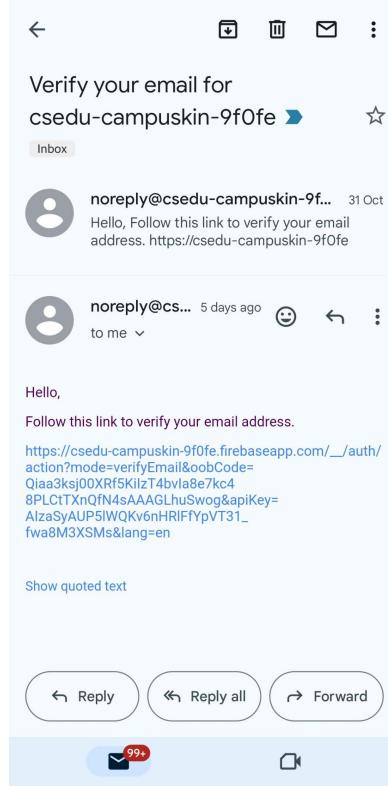
Forgot Password Page



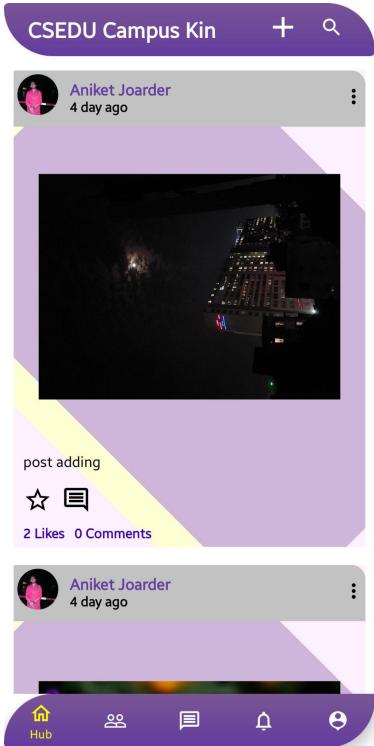
Logging in with email and password



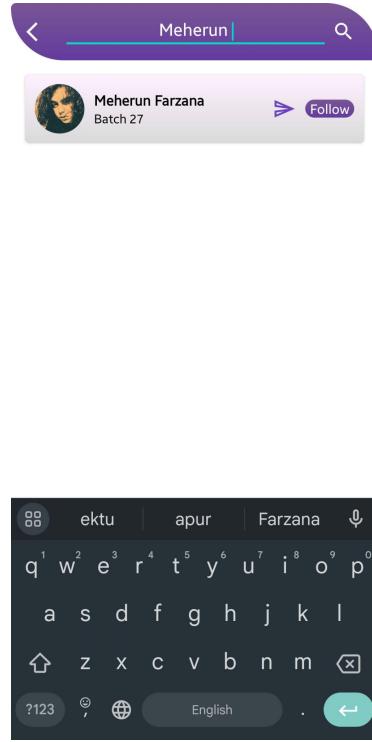
Forgot password mail



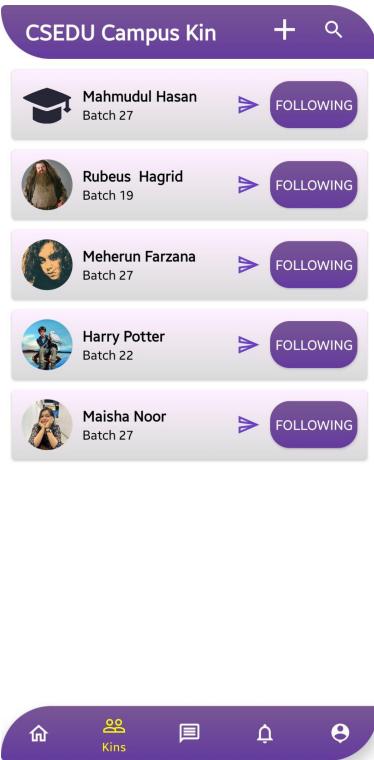
Account verification mail



Homepage
(Meherun Farzana is not followed)



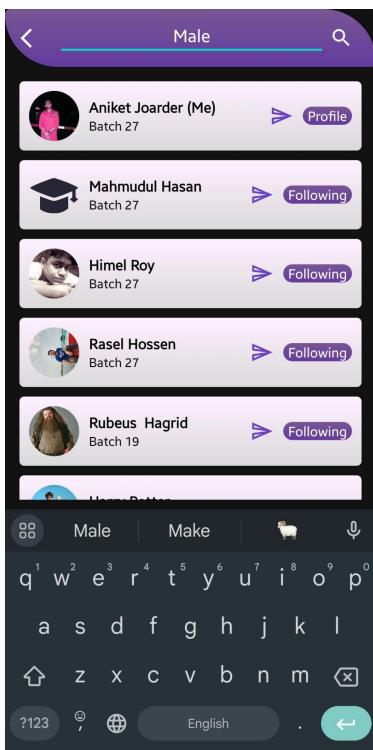
Finding Kins Page
(Searching For Meherun Farzana by Name)



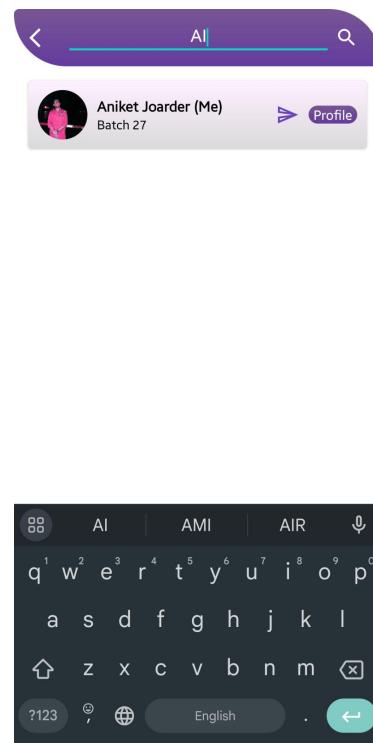
(After following Meherun Farzana)
The list of people the user follows



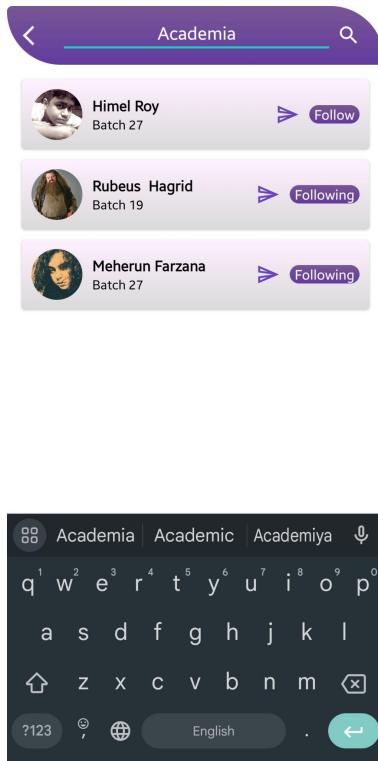
Meherun Farzana's Post is now on
Homepage



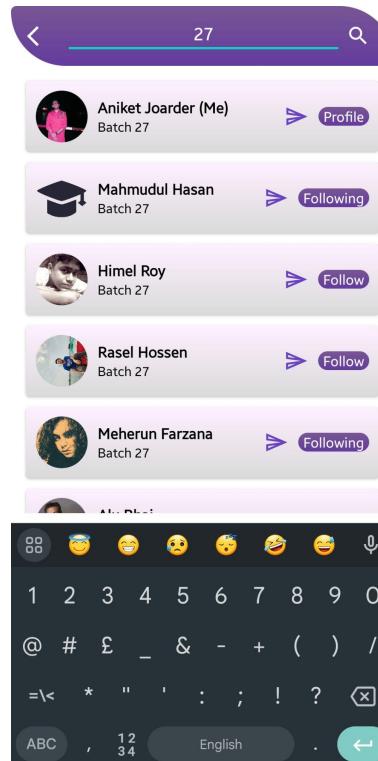
Search by Gender



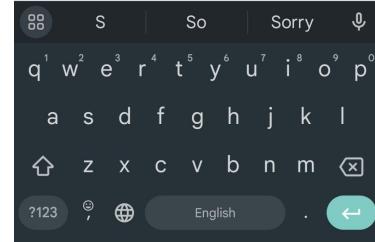
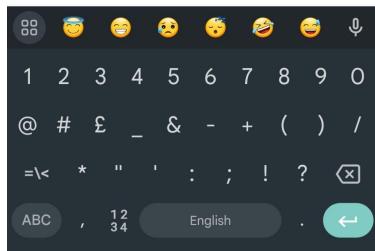
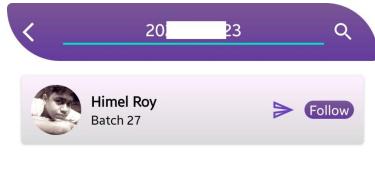
Searching by Field of Interest



Searching by Preferred Environment



Searching by Batch number



Searching by Registration number

Searching by workplace



Creating a Post

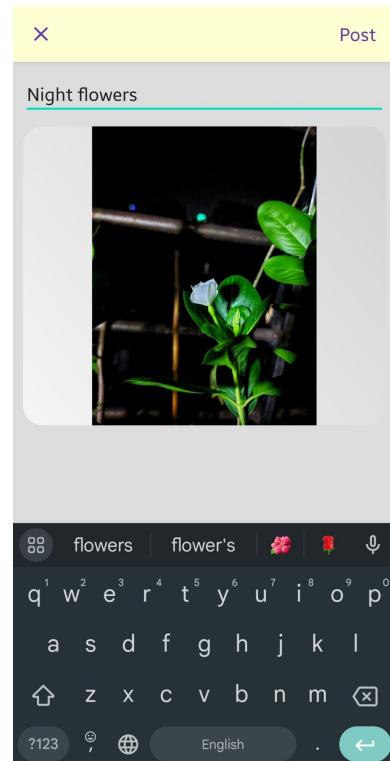
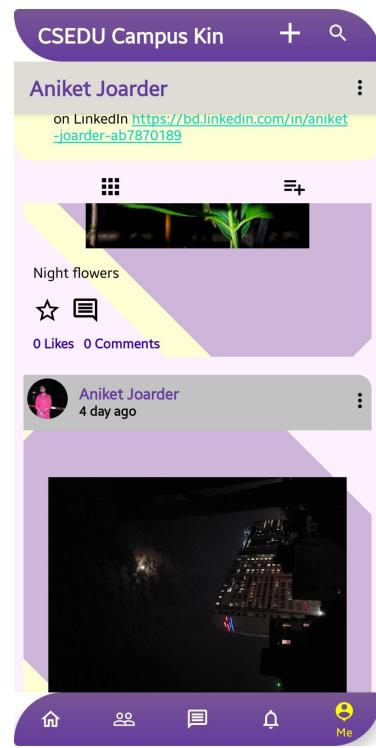


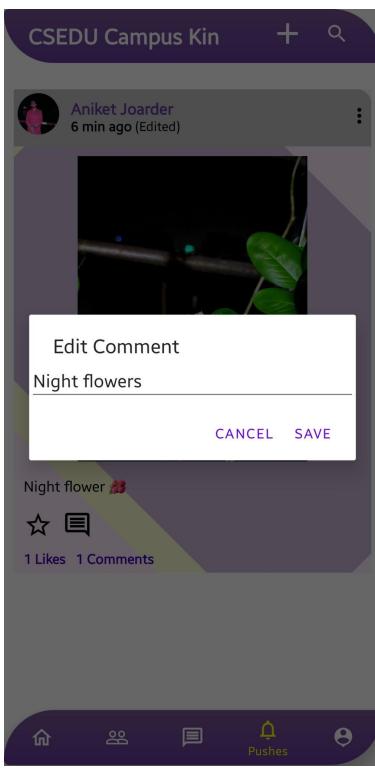
Photo post



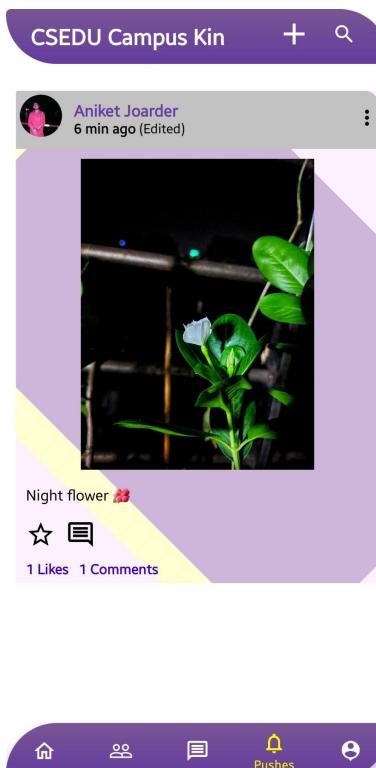
The photo post



The post in profile



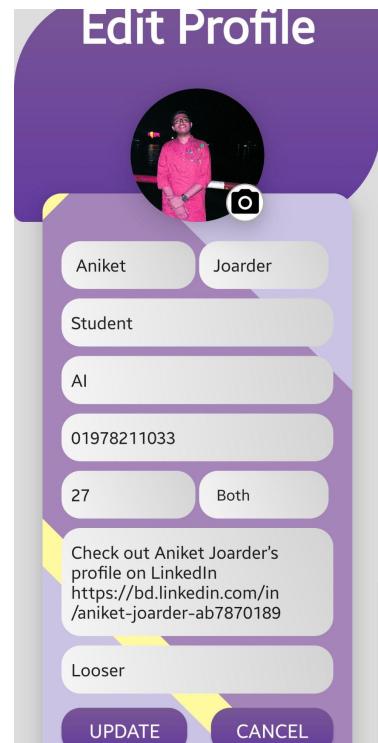
Post Editing



Post after editing



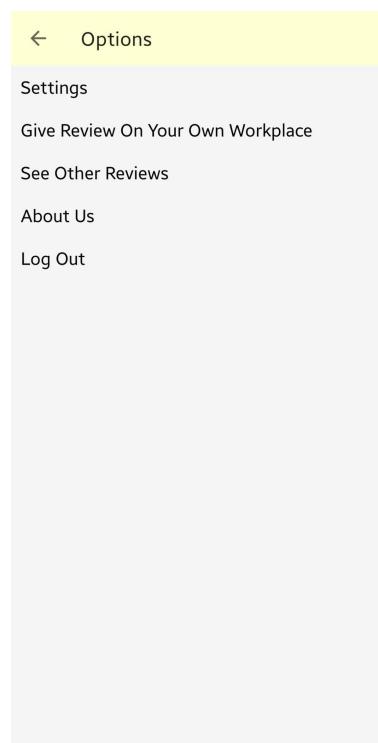
Own Profile



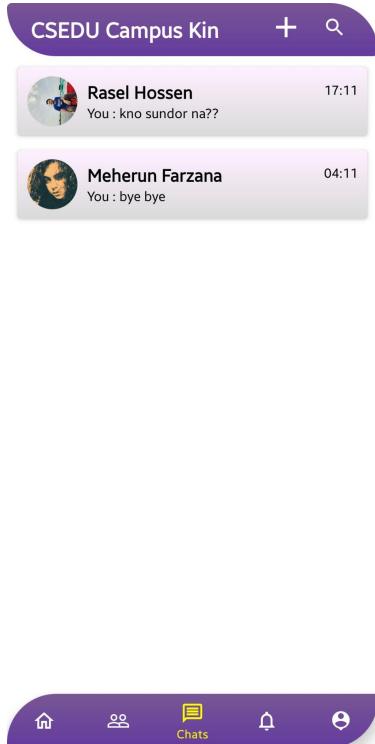
Editing Profile



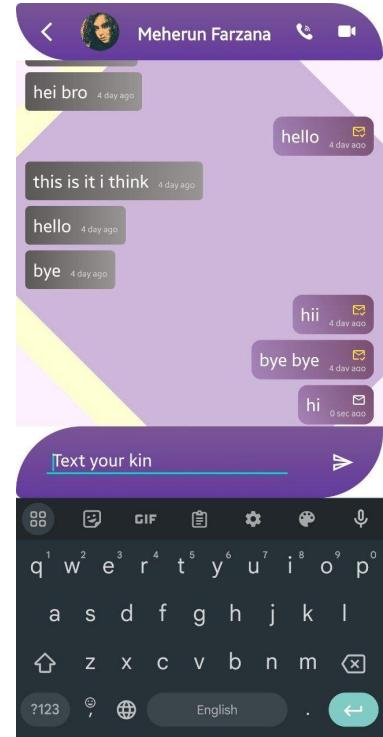
Developers' Information



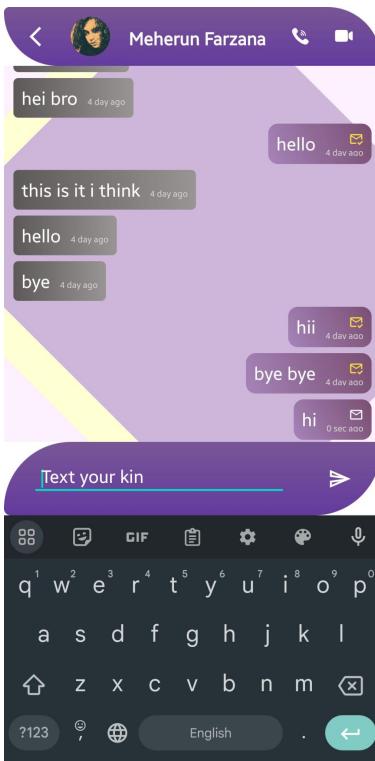
Options



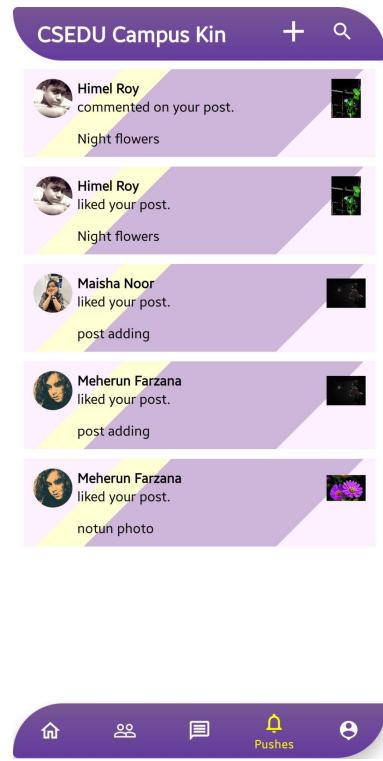
Chatbox with Recent Chats



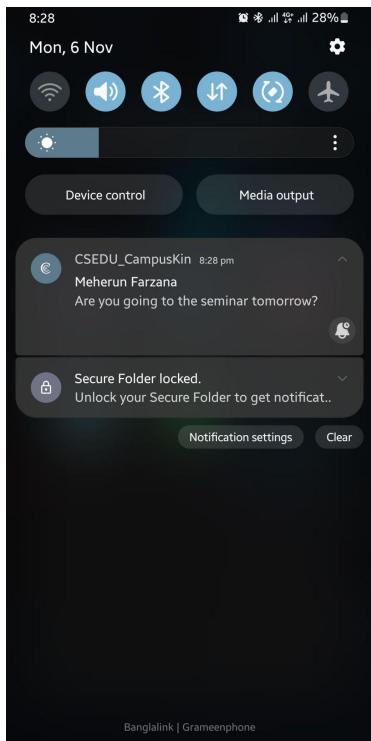
Chat (White box indicates unread message, yellow box with tick indicates read messages)



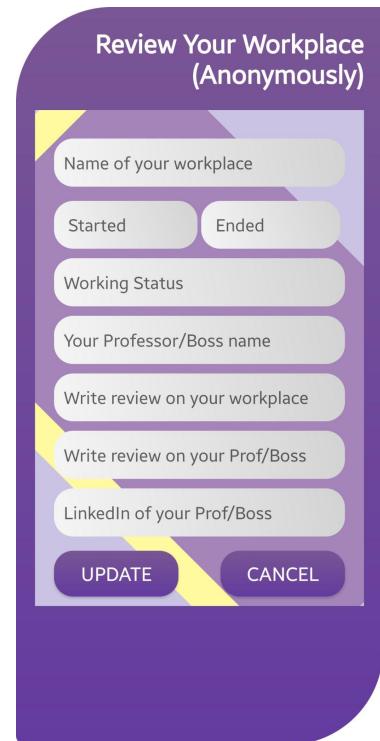
Chatting with Kins



Notifications (Pushes)



Push notification in the notification panel of the user's phone



Reviewing the workplace (Anonymously)

Work Place : CSEDU

Professor/Boss : Md Fahim Arefin

Review on workplace : A good place to study

Review on Prof/Boss : Best teacher on development

LinkedIn : <https://bd.linkedin.com/in/fahim6119>

About reviewer :
Worked as : Student
Worked from : 2023-11-01
Worked to : ending date

Work Place : CSEDU

Professor/Boss : Md Fahim Arefin

Review on workplace : A great place to study in CS

Review on Prof/Boss : A great Teacher of development

LinkedIn : <https://www.linkedin.com/in/fahim6119/>

About reviewer :
Worked as : Student
Worked from : 2023-11-02
Worked to : ending date

Searching reviews (by workplace or people)

Aniket Joarder

Industry: Looser

My LinkedIn : Check out Aniket Joarder's profile on LinkedIn <https://bd.linkedin.com/in/aniket-joarder-ab7870189>

Rubeus Hagrid 4 day ago

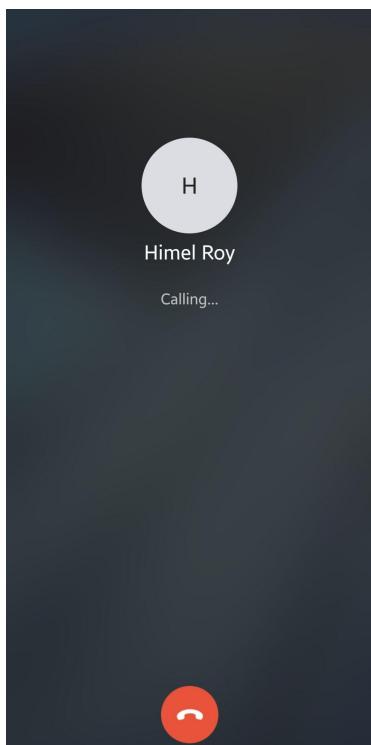
One of my colleague is seeking for a person for a job of "Meningitis Computing".

Job description:
Post: Meningitis Computer Engineer
Academic qualification: A degree on Meningitis disease and CS (non-Engineering degree preferred)
Salary: Negotiable
Company name & Location: Complex Computing Internationals, Long Island, Buriganga

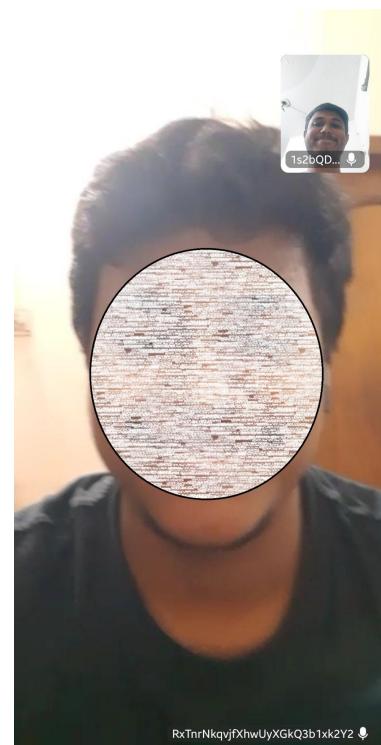
For detailed information:
pinocchio1122@hrm.cci.li.bu
+77 6726 0928 13729

2 Likes 3 Comments

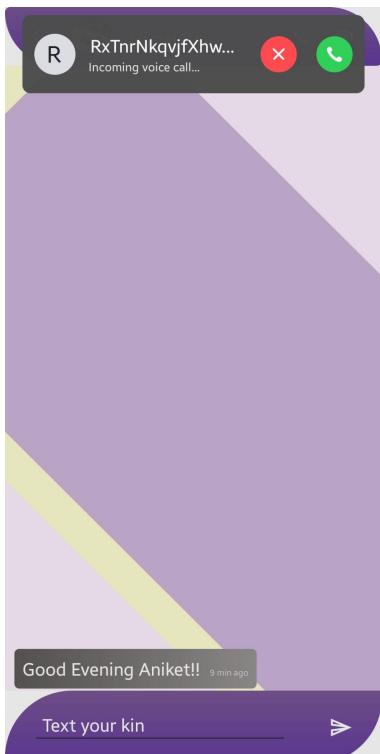
Saved posts



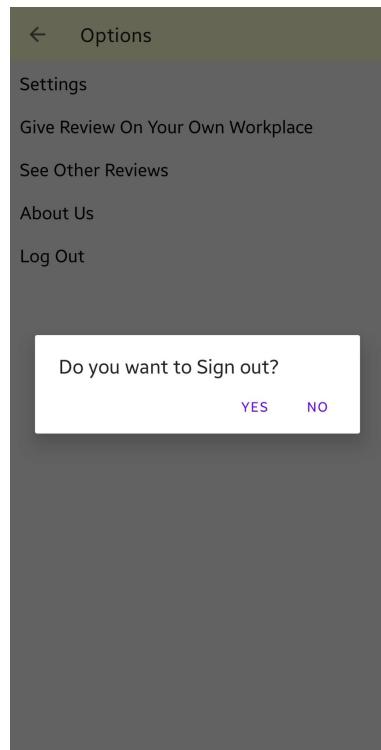
Voice call



Video call



Incoming Call



Sign Out

2.2 Database Schema

The whole database of the project is done using Firebase Firestore and Realtime database. A few data tables are used in this project. They are described here in brief:

2.2.1 Firestore Database

2.2.1.1 Users

(default)	Users	E70lc6GJULg8fH7E50Xe3Pnc63k2
+ Start collection	+ Add document	+ Start collection
Post	1s2bQD43yidqQ6pF4DIvG7lRv4s1	+ Add field
RegistrationNo	E70lc6GJULg8fH7E50Xe3Pnc63k2 >	batch: "27"
Users >	RxTnrNkqvjfXhwUyXGkQ3b1xk2Y2	bio: "
WorkReview	UHp40q01S7TmAZjJMbuuNcIJQfJ2	createdTimeStamp: November 1, 2023 at 7:18:18 PM UTC+6
chatrooms	XPxLhJ00ZTbSMjAxokF1Dv9kQfi1	email: "mahmudulyeamim@gmail.com"
	dxkuXuUA88PWbJ2TDmcP1MwzUha2	fieldOfInt: "
	gmvbXMiaz30gWP6R7sPOiV9a4PF2	gender: "Male"
	mps7s0vURkWV2XJ605Au8xmXIU03	linkedin: "
	sSfcjgmAHRSIOPB8GeanKdsF7It2	phoneNo: "01567954717"
		photo: "https://firebasestorage.googleapis.com/v0/b/csedu-campuskin-9f0fe.appspot.com/.../E70lc6GJULg8fH7E50Xe3Pnc63k2.jpg"
		registrationNo: "2020215620"
		userID: "E70lc6GJULg8fH7E50Xe3Pnc63k2"
		username: "Mahmudul Hasan"

This table contains information about all the users. Every user creates their account using their name, phone number, email address, batch number, registration number, etc. This table contains this information along with the other information added later. These include bio, LinkedIn profile, work area, fields of interest, gender, and create timestamp.

2.2.1.2 Registration Number

(default)	RegistrationNo	2020015622
+ Start collection	+ Add document	+ Start collection
Post	2012165027	+ Add field
RegistrationNo >	2015201520	reg: false
Users	2020015613	regno: "2020015622"
WorkReview	2020015622 >	
chatrooms	2020115612	
	2020115649	
	2020115658	
	2020215611	
	2020215620	
	2020415673	
	2020615617	
	2020715625	
	2020815615	
	2020815624	

This table stores all registration numbers of CSEDU. It also includes information about whether an account is created or not.

2.2.1.3 Chats

(default)	chatrooms	dxkuXuUA88PWbJ2TDmcPIMwzUha2_E7olc6GJULg8fH7E50Xe3Pnc63k2
+ Start collection Post RegistrationNo Users WorkReview chatrooms	+ Add document 1s2bQD43yidqQ6pF4DIvG7lRv4s1_E7... 1s2bQD43yidqQ6pF4DIvG7lRv4s1_Rx... 1s2bQD43yidqQ6pF4DIvG7lRv4s1_UH... 1s2bQD43yidqQ6pF4DIvG7lRv4s1_gm... RxTnrNkqvjfXhwUyXGkQ3b1k2Y2_E7... dxkuXuUA88PWbJ2TDmcP1MwzUha2_1s... dxkuXuUA88PWbJ2TDmcP1MwzUha2_E7... > dxkuXuUA88PWbJ2TDmcP1MwzUha2_Rx... dxkuXuUA88PWbJ2TDmcP1MwzUha2_UH... dxkuXuUA88PWbJ2TDmcP1MwzUha2_gm... gmvbXMiaz30gWP6R7sP0iV9a4PF2_E7... gmvbXMiaz30gWP6R7sP0iV9a4PF2_XP... sSfcjgmAHRSIOP8GeanKdsF7It2_gm...	+ Start collection chats + Add field chatRoomID: "dxkuXuUA88PWbJ2TDmcPIMwzUha2_E7olc6GJULg8fH7E50Xe3Pnc63k2" lastMessage: "Good morning" lastMessageSenderId: "dxkuXuUA88PWbJ2TDmcPIMwzUha2" lastMessageTimestamp: November 2, 2023 at 5:34:16 AM UTC+6 userIDs 0 "dxkuXuUA88PWbJ2TDmcPIMwzUha2" 1 "E7olc6GJULg8fH7E50Xe3Pnc63k2"

dxkuXuUA88PWbJ2TDmcPIMwzUha2_E7...	chats	-NiCECXA8vwW3pjglfJh
+ Start collection chats	+ Add document -NiCECXA8vwW3pjglfJh >	+ Start collection + Add field message: "Good morning" messageID: "-NiCECXA8vwW3pjglfJh" read: false senderID: "dxkuXuUA88PWbJ2TDmcPIMwzUha2" timestamp: November 2, 2023 at 5:34:16 AM UTC+6 userIDs 0 "dxkuXuUA88PWbJ2TDmcPIMwzUha2" 1 "E7olc6GJULg8fH7E50Xe3Pnc63k2"

This table contains information about all the messages being sent from one person to another. Whether a message is read or not is also stored here.

2.2.1.4 Post

 (default)	 Post		 -Ni5xP6Ep9l5FB7lGyfe	
+ Start collection	+ Add document		+ Start collection	
Post >	-Ni5xP6Ep9l5FB7lGyfe >		+ Add field	
RegistrationNo	-Ni5y7dfLdCtGpoCMb44		commentCount: 3	
Users	-NiA2HCgLpTfR01cBRos		edited: false	
WorkReview	-NiAWz5gSd2Wc6snHTkj		postDescription: "Happy Halloween 🎃"	
chatrooms	-NiAxEh8qGUcTQTeUiv7		postID: "-Ni5xP6Ep9l5FB7lGyfe"	
	-NiAxXLlRhXHWdxTGLxI		postImage: "https://firebasestorage.googleapis.com/v0/b/csedu-campuskin-9f0fe...	
	-NiB4KU1P7F6EswjLD42		postLike: 2	
	-NiB5hA-DxH-KJr2kJKK		postedBy: "1s2bQD43yidqQ6pF4DlvG7lRv4s1"	
	-NiB5pPgXuDDWsAfW6k-		postedDate: November 1, 2023 at 12:18:46 AM UTC+6	
	-NiB8GWhSZXAoGAZFOB2			
	-NiBmhBRX7tSkxkk0fZz			
	-NiBr9tiSFzpCpx2eb7o			
	-NiBtJTe6FTGxZfDd5cx			
	-NiBt_uZJTLH7PVxvY1MA			

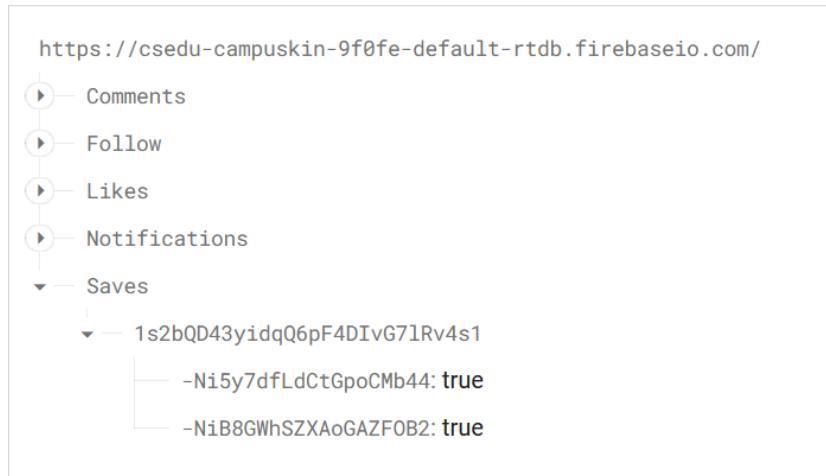
Each post and photo being posted by all users is stored here. If any photo is posted, then the cloud storage link of that photo is kept here as a reference.

2.2.1.5 Workreview

 (default)	 WorkReview		 -NiBwB5iF6_CNiGY1fkK	
+ Start collection	+ Add document		+ Start collection	
Post	-Ni5zq3tkAGySkt8_L77		+ Add field	
RegistrationNo	-NiBlqxwztmAf908h57P		bossLinkedin: "https://www.linkedin.com/in/fahim6119/"	
Users	-NiBr-14x_dDVW3C1kgw		bossName: "Md Fahim Arefin"	
WorkReview >	-NiBt6cBJXUnijlrm3Va		ended: null	
chatrooms	 -NiBwB5iF6_CNiGY1fkK >		id: "-NiBwB5iF6_CNiGY1fkK"	
			nameOfWorkPlace: "CSEDUu"	
			reviewOnBoss: "A great teacher on development"	
			reviewOnWorkPlace: "A great place to study"	
			started: November 2, 2023 at 4:10:27 AM UTC+6	
			userId: "dkuXuUA88PWbj2TDmcPlMwzUha2"	
			workingStatus: "Student"	

As said already, there is an option to write reviews about some companies and persons anonymously. These reviews are stored here in this table.

2.2.2 Realtime Database

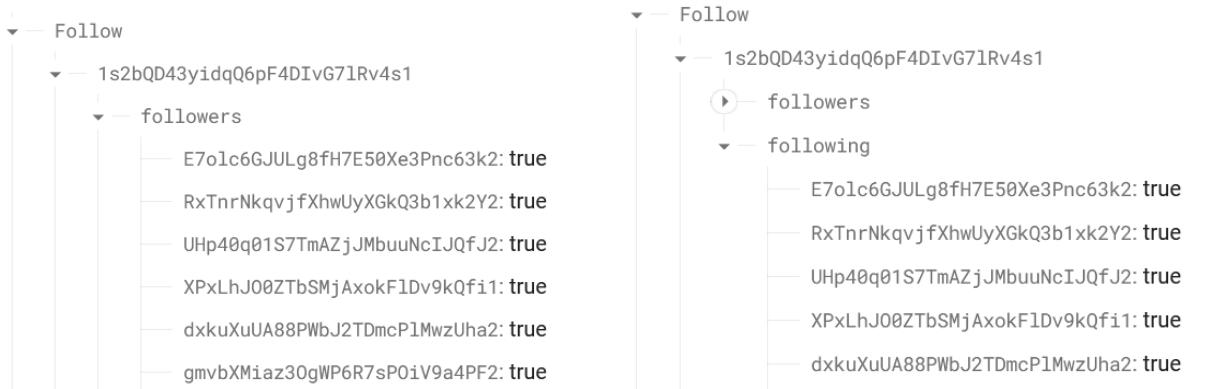


2.2.2.1 Comments



Comments about each post are stored in this database table. This table contains information about the comment including what the comment is, whether it is edited, sender id, posting time, and publisher name.

2.2.2.2 Follow



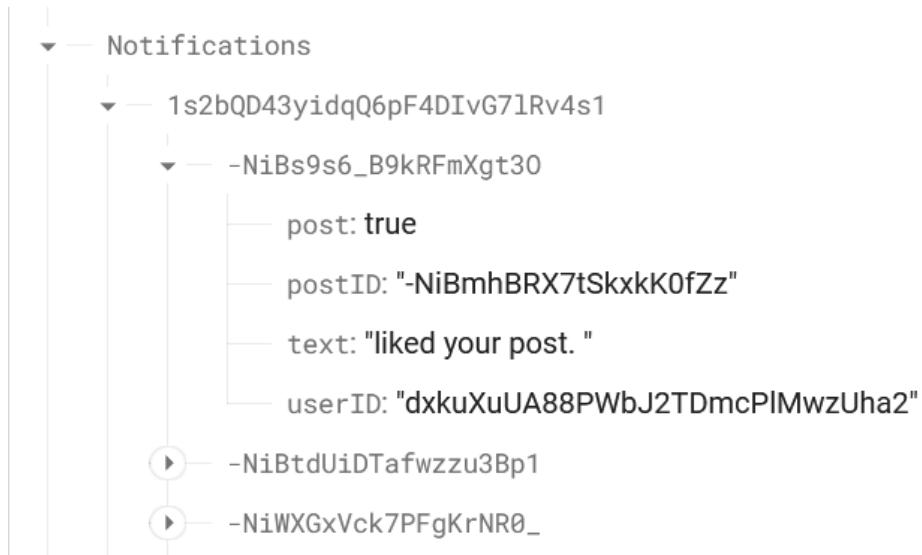
These two tables contain data about whom a user is following and who are the followers of a particular user.

2.2.2.3 Likes



This table contains information about the likes of a post. Whenever a user likes a post, it is stored in this table.

2.2.2.4 Notifications



One of the major things in a community networking site is the use of a proper notification system. All the generated notifications about likes, comments, and chat messages are kept here in this database table.

2.3 Code Repository Link

All the codes about this project are stored in Git Hub. Here is a link to that GitHub repository:

https://github.com/fatbomb/CSE_2216_MobileApplicationDevelopmentProject_CSEDU_CampusKin

2.4 Video Demo Link

A demo video showing all the features of our project application is made and posted on YouTube. Here is a link to that video:

<https://youtu.be/2FJbiSoLjls?si=bnOmJm88VuEa1iYS>

3. Conclusion

3.1 Challenges and Solutions

To complete the whole project, we had to face some challenges. During the development of the "CSEDU Campus Kin" app, several challenges were encountered, ranging from technical hurdles to user engagement issues.

None of us were familiar with Android Studio and Java XML. Moreover, we did not have any deep knowledge about database and data storing systems in Firebase Firestore and Realtime Database. We had to learn these things by trial and error and thus could bring such a result.

Another significant challenge was ensuring the authentication of csedu users. We had to get some real information about the registration numbers of the past and present students of CSEDU to keep this application valid.

Designing the whole application in Java XML was another challenge was another great challenge for us because we did not have much experience in it. However, the lectures of our teacher and our own practice made it easy to master designing in Android Studio.

Using API was another challenge for us. As mentioned before, we have used several APIs here in this application. To integrate all of them with our application, we had to face obstacles. But, adding all of them was not the same in difficulty. Especially, adding the API used for audio and video calling was one of the hardest jobs to do in this project.

Despite facing all those challenges, we are happy that we managed to pull the best out of the project together. We are willing to make it on a greater scale to use it for all people of CSE, DU.

3.2 Lessons Learned

- Learned how to build mobile applications and how the UI design for a mobile application is done.
- Learned how to navigate between screens in an Android app.
- Learned to use the native components of Android.
- Learned how to handle touch events correctly.
- Learned how to build a custom backend of an application properly and how to test the API before connecting it to the front end.
- Learned how to use external API keys to get data. Afterward how to protect and restrict the key.
- Learned how to build an APK and how to correct the bugs during the production time of an application.
- Learned how to write properly formatted commit names before pushing the work to Github.
- Learned a lot and tested a lot of Google APIs which will come in handy in the future.
- Learned how to use Firebase Firestore and Realtime database as the primary database of an Android application.
- Learned how to implement APIs in an application and use them.
- Learned how to check email and registration numbers of user authentication.

3.3 Future Plan

We are very willing to enlarge the scale of this application. To do that, these are some major things we are focusing to do:

- We would like to verify each user by their unique registration number and their unique institutional email ID. We were thinking of it, but as our alumnus cannot use their institutional email address after the completion of their degree, we could not have done it already. So, now we will try to add restrictions on email addresses. The personal email used in the Google groups of the department will be considered first.
- The app is currently accessible to the 27th batch of CSEDU only as we do not have authentic information about the whole department. We are planning to work on that too.
- Group chatting is another considerable thing to utilize later. We will add some more features like group calling and video chatting.
- We want to connect some job portal systems to it so that getting information about jobs becomes easy in this application.
- We are willing to make an event-creating feature in it.
- We will make all the existing features dynamic and more user-friendly.
- Though our main platform in this project was Android, we are willing to make a platform-independent version of this application so that users of other mobile operating systems can also use this application.
- We will try to create a web application about this.