Project Name: CSU Car Share Ride

Cleveland State University

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IST 621 Adv Sys Anyls & Design Section 51

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Introduction

Systems Objectives

Our project's major goal is to help international students who are immigrants and don't have the money to acquire a car while they are in school because they have transportation problems. This facilitates timely transit to the institution for classes and individual travel needs. Everyone who has late-night classes should feel safer. This carpool benefits folks who live outside the restricted perimeters where Cleveland State University escort services are not available. Carpooling aids in resolving several transportation-related concerns by allowing people to share a trip with others who are going in the same direction, such as:

1. Carpooling can assist in minimizing traffic congestion and shorten commute times since it puts fewer vehicles on the road.
2. Less traffic means less air pollution, which is good for the environment and for everyone's health.
3. Carpooling can help to cut down on individual vehicles' energy usage, which can assist to preserve resources and cut down on greenhouse gas emissions.
4. Sharing a vehicle with others can help everyone involved save money on transportation because the cost of gas, tolls, and parking can be split.

Background

To provide students who might not have access to their own vehicles or dependable public transportation with an economical and practical mobility option is one possible business-related justification for starting the project of a student carshare pool. Students can reduce their transportation expenditures and gain more scheduling flexibility by organizing a carpool.

The system requests to resolve this issue or accomplish the goal are as follows:

1. Creating a user-friendly app or website that allows students to quickly reserve a car from the carshare pool.
2. Putting in place a reservation system to guarantee that all students have access to a car when needed and that there are enough vehicles to meet demand.
3. Establishing a cost-effective and user-friendly payment structure, such as pay-per-use model.
4. The carshare for students' program can serve the interests of stakeholders, including colleges, as well as the needs of the student population by solving these system requests. It can develop a long-term company strategy that is advantageous to all parties.

Current System Description

There are other accessible options for traveling like uber and lyft which do not offer the option of carpooling. Presently, CSU students do not have access to any car share pool program which is exclusively for CSU students. (Need to add a system diagram)

Proposed System

For students, a shared carpool program can be a terrific way to ease traffic, save money on transportation, and benefit the environment. A student who has a car can post a ride on the way or make an account and use it to arrange a ride. The payment process is hassle-free using this application because the payment gateway is built in.

Survey details:

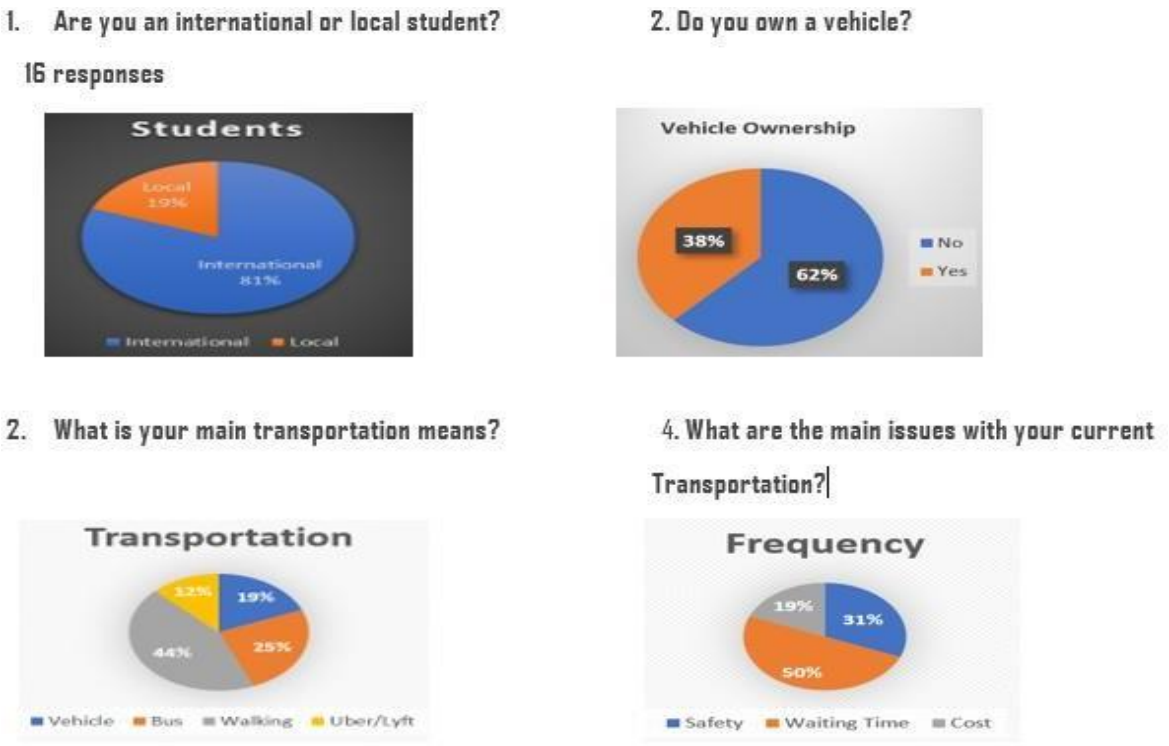


Figure 1

The survey result reveals that the students, especially the international students are not satisfied with the current transportation. With limited students owning a car and limited parking in and around the CSU university. After considering all the above, we move to write our product vision.

Product Vision:

For an overseas student at Cleveland State University who requires a trustworthy, inexpensive ride. The share-ride service, which connects students with nearby locations, offers secure transportation, eases traffic, and enhances students' mobility. In contrast to other ride services, ours provide excellent reliability at a reasonable cost.

Individual Functionality:

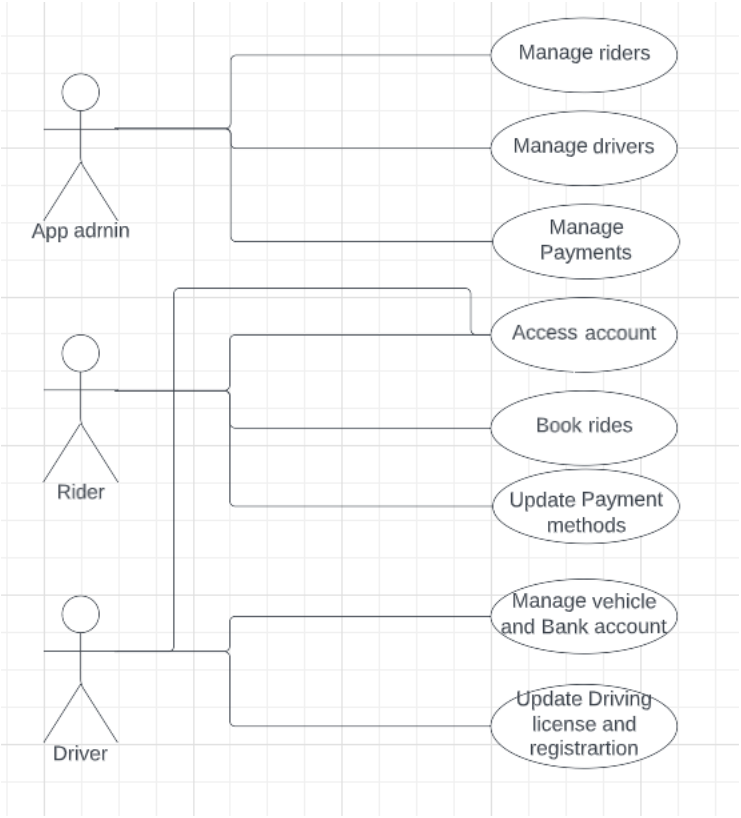


Figure 2

Functional and Non-functional Requirements:

Functional Requirements:

Home Page

FR1.1 The application should allow the user to land on the home screen.

FR1.2 The homepage should provide registration options for new and existing users.

FR1.3 The homepage should provide options for new and existing users.

FR1.4 The application should provide the users to have login option with Facebook or Google

FR1.5 The application will let the user have the option to click forgot password option.

Account Creation

FR2.1 The profile creation process should allow students to input personal information, such as their name, age, gender, and contact details.

FR2.2 The application should allow the user to enter their CSU email ID.

FR2.3 The application should allow the user to enter a seven-digit student ID and a ten-digit phone number.

FR2.4 The application should allow the user to receive a verification code to complete the account creation.

FR2.5 The profile creation process should allow users to upload a profile picture, which can help to personalize the user's experience within the app and build trust between drivers and passengers.

FR2.6 “Account created successfully” once the account is created successfully.

FR2.7 The application will allow an error message should appear if any field is missing.

Account Log-in

FR3.1 The account login process should allow users to enter their email or username, which is used to identify their account and verify their identity.

FR3.2 The account login process should require users to enter their password, which is used to protect their account and prevent unauthorized access.

FR3.3 The app should allow users to log in using their social media accounts, such as Facebook or Google. This can provide a faster and more convenient login process for users who prefer this option.

FR3.4 The application will present the user with an error message if the password/Username is incorrectly entered.

FR3.5 The application will let the user have the option to reset a forgotten password and be required to input the CSU email for the link.

FR3.5 The application should send security questions to receive a password reset link via email.

FR3.6 The application will allow the user to click Create a new password.

FR3.7 The application will allow the user to Re-enter a new password.

Ride search and booking.

FR4.1 The ride search functionality should allow users to search for available rides based on various criteria, such as their origin and destination, date and time, and preferred pickup and drop-off locations.

FR4.2 Users should also be able to filter their search results by various parameters, such as the driver's rating, date, and location of the ride.

FR4.3 Once a user has searched for available rides, the ride-matching functionality should match them with the most suitable driver based on their search criteria and the driver's availability.

FR4.4 The ride-matching algorithm should consider various factors, such as the driver's location, the driver's schedule, the number of available seats, and any other relevant criteria specified by the student.

FR4.5 Once a user has found a suitable ride and driver, they should be able to book the ride directly through the app.

FR 4.6 The booking functionality should allow users to confirm the details of the ride, such as the pickup and drop-off locations, the date and time, the number of available seats.

FR4.7 The ride search, ride matching, and booking functionalities should also provide users with real-time notifications about the status of their ride.

FR 4.8 Users should be able to cancel their ride within a reasonable amount of time, and they should be able to reschedule their ride with the same driver or find a new ride through the app.

Maps

FR5.1 The map functionality in a carpool-sharing app is an important feature that allows users to find rides, track their rides, and navigate to their destination.

FR5.2 Users should be able to use the map to search for available rides, see where drivers are located, and choose a ride that best suits their needs.

FR5.3 The map should provide real-time tracking of the ride, allowing students to track their driver's location in real-time. This feature can help passengers estimate their arrival time and plan accordingly.

FR5.4 This feature should also help drivers navigate through traffic and find the most efficient route to the passenger's destination.

FR5.5 The navigation system should include voice-guided directions and provide alternative routes in case of traffic or road closures.

FR5.6 The map should provide real-time traffic updates and information on road closures and detours. This feature can help drivers and students avoid delays and reach their destination on time.

Payment

FR6.1 The system should offer multiple payment options, including credit cards, debit cards, and digital wallets.

FR6.2 The application should let the user split the cost with other riders.

FR6.3 The application should let the user be able to make in-app-payment.

FR6.4 The system should provide an automatic receipt for each ride.

FR6.5 The application should be able to dispute when there is a payment problem.

FR6.6 The system should have robust payment security to protect customer payment information.

Vehicle Management

FR7.1 The app should allow enabling car owners to manage their vehicles and ensure that they are suitable for offering rides to passengers.

FR7.2 The system should only allow vehicles which are registered with BMV.

FR7.3 The app should allow car owners to register their vehicles and provide all the necessary information, such as make, model, year, license plate, and insurance details.

FR7.4 This information should be verified by the app to ensure that the car meets the minimum standards for safety and reliability.

FR7.5 Before a car owner can offer rides to passengers, the app should require them to undergo a vehicle inspection to ensure that the car is in good working condition.

FR7.6 This inspection should cover all the important safety features, such as brakes, tires, lights, and seat belts.

FR7.7 The system should inform drivers if there are some missing documents and ask them to upload them again.

Non-Functional Requirements:

Req 1: **Auditability:** The system must track modification by any user.

Req 2: **Exception Processing**: The system must notify the user if there is any error.

Req 3: **Security:** The app should ensure the security and confidentiality of the students, such as names, contact details, and payment information**.**

Req 4: **Performance:** The app should have fast response times and should be able to handle high volumes of users and requests without any issues.

Req 5: **Availability:** The system must be available during school hours.

Req 6: **Privacy:** The app should respect students' privacy and not collect any unnecessary user data.

Req 7: **Integration:** The app should be able to integrate with other systems or applications, such as payment gateways, mapping services, or social media platforms.

Req 8: **Scalability:** The initial number of users will be 500, System must support the growth.

Functional breakdown:

Account Creation Breakdown

Set up the first name.
Set up the last name.
Set up CSU email
Set up student id
Set up a new password.
Set phone number
Submit account creation

Password Rese

Enter CSU email Enter password
Forgot password
Enter CSU email
Click the link sent to the CSU email.
Enter new password
Re-enter new password
Click Submit

Microservices and API:

Below are some API components that can fine tune the analysis and design:

1. User Authentication: The microservice helps manage user data, their profile, registration as a new user, authenticating a new user, also helps to reset password and login.
2. Ride Management: The microservice helps to gather user's location, starting locations and drop locations, estimated travel time for booking rides or posting rides.
3. Payment Management: This microservice helps to manage the ride payments, calculate the cost for the ride according to the distance.
4. Notification Management: This microservice helps in handling all the notifications and updates for the users.
5. Wase API: This microservice can provide us map routes and directions for the ride.
6. Stripe API: This is the payment gateway which can handle the payments made for the rides, if any refunds must be issued or settled.
7. Social media API: This can help users to sign up using social media accounts and can be authenticated with the user management.
8. Email Service Authentication: This microservice helps send emails for verification code and resetting passwords for the users registered email address.
9. Tom Tom API: These APIs can be used to include location-based features into a variety of applications, including traffic information and geocoding.

Below are some non-API components that can be designed as microservices:

1. Microservice for authentication: This can handle the user authorization and authenticate users trying to create a profile or signing up through social accounts.
2. Microservice for Vehicle tracking: This can help the users track the location of the car and helps keep track of real time updates.
3. Analytics microservice: This helps the admin keep a track and metrics of the data of users, rides taken using the application.
4. File Storage microservice: This can help in storing the user's ride history, profile, payment history.
5. Monitoring and Logging microservice: This microservice can monitor and log activities within the app.

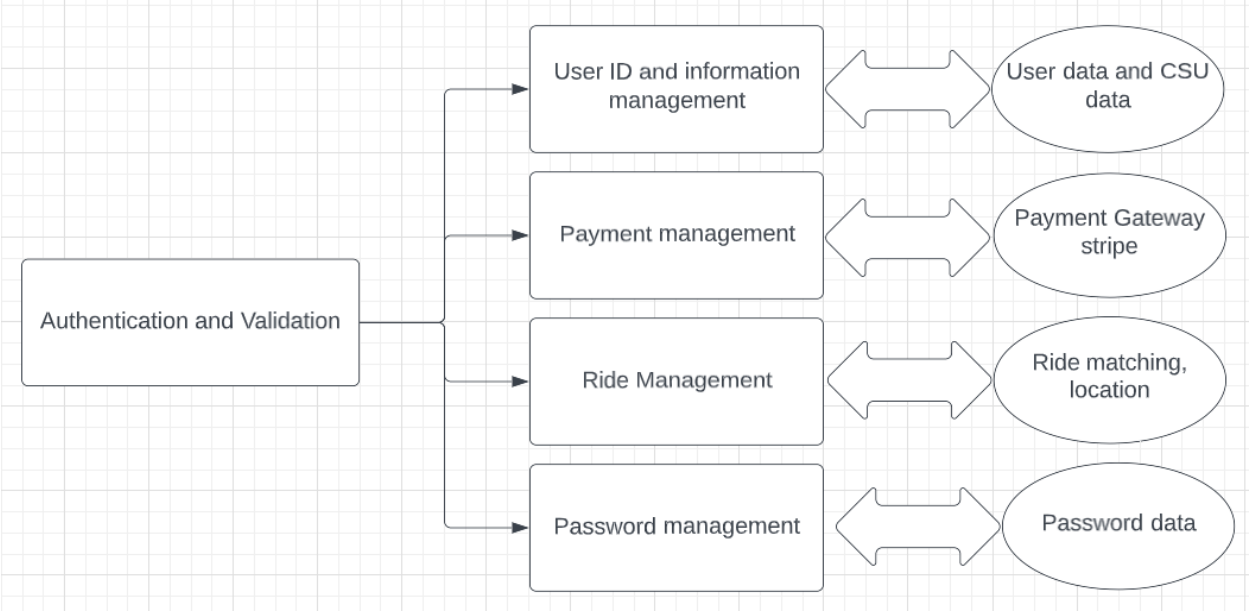
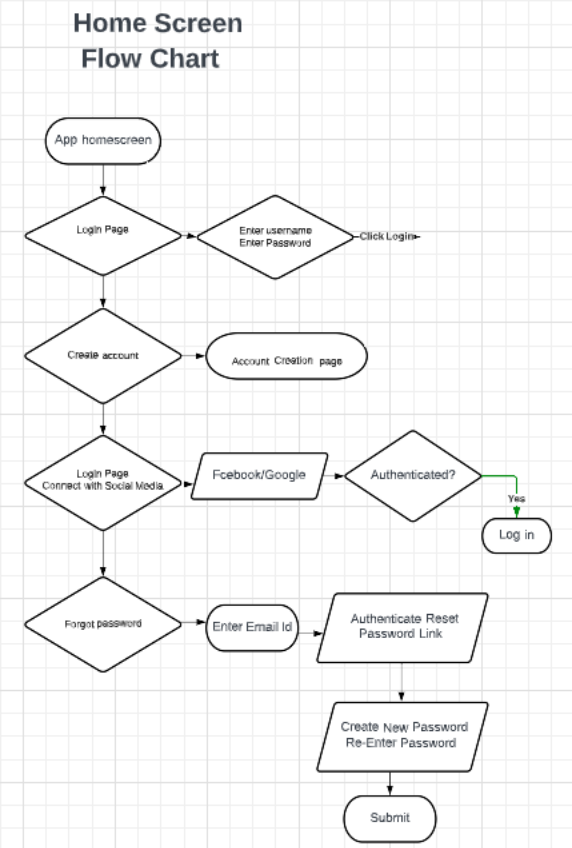


Figure 3

User Story 1:



Flowchart 1

Title: Home Screen **Priority: High** **Estimate:** **Sprint: 1**	
User Story: As a user, I want to be directed to the home screen of the app upon downloading or opening it.	
Acceptance Criteria: 1.1 User should be able to direct to the home screen. 1.2 User should have the home screen which is visually appealing and easy to navigate. 1.3 User should have the home screen which loads quickly and efficiently. 1.4 User should be able to have sign up and log in options in the home screen. 1.5 User should have multiple login options like Google, Facebook, and CSU #id	

Table 1

Directions:

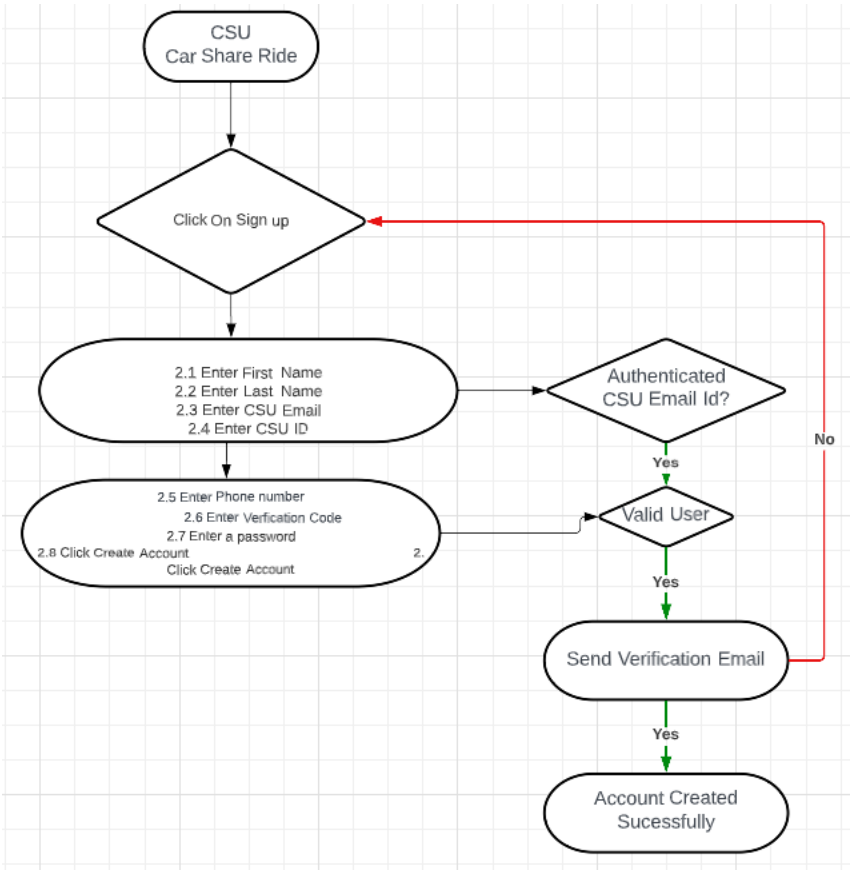
1. Select Log In if you have already signed up as a user in the application.
2. If not a user, click on sign up.

Testing Procedure:

1. Based on the selection redirect to login page or signup page

Screen 1

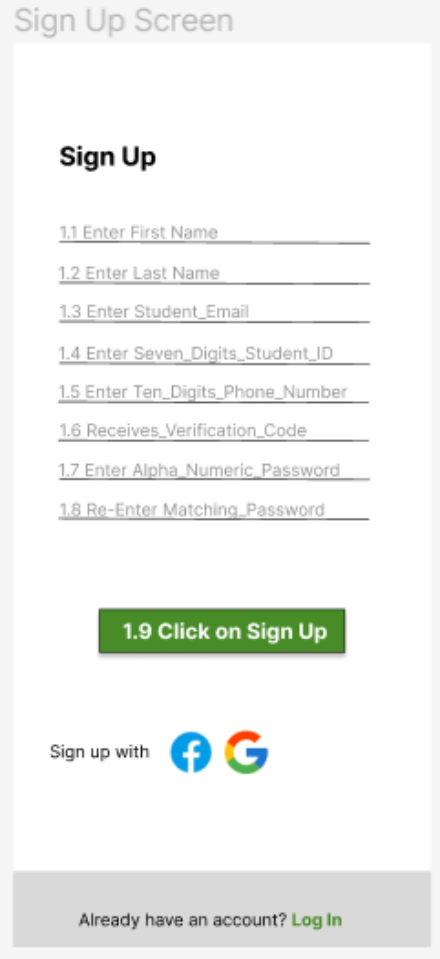
User Story 2:



Flowchart 2

Title: Account Creation **Priority: High** **Estimate:** **Sprint: 2**	
User Story: As a user, I want to sign up and log in to an account using my student email and student Id#.	
Acceptance Criteria: 2.1 User should be able to put first name and last name for signing up. 2.2 User should be able to put a CSU email and 7-digit CSU id. 2.3 User should only be able to enter a ten-digit phone number and should receive a verification code to complete the account creation. 2.4 "Account created successfully" message should appear. 2.5 As a user, I would like to log in to my account. 2.6 User should be able to log in with his/her CSU email as a username. 2.7 User should be able to log in with Facebook and google credential as well.	

Table 2



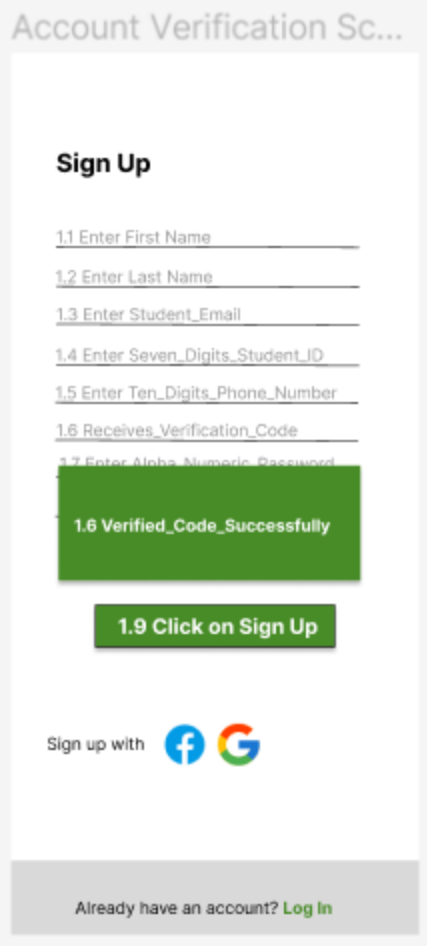
Directions:

1. Enter the user's first name and last name.
2. Enter the user's student email address and the seven digits student ID.
3. Enter the mobile number for verification.
4. Enter the received verification code.
5. Once verified, create an Alphanumeric password.
6. Reenter the Alphanumeric password.
7. Click on sign up to complete the new user registration.
8. Click on Facebook icon to sign up using Facebook.
9. Click on Google icon to sign up using Google Account.

Testing Procedure:

1. Verify the student's email address and the seven-digit student ID in the database and generate a verification code and send it to the student's email address.
2. Verify whether the user entered the correct verification code.
3. Allow create password if entered verification code is correct.
4. Resend verification code if entered code is incorrect.
5. Verify if the created password is same when reentered.
6. Redirect to Facebook Login page when clicked on Sign up with Facebook.
7. Redirect to Google Login page when clicked on Sign up with Google account.

Screen 2.1



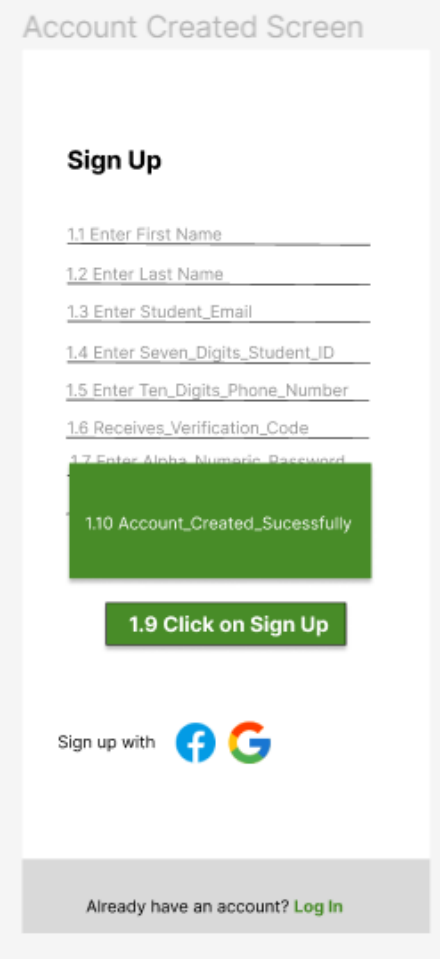
Directions:

1. Enter the verification code received on the student email address.
2. Create an Alphanumeric password.

Testing Procedure:

1. Verify if the code entered is correct.
2. If the code is correct, verify the code successfully.

Screen 2.2



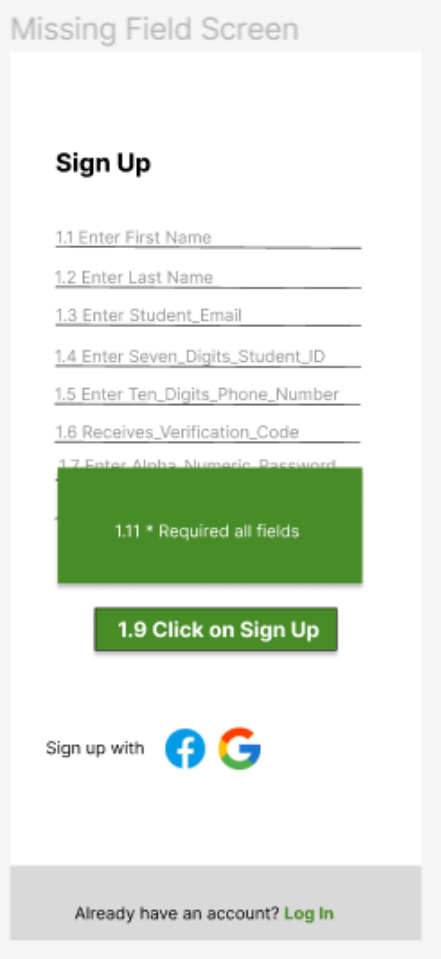
Directions:

1. Once all the details are entered correctly, an account is created successfully.
2. After successful creation of account, it will take you to login page.

Testing Procedure:

1. Verify if all the details are filled in.
2. Create an account if all fields are successfully entered.
3. Redirect to login page after verification.

Screen 2.3



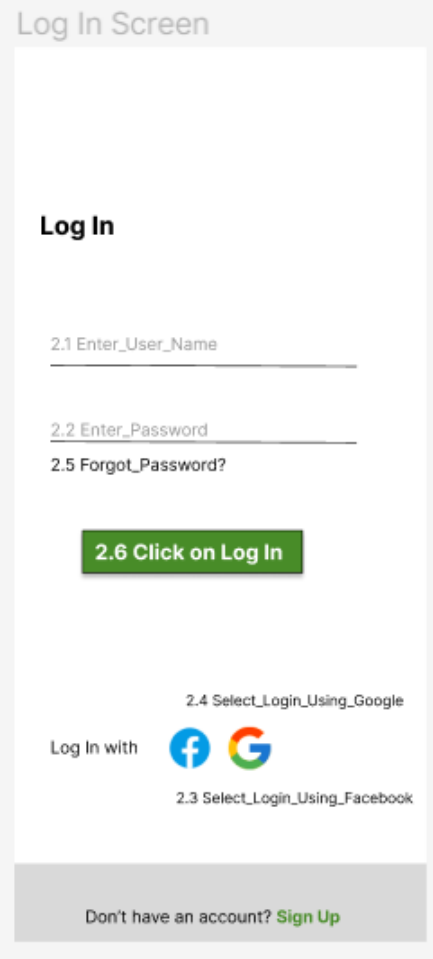
Directions:

1. Enter any missing fields that is a must to create an account.

Testing procedure:

1. If any field is missing display a pop-up message stating * required all fields.

Screen 2.4



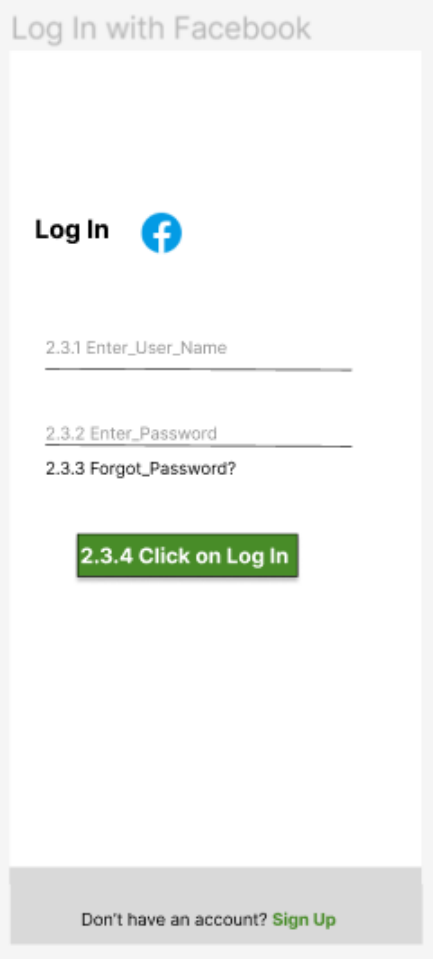
Directions:

1. Enter the student email Id near the username.
2. Enter the password to login.
3. If you have forgotten the password, click on forgot password.
4. Select log in with Facebook if you have signed up using Facebook.
5. Select log in with Google if you have signed up using Google account.

Testing Procedure:

1. Confirm that the username and password you entered are correct.
2. Confirm that an invalid username or password was used to attempt to log in.
3. Check that the home screen appears after a successful login.
4. Redirect to Facebook Login page when clicked on log in with Facebook.
5. Redirect to Google Login page when clicked on log in with Google account.

Screen 2.5



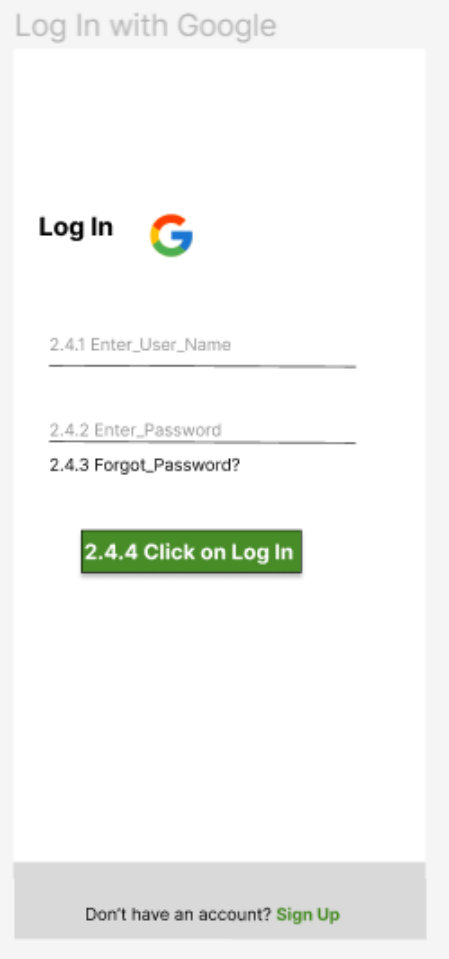
Directions:

1. Enter the username and password of your Facebook account.
2. Click on log in.
3. If you have forgotten the password, click on forgot password.

Testing Procedure:

1. Confirm that the username and password you entered are correct.
2. Confirm that an invalid username or password was used to attempt to log in.
3. Check that the home screen appears after a successful login.

Screen 2.6



Directions:

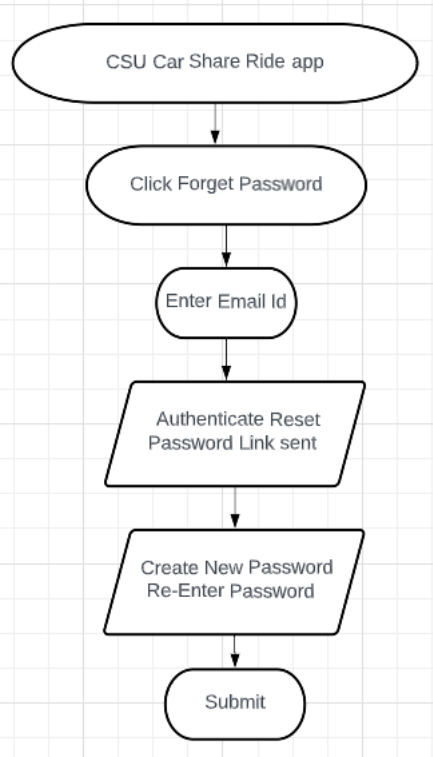
1. Enter the username and password of your Google account.
2. Click on log in.
3. If you have forgotten the password, click on forgot password.

Testing Procedure:

1. Confirm that the username and password you entered are correct.
2. Confirm that an invalid username or password was used to attempt to log in.
3. Check that the home screen appears after a successful login.

Screen 2.7

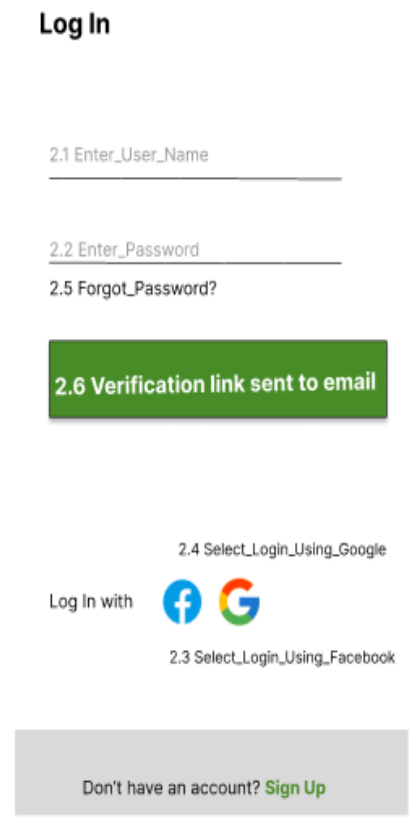
User Story 3:



Flowchart 3

Title: Password reset **Priority: High** **Estimate:** **Sprint: 3**	
User Story: As a user, I would like to reset my password in my account when I forget my password.	
Acceptance Criteria: 3.1 User should be able to click the "Forgot password" button. 3.2 User should be asked to enter the CSU email. 3.3 Message should appear indicating "Verification link sent to email". 3.4 Email should be sent to the user with a verification link sent to an email. 3.5 User should be able to click the link to reset the password. 3.6 User should be able to enter a new password. 3.7 User should be able to re-enter a new password. 3.8 Error message should appear if password mismatch. 3.9 Password reset successfully message should appear. 3.10 User should be able to log in account with the new password.	

Table 3



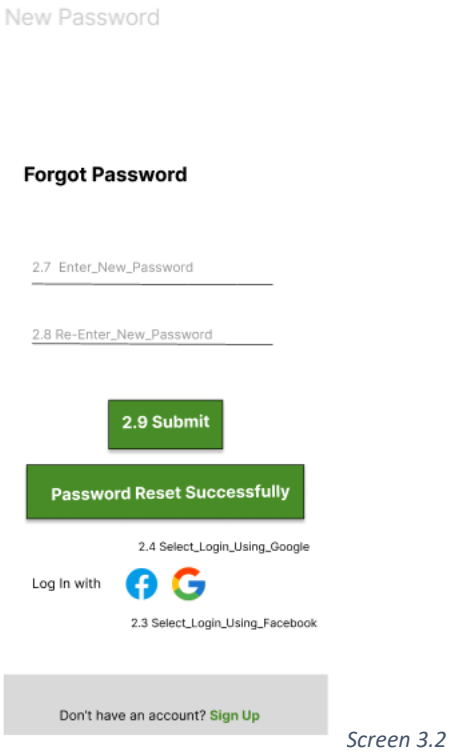
Directions:

1. Click on forget password button.
2. Click on the verification link received on your CSU Email.

Testing Procedure:

1. Check if forgot password is clicked.
2. If selected, send a verification link to the registered CSU Email.
3. Display a message saying verification link is sent to email.

Screen 3.1



Screen 3.2

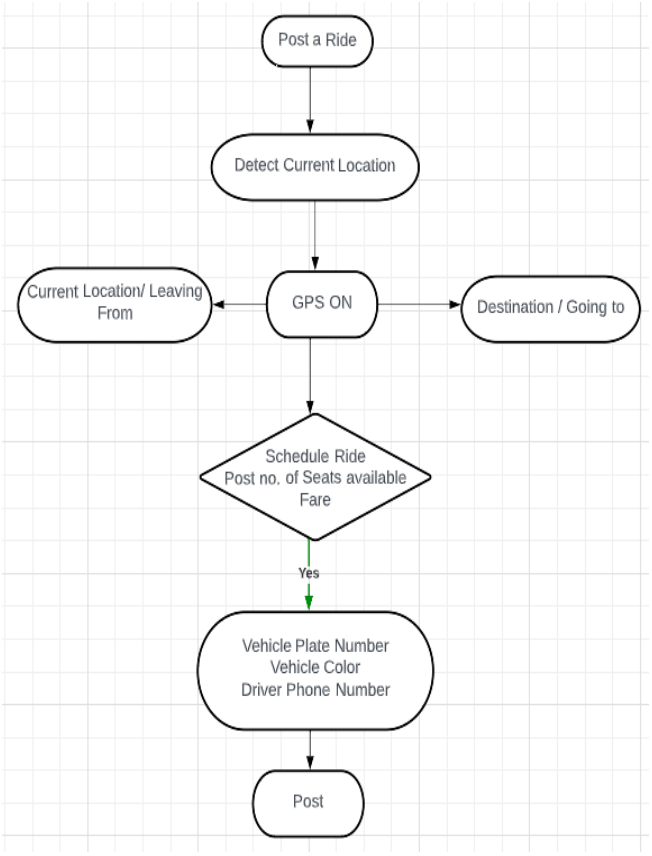
Directions:

1. Enter new password.
2. Reenter the new password.

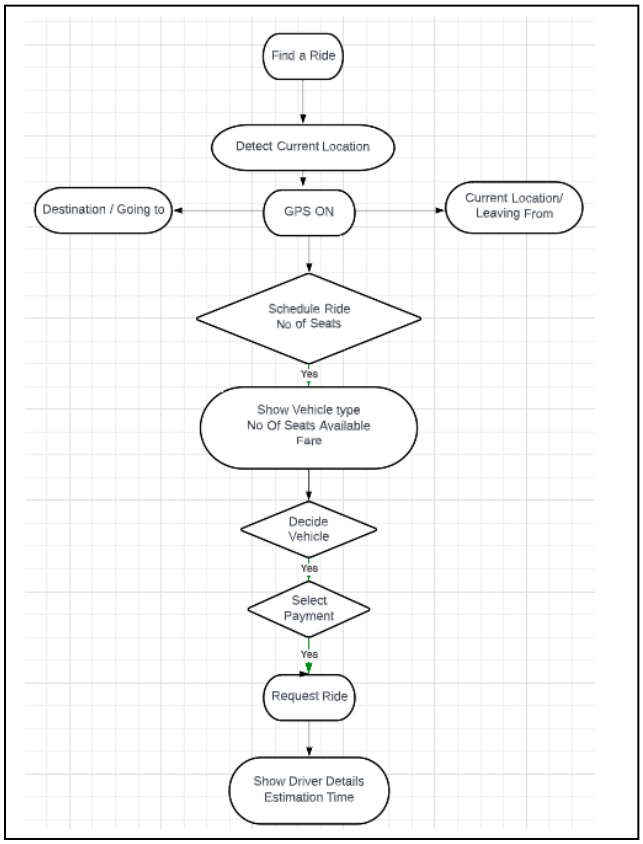
Testing Procedure:

1. Check if the new passwords that are entered are matching.
2. Display a message saying password reset successfully if passwords match.
3. Redirect to login screen page.

User Story 4:



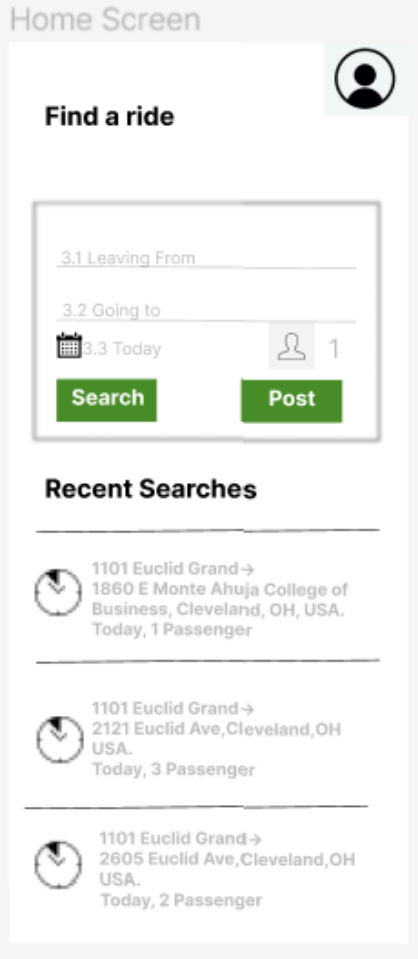
Flowchart 4.1



Flowchart 4.2

Title: Search or Post ride **Priority: High** **Estimate:** **Sprint: 4**	
User Story: User should be able to search or post for the ride easily.	
Acceptance Criteria: 4.1 User should be able to easily search for available rides in the carpool-sharing app so that he can quickly find a ride to a desired destination. 4.2 User should be able to filter search results by various parameters like time, date, location etc. 4.3 The user should be able to input the address of his/her destination. 4.4 User should be able to add the number of passengers. 4.5 User should be able to see clearly and promptly if the desired location is available or not. 4.6 The user should be able to view the details of each ride, rides history and previous trips details.	

Table 4



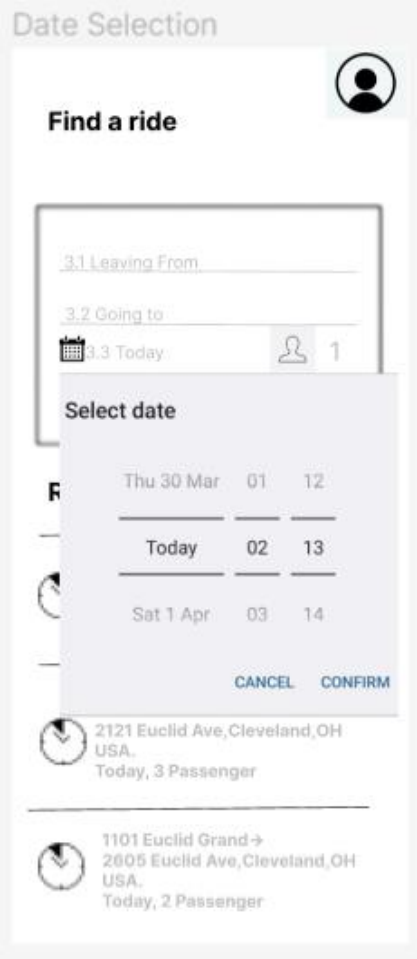
Directions:

1. Enter the location you need a ride from if you are searching for a ride or if you are posting a ride enter the start point.
2. Enter the location that you are going to.
3. You can also select from the recent searches if you have already travelled to the same destination. This option is available for those who are searching for and posting a ride.

Testing Procedure:

1. Redirect to search page when selected from recent searches for those who are searching for rides.
2. Redirect to post page when selected from recent searches for those who are posting rides.

Screen 4.1



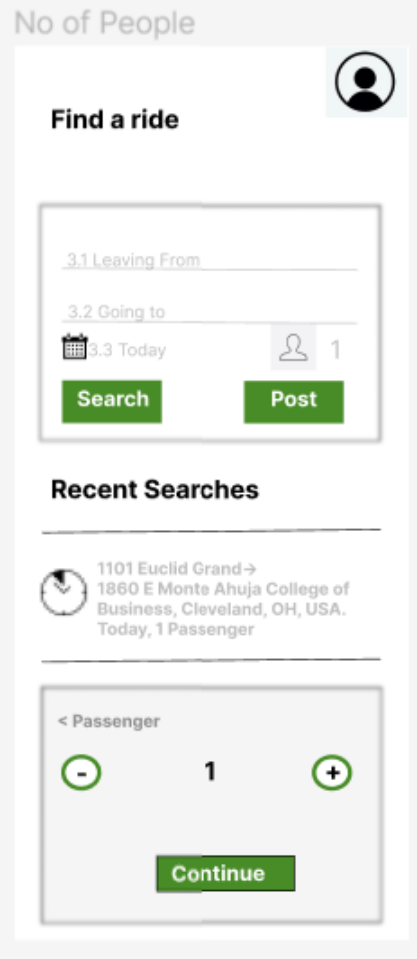
Directions:

1. Also, you have the choice to arrange your ride at a time that is convenient for you.
2. The ride date can start today and go as far into the future as you scroll upward; it is not possible to select earlier days.
3. By scrolling, you may choose the time that the ride will begin; it is provided directly next to the ride date.

Testing Procedure:

1. Verify if the date of travel is not on previous day.
2. If a recent search is selected, the search page will be automatically redirected with the current date and time as the start date and time and shows the availability of rides on that date.
3. If a recent search is selected, the post page will be redirected to rides posted screen once the time is selected.

Screen 4.2



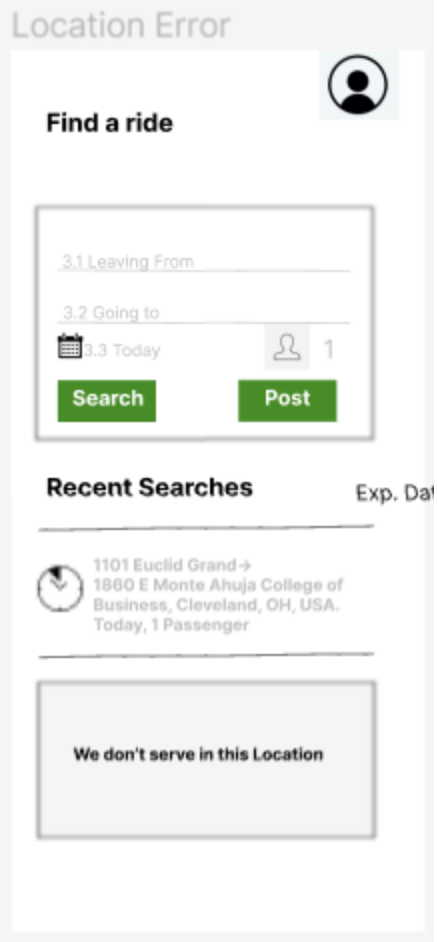
Directions:

1. For Search - select the number of passengers for the ride and select search.
2. For Post - select the number of available seats for the passenger and select post.

Testing Procedure:

1. Verify that the minimum number of passengers is at least 1.
2. Verify that the number of passengers is less than 6.
3. Redirect to search page when selected search.
4. Redirect to rides posted when selected post.

Screen 4.3



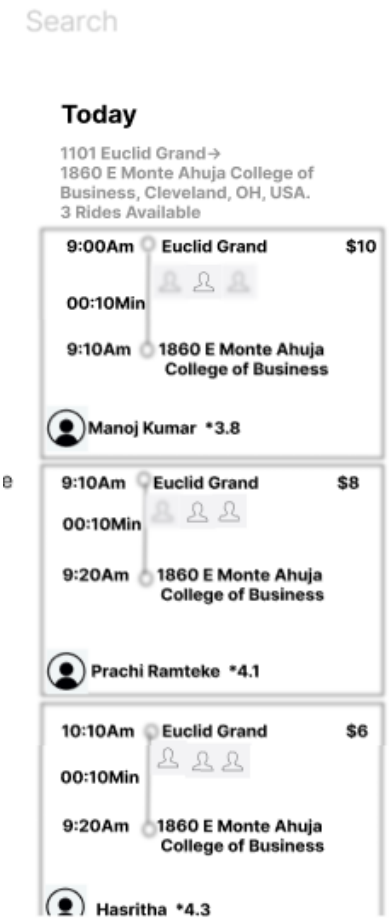
Directions:

1. Enter the location you need a ride from if you are searching for a ride or if you are posting a ride enter the start point.
2. Enter the location that you are going to.
3. If the entered location is outside the city limits of Cleveland it says, “We don’t serve in this location”.

Testing Procedure:

1. Verify if the starting point is within the city limits of Cleveland.
2. Verify if the destination is within the city limits of Cleveland.

Screen 4.4



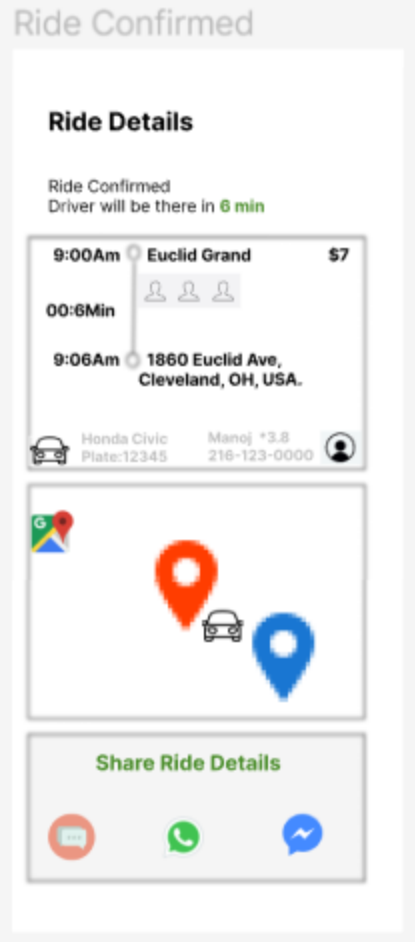
Directions:

1. When selected on search, it will show you all the rides available on that route with the location details clearly mentioned.
2. The start time along with the estimated travel time and arrival time is shown.
3. The name of the rider offering a ride along with the cost for the ride and his rating is seen.
4. The blurred passenger icon represents that the seat is filled.
5. The clear passenger icon represents that the seat is available.
6. Select the ride that is feasible for you and the ride is confirmed.

Testing Procedure:

1. Verify if the seats are available on that ride for the selected number of passengers.
2. If available confirm the ride.
3. If unavailable wait for the user to select the right availability ride, then confirm the ride.

Screen 4.5



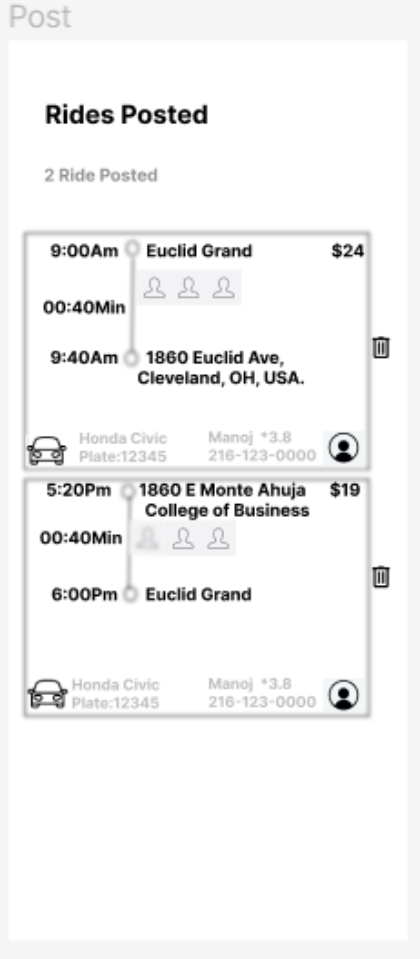
Directions:

1. Once the payment is made, the ride is confirmed.
2. The ride confirmed page has the ride details, starting point, destination, estimated travel time, start time and end time of the trip, seats availability, car model, plate number, ride provider name and contact information along with the rating.
3. You can also track the ride on maps.
4. You also have an option to share the ride details on text messaging or WhatsApp or Messenger application.

Testing Procedure:

1. When share ride details is selected, redirect to the respective apps to share the ride details which consists of starting point, destination, estimated travel time, start time and end time of the trip, seats availability, car model, plate number, ride provider name and contact information along with the rating.

Screen 4.6



Directions:

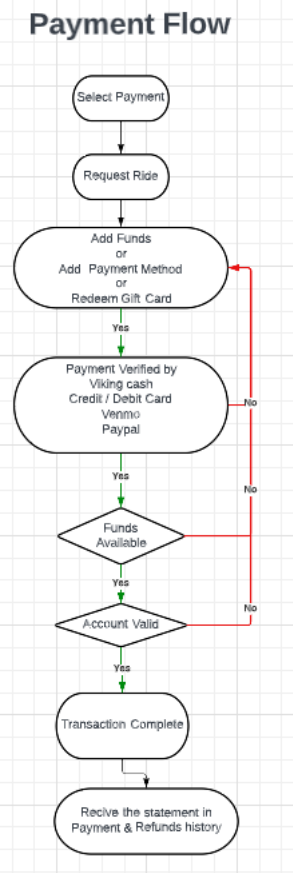
1. When posted a ride, it will show you all the rides you have posted with the location details mentioned.
2. The start time along with the estimated travel time and arrival time is shown.
3. The name of the rider offering a ride along with the cost for the ride and his rating is seen.
4. The blurred passenger icon represents that the seat is filled.
5. The clear passenger icon represents that the seat is available.
6. The car model and the plate number are also shown.
7. There is a delete option to delete the ride that you posted.

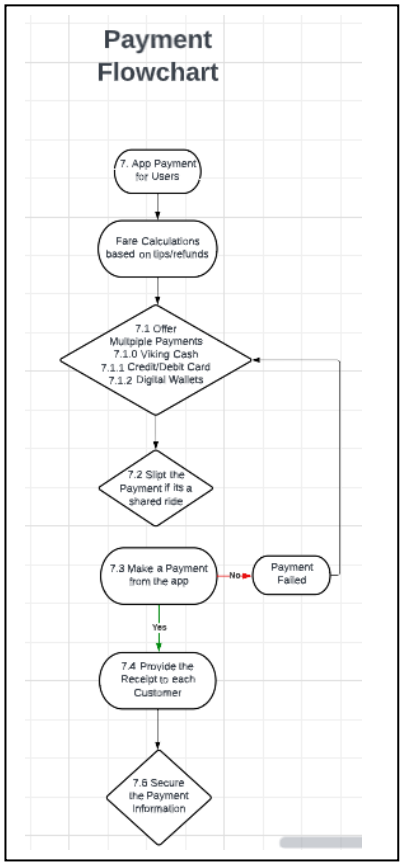
Testing Procedure:

1. When selected delete option, delete the post from the post screen.

Screen 4.7

User Story 5:

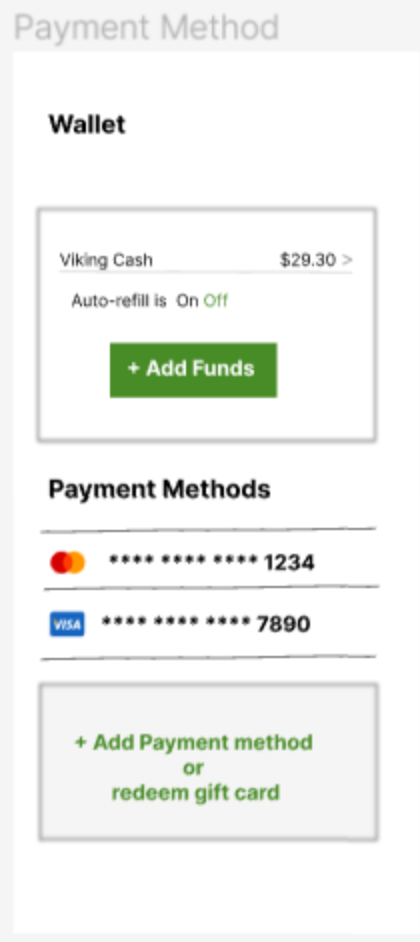




Flowchart 5.1 *Flowchart 5.2*

Title: Payments **Priority: High** **Estimate:** **Sprint: 5**	
User Story: As a rider and driver, the system should handle payment processing such as fare calculation, tips, and refunds.	
Acceptance Criteria: 5.1 The system should offer multiple payment options, including credit cards, debit cards, and digital wallets. 5.2 As a user, I should be able to add cash to my Viking card via multiple options. 5.3 As a user, I should be able to make in-app-payment. 5.4 The system should provide an automatic receipt to each ride. 5.5 The system should have robust payment security to protect customer payment information.	

Table 5



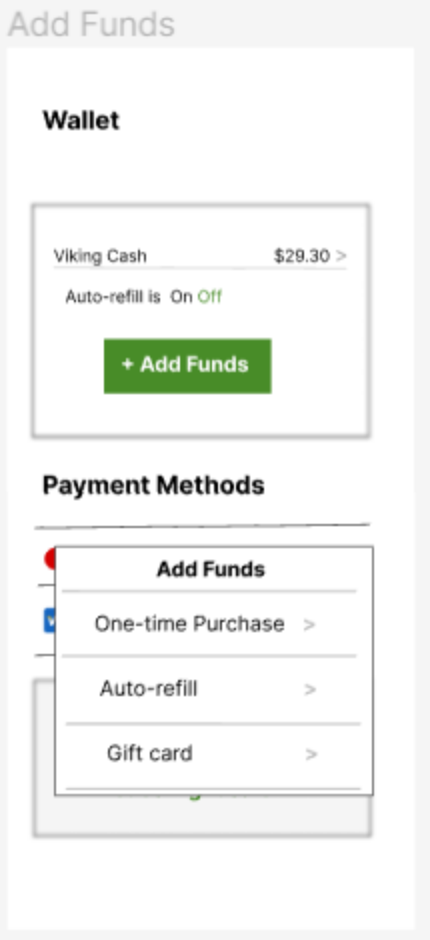
Directions:

1. After selecting the ride, it will redirect to the payment screen.
2. You have various options for making payments like Viking cash and you can add funds if you don't have any.
3. Other payment methods are saved cards that you already have.
4. You can also add a different payment method or also redeem a gift card.

Testing Procedure:

1. Verify which payment method is selected by the user and once payment is done redirect to ride confirmed page.

Screen 5.1



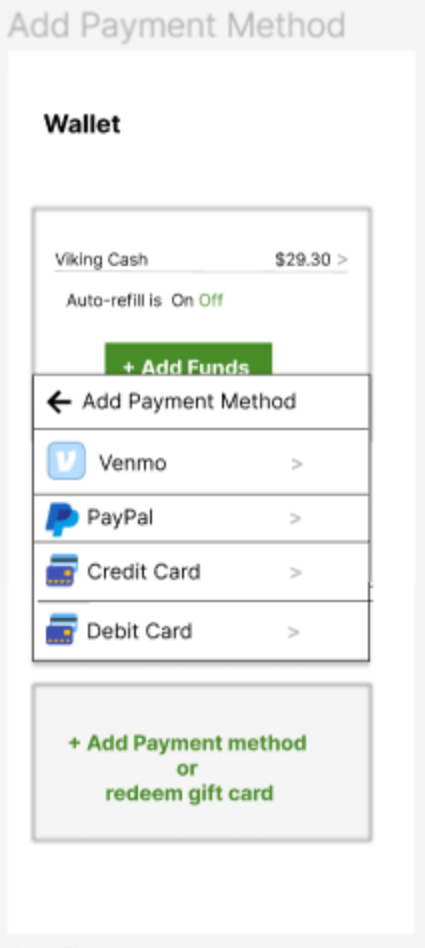
Directions:

1. When selected on add funds method, it will give a pop up for one time purchase, auto refill and adding a gift card option.
2. When the funds are added, the payment can be made.

Testing Procedure:

1. Verify which payment method is selected by the user and once payment is done redirect to ride confirmed page.

Screen 5.2



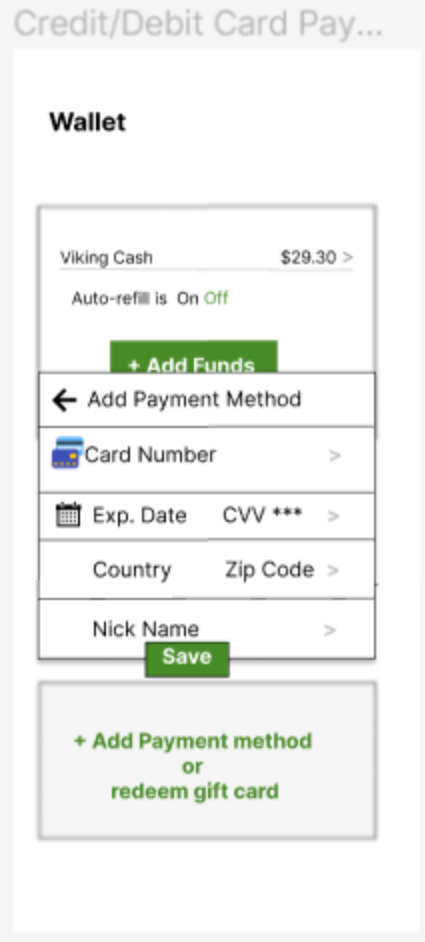
Directions:

1. When selected add payment method, it will give you various payment options like payment using Venmo and PayPal, you also have an option to add a different credit card or a debit card.
2. You can select your desired payment mode and make the payment.
3. When selected Venmo or PayPal, it will be redirected to respective websites and the payment is done.

Testing Procedure:

1. Verify which payment method is selected by the user and once payment is done redirect to ride confirmed page.

Screen 5.3



Directions:

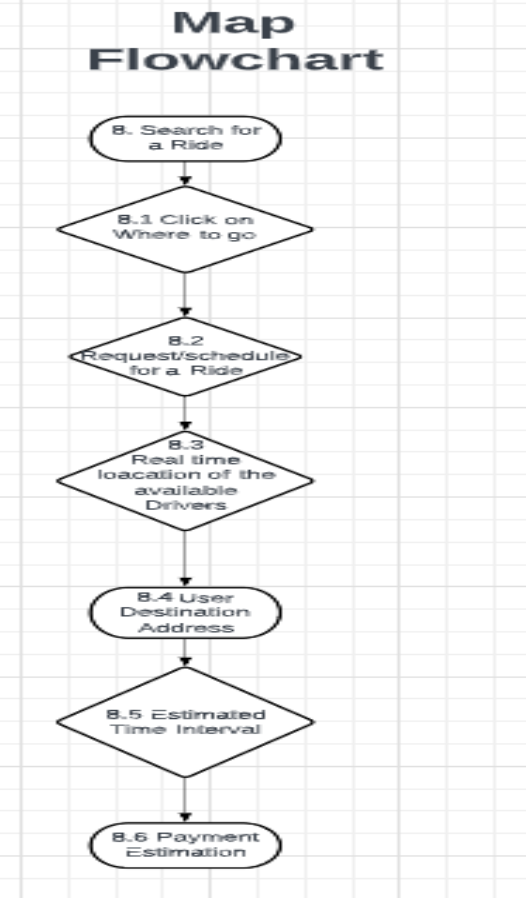
1. In the add payment, when selected the credit card or debit card option, it will let you enter card number, expiration date, CVV, country and the zip code. You can also save the card with a nick name for quicker access to the payment method.
2. You can add the card to the payment mode and make the payment.

Testing Procedure:

1. Verify which payment method is selected by the user and once payment is done redirect to ride confirmed page.

Screen 5.4

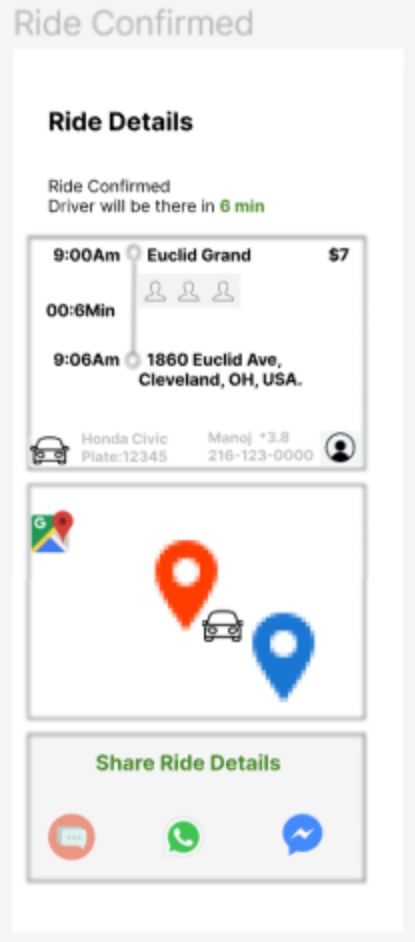
User Story 6:



Flowchart 6

Title: Maps **Priority: High** **Estimate:** **Sprint: 6**	
User Story: As a user, I should have a map that provides real-time tracking, estimated time of arrival, and cost estimate.	
Acceptance Criteria: 6.1 The user should be able to click Where to? 6.2 The user should have the option to select Pick Up now and reserve a ride for a later date and time. 6.3 The user should be able to see the real-time location of available drivers. 6.4 The user should be able to have an estimated arrival time. 6.5 The map should be integrated with the payment gateway.	

Table 6



Directions:

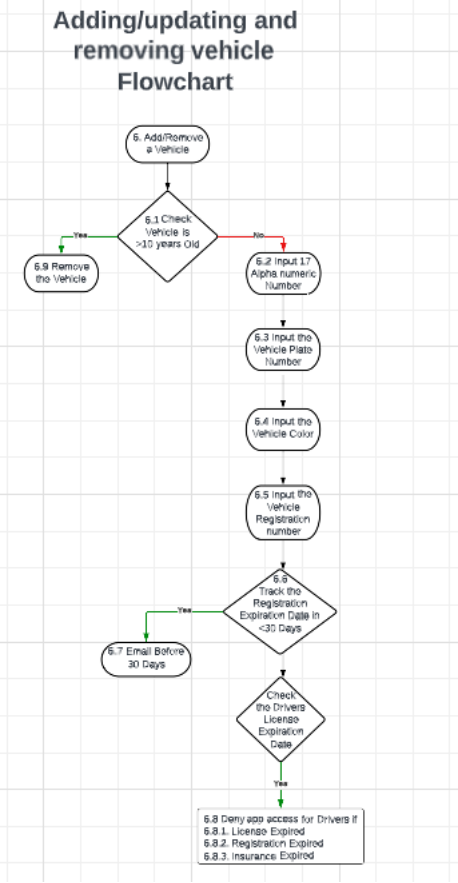
1. Once the payment is made, the ride is confirmed.
2. The ride confirmed page has the ride details, starting point, destination, estimated travel time, start time and end time of the trip, seats availability, car model, plate number, ride provider name and contact information along with the rating.
3. You can also track the ride on maps.
4. You also have an option to share the ride details on text messaging or WhatsApp or Messenger application.

Testing Procedure:

1. When share ride details is selected, redirect to the respective apps to share the ride details which consists of starting point, destination, estimated travel time, start time and end time of the trip, seats availability, car model, plate number, ride provider name and contact information along with the rating.

Screen 6.1

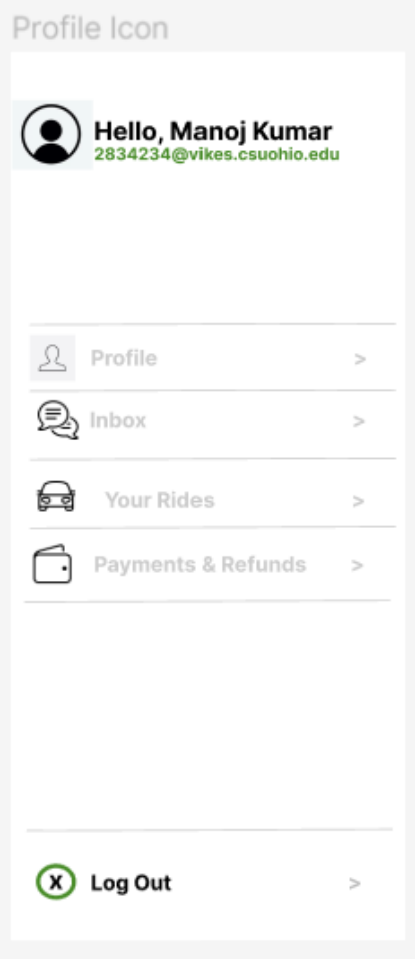
User Story 7:



Flowchart 7

Title: Adding/Updating Vehicle **Priority: High** **Estimate:** **Sprint: 7**	
User Story: As a driver, I should be able to add/update and remove a vehicle.	
Acceptance Criteria: 7.1 The system should only allow vehicles which are registered with BMV. 7.2 As a rider, I want to be able to see the verified driver and vehicle information before booking a ride, so that I can ensure that I am travelling with a trusted and safe driver. 7.3 As a driver, I want to be notified promptly if my identity or vehicle information has not been verified, so that I can take necessary steps to resolve the issue. 7.4 As a driver, I want to be able to upload relevant documents, such as my driver's license, proof of insurance, and vehicle registration, so that my identity and vehicle information can be verified by the carpool sharing app. 7.5 As a driver, the system should inform if there are some missing documents. 7.6 System should inform that profile verification has been successful.	

Table 7



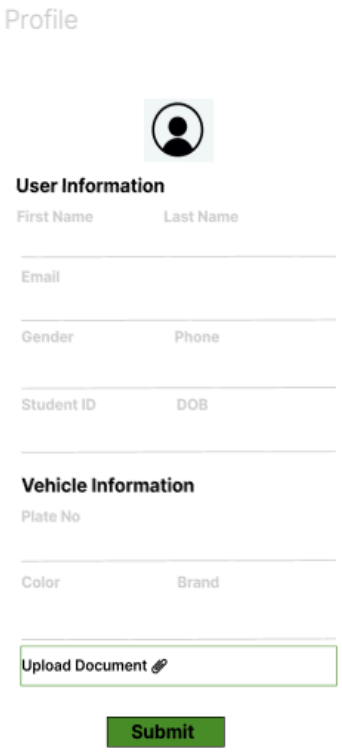
Directions:

1. There is a profile icon the home page.
2. It consists of Name, CSU email address.
3. There are different selections available like Profile details, Inbox, Your rides, payments, and refunds.
4. There is also a log out option available on the profile icon page.

Testing Procedure:

1. Redirect to profile icon page when profile icon is clicked on home screen.
2. Redirect to launching screen when selected log out.

Screen 7.1



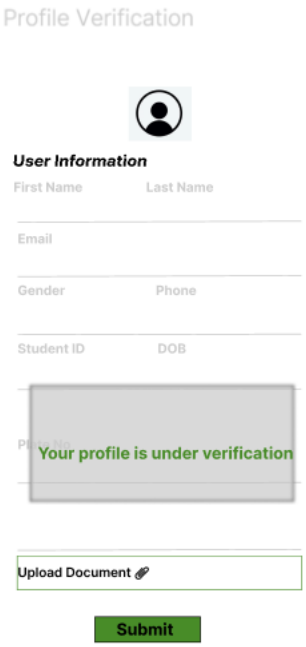
Directions:

1. The user should submit their first name and last name, gender, contact information, date of birth.
2. The user should upload their vehicle brand, color, and number plate.
3. Along with this they must upload their vehicle registration document, as my driver's license, proof of insurance, and vehicle registration which will be manually verified.

Testing Procedure:

1. Check if all the fields are entered.

Screen 7.2



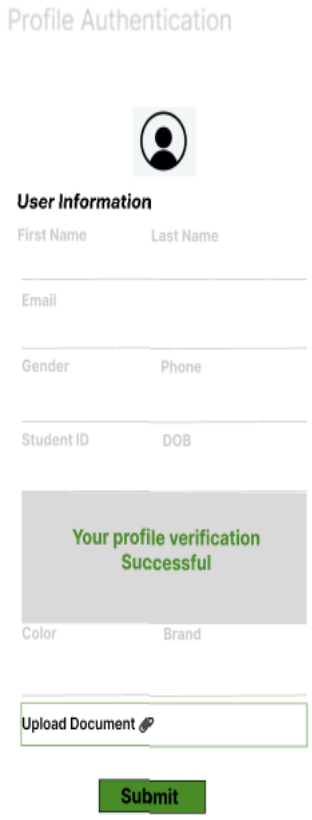
Directions:

1. The user should submit their first name and last name, gender, contact information, date of birth.
2. The user should upload their vehicle brand, color, and number plate.
3. Along with this they must upload their vehicle registration document which will be manually verified.

Testing Procedure:

1. Once the user uploads all the required fields, display a message saying, “Your profile is under verification”.

Screen 7.3



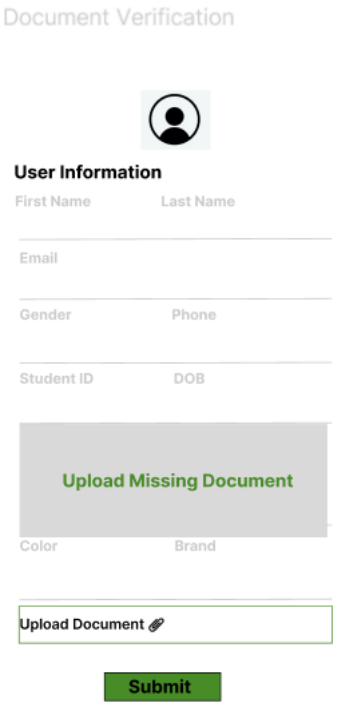
Directions:

1. The user should submit their first name and last name, gender, contact information, date of birth.
2. The user should upload their vehicle brand, color, and number plate.
3. Along with this they must upload their vehicle registration document which will be manually verified.

Testing Procedure:

1. Once the document and details are manually verified, display a message saying, “Your profile verification successful”.

Screen 7.4



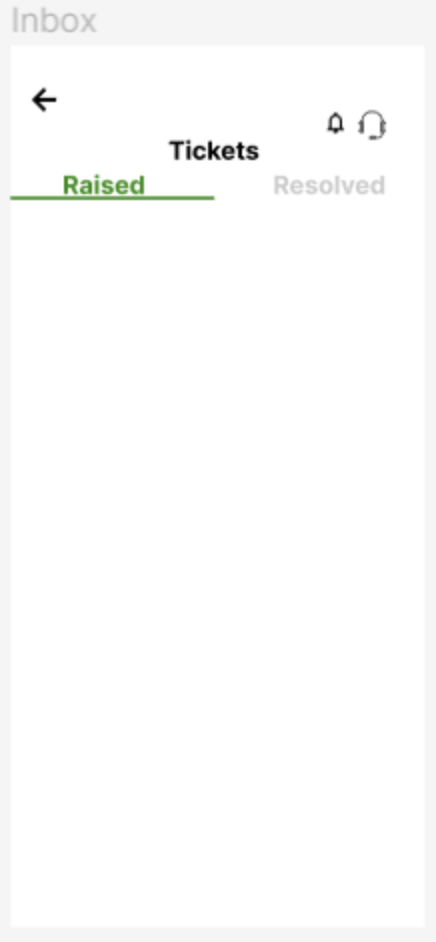
Directions:

1. The user should submit their first name and last name, gender, contact information, date of birth.
2. The user should upload their vehicle brand, color, and number plate.
3. Along with this they must upload their vehicle registration document which will be manually verified.

Testing Procedure:

1. If verification is unsuccessful, display a message asking the user to upload the missing document.

Screen 7.5



Directions:

1. The inbox folder on profile icon has tickets raised or resolved by the user.
2. There is a notification button to notify if any ticket is raised or if any ticket that has been raised is resolved.
3. There is a customer support icon which will help the user to talk to the customer support regarding any issues.

Testing Procedure:

1. Redirect to contact the customer support when the customer support icon is clicked.

Screen 7.6

Directions:

1. In your rides section, you can find the history of rides taken as well as the rides given.

Testing Procedure:

1. Display information of rides taken and given from the database.

Screen 7.7

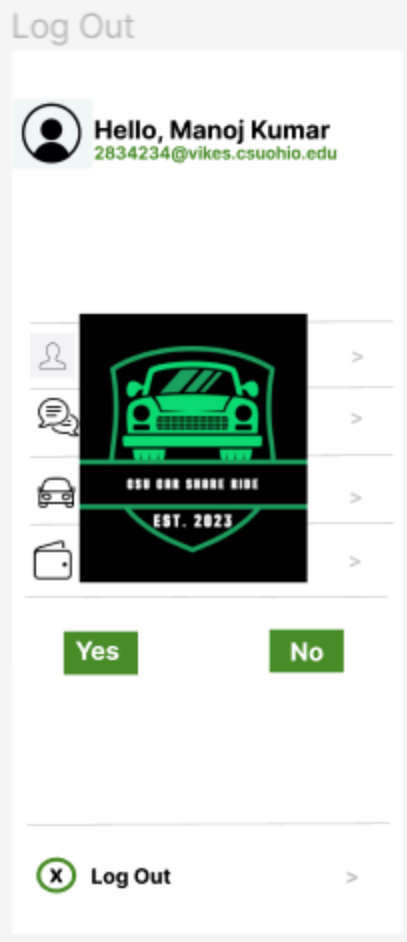
Directions:

1. The payments and refunds section consists of Refunds and Settled payment information.
2. The ride taker can see any refunds he received on this refund section.
3. The ride giver can check all the settled payments for the rides he offered.

Testing Procedure:

1. Display information of the payments settled, and payments refunded from the database.

Screen 7.8



Directions:

1. When you select the log out button, it will ask you to confirm if you want to log out.
2. If selected yes, it will log out.
3. If selected no, it will stay on the log out page.

Testing Procedure:

1. When selected log out redirect to launching screen.

Screen 7.9

End to End Flowchart:

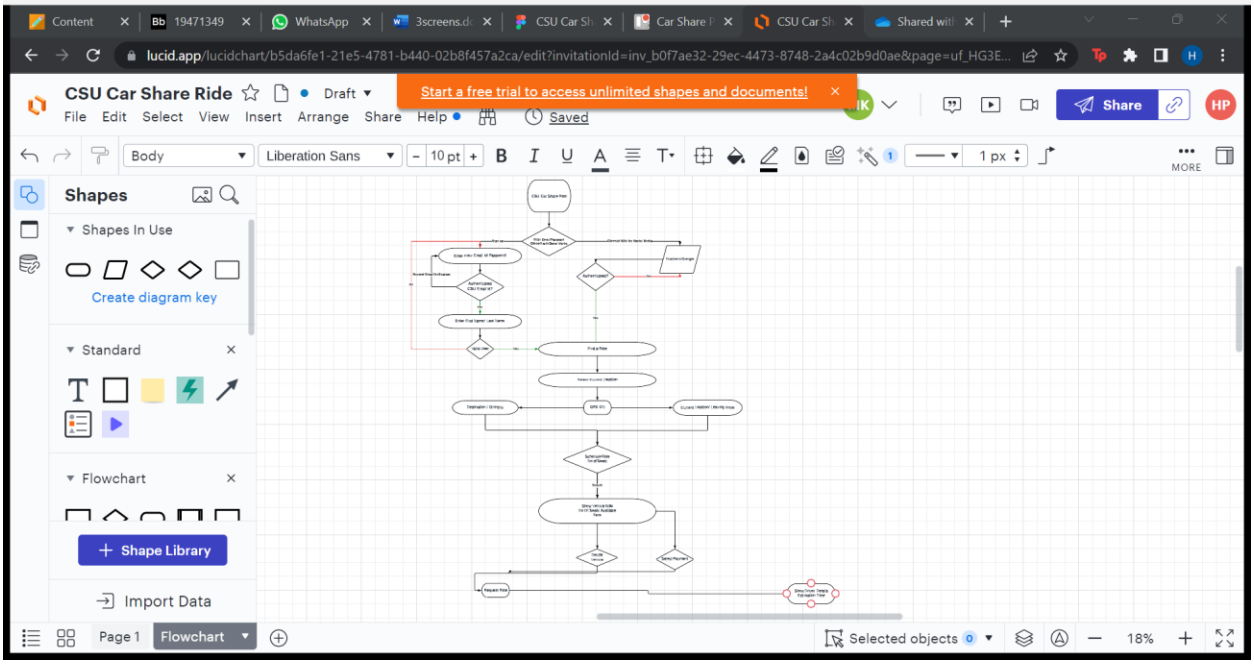


Figure 4

End to End Prototype:

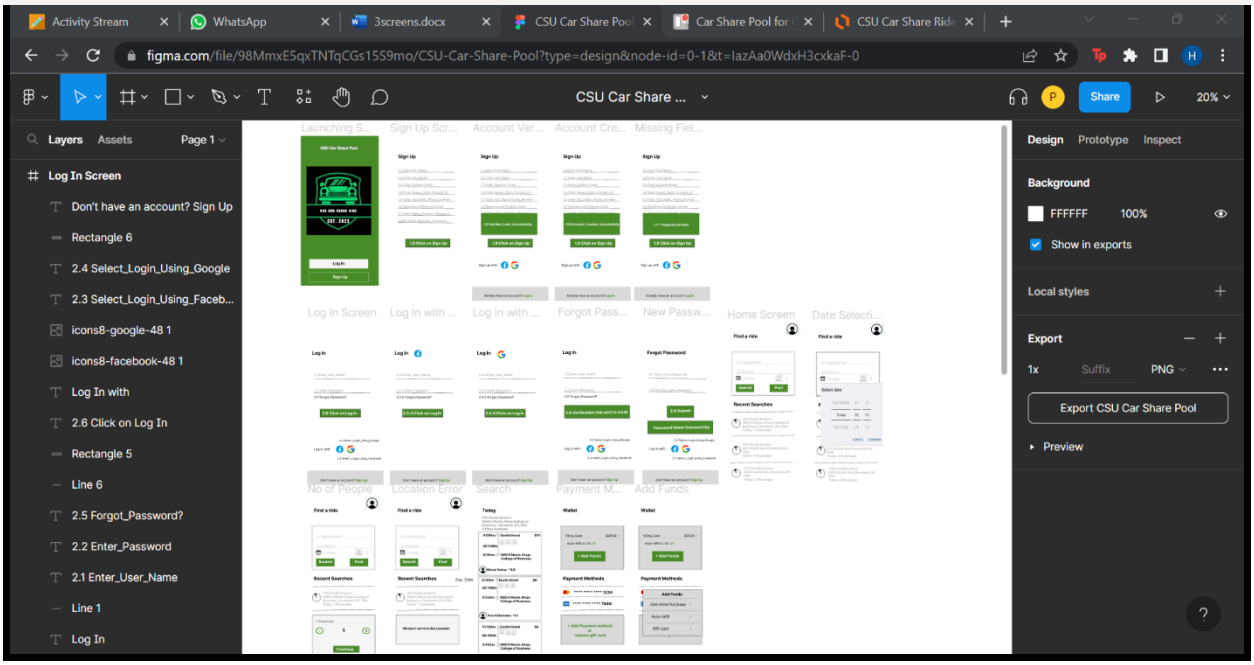


Figure 5

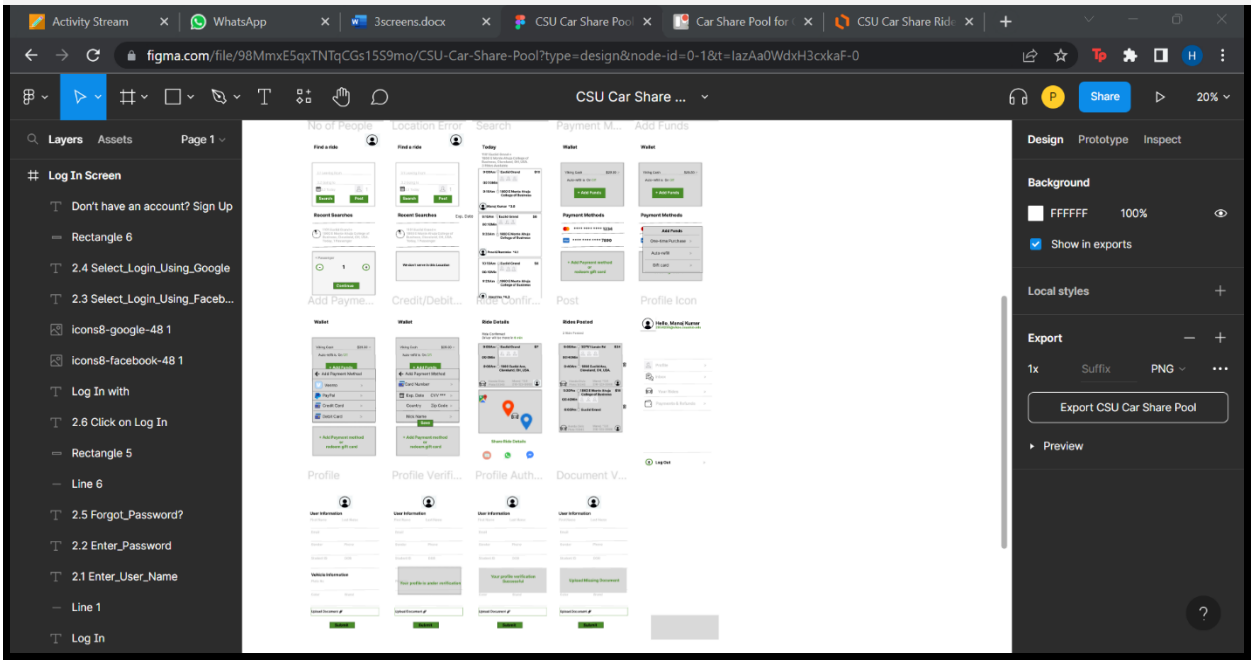


Figure 6

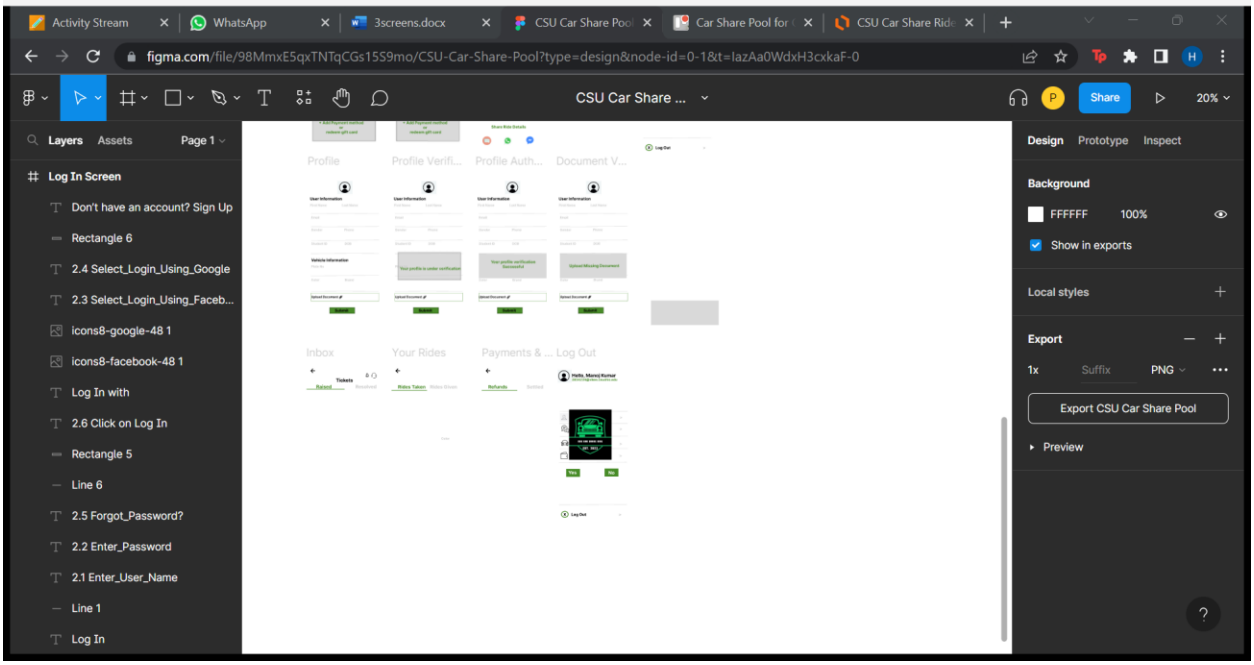


Figure 7

Agile Methods:

1. The Agile methodology was used in the development of the car share pool application. We used to gather in the breakout area during each class to discuss our work progress and solicit opinions or suggestions regarding the finished or continuing project chores.
2. Trello was used to organize our project. We discussed and divided up the work in accordance with the Sprint description in Trello, which we used to characterize the project's assignments. After each Sprint, we used to discuss our upcoming project advancements in Zoom sessions, and we used WhatsApp for day-to-day project communications.
3. The screen prototypes for our application were created using Figma.
4. Any assignment or work that was completed was documented and uploaded to a shared group.

Link for our Trello: https://trello.com/b/XuSbRqgC/car-share-pool-for-csu

Link for our Figma: https://www.figma.com/file/98MmxE5qxTNTqCGs15S9mo/CSU-Car-Share-Pool?type=design&node-id=0-1&t=IazAa0WdxH3cxkaF-0

Link for Lucid Charts: https://lucid.app/lucidchart/b5da6fe1-21e5-4781-b440-02b8f457a2ca/edit?invitationId=inv_b0f7ae32-29ec-4473-8748-2a4c02b9d0ae&page=uf_HG3EU-W2n#

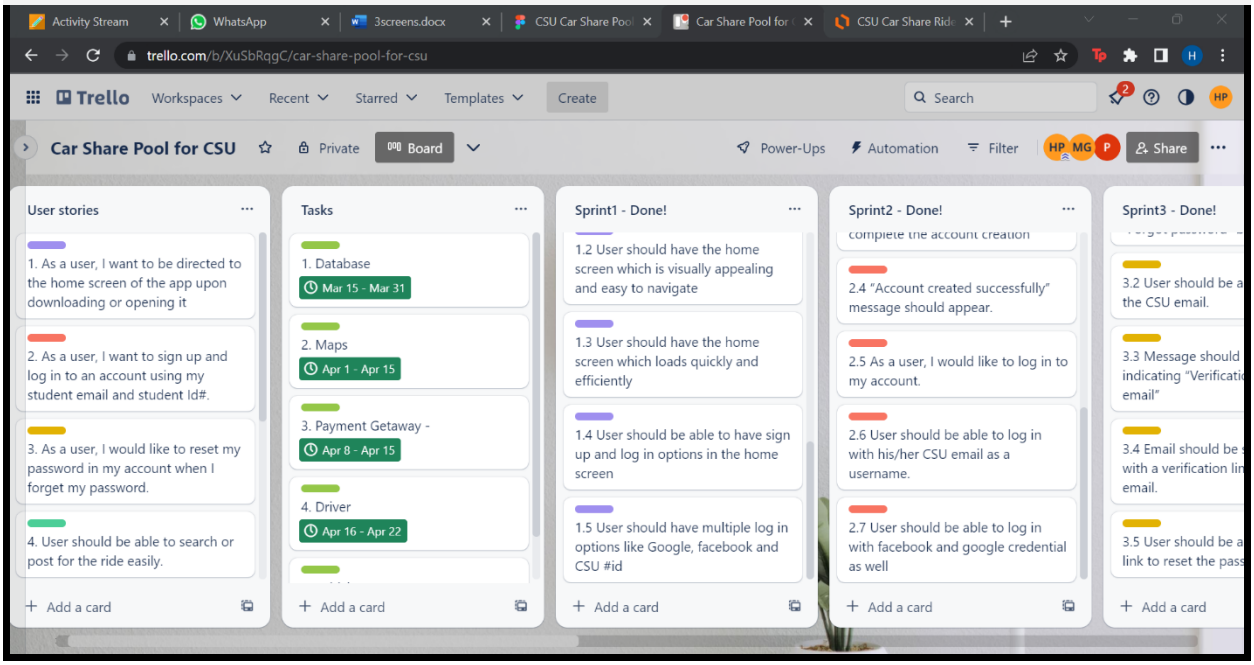


Figure 8

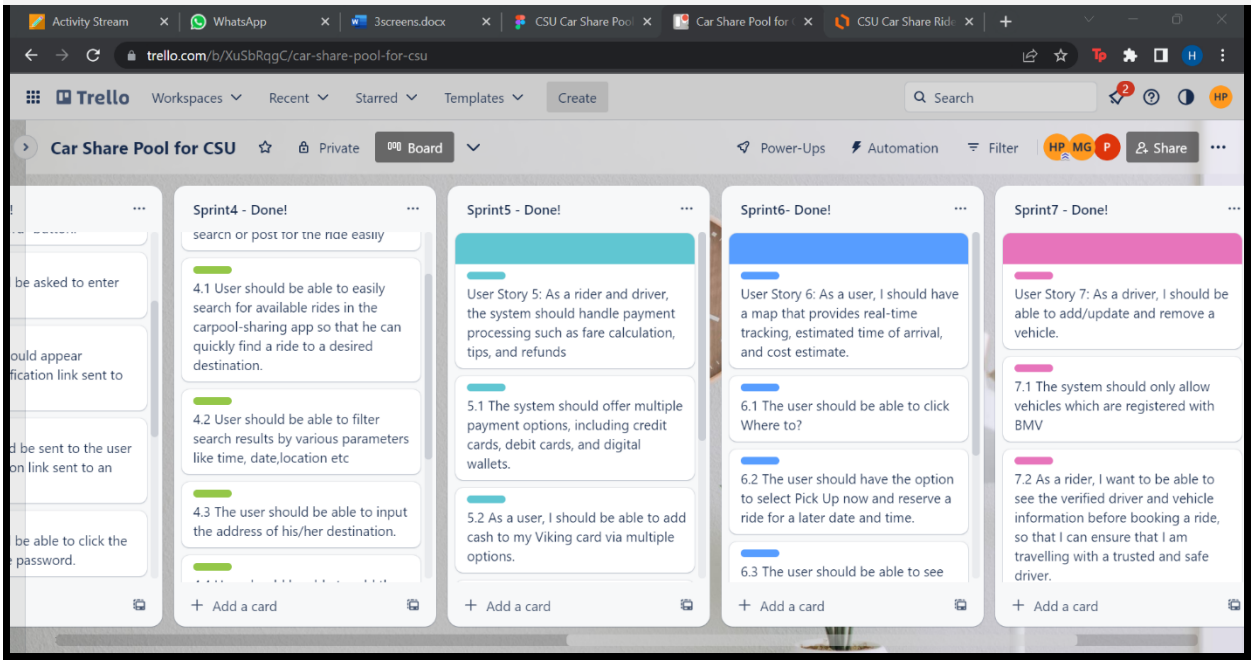


Figure 9

Risks:

Although using car share services can be a practical and economical alternative for students, there are also several concerns involved. Potential dangers include:

1. Safety risks: Car share pools can entail riding in a vehicle with strangers, which raises the possibility of theft or bodily damage. Students should make sure that the car-sharing service they choose has enough safety precautions in place, such as background checks for drivers and requirements for vehicle upkeep.
2. Risks associated with availability: If students depend on car sharing services to go to crucial activities or appointments, it may not always be possible to find one when they're needed. The availability and operating hours of the car-sharing service that students are utilizing should be understood by them.
3. Risks to user privacy include the collection and use of personal information from users, including journey histories and location information.

Mitigation Strategies:

There are several risk-mitigation techniques that can be used to lessen the dangers of student car sharing. Here are a few instances:

1. Safety concerns: By putting in place appropriate safety procedures like background checks for drivers, regular vehicle maintenance inspections, and offering safety features like GPS monitoring and emergency response systems, car sharing firms can reduce safety risks. Additionally, students ought to confirm that the car-sharing company they choose has a solid reputation for safety.

2. Availability risks: By making sure there are enough vehicles on hand to match demand and expanding working hours, car share firms can reduce availability risks. To guarantee they have access to the service when they need it, students can also plan ahead and reserve a vehicle in advance.
3. Privacy concerns: Car share firms can reduce privacy risks by putting solid privacy policies in place, giving users a clear understanding of how their personal information will be used, and getting their express consent before collecting and sharing it.

Security and Privacy Policy:

1. The car share pool application has security procedures in place to protect the information of our clients and to guarantee a safe user experience.
2. Before using our service or accessing the CSU database, all our users are validated. All our drivers have their backgrounds checked as well.
3. The robust application program interfaces encrypt all user data. All your travels are tracked as an added security measure.
4. According to its policy, the car share pool application may utilize users' location and payment data to provide services, enhance the app, and tailor their experience.
5. The user always has the option to change or delete their data. If it's not required for the services we offer, we won't divulge any of our users' personal information to a third party.

References:

1. *Blablacar*. Bla Bla Car application. https://www.blablacar.com/
2. *Blablacar: Carpooling and bus - apps on Google Play*. Google. https://play.google.com/store/apps/details?id=com.comuto
3. *Chat.openai.com*. Chatgpt. https://chat.openai.com/