

FOOD AND RIDE SHARING APPLICATION “THE POOL”

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project/internship titled “**FOOD AND RIDE SHARING APPLICATION ‘THE POOL’**”, submitted by **Mohammad Mubashir Kabir** , ID No: 181-15-10691 and **Mostakim Billah Emon**, ID No: 181-15-10923 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 04-01-2022.

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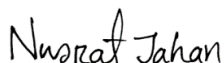
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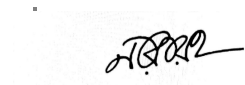
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DECLARATION

We hereby declare that this project has been done by us under the supervision of **Mr Narayan Ranjan Chakraborty, Assistant Professor, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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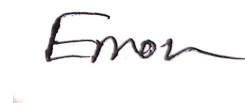


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ABSTRACT

Mainly we are focusing on ride and food sharing. In this time we are introduced to many ride-sharing apps. So what's new in that? The answer is, we are opening a door to a new type of ride-sharing where you can share your personal vehicle like a bike or car or you can share your hired ride with someone else who is also intended to go in the same way. That will reduce the cost of transportation and make life easier. On the other side we intend to work on food sharing or we can say avail offers with other people. There are some food delivery applications in our country but we are proposing food sharing applications. Through it people can avail offers with others and it will cost less for both of them. The main limitation of this applications is we can not ensure that the person who want to share their foods or ride and also the person who want to take the ride share or avail the food sharing offer, both of them are truly want to share their food or ride. Mainly this application is easy and comfortable to use for everyone. But we think that the users of this application will mostly be students. But we want everyone to use this application for sharing their extra amount of food or sharing their rides. And it will be very helpful for the middle class or poor people, society and environment.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The pool is an android based application. In this system there will be two panel phrases. One is ride sharing and another is food sharing. In this time we are introduced to many ride-sharing apps. So what's new in that? The answer is, we are opening a door to a new type of ride-sharing where you can share your personal vehicle like a bike or car or you can share your hired ride with someone else who is also intended to go in the same way. That will reduce the cost of transportation and make life easier. You have no need to struggle in buses or have a big amount to pay for hiring a private vehicle. On the other side, we are intended to work on food sharing or we can say avail offers with other people. Nowadays, most of the restaurants offer combo meals or buy 2 get one, buy 3 get 50% off, buy 4 at the price of 2 and so many offer like this. But many of us can't avail offers all the time, because sometimes we are alone to eat and can not buy extra food which is at offer price. But there is a possibility we can avail your meal at some lower price so why not. People can find matches of their interesting offers through this app. they can post for sharing their rides or avails offers at restaurants and also can search for ride and food offers other posted. If the route of their destination matches, they can contact each other and share their rides or foods.

1.2 Motivation

In this 21st era, we still face the problem of transportation. We all can't afford a personal vehicle at the same time owners of private vehicles find it difficult to maintain that vehicle. The cost of fuel and maintenance charge is also really high. On the other hand, if we are having so many individual vehicles problems are going to hit that much like traffic jams and global warming. These problems actually made us think about this project. How we can make these things easier for our day to day life. On the other hand, restaurants offer delicious meals in the combo in which they offer for four but we wanted to have that for 2 people or alone sometimes. But we could not. To resolve this issue, food sharing where you can match up with some other people

who wanted to have that also. In this way, we can have delicious food at a really reasonable price. In this expensive world, the more you share, the less you have to pay. So our motto is, we share because we care.

1.3 Objective

The pool is basically an android application. This project will come up primarily with 2 sectors. One side will be ride-sharing and the other will be food sharing. The users can create posts and search for existing posts. There are some searching filters available for a better searching experience. The users who want to use this application must have to register with some terms and policies. Then they can only log in to their personal account. Taking or sharing rides through the application will be easy. Food sharing is also going to be done in the same way. Users safety and comfort is the first priority of our project.

1.4 Expected Outcome

We think this project or application is going to make an evolutionary change in every perspective of life. This application will impact positively in our day to day life, society and also in the environment. We have faced many challenges and problems through this project but we hope that this project is settled, people will get its benefits and we also.

1.5 Report Layout

In Introduction this Chapter we've discussed Introduction, Objectives, Motivation, Expected Outcome and Report layout of the project.

After that in chapter 2 Project Introduction, Related works, Comparative Studies, Scope of the Problem and Challenges of our project is discussed.

Following that Requirement Specification contains Business Process Modeling, Requirement Collection and Analysis, Use Case Model and Description, Logical Data Model and Design Requirement.

Following that Design Specification describes our application description which is related to Design Specification like Front-end Design, Back-end Design, Interaction Design and UX and Implementation Requirements.

After that Implementation and Testing contains Implementation of Database, Front-end Design, Interactions, Testing Implementation and Test Results and Reports.

Last but not the least Conclusion and Future Scope will discuss conclusion and Scope for Further Development.

CHAPTER 2

BACKGROUND

2.1 Preliminaries/Terminologies

We decided to create the application based on the problem we faced. Sometimes we are financially unable to eat at restaurants. And sometimes there are some offers at the restaurant like buy one get one, buy one get two, bogos and so on. When we are alone to eat, the food will be more than enough for one person. But if we order the regular one the price remains the same. So we decided to create such an application through which we can find a partner for sharing our food at the offer price.

On the other hand the ride sharing idea came to our mind when we were thinking about creating the food sharing application. Rideshare is basically sharing our personal ride. It's not like hiring a pathao or uber. When we are traveling by our personal vehicle and if there is an empty pelion seat then we can take a random pelion who wants to travel through the same route. And share the amount of fuel.

2.2 Related Works

When we faced the problem then firstly we were looking for such an application which can solve or fulfill what we want. But no such application was found. Then we searched for web applications. But again we failed to find any kind of web application which provides the service we want. We found some application which provides food delivery service like food panda and ride sharing like uber pathao. But we are not looking for food delivery services. And the uber pathao like applications are actually not providing ride sharing they are basically ride hiring applications.

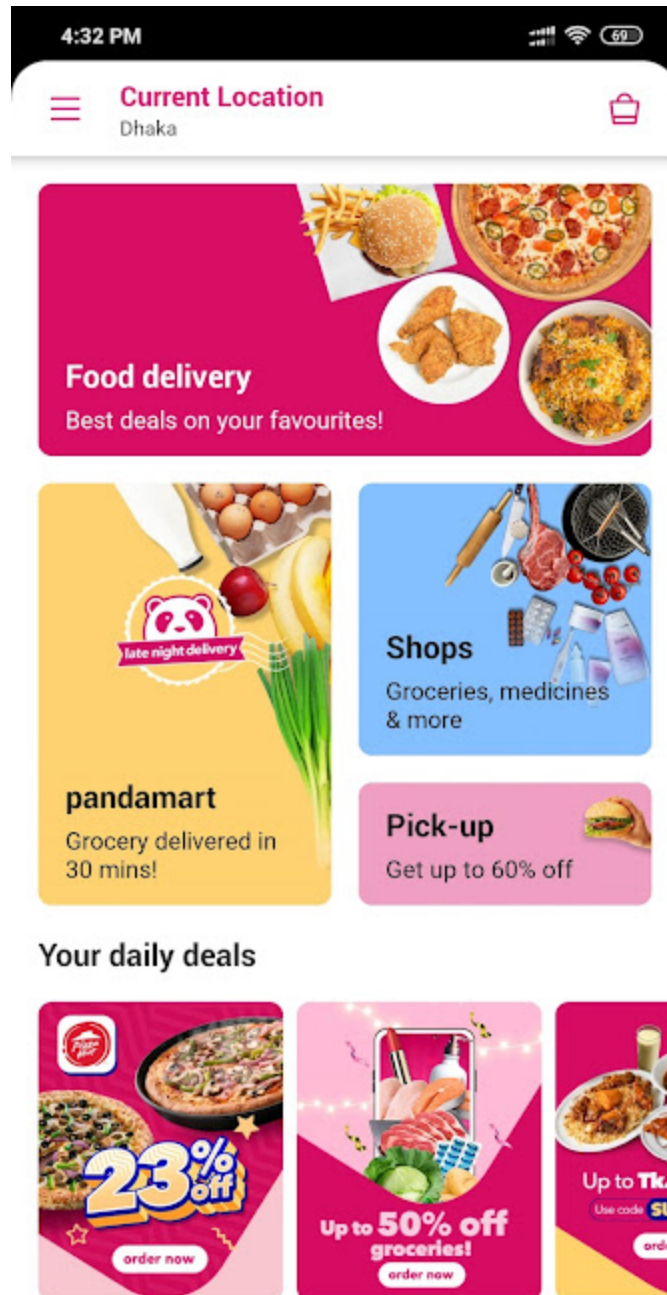


Fig 2.2.1: food delivery and pickup application -Foodpanda

In the figure 2.2.1 we can see a food delivery or pickup service is available in foodpan mobile application[3].

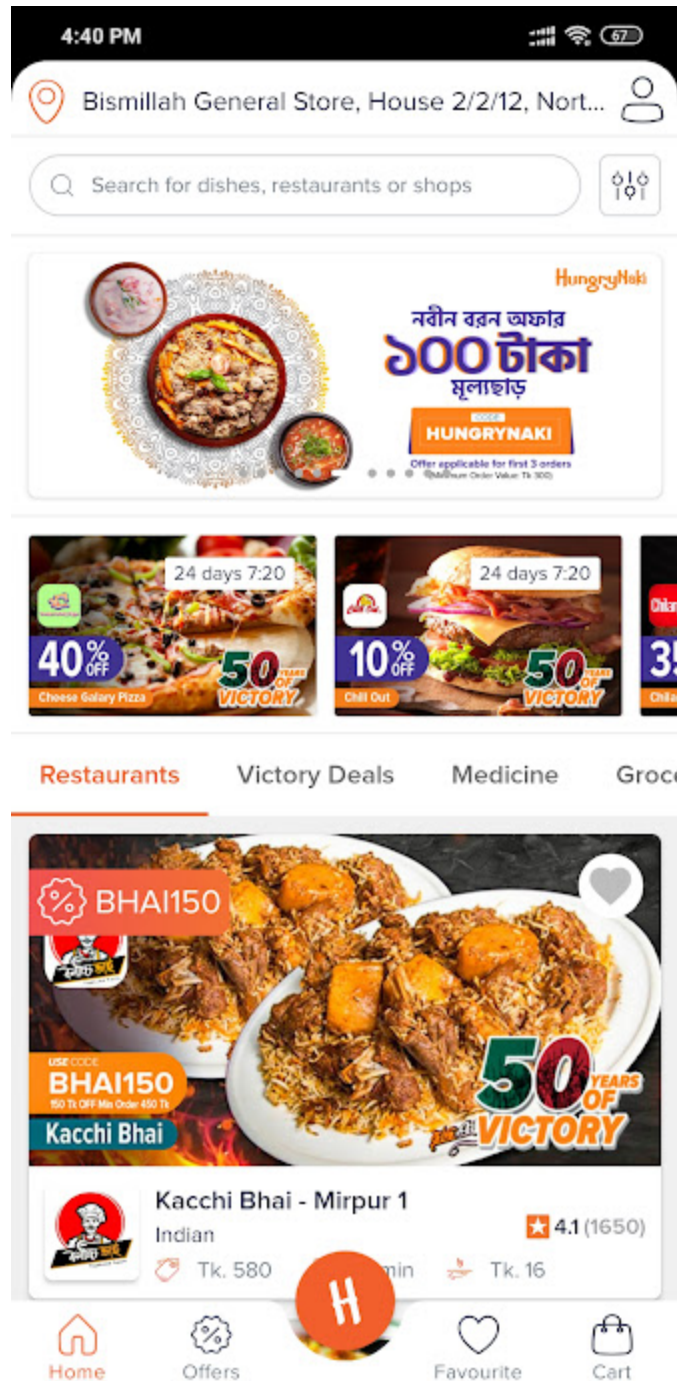


Fig 2.2.2: food delivery application -HungryNaki

In the figure2.2.2 we can see an application called HungryNaki. And this app only has food delivery service[4].

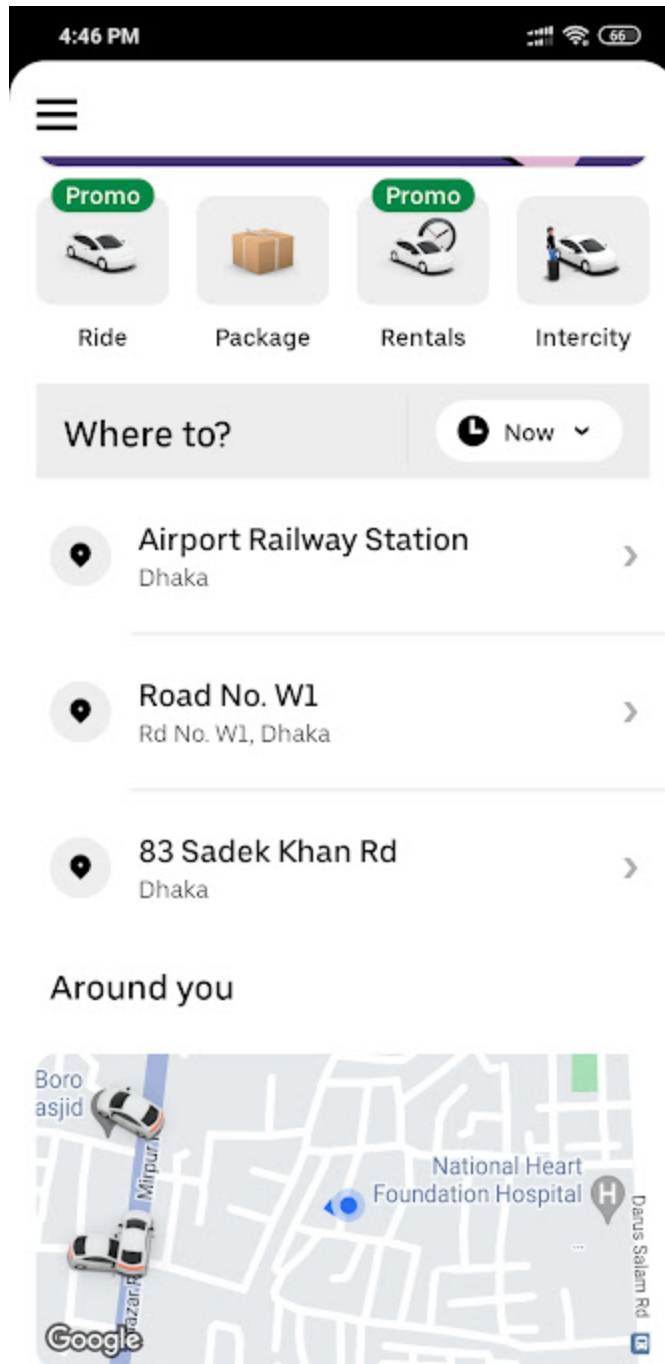


Fig 2.2.3: ride hiring application -Ubar

In figure 2.2.3 there is a screenshot of the Uber application which is used for ride hiring. They also have some other services but we are not focusing on that. We focused on food and riding only[6].

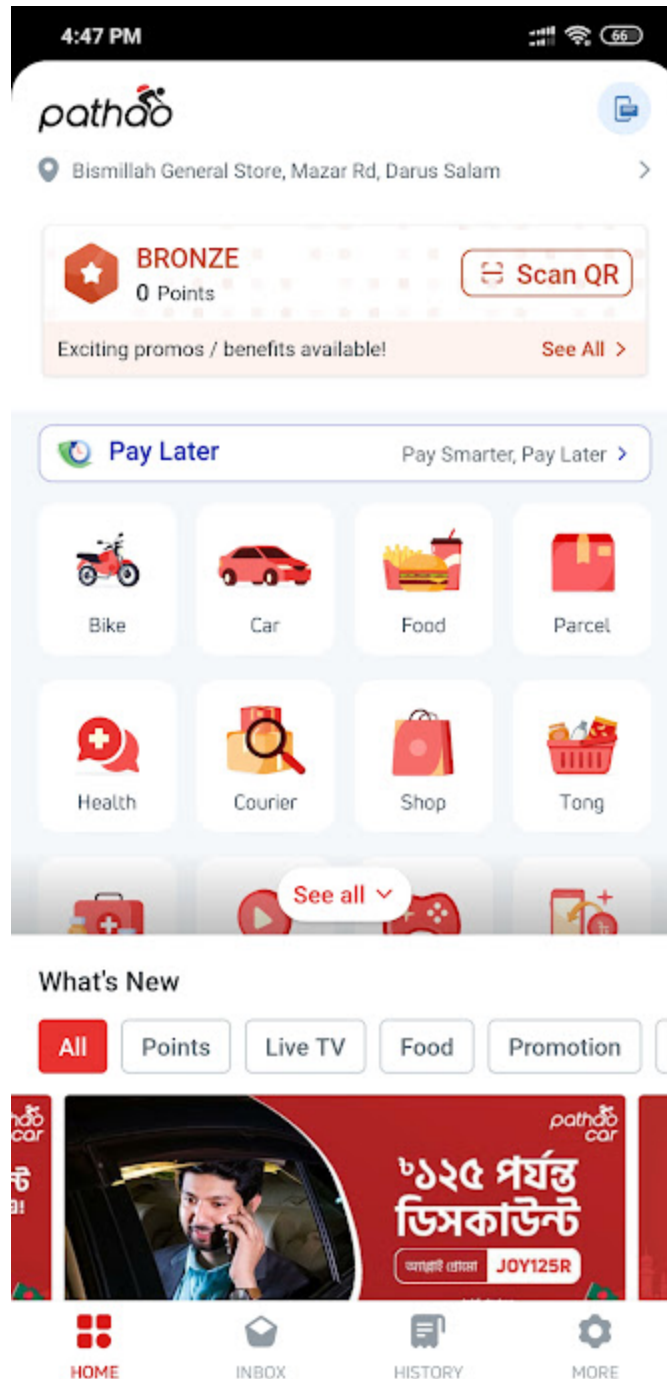


Fig 2.2.4: ride hiring application -Pathao

In figure 2.2.3 there is also the hiring application Pathao. And Pathao also has some extra services like Uber. But both of them don't have ride sharing services that we are searching for[5].

2.3 Comparative Analysis

As we have mentioned before, there are some applications which are quite similar to what we want. for example, Food Panda is delivering food from restaurants to home or where we want but they are not providing any sharing facilities. On the other hand the ride sharing applications are providing riders to the passengers. But we were wanting a service where we can take passengers who want to go with us on the same route and share the cost of fuel.

In table 2.3.1 there is a comparison between the existing application offers and our desired query. But we can see in the table that no such application provides what we actually want.

Table 2.3.1: Comparison between various application

App Name	Type	They Offer	Sharing	Desired Query
Foodpanda	Food	Food Delivery Food Pick-up	No	Not Fulfilled
HungryNaki	Food	Food Delivery	No	Not Fulfilled
Uber	Ride	Ride Hiring	No	Not Fulfilled
Pathao	Ride	Ride Hiring	No	Not Fulfilled

2.4 Scope of the Problem

After facing the problem and searching for the solutions, we realize that there are no service providers or applications or websites available. Some the application said that they are offering ride sharing but in actual meaning we found that we can hire their ride. But we can not share our ride when we travel. And also we can not find any service where we can share restaurants or family platers.

Then we decided to take this as an opportunity and build an android application which can provide all the services together. We have two sections in our application. One is the food section for avail restaurant offers or platers with other peoples. And we also create a ride section where people can share their rides when they travel with their personal vehicles. And others can go with them if their route matches.

2.5 Challenges

To build this application we faced so many challenges. Overcoming the challenges is another challenge to us. The challenges we faced :

- To choose the application type.
- To choose the primary programming language, frameworks, database and all.
- To make it more user friendly and user acceptable.

CHAPTER 3

REQUIREMENT ANALYSIS

3.1 Business Process Modeling

Generally, representing the flow of a system is called Business process model. In short, BPM defines the GUI of systems workflows that disclose the potential improvements. We used BPM to improve the path of our application. The business-to-business forms comprises mapping and sub-processing to their layer. A commerce process demonstrates how operations are done to accomplish the specified destinations of a company.

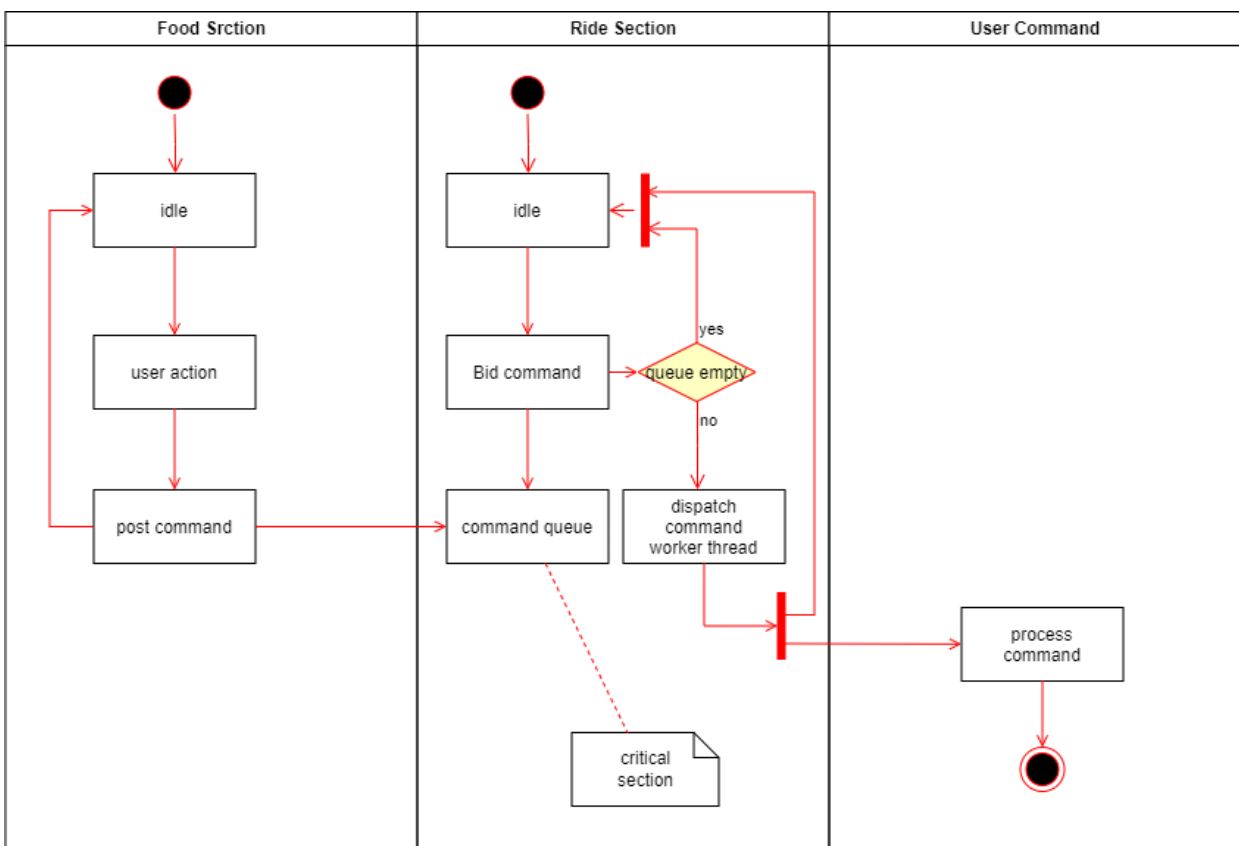


Figure 3.1.1: Business Process Model.

In figure 3.1.1 we can see the business process model of our proposed application.[1]

3.2 Requirement Collection and Analysis

Initial conditions for developing an application is Requirement collection and analysis. To build this application, we need two kinds of requirements:

- Functional Requirement.
- NonFunctional Requirement.

3.2.1 Functional requirements

Functional requirements are those activities which are performed by software or application.

Functional Requirements In this application there are many functional requirements.

- Users have to register and login.
- Users can create posts for both food and ride sharing.
- Users can comment on any posts.
- Users can edit user details.
- Remove and edit their own posts.
- Logout from the application.

3.2.2 Nonfunctional requirements

Nonfunctional requirements define the personality of an application.

In order to get more user satisfaction based on their needs, we had to meet non-functional requirements for my project. I have to maintain

- Usability requirement
- Serviceability requirement
- Manageability requirement
- Recoverability requirement
- Security requirement
- Reliability requirement

3.3 User Case Modeling Description

In the figure 3.3.1 we can see the user case diagram.[1]

One user can register, login, visit the food section, visit the ride section, create posts, make a bid in a post, visit timeline, edit profile and last but not the least log out.

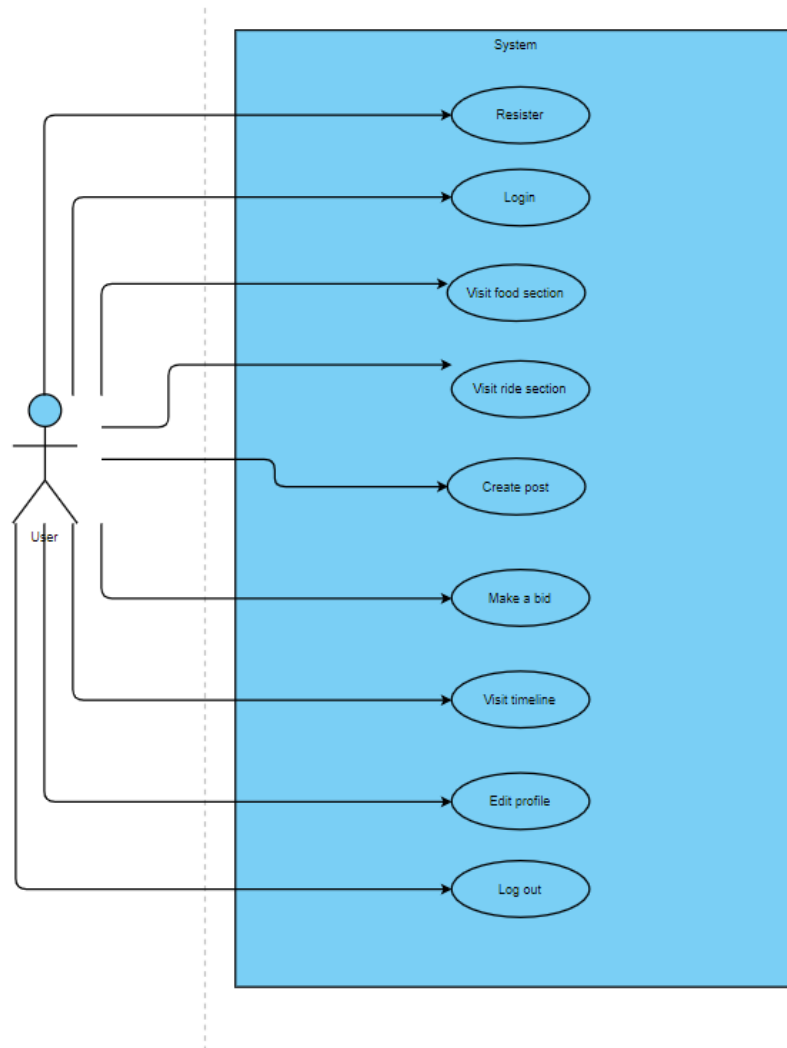


Figure 3.3.1: Use case modeling diagram.

Table 3.3.1: Register

Use case name:	Register
Actors(s):	User
Summary Description:	User can register for an account in this system
Pre-condition:	Users add here all the information and fill up the registration form.
Post-Condition:	User will get user id
Functional Requirement:	Format of password
Non-Functional Requirements?	Language support

Table 3.3.2: Login

Use case name:	Login
Actors(s):	User
Summary Description:	User can log in our system
Pre-Condition:	Users must fill in the username and password correctly.
Post-Condition:	After logging in successfully, users access our system.
Functional Requirement:	Non functional requirement
Non-Functional Requirement:	No Non functional requirement

Table 3.3.3: Search Filters

Use Case Name:	Search Filter
Actors(s):	User
Summary Description:	User can search filters
Pre-Condition:	
Post-Condition:	User view this search filters
Functional Requirement:	
Non-Functional Requirement:	No non-functional requirement.

Table 3.3.4: Visit Food Section

Use Case Name:	Visit food section
Actors(s):	User
Summary Description:	User can scroll or crate pool or bid
Pre-Condition:	User create post
Post-Condition:	User view pool or bid
Functional Requirement:	Post details
Non-Functional Requirement:	No non functional requirements

Table 3.3.5: Visit Ride Section

Use Case Name:	Visit Ride Section
Actors(S):	User
Summary Description:	User can scroll or create pool
Pre-Condition:	User create pool
Post-Condition:	User visit pool
Functional Requirement:	Pool Details
Non-Functional Requirement:	No Non functional Requirements

Table 3.3.6: Create Post

Use Case Name:	Create post
Actors(S):	User
Summary Description:	User can create pool
Pre-Condition:	User create pool
Post-Condition:	User view pool
Functional Requirement:	Pool details
Non-Functional Requirement:	No Non Functional Requirements

Table 3.3.7: Make a bid

Use Case Name:	Make a bid
Actors(S):	User
Summary Description:	User can make a bid
Pre-Condition:	
Post-Condition:	
Functional Requirement:	
Non-Functional Requirement:	No non functional requirements

Table 3.3.8: Visit Timeline

Use Case Name:	Visit timeline
Actors(S):	User
Summary Description:	
Pre-Condition:	
Post-Condition:	User
Functional Requirement:	
Non-Functional Requirement:	No non functional requirement

Table 3.3.9: Log Out

Use Case Name:	Log Out
Actors(S):	User
Summary Description:	User can log out from our system
Pre-Condition:	
Post-Condition:	
Functional Requirement:	
Non-Functional Requirement:	No Non-Functional Requirement

3.4 Logical Data Model

Entity-Relationship Diagram (ERD) is a diagram which is used to show the relationship of entity sets stored in a database. A substance is considered to be a question of a database. An entity set is the collection of all comparable substances of a whole database. These substances have some qualities that characterize the properties of a substance set. The consistent information demonstrated presents the Entity-relationship graph called the ER graph. The substance is a question or concept in which data is put away.

In figure 3.4.1 we can see that there is an ER diagram (Entity Relationship Diagram) of our application.[1]

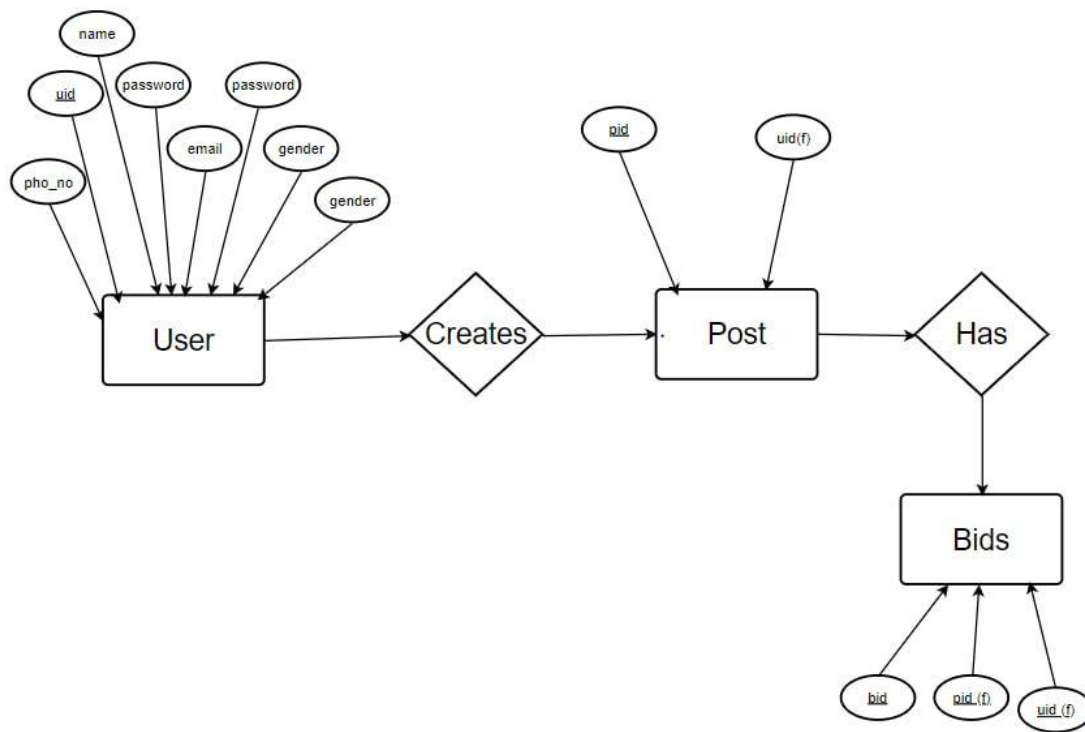


Fig 3.4.1: Entity-Relationship Model

3.5 Design Requirements

Clients will be searching for a well-designed site since a well-designed site takes pleasure in drawing their consideration when they visit the site. In common, a well-designed site can be said to reflect the behavior of an organization. A few required rules to be used in creating our extension from a great plan viewpoint.

- **Easy to understand features:** Our application does not require a detailed clarification of how it works since it keeps up the route and instinctive unmistakable structure.
- **User friendly Interface:** Over the past few years, the application user-friendly interface has added value in the market, so we need to create a user-friendly interface for our project.

- **Efficient:** It is very important to run the application faster on any device. We made our application very smooth and error-free. We made the design of this website very easy.
- **Compatible in various android versions:** Our application will work perfectly in all different android versions types.
- **Reducing complicated tasks:** Users can visit that's why we will reduce complicated tasks for them at registration, payment gateway, and get updated with order status.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

The visual parcel of an application is known as the front-end. We have developed our application with Node.js which is a frontend library of JavaScript. Also we use MariaDB framework[8].

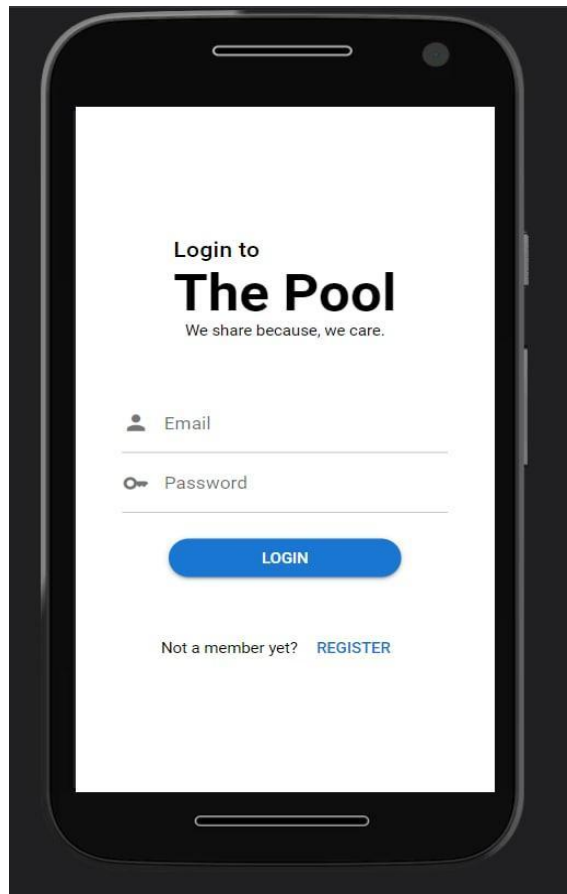


Figure 4.1.1: Login page

In figure 4.4.1 we can see the login page. To use this application, users must have to log in this application. If they did not register before, they will not be able to login to this application. That's why they have to register this application.

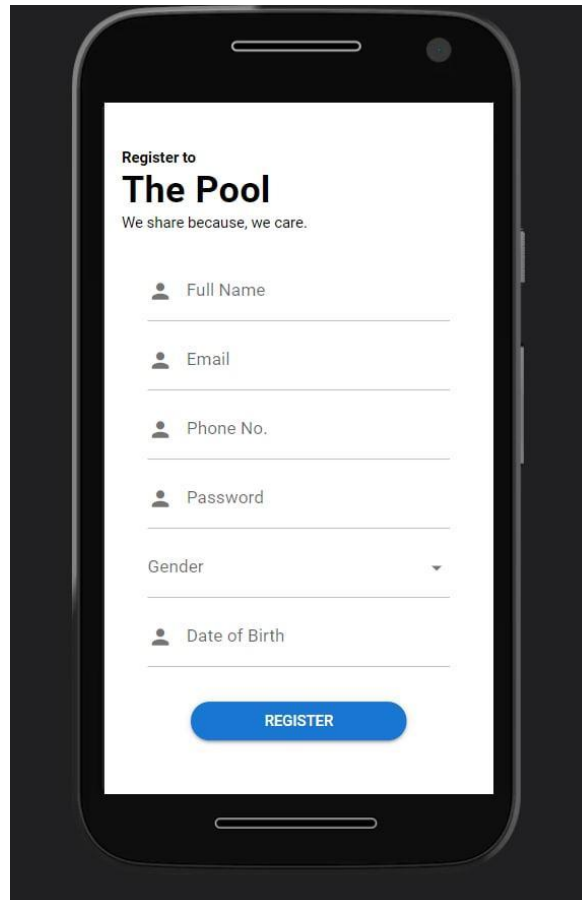


Figure 4.1.2: Registration page.

In figure 4.1.2 we can see the registration page. If anyone wants to use this application they must be registered. Users can register them by giving some basic information. All of their information is fully secured to our database. After completing registration users can login their profile by giving their email and password.

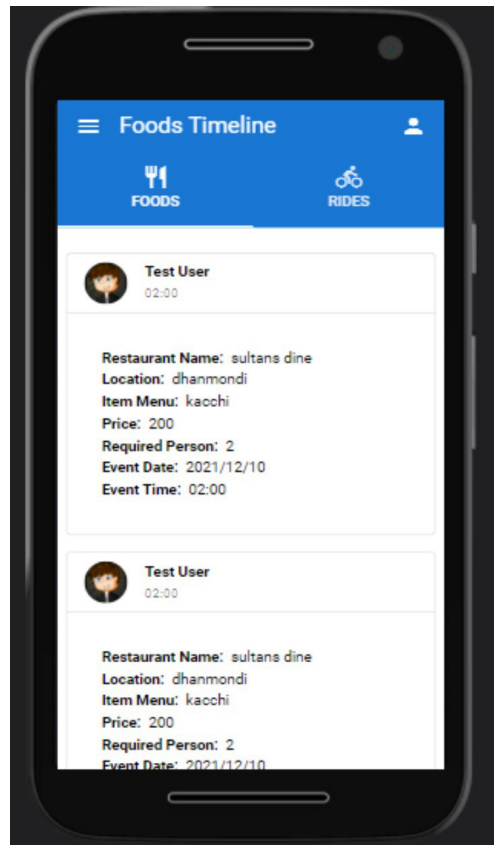


Figure 4.1.3: Dashboard and Food section

In 4.1.3 we can see the Home page of this application that is called dashboard. There are two portions. One is the Food section and the other is the Ride section. On the home page users can view all the posts and offers. This is by default the Food section on our homepage. Users can see other posts and bid it or create their own post.

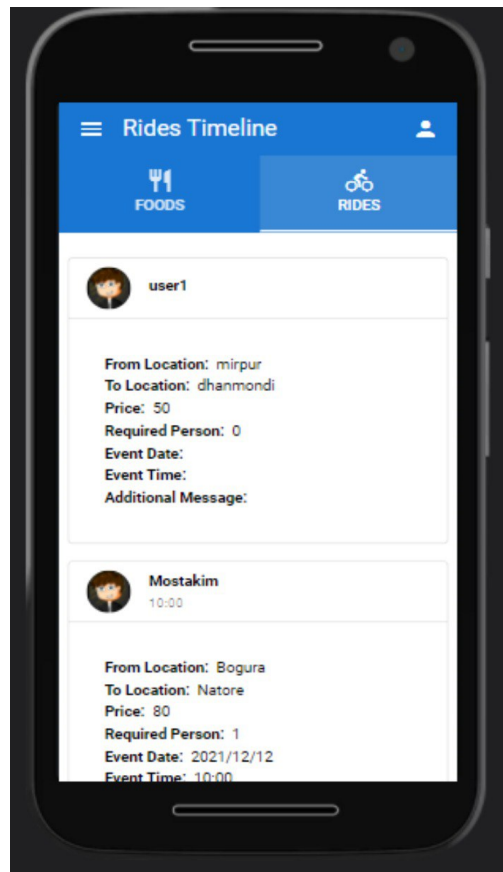


Figure 4.1.4: Ride Section

In figure 4.1.4 we can see the ride section of this application. Users can see the rides, bid a ride or create their own ride.

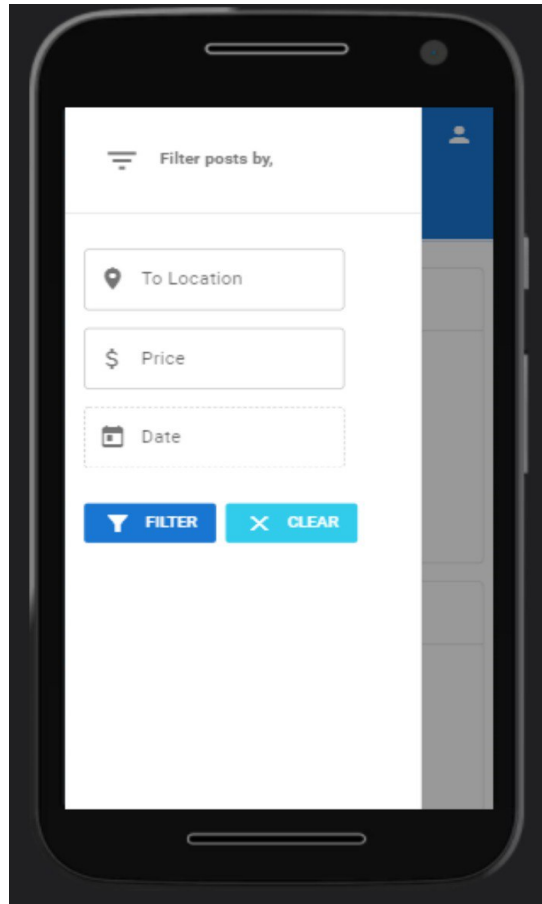


Figure 4.1.5: Search Filters.

In figure 4.1.5 Search filters are shown. Users can filterize their search option by place, price and date.

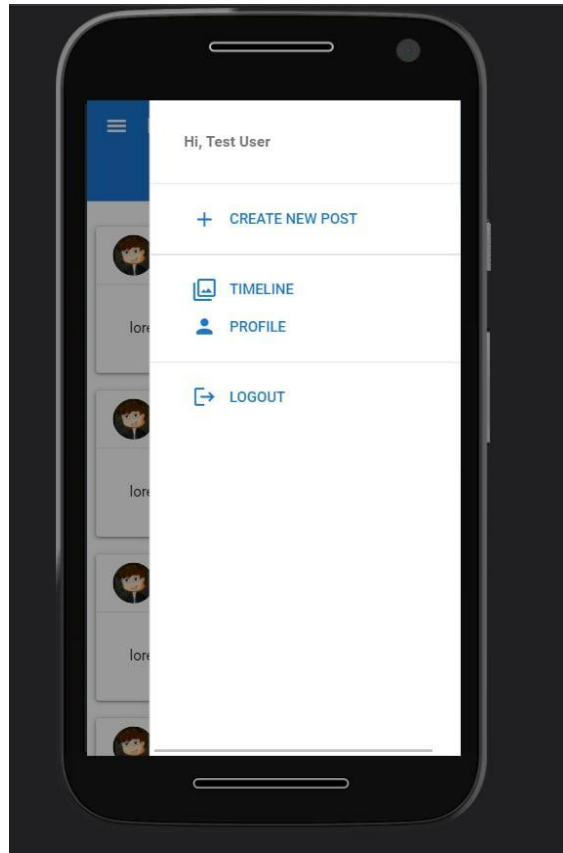


Figure 4.1.6: User Menu.

In figure 4.1.5 we can see the user menu of this application. Here users can create a new post, go to timeline, also go to profile menu and also log out from this application.

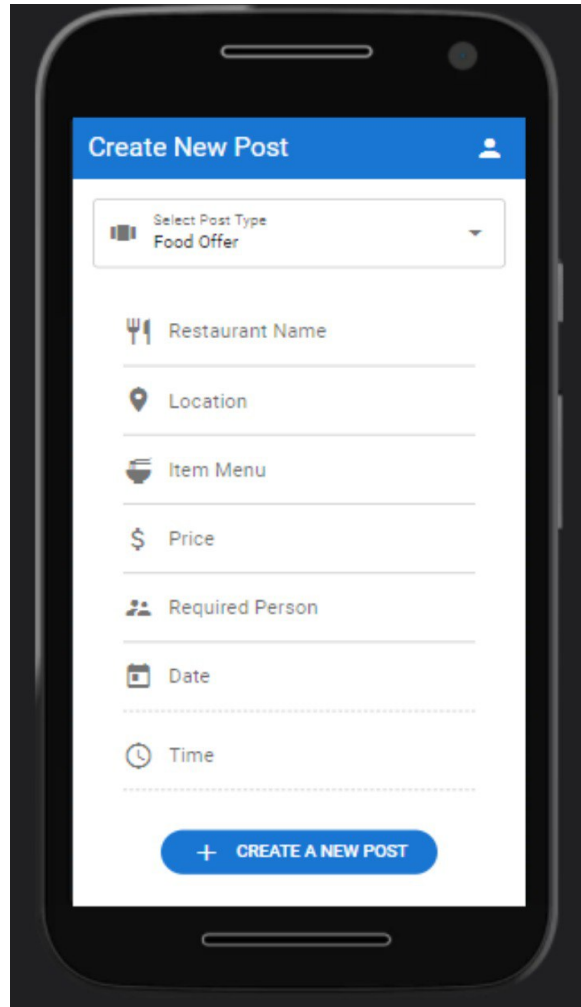


Figure 4.1.7: Create post.

In figure 4.1.7 we can see the create post section of this application. Here users can create a new post with appropriate information.

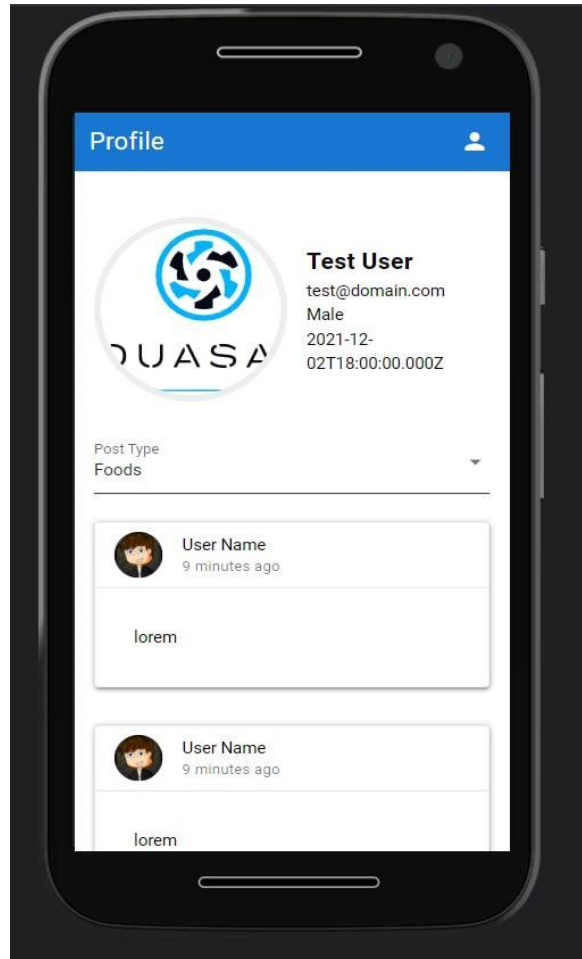


Figure 4.1.8: Profile

In figure 4.1.6 we can see the profile menu of this application. Here we can update our profile, update our profile picture and many other things. Also we can see our previous activities in this application.

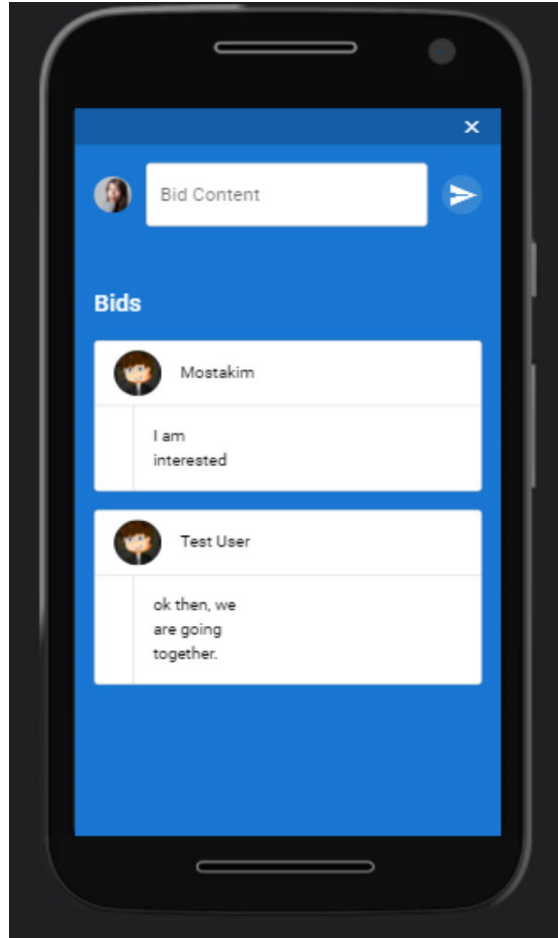


Figure 4.1.9: Bid Option.

In figure 4.1.6 we can see the Bid option in this application. Users can bid against posts to match their sharing partner. This part is mainly for communication between users.

4.2 Back-end Design

We designed the front end of our application by using QuasarJS which is dependent on VueJs. VueJs is a framework of JavaScript. The reason behind using QuasarJs to develop single page applications where users can navigate easily between the different pages without waiting for the pages to load.

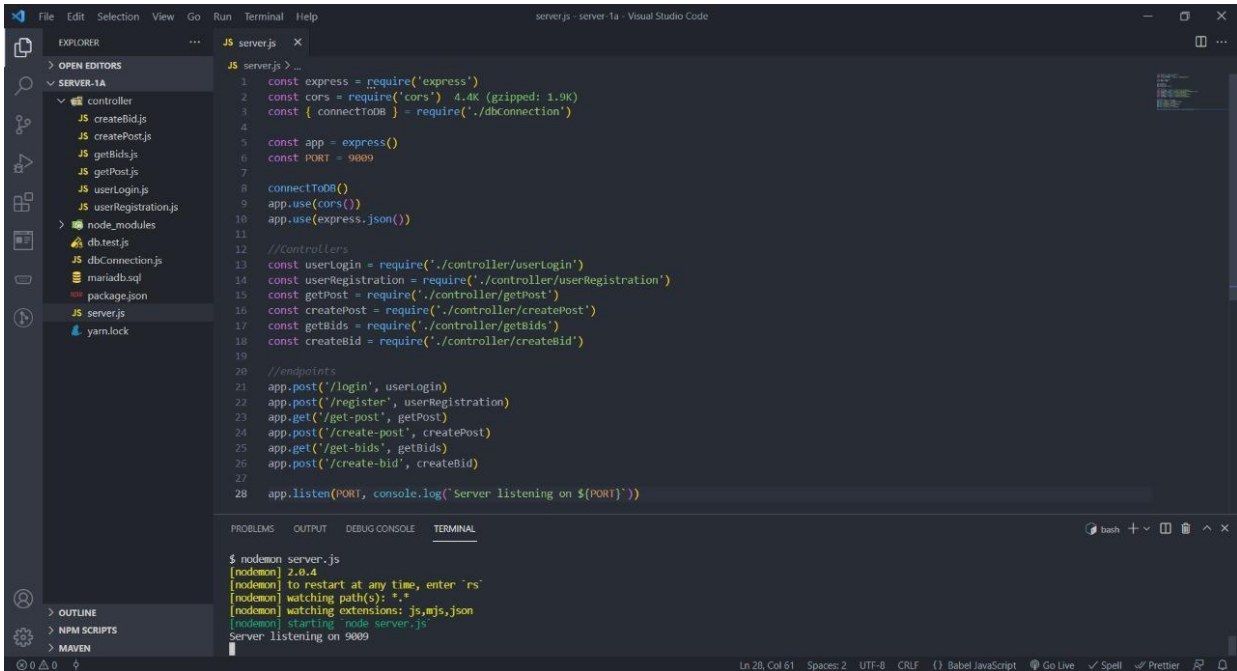


Figure 4.2.1: Client app folder structure.

Programming folder structure of client application is shown in the figure 4.2.1

The folders created and codes are written in the Visual Studio code editor[2].

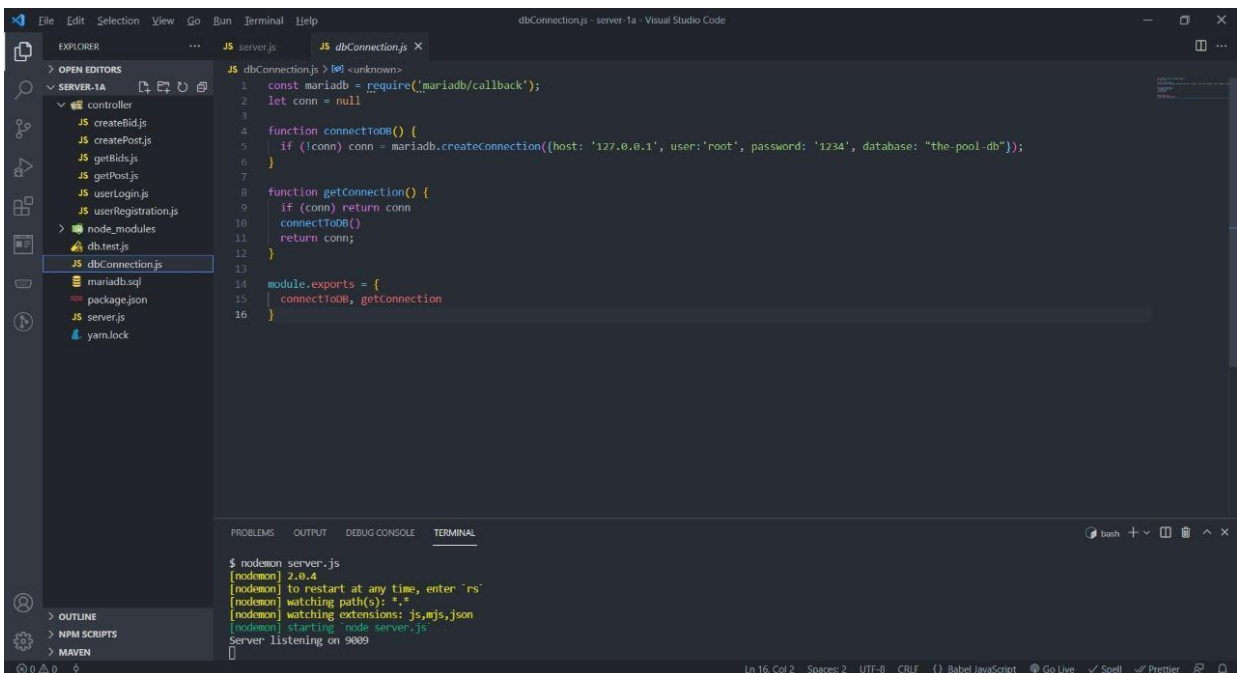


Figure 4.2.2: Server folder structure.

In figure 4.2.2 the folder structure of the server is shown. And this is also created in Visual Studio code editor[2].

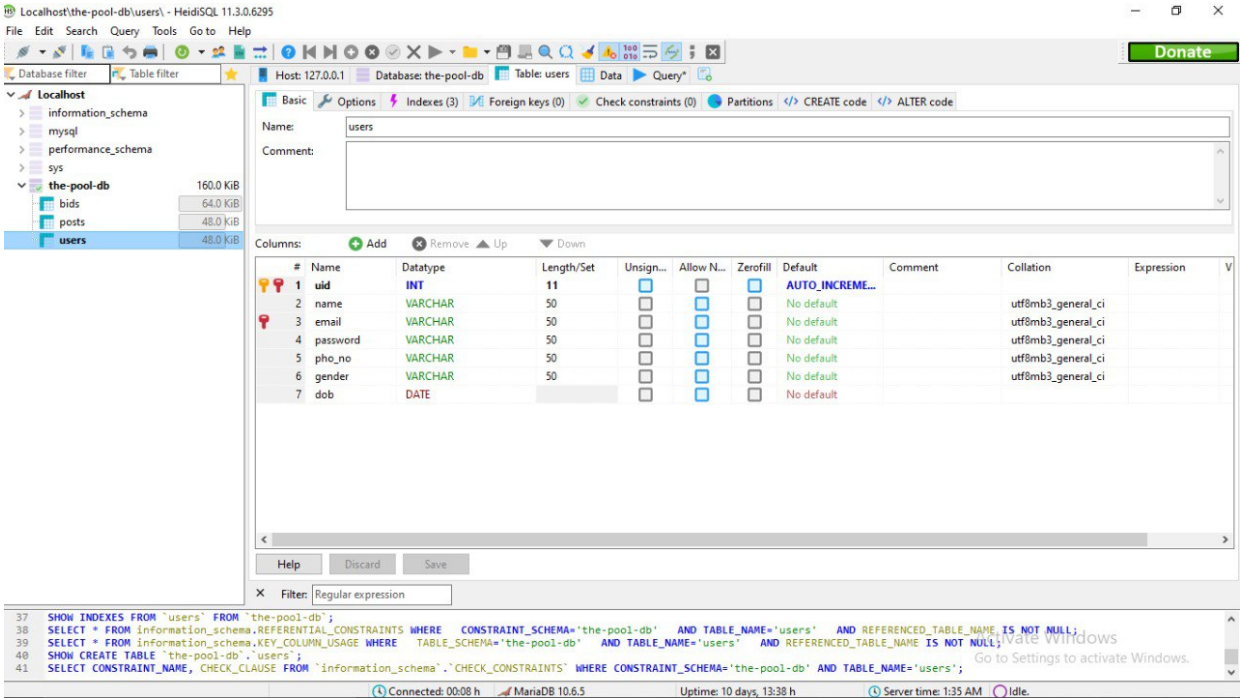


Figure 4.2.3: Database for users.

In figure 4.2.3 the database structure of the user is shown. We can see the table of the user database.

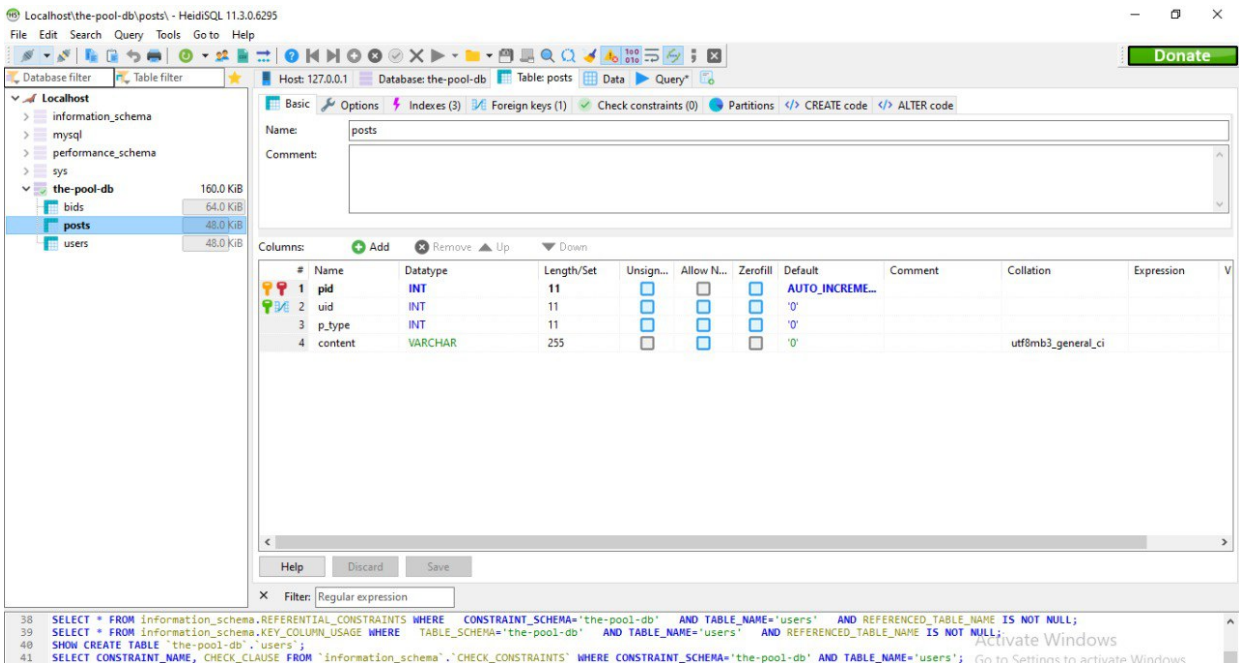


Figure 4.2.4: Database for posts.

In figure 4.2.4 the database structure of the posts is shown. We can see the table of the posts database.

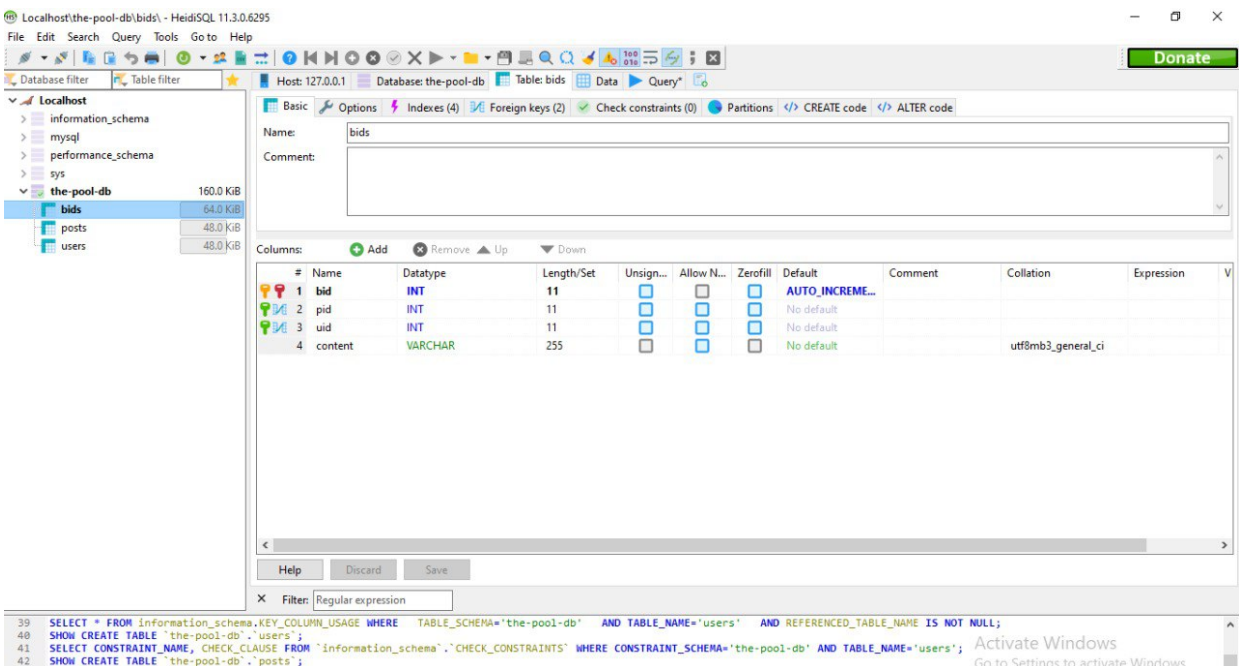


Figure 4.2.5: Database for bids.

In figure 4.2.5 the database structure of the bids is shown. We can see the table of the bids database.

4.3 Interaction Design and User Experience (UX)

Interaction means, how client application communication with server side and server side communication with database. The interaction effects on user experience. In the figure 4.3.1 the interaction between client and server, and server and database are shown[1]. The whole interaction works through REST API format.

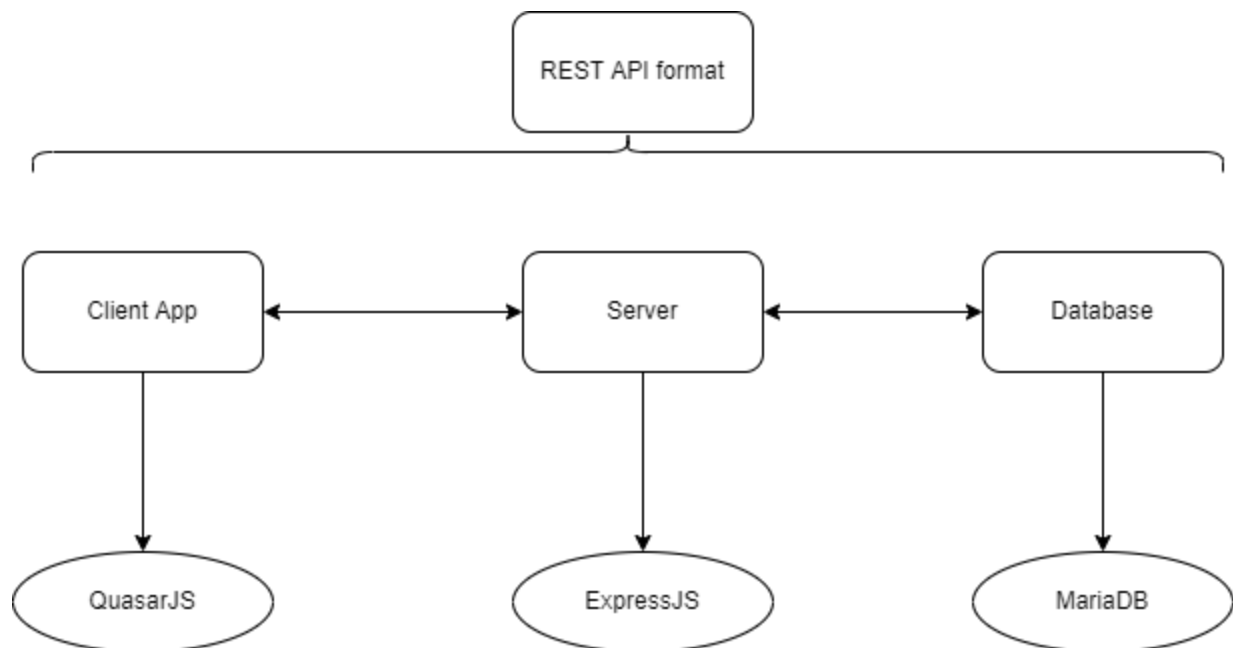


Figure 4.3.1: Interaction.

4.4 Implementation Requirements

To make the project, we need Visual Studio Code Editor to design the Application with the JavaScript programming language. On the other hand, for the backend, we needed a Node JS platform. In our case we use NodeJS LTS for our development[9]. We need Android studio to

build the application[7]. And we also need some packages or framework to make our work easy. We use QuasarJS which is a dependent framework of vueJS. And VueJS is a framework of JavaScript. We also need MariaDB for database management.

In short we need

- Visual Studio[2].
- NodeJS -LTS[9].
- MariaDB[8].
- Android Studio[7].

CHAPTER 5

IMPLEMENTATION TESTING

5.1 Implementation of Database

Database and table are mainly used for loading the data dynamically. We implemented the backend with Node JS and MariaDB. Node JS is an open source, cross-platform, backend, JavaScript runtime environment that executes JavaScript code outside a web browser. Developers utilize Node JS to type in JavaScript command line devices and for server-side scripting. Also we use the Express JS framework. It's a free and open source back end web application framework. Which is designed for building web applications and APIs. we also used MariaDB. MariaDB is generally used for high volume data storage[8].

- Node JS
- MariaDB
- Express JS

5.2 Implementations of Front-end Design

We designed the front end of our application by using QuasarJS which is dependent on VueJs. VueJs is a framework of JavaScript. The reason behind using QuasarJs to develop single page applications where users can navigate easily between the different pages without waiting for the pages to load. Moreover, in QuasarJS the file folder structure is very developer friendly. By using it we can create reusable UI components. Here for making this application we used Visual Studio Code for coding and we also used various React CSS classes, VueJS, forms, edit texts, buttons, icons, navigation bar. Then we linked all the things with the components of the class by calling them. Here it worked by logical operations.

- JavaScript.
- ViewJS.
- QuasarJS.

5.3 Implementation of Interactions

The action or connection between two things is called Interaction. Here in our application, the interaction works between client application, server and database. We used ExpressJS for this interaction.. And all these interactions worked through rest API format.

5.4 Testing Implementation

Testing implies testing something for guaranteeing the quality of that item. Testing is an integral portion of all sorts of applications or computer programs. By testing our site, we continuously attempt to recognize the bugs in prior arrangement and attempt to unravel it. We utilize conclusion to conclusion testing for each functionality of our site to guarantee it works as anticipated. We moreover utilized stack testing to check our application's execution. We moreover utilize a relapse test for this application. Regression test implies after fathoming a bug of a usefulness once more tests the total application. We too did that to guarantee the least bugs of our application.

5.5 Test Results and Reports

There are some test cases and results of our application are given below in table 5.1.1:

Table 5.5.1: Test case and result

Test Id	Test Case Name	Test Process	Expected Outcome	Actual Outcome	Result
01	Register	Wrong Information	Not Registered	Not Registered	Pass
02	Register	Correct Information	Registered Successfully	Registered Successfully	Pass
03	Login	Wrong Information	Login failed	Login failed	Pass

04	Login	Correct Information	Login Successfully	Login Successfully	Pass
05	Search Filter For food	Correct Process	Worked Successfully	Worked Successfully	Pass
06	Search Filter For ride	Correct Process	Worked Successfully	Worked Successfully	Pass
07	Add post for food	Wrong Process	Post Unsuccessful	Post Unsuccessful	Pass
08	Add post for food	Correct Process	Post Successful	Post Successful	Pass
09	Add post for ride	Wrong Process	Post Unsuccessful	Post Unsuccessful	Pass
10	Add post for ride	Correct Process	Post Successful	Post Successful	Pass
11	View All Posts	Correct Process	Showing all posts	Showing all posts	Pass
12	Make a Bid	Correct Process	Bided Successfully	Bided Successfully	Pass
13	Reply a Bid	Correct Process	Reply Successfully	Reply Successfully	Pass
14	View All Bid	Correct Process	Showing all bids	Showing All bids	Pass
15	Log Out	Correct Process.	Successfully Logged out	Successfully Logged out	Pass

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on society

Our application will bring together many strangers through this work. Strangers can be friends when they use our application and share their food and ride. By using the application and sharing food can reduce waste of food. And it can help to maintain the demand and supply of food. Sometimes In our society some middle class and poor people can not fully fulfill their dream to eat at a good restaurant or good quality food for a high price. But sharing food will cost less for the same food.

Secondly, sharing a ride with others will be more environmentally friendly and cost less for transportation.

6.2 Impact on Environment

Our proposed application is obviously environmentally friendly. By using the application, positive impact can be noticeable. By sharing extra food with others will reduce the waste and it will help the environment.

On the other hand, if we start to share rides then the number of vehicles for transportation will be reduced. Because of it, pollution by vehicles will be reduced. Need of fuel for vehicles will be reduced.

6.3 Ethical Aspects

Our application is open to everyone. Which is why any type of person can use our application. Due to which the authorities will not have the opportunity to monitor above all.

Anyone can misuse the application. But if we think positively then this application can build our good ethical aspects. Meeting with random people and sharing our food and rides with them can make us extroverted and help us to develop our communication skills. And most importantly the application can teach us to share our things which are extra or more than enough.

6.4 Sustainability Plan

We planned to build this application as a hybrid application. For now we built this application as an android application. In the future we can easily convert the same program into ios and web. On the other hand people will never stop eating and traveling. We strongly believe that people will love to use our application to share their food and ride also.

CHAPTER 7

CONCLUSION ON FUTURE SCOPE

7.1 Discussion and Conclusion

Our project is based on ride sharing and food sharing application. This project will come up preliminary with two sectors. One side will be ride-sharing and the other will be food-sharing. The consumers have to register with some terms and policies.. Taking or sharing rides through the application will be a must to do. Food sharing is also going to be done in the same way. Consumers' safety and comfort is the first priority of our project. This application is a web based android application. We chose this path to make this project single code based. The application also has some limitations. We will try to cover the limitations in future. We strongly believe that this project will help lots of people.

7.2 Scope for Further Developments

In this sector, there is always a chance for further development. Nowadays ride sharing is very popular to everyone. But we are introducing something new that is food sharing in our application. Some of our future goals are given below.

- Convert for ios and web also
- Live map for ride section
- Mail or phone verification for security
- Personal massing
- License verification for ride section
- More security for users

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Final Test

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