Group1

Car rental

RANACHRITA - Car Service

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Table of Contents

Design

- ## Design Goals.

Some Criteria for our Design Goals

1. Performance Criteria

    (a) Response time: For achieving the most reasonable response time we decided to use the light database like firebase DB and implement the app and release it as an Android app.

2. Dependability Criteria

    (a) Robustness: We are going to check all inputs that users can enter to prevent entering invalid data into the system.
    (b) Fault tolerance: we are going to interact with our users during app usage. meaningful errors must be shown to the user in faulty situations to alert them what should they do or what they have done wrong.

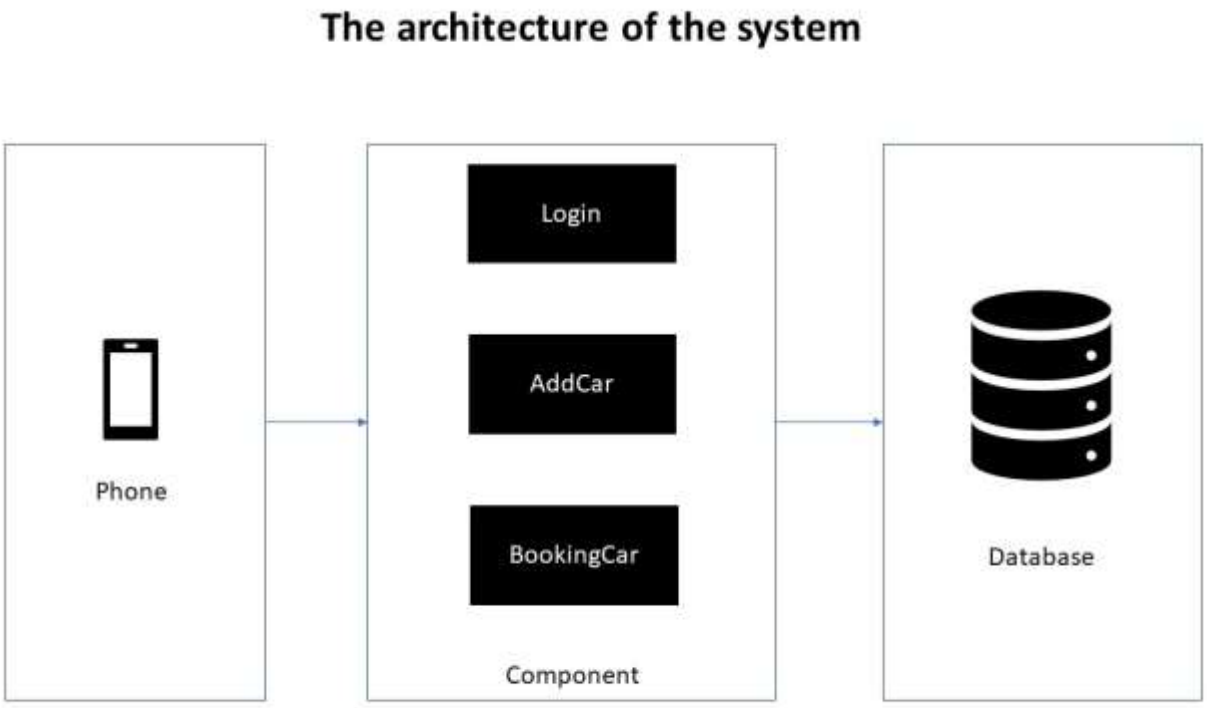
3. Maintenance criteria

    (a) Extensibility: This system will be implemented modular and that is the reason it is extensible.
    (b) Modifiability: Structured functional design helps us to modify functions easily.
    (c) Adaptability: Android apps are the most popular among people all over the world as most of the people use android phones and it is easy to download.
    (d) Portability: All people who have smart android phones are able to be our users and download the app.

4. End-user criteria

    (a) Usability: The software we design is very easy to use and understand. We design it as user-friendly as possible because we believe, users won't care what algorithms it uses, the UI is everything for the users. Our goal is to not bury functions under layers of meaningless icons and complicated pages. we present data in a straightforward way. we set screens up to match workflow, and size buttons according to their importance. During the design of the RANACHRITA App, we have thought about how to design this app to achieve the fulfill system according to the problems we had defined

- **The architecture of the system**
    - RANACHRITA application will be implemented on the Android framework by Java language.
    - Database is Firebase.
    - The only needed infrastructure for the system to run is a smart mobile with Android OS.



A user registers through Register Component in the system and defines if they are Customer or Host. Also, there is another role called Admin.

After registration, the user Login the system through Login Component, immediately after Login it will be checked on the database and determined that if the user is a host or customer to show them the relevant menu.

Both customers and Host are able to edit their profile through Profile Component. They can also define the information about their credit card through the Payment Component.

The host creates a list of their car(s) in CreateCar Component, in this component the host is able to enter different data about the car. After adding a car the host is able to see the car(s) list through CarList Component and it is possible for them to edit or delete a created car.

The host is also able to see a list of requests through RequstList Component. in this component they are able to accept or deny a request.

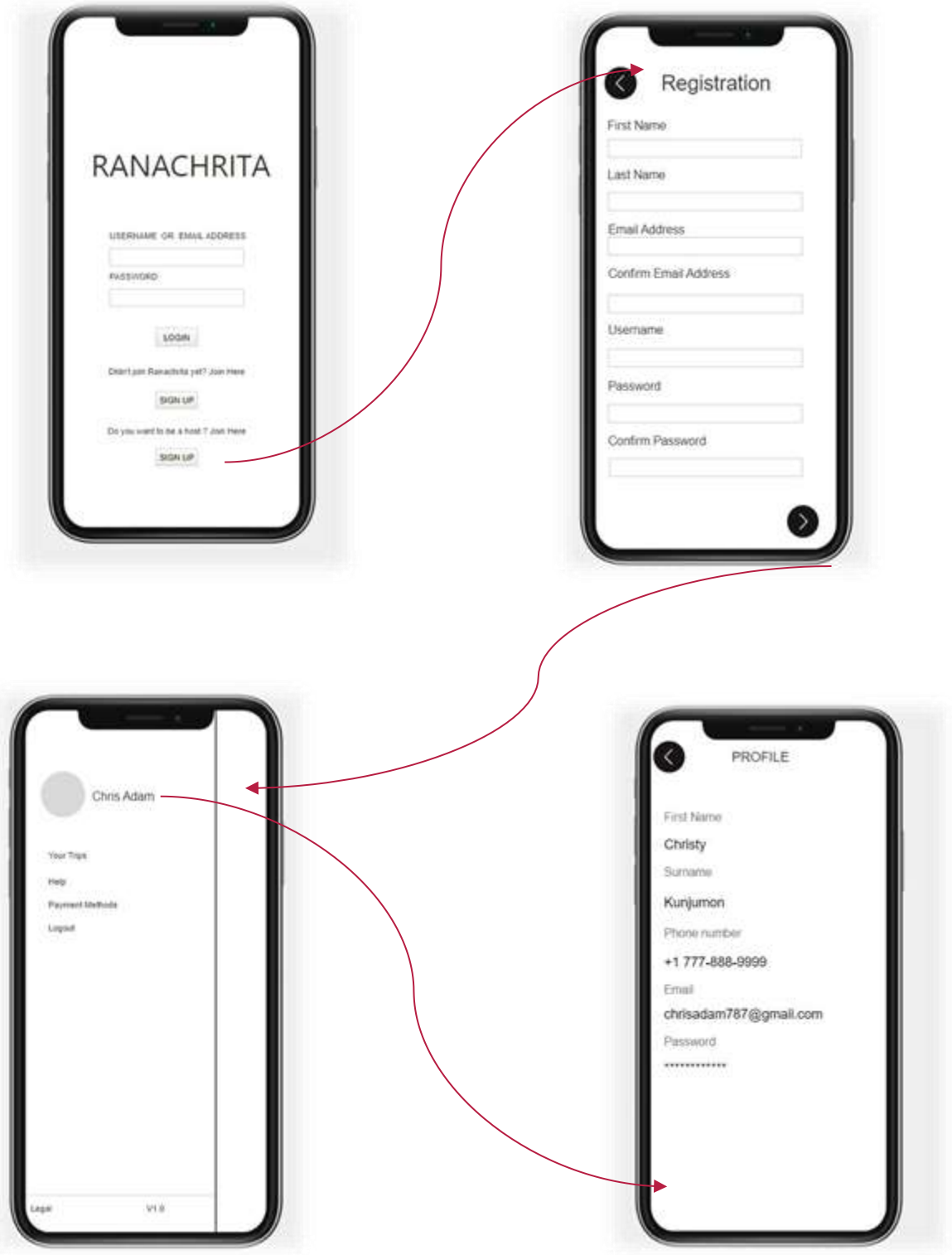
The customer is able to see a list of the car through CarsListed Component. this is list is filterable by clicking on a filter Icon and Filter Component is run then.

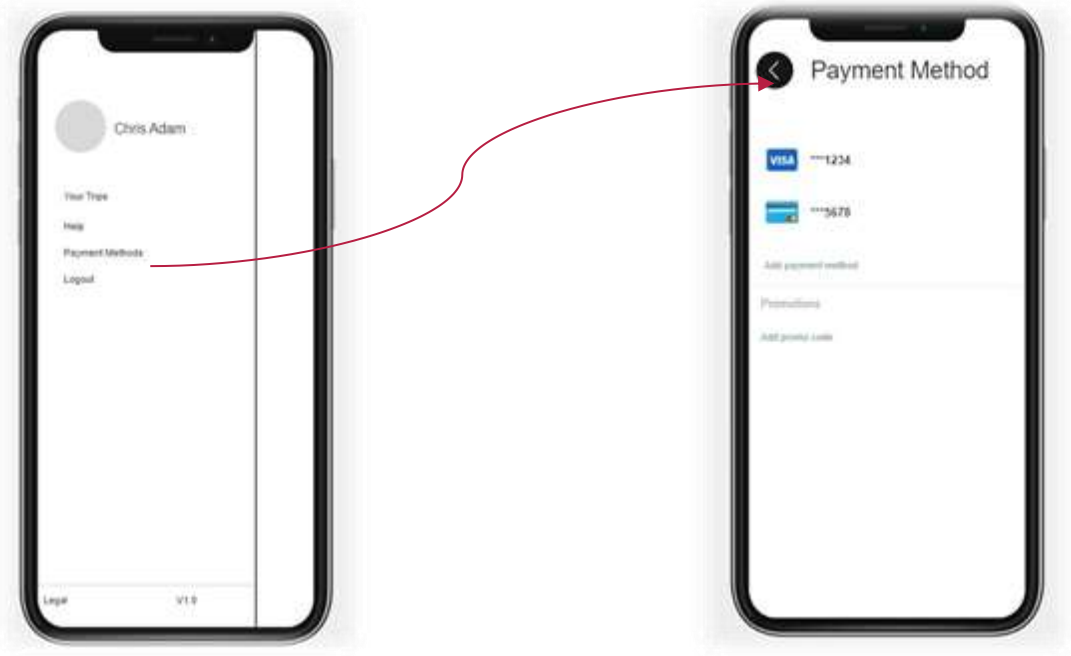
Customer can see the detail of a car by clicking on a cars block, the detail of the car will be shown through the CarDetail Component and in this component by clicking on booking button, Booking Component run and customer is able to book the car.

Because the payment information is already defined by the customer it temporarily reduces the amount of money automatically (authorized transaction).

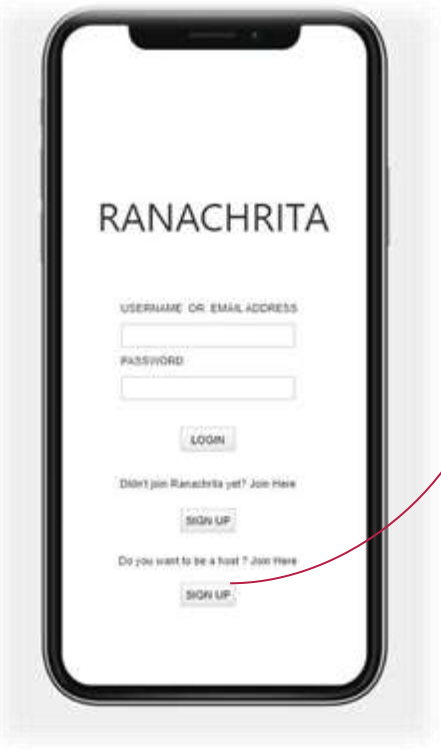
- **User interface Requirements**

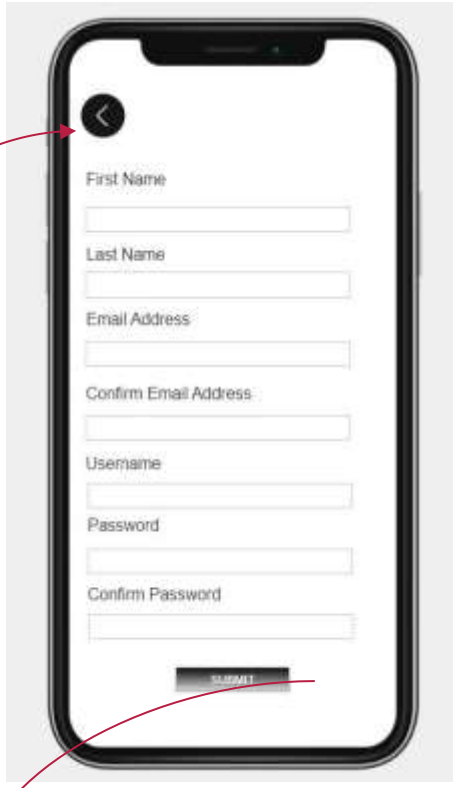
Customers can see all cars list and are able to filter the list. by clicking on one item the detail of the car is shown and through this page they are able to book the car.

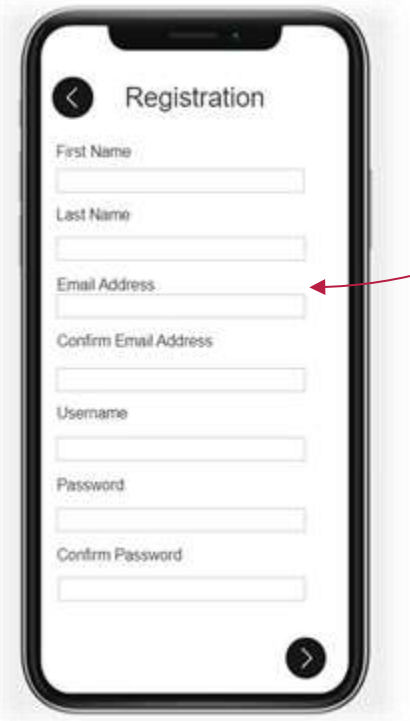


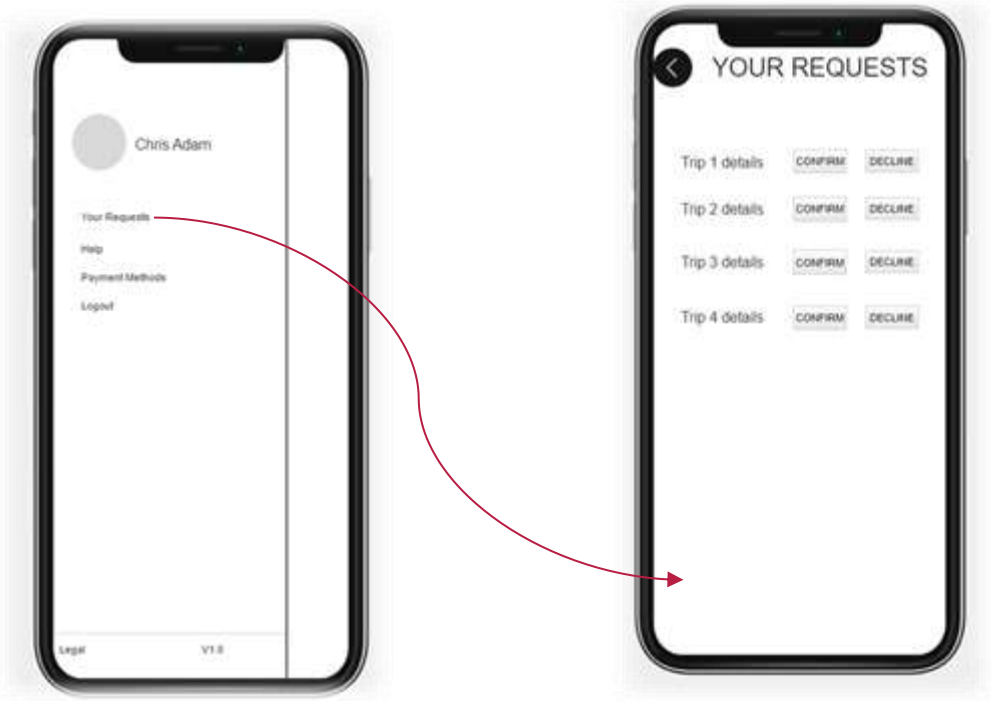

Chris Adam
Your Trips
Help
Payment Methods
Logout
Legal
V1.0
Payment Method
VISA
****1234
****5678

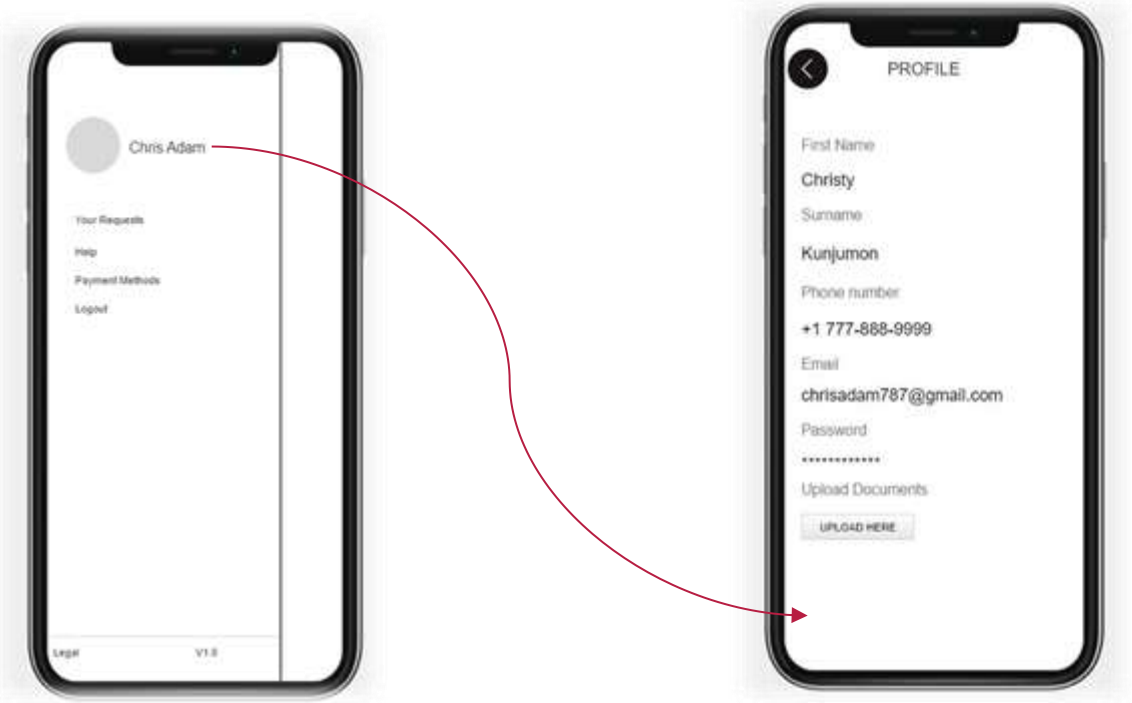
Host:

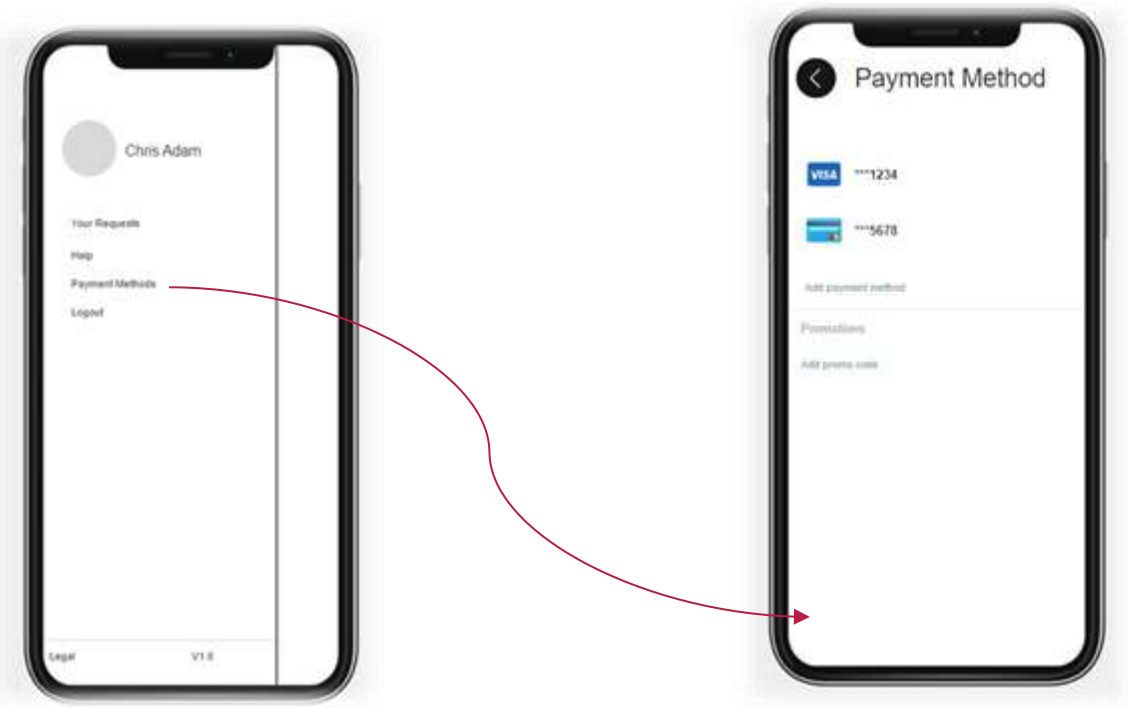

RANACHRITA
USERNAME OR EMAIL ADDRESS
PASSWORD
LOGIN
Didn't join Ranachrita yet? Join Here
SIGN UP
Do you want to be a host ? Join Here
SIGN UP


First Name
Last Name
Email Address
Confirm Email Address
Username
Password
Confirm Password
SUBMIT


Registration
First Name
Last Name
Email Address
Confirm Email Address
Username
Password
Confirm Password

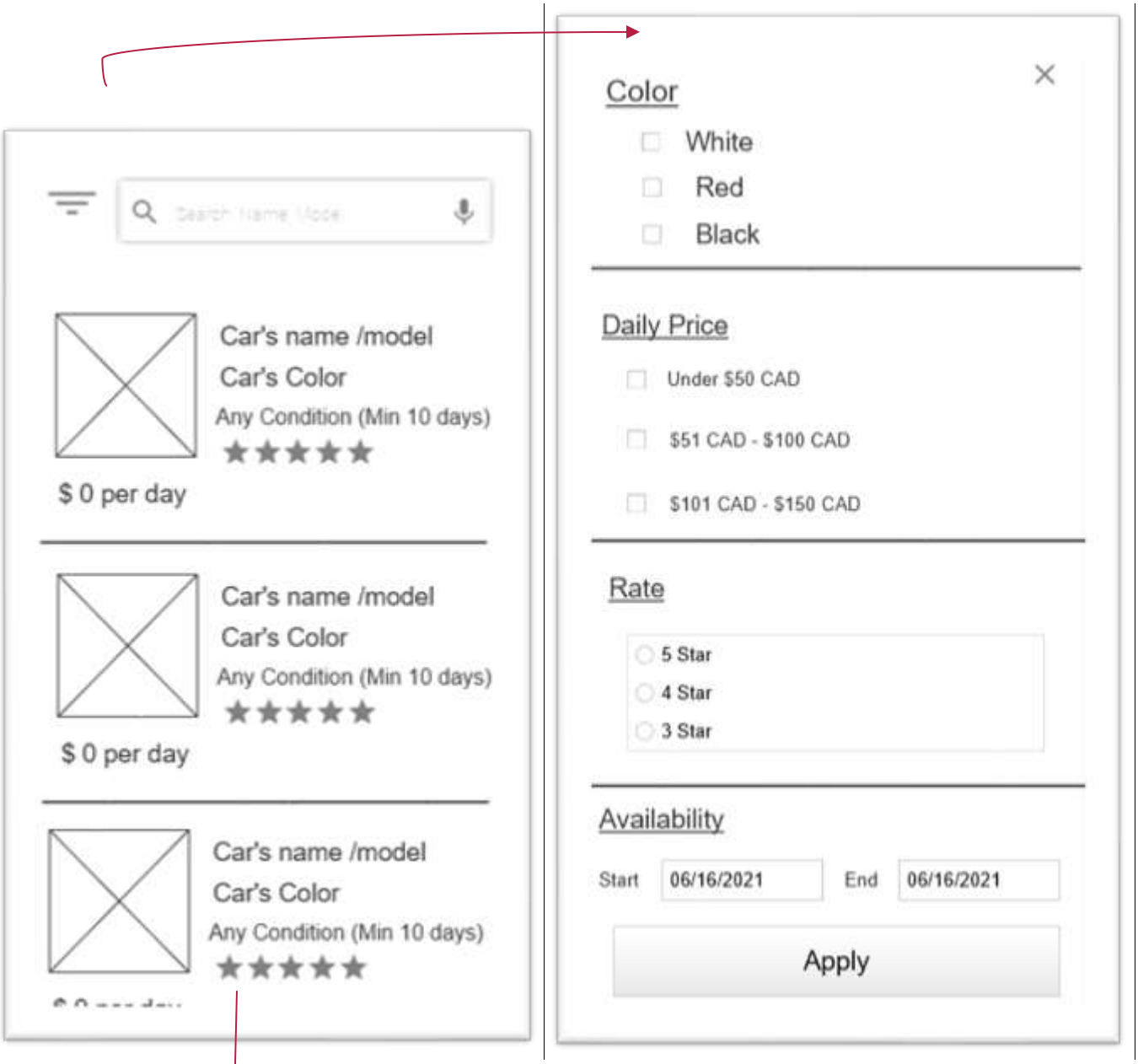

Chris Adam
Your Requests
Help
Payment Methods
Logout
Legal
V1.0
YOUR REQUESTS
Trip 1 details
CONFIRM
DECLINE
Trip 2 details
CONFIRM
DECLINE
Trip 3 details
CONFIRM
DECLINE
Trip 4 details
CONFIRM
DECLINE


Chris Adam
Your Requests
Help
Payment Methods
Logout
Legal
V1.0
PROFILE
First Name
Christy
Surname
Kunjumon
Phone number
+1 777-888-9999
Email
chrisadam787@gmail.com
Password
Upload Documents
UPLOAD HERE


Chris Adam
Your Requests
Help
Payment Methods
Logout
Legal
V1.0
Payment Method
VISA
****1234
****5678
Add payment method
Promotions
Add promo code

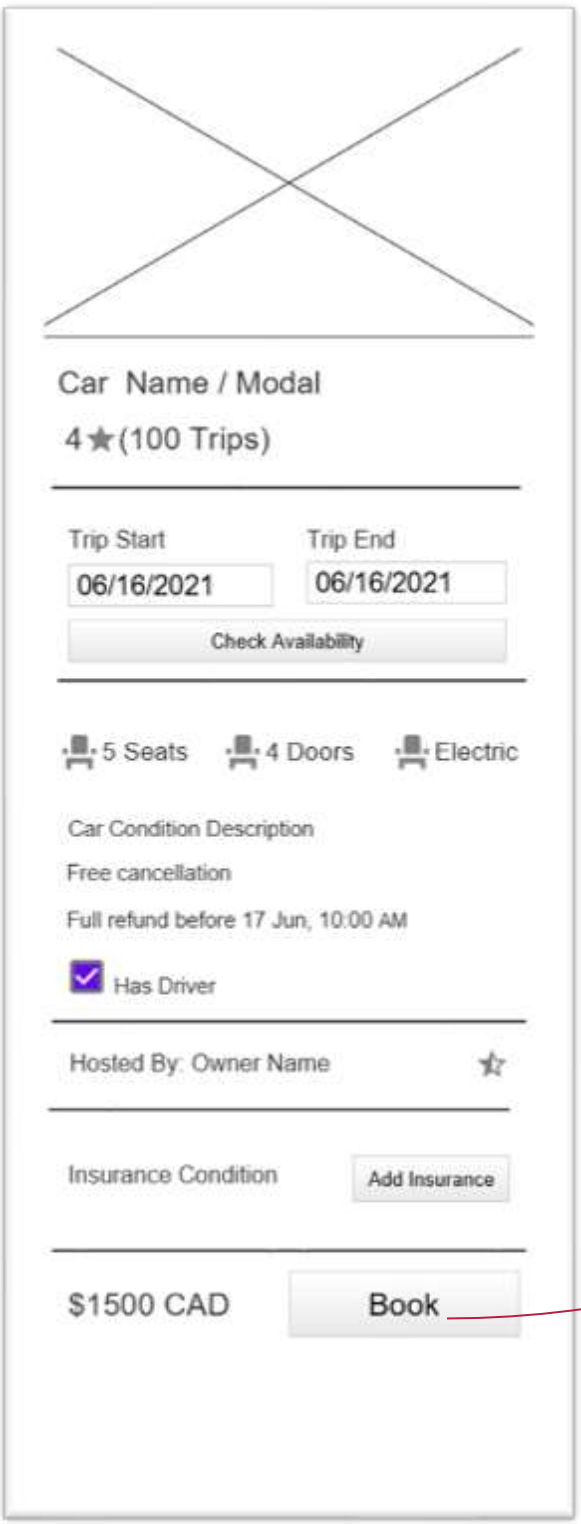
List of cars

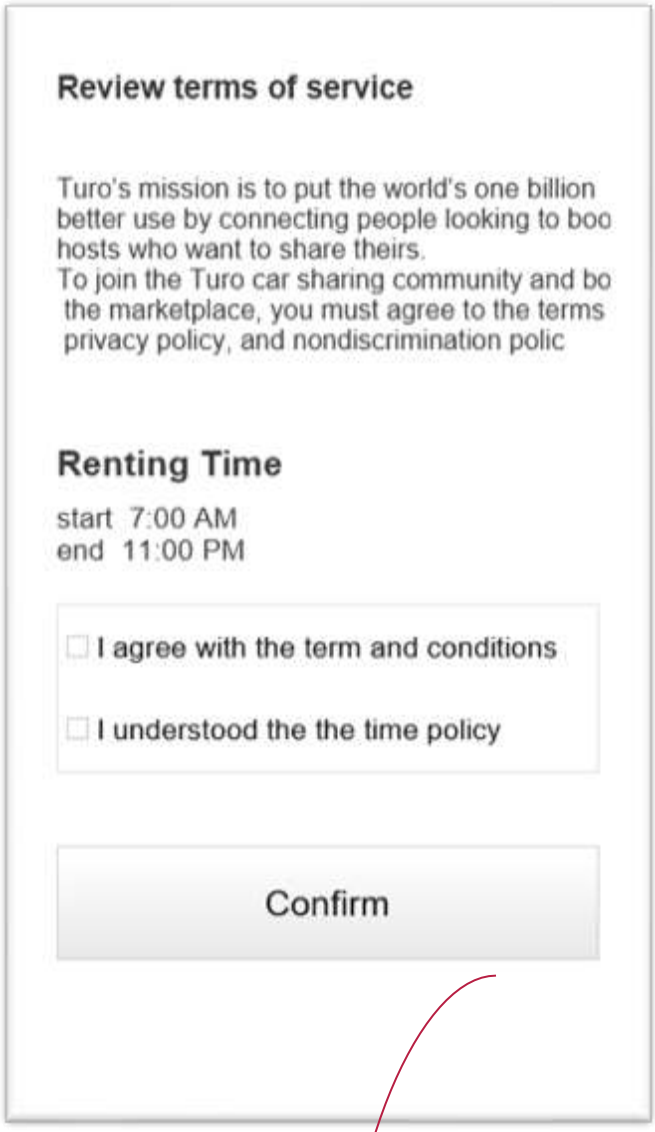
click on Filter Icon



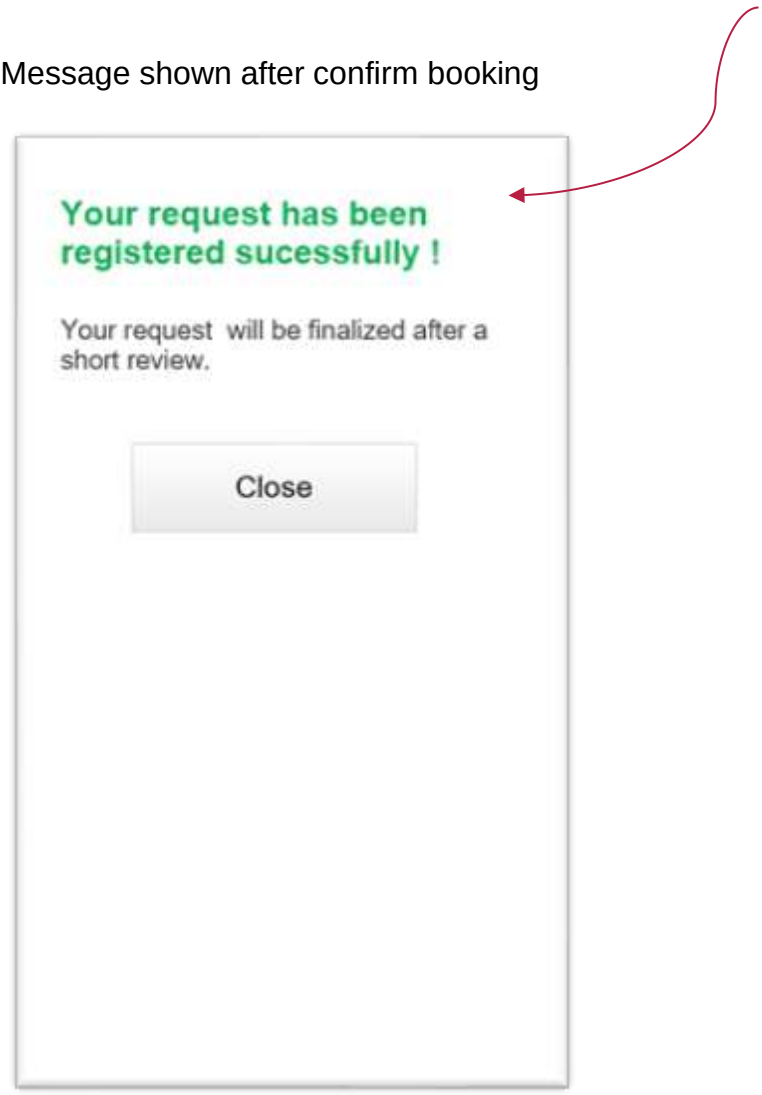
Car Detail

Booking Policy


Car Name / Modal
4★(100 Trips)
Trip Start
06/16/2021
Trip End
06/16/2021
Check Availability
5 Seats
4 Doors
Electric
Car Condition Description
Free cancellation
Full refund before 17 Jun, 10:00 AM
Has Driver
Hosted By: Owner Name
Insurance Condition
Add Insurance
$1500 CAD
Book

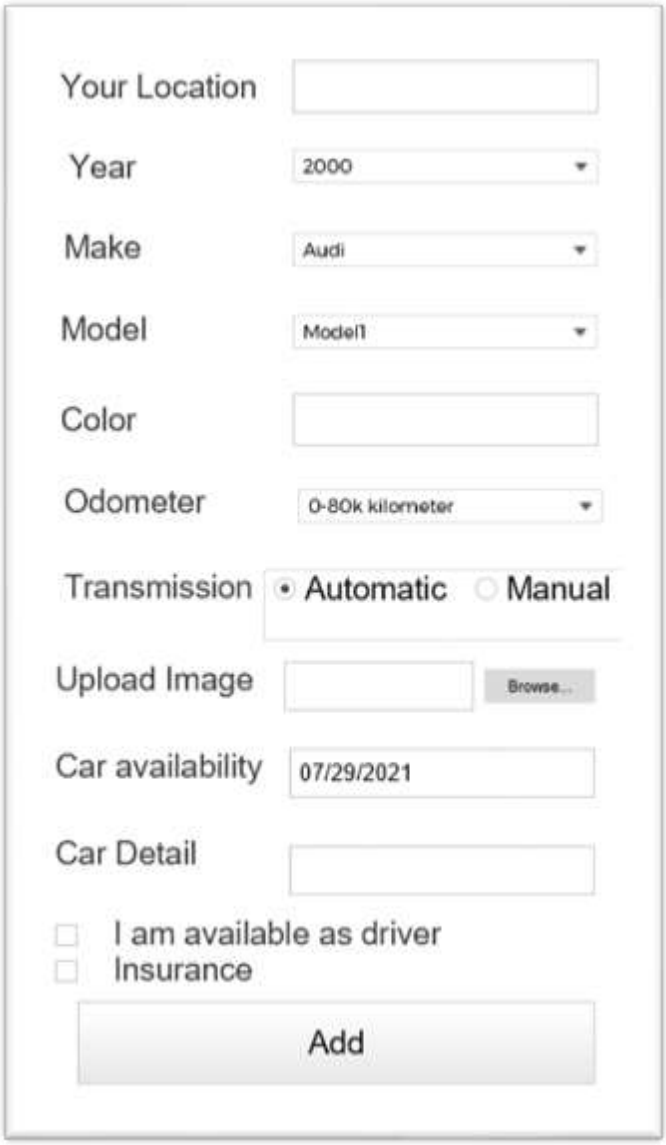

Review terms of service
Turo's mission is to put the world's one billion
better use by connecting people looking to boo
hosts who want to share theirs.
To join the Turo car sharing community and bo
the marketplace, you must agree to the terms
privacy policy, and nondiscrimination polic
Renting Time
start 7:00 AM
end 11:00 PM
I agree with the term and conditions
I understood the the time policy
Confirm

Message shown after confirm booking



Hosts are able to add cars to their profile and also they can see the list of their added cars, edit, and delete it.

Host adds car



List of added car by a host

• The hardware and software configuration of the system

The Hardware and Software configuration of the System.

The Hardware and software configuration required to run RANACHRITA for a Customer and Host are as follow:

Host:

The Host should have an Android device with enough storage and running Android 8 or more.

They must have a minimum of 2GB of data available every month and they must have airtime when the customer calls if in need of any emergency help (when necessary).

The company also requires that the host should have their own smartphone with its own designated SIM card, so they have access to the Internet, email, WhatsApp, and other channels of communication.

Customer:

The Customer should have an Android device with enough storage and running Android 8 or more.

Developer hardware and Software Requirement.

Minimum System Requirements:

- Microsoft Windows 7/8/10 (32 or 64 bit).
- Mac OS X 10.8. ...
- GNOME or KDE or Unity desktop on Ubuntu or Fedora or GNU/Linux Debian.
- 4GB RAM.
- 8GB RAM recommended.
- 20 GB disk space.
- 1 GB for Android SDK.
- Java Development Kit (JDK) 7

Access to firebase database and reliable internet connection.

- **A detail description on how the non-functional requirement will be achieved**

Usability and Performance:

The system provides an interface help and support menu to help users operate the system more easily. The system response time of any command issued by the user cannot exceed at least 10 seconds. The system should be able to provide a high performance when executing user input, a response within a short time of typically 50 seconds for very complex tasks and 20 to 25 seconds for less complex tasks.

Availability and Error Handling:

The system must be accessible 24/7. Additionally, in the event of a major failure of the system, the system will be available within 1 to 2 business days, so that the business process is not severely affected. Errors should be drastically reduced, and appropriate error messages should be provided to help users recover from errors. Validating user input is essential. In addition, the standard error recovery time should be 15-20 seconds.

Security:

The system provides a username and password to prevent unauthorized access. The employee password must exceed eight characters. The subsystem must provide a high degree of security and integrity for the data stored in the system. Only the authorized personnel of the company can access the company's security page in the system; and Only users with a valid username and password can log in to view the user page.

- **The database design**

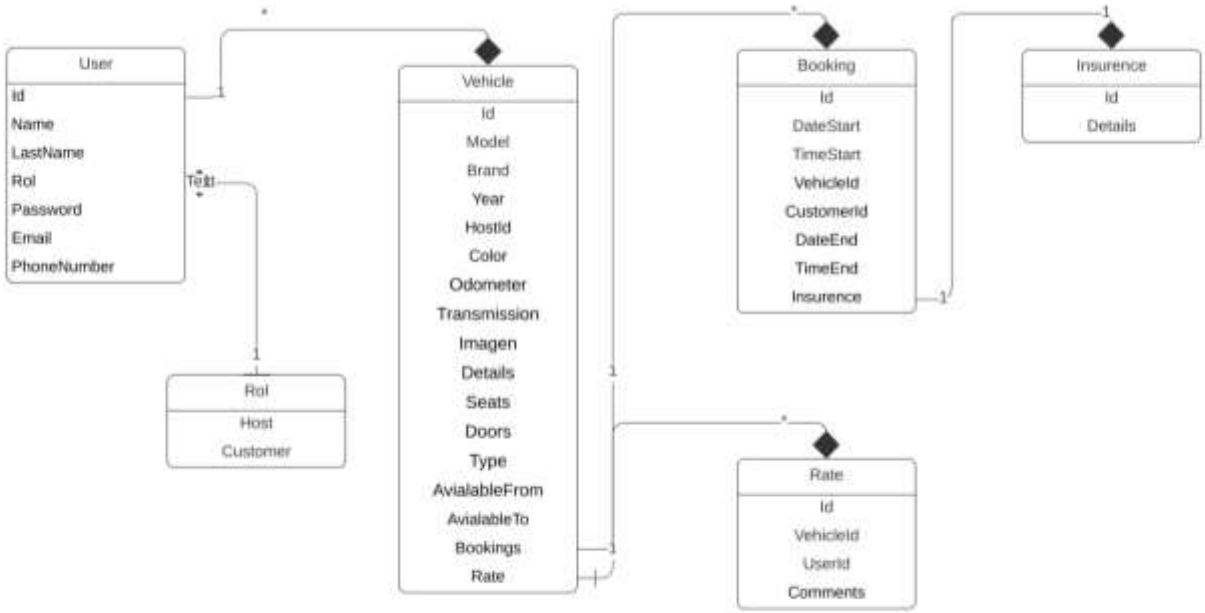
In *Ranachrita* we use Firebase to save our data. Firebase is a NoSQL, instead, it works with collections, which are also objects. The structure of our database is composed of 2 main collections: Users and Vehicles. Users will collect the name of all the users of the app, including host and Customer. Besides, Vehicles contains objects such as booking, which also has insurance object inside, rate of the vehicle.

Below you can find the JSON file.

```
{
    "user":{
        "id" : 0,
        "name": "string",
        "lastName": "string",
        "rol":"string",
        "password":"string",
        "email":"string",
        "phoneNumber":"string"
    },
    "vehicle":[{
        "id":"string",
        "model":"string",
        "brand":"string",
        "color":"string",
        "odometer":"string",
        "transmission":"string",
        "imagen":"string",
        "details":"string",
        "year":0,
        "driverId":"string",
        "hostId":"string",
        "seats":0,
        "doors":0,
        "type":"string",
        "avialableFrom":"string",
        "avialableTo":"string",
        "booking":[{
            "dateStart":"string",
            "timeStart": "string",
            "customerId": "string",
```

```
            "dateEnd": "string",
            "timeEnd": "string",
            "insurence":{
                "details": "string"
            },
            "rate":{
                "id":"string",
                "vehicleId": "string",
                "userId":"string",
                "comment":"string"
            }
        }]
    }]
}
```

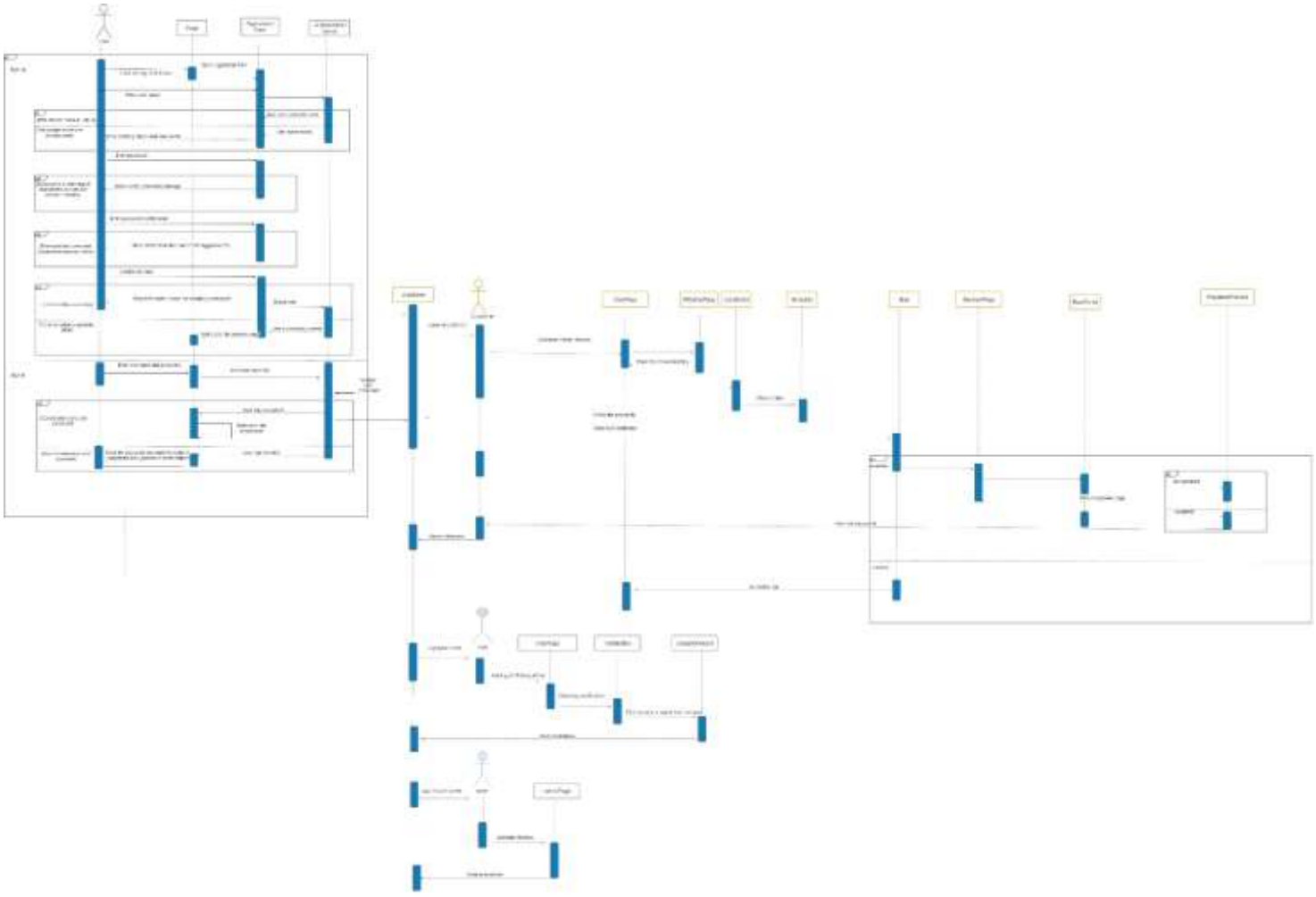
- **UML Class Diagrams**



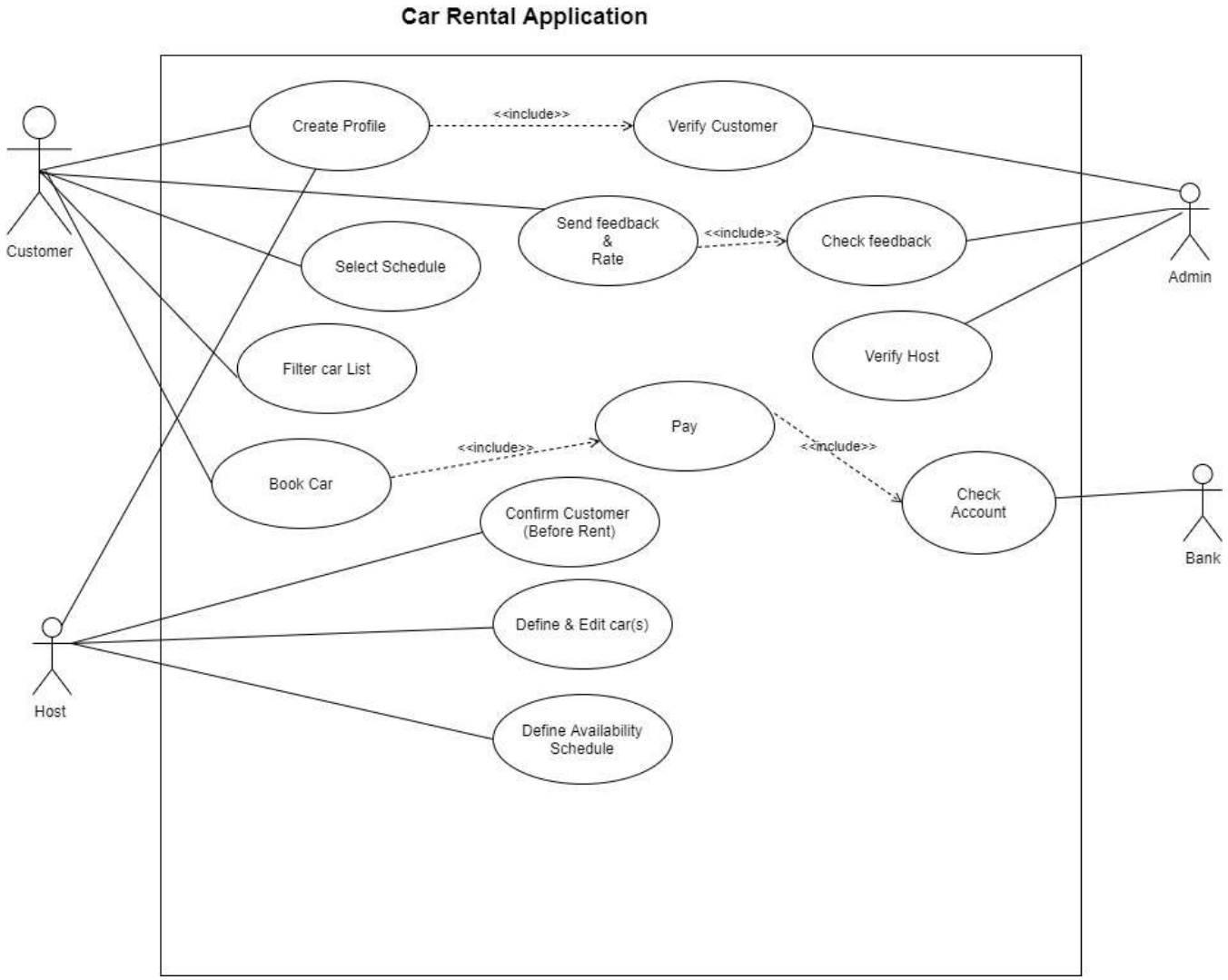
- **Dynamic Models (Sequence)**

For a better look please go to the link below:

https://drive.google.com/file/d/1xWNAJYbAM52XPoI4akW2uAdm6Q38ClKr/view?usp=sharing



- **Use Case**


Car Rental Application
Create Profile
<<include>>
Verify Customer
Customer
Send feedback & Rate
<<include>>
Check feedback
Admin
Select Schedule
Filter car List
Verify Host
Pay
<<include>>
<<include>>
Book Car
Check Account
Bank
Confirm Customer (Before Rent)
Define & Edit car(s)
Host
Define Availability Schedule