Dr. B.R. AMBEDKAR NATIONAL INSTITUTE OF TECHNOLOGY, JALANDHAR, PUNJAB

PROJECT REPORT

ON

"CLOSE POOL APP"

Submitted to:
Dr. Mohit Kumar
Assistant Professor
NIT Jalandhar

Submitted by:
Ashi Jain(18124005)
Avani Bajpai (18124008)
Ashita Garg(18124006)
Harsh Kumar Singh (18124012)
Maheep Singh(18124015)

CLOSE POOL APP

ABSTRACT

This report includes the details of the method used to develop CLOSE POOL APP. The driver CLOSE POOL APP can help you in travelling, up to your destination with your dear and near ones (to whom you may be unknown, but authorized). This system makes use of Android Studio, Firebase, Java and many predefined methods. The system is user friendly, so that any user can use it easily. The report is to completely make you visualize about the project. The implementation of the project gives the real-world idea of how the system works.

INTRODUCTION

This project is based on the real-life problem. The problem of Students, Old age persons, Girls in metro city, when they want to go somewhere, but no one is free, to company them, then they can pool with an authorized user.

This app is the solution for several problems, it can save the users from extra charges charged by Auto's and Taxi owner. And user can get a good company that can make their travelling memorable. It is also good by safety aspect. Now a days due to busy schedule, some people are not able to give time to their old parents, so this app can be used by them, they can search for their destination and can pool with the other verified user. It can also be used as the safety precaution for girls, as in today's world there in no security for girls, so when they are alone and want to go somewhere they can search for authorized person ,who is going to same destination at that particular time.

APPLICATIONS

- This project can save the users from extra charges charged by Auto's and Taxi owner. And user can get a good company that can make their travelling memorable.
- Now a days due to busy schedule, some people are not able to give time to their old parents, so this app can be used by them, they can search for their destination and can pool with the other verified user.
- It can also be used as the safety precaution for girls, as in today's world there in no security for girls, so when they are alone and want to go somewhere they can search for authorized person ,who is going to same destination at that particular time.

- With the ever-increasing vehicle and population density and less than adequate transportation infrastructure of most Indian cities (including Jalandhar), this project can help reduce the number of vehicles on the road by facilitating ride sharing. Less vehicles on the road equate to cleaner air, quieter streets, less traffic congestion and by extension smaller commute times.

MOTIVATION:

We were inspired to make this project due to the various every-day commute related issues in the college lifestyle. Most students do not have their own rides, which means that they have to look for friends who do have rides whenever they want to go outside the college premises, or look for an auto-rickshaw.

We cannot always expect our friends to be at our beck and call every time we need to go outside, and apart from certain pre-defined routes, auto-rickshaws tend to be an expensive means of commute. Add to that the uncertainty of finding an empty auto-rickshaw as unless you're going to somewhere on the pre-defined routes, an auto driver will only accept your request if their auto is empty, and you can end up in quite the conundrum when looking for a ride.

Furthermore, the more we looked into this project, the more we realized how many positives there are to ride sharing, and how much helpful it would be if there were a ride sharing platform for the students.

One such positive was the commotion during the beginning of various breaks. Students often rush back home right as college enters a break period. The ride sharing application would be highly beneficial to those students to find company when going back home, and also to those with too much luggage to carry around in an auto-rickshaw.

Another was security. Public transit can tend to be congested. It is always safer to have a trusted peer with you when you're heading out in these scenarios.

Another still was the positive environmental impact of ride sharing.

All of these factors combined motivated us to tackle the problem of creating a platform to facilitate ride sharing.

PROBLEM STATEMENT (REQUIREMENTS):

Our goal with this project was to create an application which could facilitate the following:

- Provide an easy to navigate platform to view and share ride sharing information.

- Regularly keep itself updated with the latest information from all users over the internet.
- Provide the users with a filtering functionality so that they can find the rides quicker.

TOOLS

Programming Languages: Java.

Java has been a staple of Android development since its inception. It is one of the two default programming languages supported by Android Studio.

We chose Java because of the extensive documentation available for it and our familiarity with the language.

XML is used in conjunction with Java to store information about the application layout.

Database Platform: Firebase.

Firebase is a DBMS platform developed by Google to be utilized in Mobile and Web applications. It is a light and feature rich platform that is ideal for application development. It hosts a NoSQL database for data storage.

We chose it because of its integration with Android, ease of use, and features like in-built user authentication, cloud-based data storage, real time updates, etc.

Development Environment: Android Studio.

Android Studio is the official SDK and IDE for Android development created by Google. It allows for creation of Android application in either Java or Kotlin. It separates applications into different screens called Activities, allows for drag-and-drop UI creation, has an in-built automated build file generation and building system called Gradle, has code auto-completion, various debugging functionalities, and even a built in Android OS and Hardware Emulator.

Libraries: Android.

Android studio automatically integrates various different Android specific libraries into your project. Some of these core libraries are:

- android.app – Provides access to the application model and is the cornerstone of all Android applications.
- android.content – Facilitates content access, publishing and messaging between applications and application components.
- android.database – Used to access data published by content providers and includes SQLite database management classes.

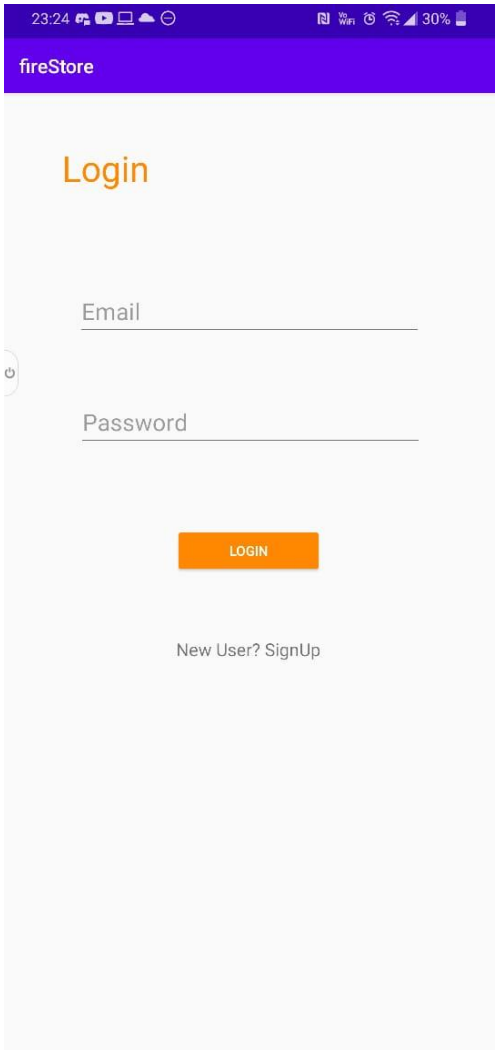
- android.opengl – A Java interface to the OpenGL ES 3D graphics rendering API.
- android.os – Provides applications with access to standard operating system services including messages, system services and inter-process communication.
- android.text – Used to render and manipulate text on a device display.
- android.view – The fundamental building blocks of application user interfaces.
- android.widget – A rich collection of pre-built user interface components such as buttons, labels, list views, layout managers, radio buttons etc.
- android.webkit – A set of classes intended to allow web-browsing capabilities to be built into applications.

This list is not extensive, and as the complexity of Android systems increase, the number of various libraries included also increases.

OS: Android (Target operating system/Testing platform), Windows/Linux (Development and coding platforms)

METHODOLOGY:

When you open the app, the first screen we see are the Login/Register pages:

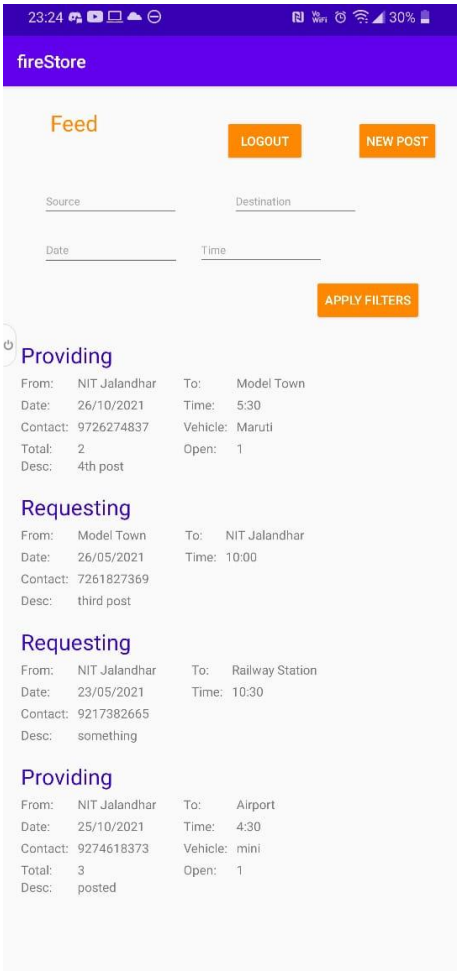


Login Page

The two pages are built as separate activities.

These use the built-in authentication features of Firebase to create new users and authorize existing ones.

Upon logging on or registering, the application opens up the MainActivity Activity, which has our home screen.

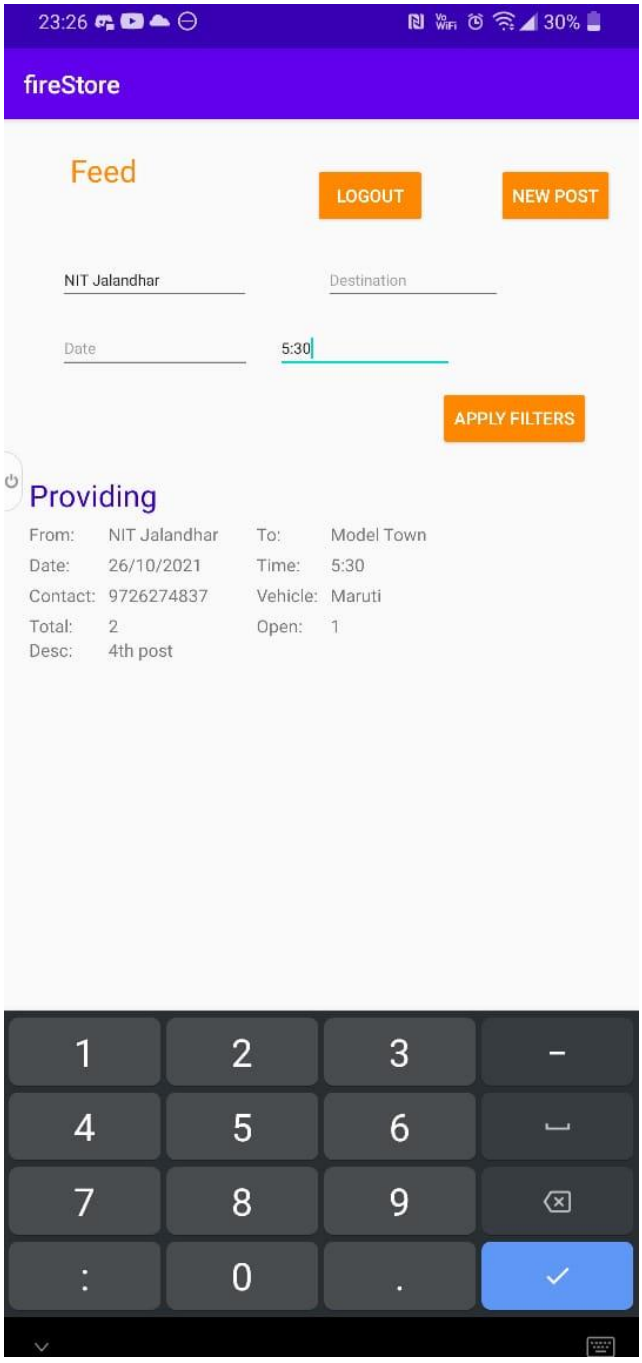


Home Page (without active filters)

This page has can be divided into two portions:

1. Filters: This has four text fields corresponding to Source, Destination, Date, and Time. Clicking on Apply Filters refreshes the field and only shows posts that match our criteria.

2. Feed: The application sends a connection request to the Firebase server. From that, it retrieves a reference to the Collection (Analogous to Tables in other DBMS software) that stores the information about the various rides. We utilize a function to iterate and convert the raw data retrieved from the server into information about the rides.
   This information is compared to the filters input by the user. If the information matches the filters, it is shown in the feed.
   In case no filters are input, we display all of the available rides in the feed.

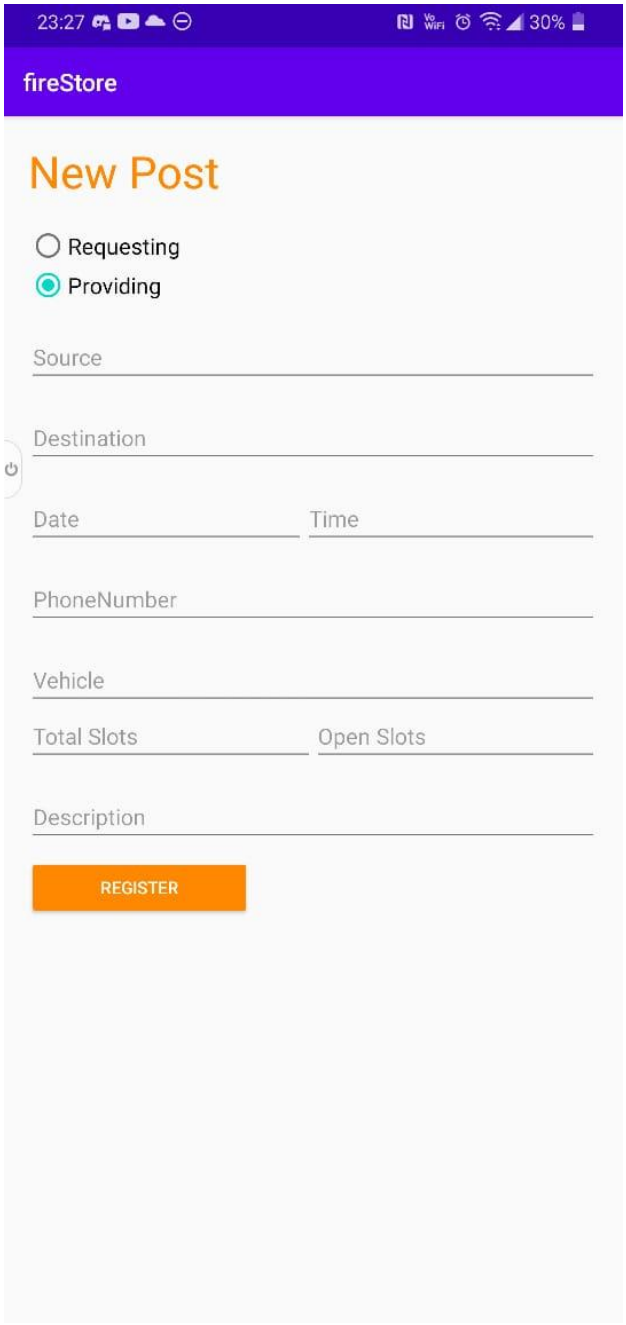


Home Page (with active filters)

In addition to this, we have two buttons in the header:

1. Logout: Closes the current session and logs out the user. The application opens the Login/Register page again.

2. New Post: The user is redirected to the New Post Activity.



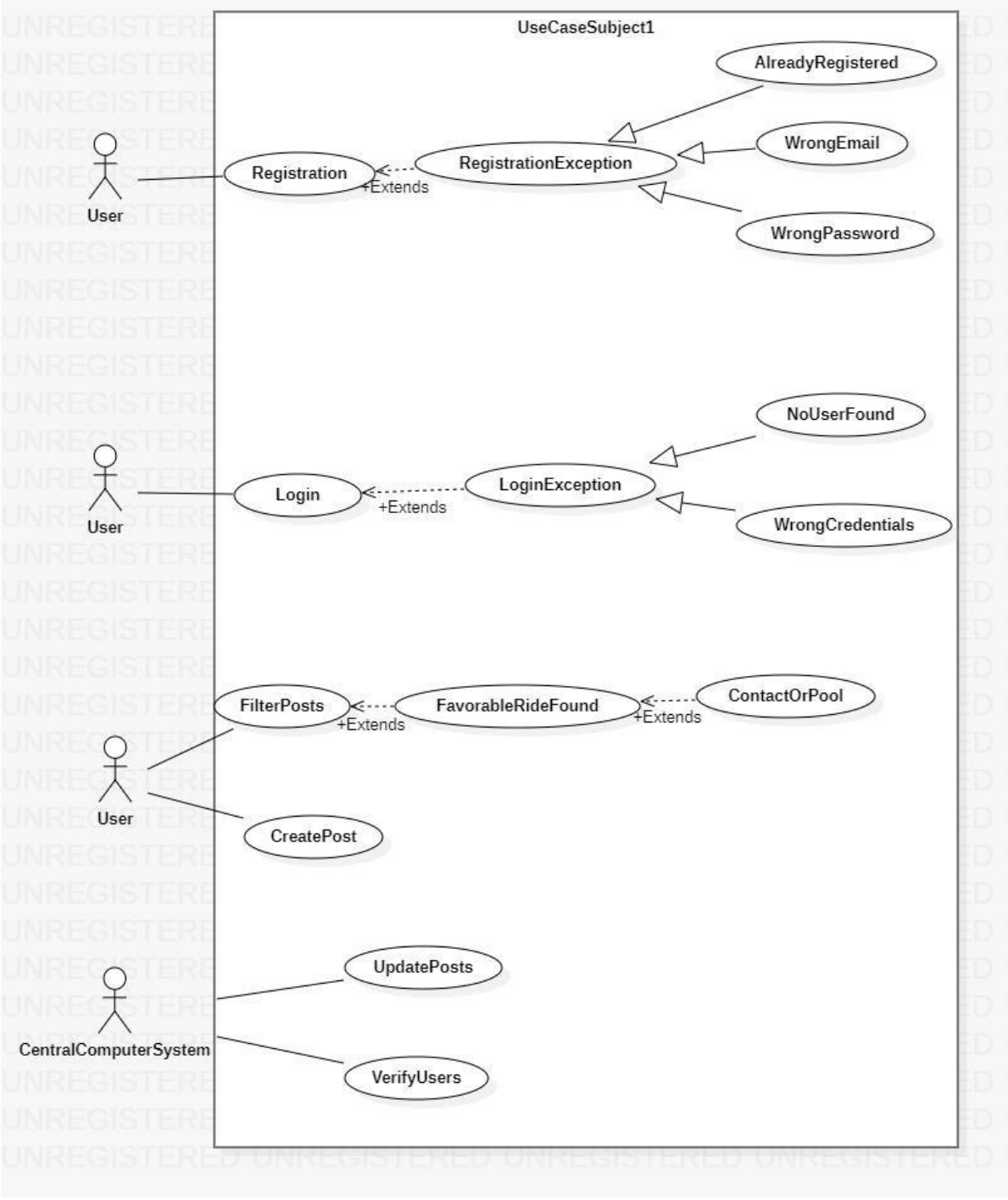
New Post

Here, the user can create a new post that will be publicly displayed in the feed. The user can choose between two types of post:

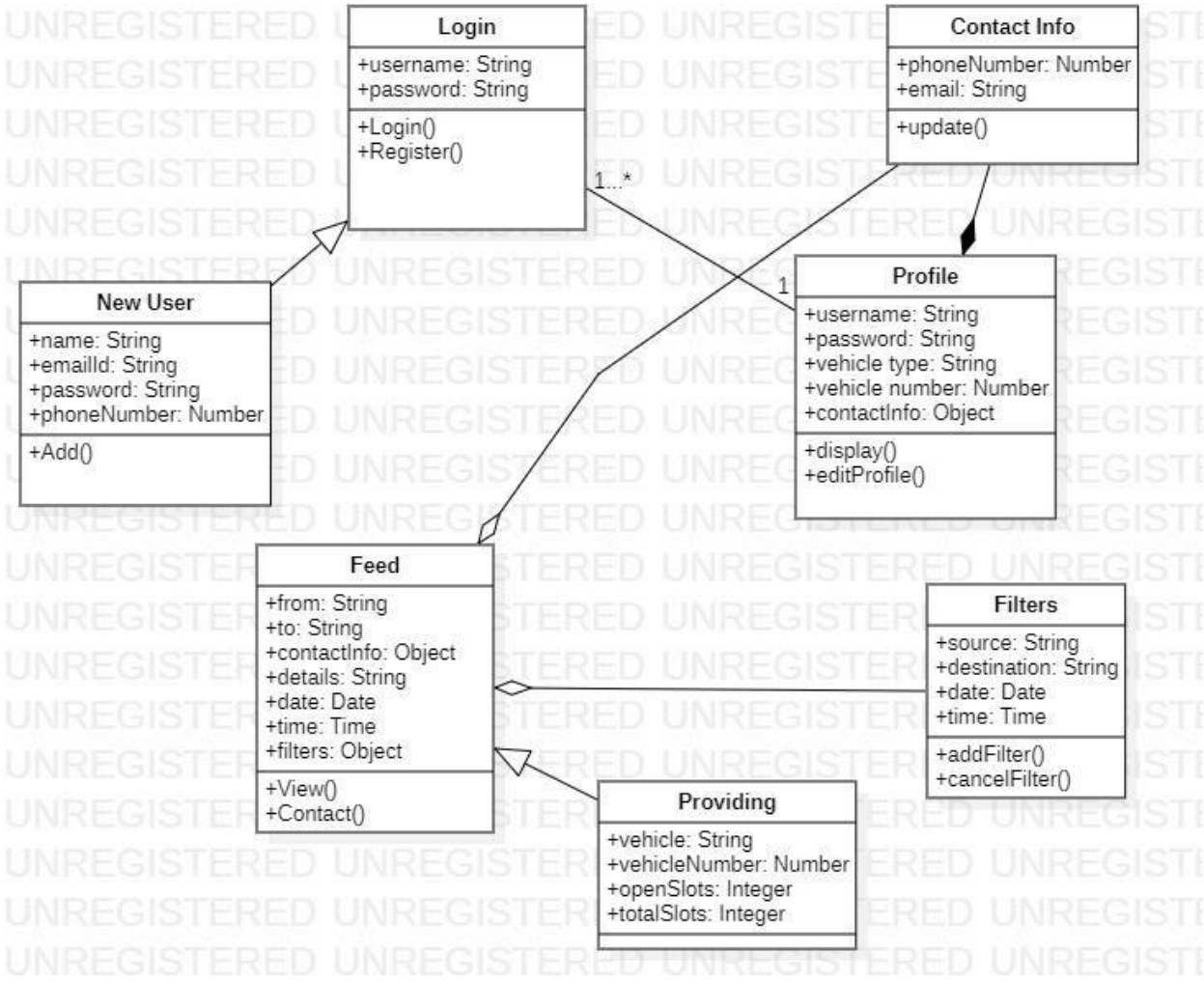
1. Requesting: If the user does not have their own ride.
2. Providing: If user has their own ride. The Vehicle, Total Slots, and Open Slots text fields are only visible if the user is making a Providing type of post.

UML DIAGRAMS

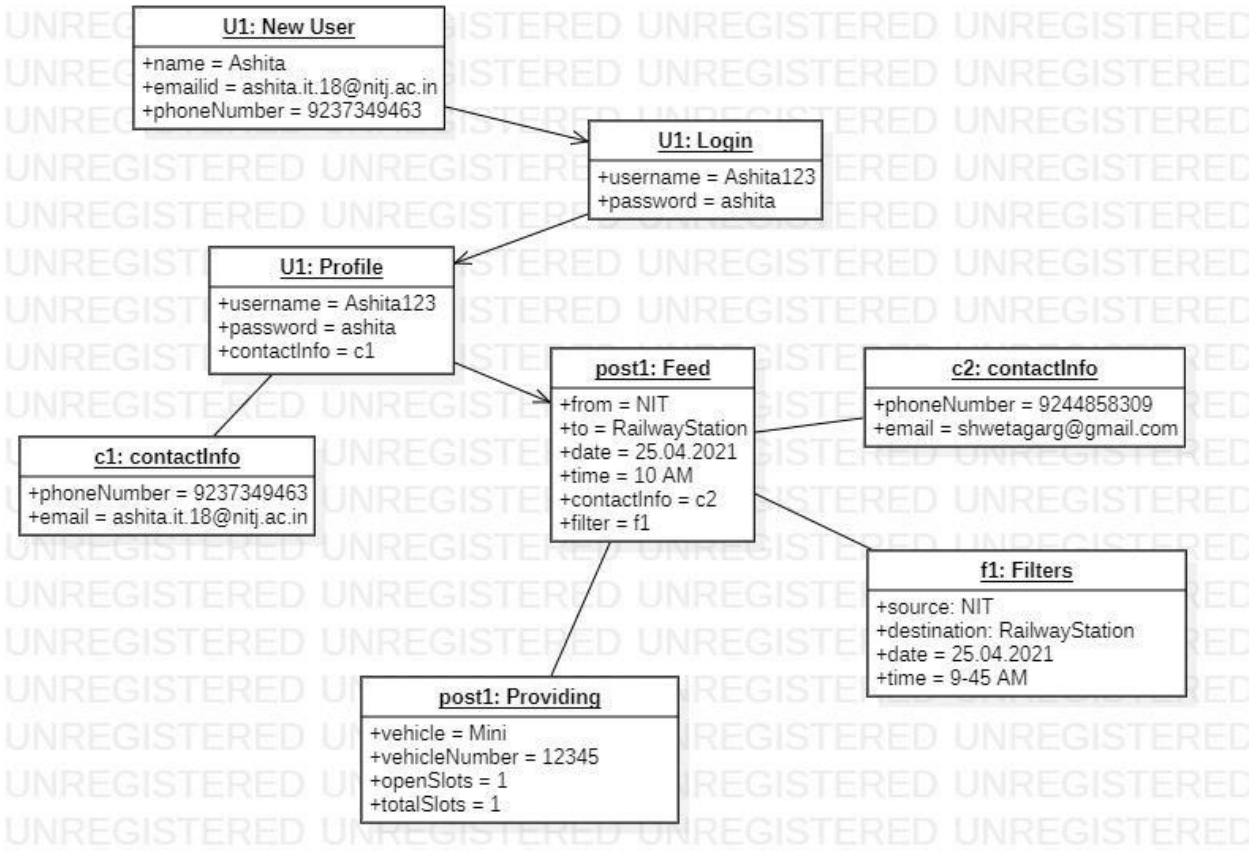
Use Case Diagram



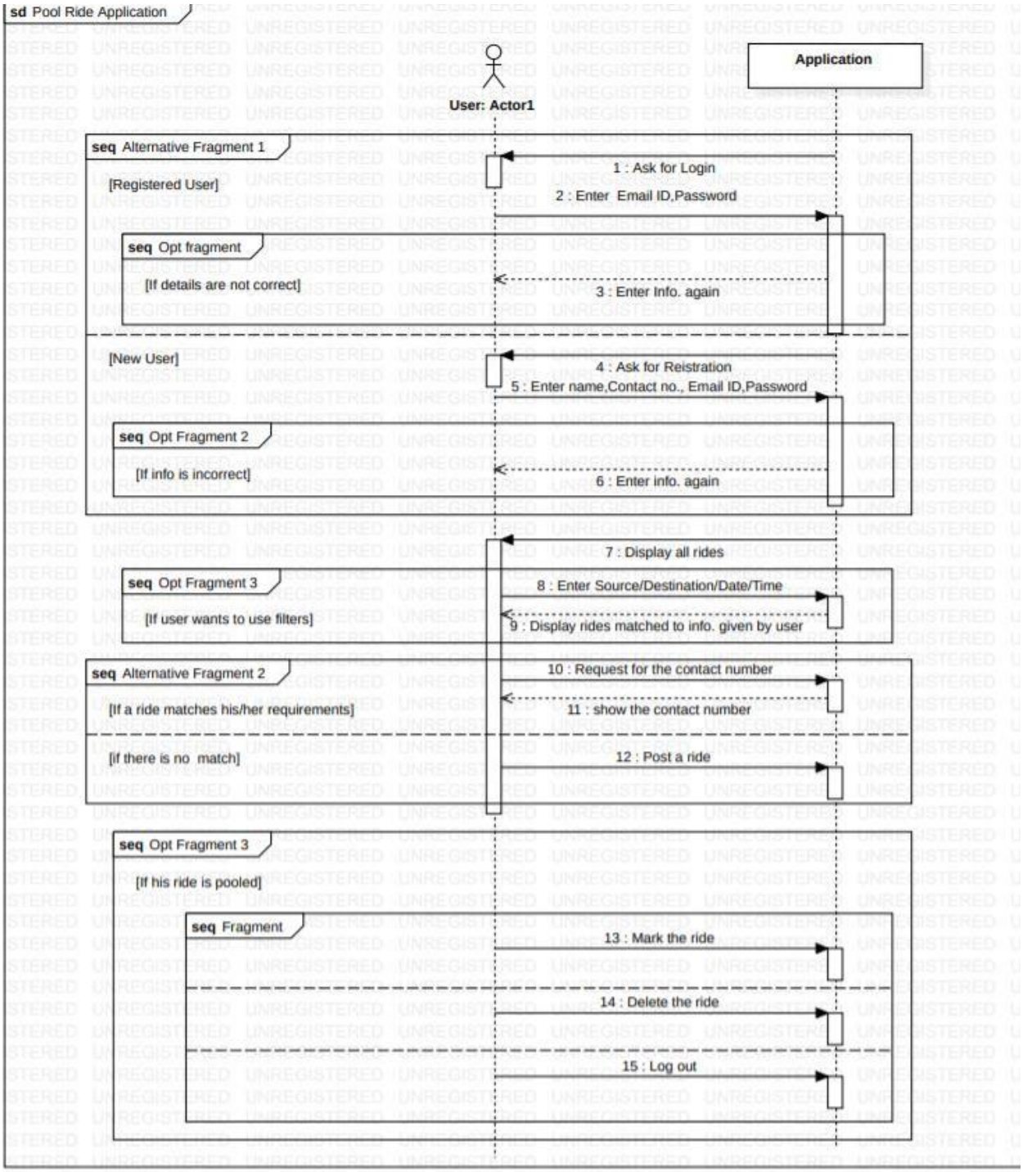
Class Diagram



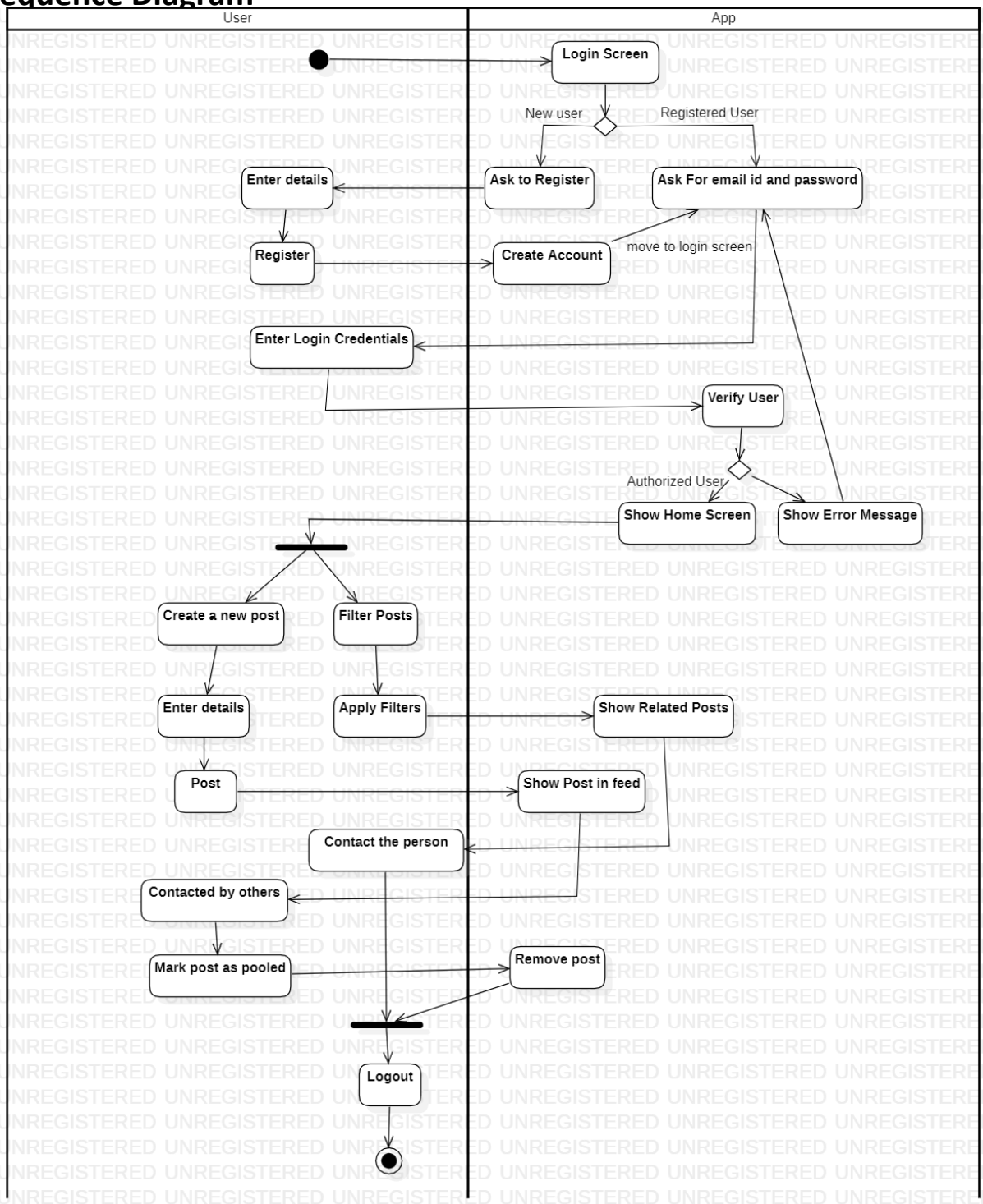
Object Diagram



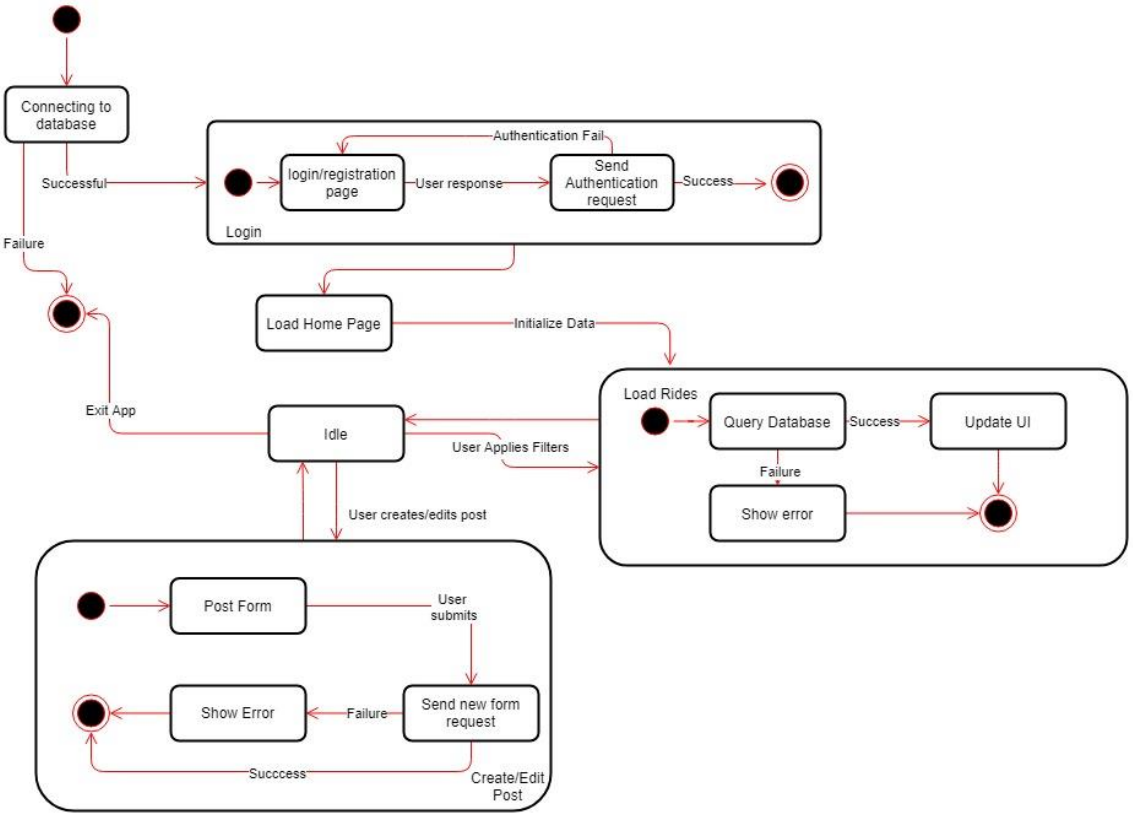
Sequence Diagram



Sequence Diagram



State Chart Diagram



RESULTS:

The application has been successfully developed and is operational on most modern android smartphones. It satisfies all of the core criteria we had planned. All of the various facets of the project (Authentication, Post Creation, Viewing, Filtering) work well. Overall, the project is a success.

CONCLUSION

In conclusion, the project was a learning experience for the entire team. Through the various ups and downs of the development process, we have learned a deeper understanding of the different systems and languages we used. We have also gained insight into developing projects as a team, which will certainly be helpful in our journey into the professional realm.

It was a fulfilling to come up with an idea that may bring positive changes to society, and even more so to see it being developed.

We hope that we can similarly work on projects that may make the world a better place all throughout our careers, and we hope that this project can reach the polish and have the impact that we dreamed it may someday have on the world.

We would like to give our earnest thanks to our institute, Dr B R Ambedkar National Institute of Technology, Jalandhar, and professor Dr. Mohit for giving us the opportunity to learn and implement these skill, as well as the guiding us through this project.

FUTURE SCOPE

The application was a success, but that doesn't mean that it cannot be improved. Many functionalities can still be added to make the application more user-friendly and feature-rich.

A smarter filter system, more filters, an in-built chat functionality, automated ride assigning, a routing system to maximize the amount of people per ride, etc. can be introduced to further improve the application.

In addition to that, opening the application to people outside the college premises is imperative to realizing the full potential of the application, though that does come with the problem of creating a system to ensure the safety of all users.