

PROJECT REQUIREMENTS

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PROJECT DESCRIPTION

The Vehicle Marketplace Application "Contact Cars" addresses the challenge of simplifying the process of buying and selling both new and used vehicles. The goal is to provide a platform where users can search for vehicles based on various filters, get offers if the user buys a new car from some specific dealers , and easily contact buyers and sellers together. The system will also support multiple payment methods, user authentication (login/sign-up), and offer a seamless user experience for managing vehicle listings.

USER FUNCTIONAL REQUIREMENTS

1.Guest Access:

- 1.1.The system should allow users to browse vehicle listings without signing in. Guests should be able to view details of each vehicle but should be restricted from actions like saving to wishlist or contacting sellers.
- 1.2.If a guest attempts to access restricted actions, the system should prompt them to sign in or create an account.

2.User Account Management:

- 2.1.The system should allow users to create an account by entering an email, password, phone number, and location. Upon successful registration, the system should confirm account creation and redirect the user to the login page.
- 2.2.The system should authenticate users on login by verifying their email and password, and it should display an error if the credentials are incorrect.
- 2.3.Users should be able to update their account information (e.g., phone number, location) from the profile page. The system should save changes and notify users of successful updates.
- 2.4.The system should allow administrators to manage user accounts, including viewing, updating, and deleting accounts.

3. Vehicle Listing Management:

- 3.1. Sellers should be able to create a new vehicle listing by providing photos, price, mileage, brand, model, year, location, and description. The system should save and display the listing on the platform.
- 3.2. Sellers should be able to edit or delete their own listings. The system should update the listing details or remove the listing as requested.
- 3.3. Buyers should be able to search and filter listings based on criteria such as new/used status, brand, model, year, and location. The system should return relevant listings that meet the search criteria.

4. Search and Filter Functionality:

- 4.1. The system should allow users to search for vehicles using specific filters, such as new/used status, brand, model, year, and location. The system should update the list of vehicles displayed to match the selected filters.
- 4.2. Administrators should be able to manage available search filters, including adding new filters or modifying existing ones as needed.

5. Notifications:

- 5.1. The system should send notifications to users regarding updates such as new offers, messages, and changes to their listed vehicles. Notifications should be sent based on user preferences (email, SMS, or push notifications).
- 5.2. Users should be able to configure their notification preferences. If a user updates their preferences, the system should adjust notifications accordingly.

6. Wishlist Management:

- 6.1. The system should allow users to add vehicles to a wishlist from the vehicle detail page. Once added, users should be able to view their wishlist and remove vehicles as desired.
- 6.2. If a vehicle is removed from the platform, it should be automatically removed from all wishlists that contain it.

7.Dealer Management:

- 7.1.Administrators should be able to manage dealership contracts, specifying which vehicles dealerships want to list on the platform.
- These listings should automatically display as "New Cars" without requiring a separate dealership account.
- 7.2.Administrators should be able to add, update, and remove vehicle listings from contracted dealerships, with updates reflecting in real-time on the platform.
- 7.3.The system should automatically calculate a percentage of each sale made through the platform and deduct it from the dealership's earnings.

8.Offers Management (for New Cars Only):

- 8.1.Dealerships should be able to add special offers to new car listings. The system should display these offers prominently to buyers.
- 8.2.Buyers should be able to view and accept offers on new cars. If an offer is accepted, the system should update the offer status accordingly.

9.Communication Management:

- 9.1.The system should allow buyers and sellers to exchange messages related to a vehicle listing. Each message should be associated with a specific listing, and conversations should be viewable within the user's messaging inbox.
- 9.2.Administrators should be able to monitor and manage user communications to ensure adherence to platform policies.

10.Payment Management:

- 1.The system should allow buyers to select a payment method for new cars, supporting options like cash, credit card, and other electronic payments. Payments for used cars should be restricted to cash only.
- 2.If a buyer attempts to select a non-cash payment for a used car, the system should restrict the action and display an error message explaining the restriction.

11.Rating and Review System:

- 11.1.After a transaction is completed, users should be able to leave ratings and reviews for sellers or dealerships, which will appear on the relevant listing page.
- 11.2.Sellers should also be able to rate buyers based on the transaction experience. The system should display these ratings on buyer profiles to inform future sellers.
- 11.3.If a user has multiple reviews, the system should display the average rating along with individual reviews on the user's profile.

USER NON FUNCTIONAL REQUIREMENTS

Performance and Response Time:

The system should load and display vehicle listings within 3 seconds and critical actions like payment processing and form submissions should be completed within 5 seconds.

Security:

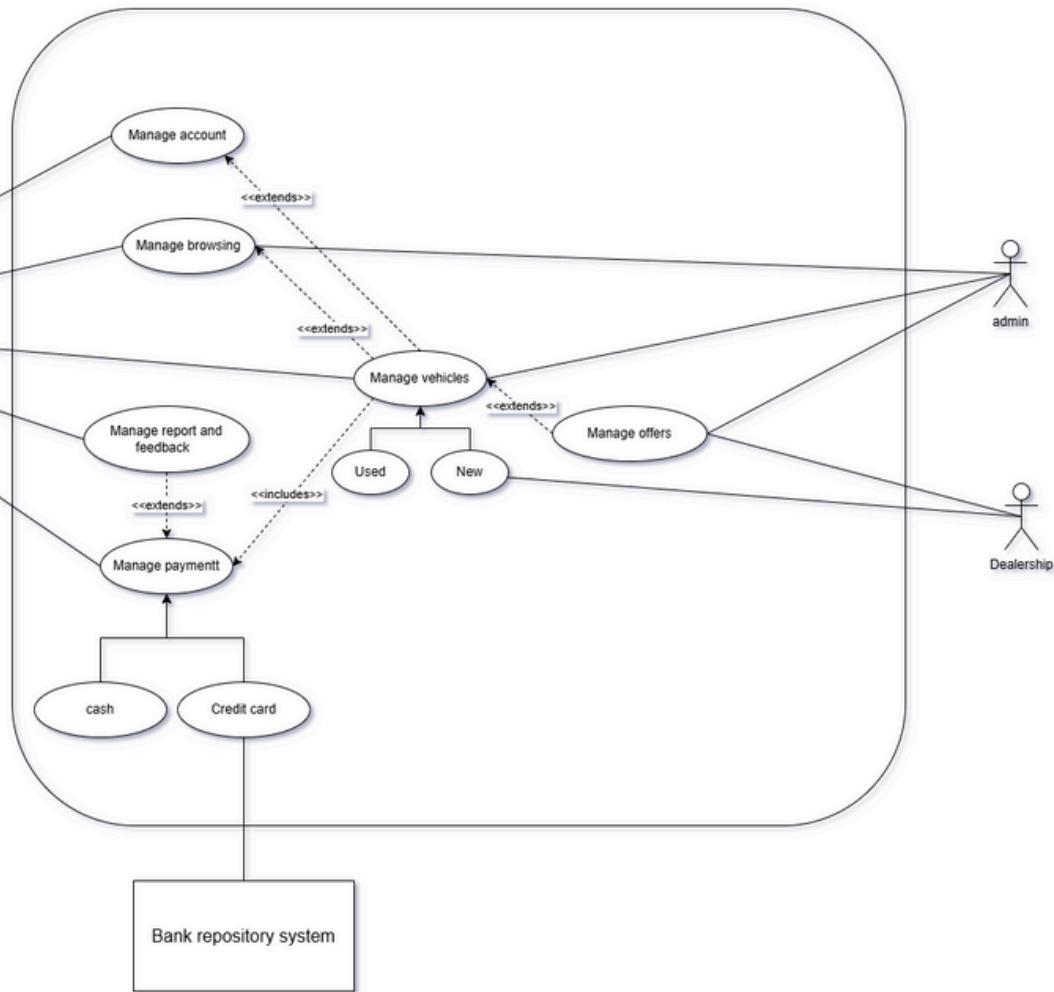
All payment transactions must be encrypted , and sensitive user data should be securely stored and transmitted. Only authenticated and authorized users should be able to access secure functionalities like managing vehicle listings or offers.

Availability and Uptime:

The system should maintain an uptime. Scheduled maintenance for the site should be communicated to users at least 24 hours in advance to ensure continuous availability of services like viewing cars, managing offers, and payment processing.

PROJECT USECASES

Contact Cars



Cross References

MA-O1: Account Creation
 MA-O2: Secure Login
 MA-O3: Password Reset System
 MA-O4: User Authentication
 MA-O5: Account Information Update

MB-O1: Listing Browsing Functionality
 MB-O2: Search and Filter Option
 MB-O3: Car Detail Display

MV-O1: Dealership Contract Management
 MV-O2: Admin Listing Management
 MV-O3: User Listing Management
 MV-O4: Messaging and Communication

PM-O1: Payment Method Selection
 PM-O2: Reservation Options
 PM-O3: Payment Validation and Error Handling
 PM-O4: Dealership Notification
 PM-O5: Car Status Update
 PM-O6: Purchase Cancellation Option

MRF-O1: Transaction Reporting
 MRF-O2: Feedback Submission
 MRF-O3: Data Availability
 MRF-O4: Feedback Recording

Manage Account

Interaction Scenario

Actors Intentions

- 1. The User opens the app and selects the "Sign up" option.
- 3. The User enters their username, password, email, phone number, and location.
- 5. The User selects "Create Account."
- 7. The User receives a confirmation email and activates their account.
- 9. The User selects the "Login" option.
- 11. The User enters their registered username and password.
- 13. If the User forgets their password, they select "Forgot Password"
- 15. The User accesses their account
- 17. The User selects "Account Settings" to update information
- 19. The User enters their new phone number or location and selects "Update" option

Alternative Course

Step 3: If the email already exists the system will inform the user to use a different email or recover their password

Step 11: If the User enters incorrect credentials multiple times the system temporarily locks the account and notifies the user

System Responsibility

- 2. Displays the signup page to enter username, password, email, phone number, and location
- 4. The system checks the password strength and the email format and that the username is unique
- 6. The system sends a confirmation email to activate the account
- 8. Confirms activation and creates the account
- 10. Displays login Page.
- 12. Authenticates credentials if it is valid
- 14. Sends password reset to the user email address
- 16. Displays Main Page with options like "Account Settings"
- 18. Displays Account Settings
- 20. The system saves the changes and displays a success message

Usecase Description

- **Actors:** User
- **Type:** Primary and essential
- **Description:**
 - 1.The User opens the app and selects "Sign up " option
 - 2.The User enters their username ,password, email, phone number and location
 - 3.After entering their information, The user select "create Account"
 - 4.The system validates the email format and ensures password strength meets security guidelines
 - 5.The User successfully registered and a confirmation email to activate their account it sent
 - 6.The User select "login " option to login to their account
 - 7.The User enters their registered username and password
 - 8.The system authenticates the credentials
 9. The User successfully have access to their profile
 - 10.The user select "Forgot password" option
 - 11.The user enters their email address
 - 12.The user receives email to rest their password
 - 13.The system update the user new password
 - 14.The user has successfully set a new password which they can use to log in
 - 15.The User logs in and navigates to "Account Settings"
 - 16.The system displays a form with fields for the User's current phone number and location
 - 17.The User updates their details and submits the changes
 - 18.The system validates the updated information
 - 19.If valid, the system saves the changes and displays a success message
- **Cross Ref:** MA-O1, MA-O2, MA-O3, MA-O4, MA-O5
- **Preconditions:** None

- **Postconditions:**

- 1.The User have access to sell their cars
- 2.The User can browse to buy a used or new cars

- **Alternate Scenarios:**

- 1.If the User enters a password that does not meet strength requirements, the system displays password guidelines for them to follow
2. If the User enters incorrect login credentials multiple times, the system temporarily locks the account

Test requirements

1. validate that the system allows account creation with valid username, password, email, phone number, and location
2. validate that the email address format is correct
3. validate that the system prevents account creation if the email is already in use
4. validate the password strength
5. validate that the account has been created
6. validate that the system displays an error message when incorrect login credentials are entered
7. validate that the system sends a password reset email when the "Forgot Password" option is selected
8. validate users can update their phone number and location

TEST CASES

Test Case ID	Test Scenario	Test Steps	Test data	Expected Result	Actual Results	Pass/Fail
TC_SIGNUP_001	Verify sign up with valid data	<ol style="list-style-type: none">1.Open the "Sign up" page2.Enter valid username, password, email, phone number, and location3.Click "Sign up" button	username:Validuser password: ValidPass email: ValidEmail phone number:ValidPh.Num location:ValidLocati on	User successfully signed up and receives confirmation email to activate account	User signed up successfully and received confirmation email	Pass

Test Case ID	Test Scenario	Test Steps	Test data	Expected Result	Actual Results	Pass/Fail
TC_SIGNUP_002	Verify sign up with invalid email format	1.Open the "Sign up" page 2.Enter valid username, password, email, phone number, and location 3.Click "Sign up" button	username:ValidUser password:ValidPass email: InvalidEmail phone number:ValidPh.Num location:ValidLLocation	Error message: "Please enter a valid email address"	User was unable to sign up and received an error message	Pass
TC_SIGNUP_003	Verify sign up with weak password	1.Open the "Sign up" page 2.Enter valid username, password, email, phone number, and location 3.Click "Sign up" button	username:ValidUser password:WeakPass email: ValidEmail phone number:ValidPh.Num location:ValidLLocation	Error message: "Password does not meet strength requirements"	User was unable to sign up and received an error message	Pass
TC_SIGNUP_004	Verify sign up with duplicate email	1.Open the "Sign up" page 2.Enter valid username, password, email, phone number, and location 3.Click "Sign up" button	username:ValidUser password:WeakPass email: ValidEmail (already registered) phone number:ValidPh.Num location:ValidLLocation	Error message: "Email already in use. Please log in "	User was unable to sign up and received an error message	Pass
TC_LOGIN_001	Verify login with valid credentials	1. Open login page. 2. Enter a valid username and password. 3. Click "Login"	Username: validUser Password: validPass	User is successfully logged in and redirected to the dashboard.	User logged in and navigated to profile page	Pass
TC_LOGIN_002	Verify login with invalid password	1. Open login page. 2. Enter a valid username and password 3. Click "Login"	Username: validUser Password: invalidPass	Error message: "Invalid username or password"	User was unable to login and received error message	Pass
TC_LOGIN_003	Verify login with invalid username	1. Open login page. 2. Enter a valid username and password 3. Click "Login"	Username: invalidUser Password: validPass	Error message: "Invalid username or password"	User was unable to login and received error message	Pass
TC_LOGIN_004	Verify login with both username and password invalid	1. Open login page. 2. Enter a valid username and password 3. Click "Login"	Username: invalidUser Password: invalidPass	Error message: "Invalid username or password"	User was unable to login and received error message	Pass
TC_LOGIN_005	Verify account lock after multiple failed attempts	1. Open login page. 2. Enter a valid username and password 3. Click "Login"	Username: invalidUser Password: invalidPass	Error message: "Account locked due to multiple failed attempts. Please try again later "	User account locked after multiple failed attempts	Pass
TC_FORGETPASSWORD_001	Verify forgot password with valid email	1. Open login page. 2. Click "Forgot Password." 3. Enter registered email. 4. Click "Submit"	Email:ValidEmail	Password reset email is sent to the registered email address	User received a password reset email	Pass

TC_FORGETPASSWORD_OO2	Verify forgot password with unregistered email	1. Open login page. 2. Click "Forgot Password." 3. Enter unregistered email. 4. Click "Submit."	Email:InvalidEmail	Error message: "Email not found"	User was unable to submit and received error message	Pass
TC_UPDATE_OO1	Verify update of phone number and location with valid data	1. Log in to the account 2. Go to "Account Settings" 3. Update your personal information 4. Click "Update"	Phone number:ValidPh.Numb Location:ValidLLocation	Account information updated successfully	User's details updated successfully	Pass
TC_UPDATE_OO2	Verify update with invalid phone number format	1. Log in to the account 2. Go to "Account Settings" 3. Update your personal information 4. Click "Update"	Phone number:InvalidPh.Numb Location:ValidLLocation	Error message: "Please enter a valid phone number"	User was unable to update details and received error message	Pass
TC_UPDATE_OO3	Verify update with empty fields	1. Log in to the account 2. Go to "Account Settings" 3. Update your personal information 4. Click "Update"	Phone number:Empty Location:Empty	Error message: "Phone number and location are required"	User was unable to update details and received error message	Pass

Manage Browsing

Interaction Scenario

Actors intention

- 1. User opens the car buying/selling app and accesses the browsing section.
- 3.. User selects search filters such as car make, model, year, price range, and location.
- 4. User views available cars and clicks on specific listings to see more details.

System's Responsibilities

- 2. Displays available filters for narrowing down car listings.
- 4. Shows a list of cars based on selected filters.
- 5. Provides detailed car information (e.g., mileage, features, seller contact) when a user selects a car to view.
- 6. Allows users to contact the seller if they're interested in a particular car.

Alternative Courses

Step 4: If no cars match the criteria, the system will prompt the user to adjust their filters or search for similar options.

Step 6: If the user tries to contact a seller and the car is no longer available, the system notifies them and suggests similar listings.

UseCase Description

- **Actors:** User

- **Type:** Primary and essential

- **Description:**

- 1.The user accesses the car browsing section to explore available cars and apply search criteria.
- 2.The system displays cars that match the user's specified filters.
- 3.The user can view detailed information about a car and contact the seller if interested.
- 4.The user can adjust search criteria at any time.

- **Cross Ref:** MB-O1, MB-O2, MB-O3

- **Preconditions:** None

- **Postconditions:**

1. The user successfully views available cars according to selected filters.
2. The user can proceed to contact a seller or continue browsing.

- **Alternative Courses**

1. If no cars are found that match the search criteria, the system will suggest modifications to the search filters or notify the user to adjust filters
2. If the user attempts to contact the seller of a car that's been sold, the system will notify them and suggest similar cars.

- **Test Requirements**

1. Ensure the user can select and modify filters, such as car make, model, year, and price range.
2. Verify that the results update based on the selected filters.
3. Confirm that detailed car information (e.g., mileage, price, features) appears upon selection.
4. Test that the system suggests adjustments when no matching results are found.
5. Validate that a message appears if the car is no longer available upon contact.
6. Ensure that after selecting all criteria, clicking "Search" displays relevant car listings based on filters.

Test Cases

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Result
TC_BROWSER_O1	User applies filters to search for cars	<ol style="list-style-type: none">1. Open the app.2. Go to the browsing section.3. Select filters: car make, model, year, price range, location.4. Click "Search."	Car make: Toyota Model: Corolla Year: 2018 Price Range: \$10,000-\$15,000 Location: Los Angeles	System displays cars matching the filter criteria in the search results.

TC_BROWSER_O2	System displays results based on filter criteria	<ol style="list-style-type: none"> 1. Apply search filters as in TC_BROWSER_O1. 2. Observe search results. 	Same as TC_BROWSER_O1	Search results accurately reflect the applied filter criteria.
TC_BROWSER_O3	System shows "no results found" for unavailable cars	<ol style="list-style-type: none"> 1. Apply search filters as in TC_BROWSER_O1. 2. Observe search results. 	Car make: Ferrari Model: Testarossa Year: 1990 Price Range: \$1,000,000+	System displays "No results found" and suggests adjusting filters.
TC_BROWSER_O4	User views detailed car information	<ol style="list-style-type: none"> 1. Perform a search with broad filters to find multiple results. 2. Click on one of the car listings to view details. 	Car make: Any Model: Any Price Range: Any	Car detail page opens, displaying mileage, price, features, and seller contact information.
TC_BROWSER_O5	System displays accurate car details	<ol style="list-style-type: none"> 1. View the details of a specific car as in TC_BROWSER_O4. 2. Verify that car details like mileage, price, and features are correct and complete. 	Selected Car: Ford Mustang 2019	Details match car listing, with accurate mileage, price, and features information.

TC_BROWSER_06	User attempts to contact seller for available car	<ol style="list-style-type: none"> 1. Perform a search and select a car. 2. Click "Contact Seller" on an available listing. 3. Verify contact options appear. 	Selected Car: Honda Accord 2020	Contact options appear (phone, email, or message) to reach the seller.
TC_BROWSER_07	System suggests modifying filters if no matches	<ol style="list-style-type: none"> 1. Enter uncommon search criteria that likely yield no results. 2. Click "Search." 3. Verify system suggestion to modify search criteria is displayed. 	Car make: Bugatti Year: 1960 Location: Remote Area	System displays a message suggesting filter adjustments.
TC_BROWSER_08	User clears filters to reset search	<ol style="list-style-type: none"> 1. Apply filters for make, model, and year. 2. Clear all filters. 3. Verify that all filters are reset and the full listing is displayed. 	Car make: Tesla Model: Model 3 Year: 2021	System resets filters, showing all available cars in search results.
TC_BROWSER_09	System updates results dynamically as filters change	<ol style="list-style-type: none"> 1. Apply initial filters to generate results. 2. Modify one filter (e.g., change model or price range). 3. Observe updated search results. 	Initial Filter: Toyota Corolla 2020 Updated Filter: Toyota Camry 2020	System updates results based on new filter criteria without reloading the page.
TC_BROWSER_10	User searches by keyword	<ol style="list-style-type: none"> 1. Open the app's browsing section. 2. Enter a keyword in the search bar (e.g., "SUV"). 3. Verify search results are related to the keyword. 	Keyword: SUV	Results include listings with "SUV" in the title or description.
TC_BROWSER_11	System prompts if invalid price range is entered	<ol style="list-style-type: none"> 1. Go to the browsing section. 2. Enter a minimum price higher than the maximum price. 3. Attempt to search. 4. Observe system prompt for correction. 	Minimum Price: \$50,000 Maximum Price: \$20,000	System displays an error message indicating the invalid price range.

TC_BROW SE_12	User filters by location	<ol style="list-style-type: none"> 1. Open the browsing section. 2. Select a specific location (e.g., city or ZIP code). 3. Verify that search results are limited to that location. 	Location: Miami, FL	Search results display only cars listed within the specified location.
TC_BROW SE_13	User filters by year range	<ol style="list-style-type: none"> 1. Open the browsing section. 2. Set a year range filter (e.g., 2015-2021). 3. Verify that results fall within the specified range. 	Year Range: 2015-2021	System displays cars that match the specified year range.
TC_BROW SE_14	User views recently viewed cars	<ol style="list-style-type: none"> 1. Open the browsing section. 2. View details of multiple cars. 3. Navigate to "Recently Viewed" section. 4. Verify that recently viewed cars are listed. 	Viewed Cars: Honda Civic 2019, Ford F-150 2020	Recently viewed cars are listed, displaying the correct cars in the order viewed.

Manage vehicles

Interaction Scenario

Typical Course of Events

Actors Intentions

- 1. User(**seller**) wants to list their used car for sale.
- 3. User(seller) enters car details (photos, price, mileage, brand, model, year, location, description) for their used car.
- 5. User(**buyer**) decides to buy selected used car from another user.
- 7. User(buyer) decides to buy selected new car from a specific dealership.
- 9. **Admin** adds new dealership vehicles to the system after making a contract with the dealership.

System Responsibility

- 2. Allows logged in user to access the "Sell a Car" page.
- 4. Saves the listing of the car with its details in the "Used Cars" section for future buyers.
- 6. Allows buyer to initiate contact with seller via a messaging feature and proceed with a cash-only transaction if the purchase terms are agreed upon.
- 8. Verifies payment details and marks car "Reserved"(in case of deposit which is optional) or "Sold".
- 10. Allows admin to enter dealerships cars details and displays them under "New Cars".
- 11. Generates a report with buyer information after a successful purchase and sends it to the dealership based on the contract.
- 12. Automatically calculates the commission and deducts it from the sale, logging this transaction for financial records.

Alternative Courses

Step5: User tries to buy an already sold used car before it's removed from the listings.

Step9: The admin updates or removes specific dealership vehicle listings if requested by the dealership or if the listing requirements change.

UseCase Description

- **Actors:** User(buyers and sellers), Admin.
- **Type:** Primary and essential.
- **Description:**
 1. Admin enters dealership car listings into the system as "New Cars" after establishing a contract with the dealership.
 2. Admin adds dealership cars details like brand, model, price, and any special offers so they are available for users to view and buy.
 3. Registered users can list their used cars for sale by providing relevant details (e.g., photos, price, mileage, brand, model, year, and location) so they become visible in the "Used Cars" section for potential buyers.
 4. Logged in users can select desired available used car based on their search or other filters and initiate contact with buyer.
 5. Logged in users can select desired new car based on their search or other filters for purchase.
- **Cross Ref:** MV-O1, MV-O2, MV-O3, MV-O4, MB-O3, MB-O1, MB-O2
- **Preconditions:**
 1. The Seller must be a registered and authenticated user to list a used car.
 2. The Buyer must be a registered and authenticated user to initiate a purchase.
 3. The Admin has completed a dealership contract to list dealership vehicles as "New Cars" on the platform.
- **Postconditions:**
 1. The new car listing is successfully created, updated, or removed by Admin.
 2. The used car listing is successfully created, updated, or removed by the seller.
 3. The buyer has completed a purchase or reservation, with the system generating and proceeds to payment or to leaving a deposit if their buying a new car.

- **Alternate Scenarios:**

1. Seller decides to update or delete their car listing.
 - System verifies seller's authorization and then updates or removes the listing from the "Used Cars" section.
2. Buyer cancels their reservation on a new car.
 - System cancels the reservation, updates the listing status, and, if applicable, refunds the deposit.
3. Dealership requests removal of car listing.
 - Admin removes the specified vehicle from the "New Cars" section and notifies.
4. Buyer attempts to purchase a car with incorrect card info or with insufficient funds.
 - System notifies the buyer of the issue and offers options to retry payment or cancel.

Test Requirements

1. Verify that only a logged in user can buy or sell a car.
2. Verify that a seller can successfully create a listing for a used car with all required details (photos, price, mileage, brand, model, year, location).
3. Verify that the system displays the used car listing in the "Used Cars" section for buyers to view.
4. Verify that the seller can update the details of an existing used car listing.
5. Verify that the seller can delete an existing used car listing, and that it no longer appears in the search results.
6. Verify that a buyer can contact the a seller through the system's messaging feature.
7. Verify that the system logs successful used car transactions between buyers and sellers.
8. Verify that the admin can add new cars to the system on behalf of a dealership.
9. Verify that the admin can update or remove a dealership car listing based on dealership requests.
10. Verify that dealership cars are labeled as "New" and are accessible under the "New Cars" section.
11. Verify that the admin can enter special offers for dealership cars and that these offers are accessible to buyers.

12. Verify that the system displays an error message if required listing details are missing or invalid when a seller adds or updates a listing.
13. Verify that buyers and sellers receive notifications for successful transactions, cancellations, and changes in listing status.

Test Cases

Test Case ID	Test Scenario	Test Steps	Test Data	Requirement Traceability
TC_SellNewCar_001	Verify only admin can add details of the listings of dealerships	1.Gain access to system 2.Select add new cars 3.Enter new car with its details 4. add offer if it applies 5. click "enter"	car name car details car offer	TR-08
TC_SellNewCar_002	Verify the display of details of the listings in "New Cars"	1.open the system 2.open "New Cars" criteria 3.view car details and offers	New Cars listing	TR-08 TR-09 TR-10 TR-11
TC_SellNewCar_003	Verify admin can edit the listings of "New Car"	1.gain access to system 2.select a car from the "New Cars" listing 3.choose "edit" 4.enter new info 5.select "submit"	updated car info	TR-08 TR-09 TR-10 TR-11
TC_SellNewCar_004	Verify admin can delete cars in the listings of "New Cars"	1.gain access to system 2.select a car from the "New Cars" listing 3.choose "delete" 4.confirm deletion of the listing	proof of dealerships desire to remove a listing	TR-08 TR-09 TR-10
TC_SellNewCar_005	Verify new car status can be updated if reserved or sold	1.user buys or reserves a new car or cancels reservation on a car 2.Car status must automatically change according to its status(available, reserved, sold)	deposit or full payment	

TC_SellUsedCar_OO1	Verify only logged in user can add to the "Used Cars" listing	1. user must gain access to their account 2. user selects "sell" 3. user enters their car info 4. user clicks "submit"	account info car details	TR-O1 TR-O2 TR-O3
TC_SellUsedCar_OO2	Verify logged in user can only add to the "Used Cars" listing	1. user must gain access to their account 2. user doesn't have a "Sell New Car" option 3. user selects "sell" 4. user enters their car info 5. user clicks "submit"	account info car details	TR-O1 TR-O2 TR-O3
TC_SellUsedCar_OO3	Verify logged in user can edit their listing	1. user gains access to their account 2. user selects "My Listings" 3. user selects car in "My Listings" 4. user selects "edit" 5. user enters updated info 6. user clicks "submit"	account info updated car details	TR-O1 TR-O2 TR-O3 TR-O4
TC_SellUsedCar_OO4	Verify logged in user can delete their listing	1. user gains access to their account 2. user selects "My Listings" 3. user selects car in "My Listings" 4. user selects "delete" 5. user confirms the deletion of their listing	account info	TR-O1 TR-O2 TR-O3 TR-O5
TC_SellUsedCar_OO5	Verify logged in user gets Notifications to update them on their listings	1. user gets notification if their car is selected by a buyer	none	TR-13

TC_SellUsedCar_006	Verify logged in user can communicate with potential buyer of their listing	<ol style="list-style-type: none"> user gets notification if their car is selected by a buyer user clicks on the chatting button 		TR-01 TR-06 TR-13
TC_BuyNewCar_001	Verify only logged in user can buy a car from the "New Cars" category	<ol style="list-style-type: none"> user gains access to their account user selects "New Cars" User selects desired car for purchase 	account info	TR-01 TR-10
TC_BuyNewCar_002	Verify logged in user can view the details and the offers of the cars in the "New Cars" category	<ol style="list-style-type: none"> user gains access to their account user selects "New Cars" user browses through the available listing viewing car details user can see if there is an offer available on every car in the listing User selects desired car for purchase 	account info	TR-01 TR-10
TC_BuyNewCar_003	Verify the info visibility of the dealerships supplying the cars	<ol style="list-style-type: none"> user gains access to their account user selects "New Cars" user browses through the available listing viewing car details user can see if there is an offer available on every car in the listing User selects desired car for purchase User can view dealerships info including their location, phone number 	account info	TR-10

TC_BuyUsedCar_001	Verify only logged in user can buy from the "Used Cars" category	1.user gains access to their account 2.user selects "Used cars" 3.user selects desired car for purchase	account info	TR-O1 TR-O3
TC_BuyUsedCar_002	Verify logged in user can view "Used Cars" listings and their details	1.user gains access to their account 2.user selects "Used cars" 3.user browses available listings and can see their details 4.user selects desired car for purchase	account info	TR-O1 TR-O3
TC_BuyUsedCar_003	Verify logged in user can message sellers	1.user gains access to their account 2.user selects "Used cars" 3.user browses available listings and can see their details 4.user selects desired car for purchase 5.user selects the chatting button to finalize purchase and contact seller	account info	TR-O1 TR-O6

Manage Payment

Interaction Scenario

Typical Course of Events

Actor's Intentions

1. Buyer confirms the purchase.
3. Buyer selects a payment method.
5. Buyer submits the payment.
7. Payment is processed successfully.
9. Buyer receives a confirmation.

System's Responsibilities

2. Displays available payment methods.
4. Validates payment details.
6. Sends payment request to the Payment Processing System.
8. Updates vehicle listing status to "Sold" or "Reserved."
10. Sends a report with buyer information to the dealership.

Alternative Courses

Step 3: Buyer enters invalid payment details.

- Notify the buyer of invalid details and prompt for re-entry.

Step 6: Payment fails due to insufficient funds or credit.

- Inform the buyer and request an alternative payment method.

Step 9: Payment is declined by the Payment Processing System.

- Notify the buyer, cancel the transaction, and suggest retrying with a different payment method.

Step 3: Buyer decides to reserve the vehicle by paying a deposit.

- The system processes the deposit and marks the vehicle as "Reserved," notifying the buyer of the status.

Use Case Description

- **Actors:** User, Bank repository System, Admin, Dealership
- **Type:** Primary and essential

- **Description:**

1. The buyer logs into the ContactCars application.
2. The buyer selects a new car listing and confirms the purchase intention.
3. The system displays available payment methods for new car purchases (e.g., credit card, debit card).
4. The buyer chooses a payment method and enters the required payment details.
5. The system validates the payment details based on the selected payment method.
6. The payment processing system handles the transaction.
7. Upon successful payment, a confirmation message is displayed to the buyer.
8. The system sends a report of the buyer's information to the dealership.

- **Cross Ref:** MA-O4, PM-O1, PM-O2, PM-O3, PM-O4, PM-O5, PM-O6

- **Preconditions:**

1. The buyer is successfully logged in.
2. The buyer has selected a new car listing and intends to purchase it.
3. Postconditions

- **Postconditions:**

1. The payment is recorded in the system.
2. The buyer's information is sent to the dealership.
3. The car's status changes to "Sold" or "Reserved," as applicable.

- **Alternative Scenarios:**

1. The buyer enters incorrect or invalid payment details or has insufficient funds.
 - The system displays an error message to the buyer, prompting them to re-enter the payment information or select a different payment method.
2. The buyer decides to cancel the purchase after selecting the payment method but before confirming the payment.
 - The system confirms the cancellation and returns the buyer to the car listing or main menu.

Test Requirements

1. User Authentication

Verify that the buyer can successfully log into the ContactCars application.

2. Vehicle Listing Access

Confirm that the buyer can select a vehicle listing and initiate the purchase process.

3. Payment Method Selection

Ensure that the buyer can choose from available payment options.

4. Payment Detail Validation

Validate that the system checks the accuracy of payment information.

5. Payment Processing

Confirm that the payment processing system can handle the transaction and return the result.

6. Confirmation and Status Update

Ensure that the system displays a confirmation message to the buyer and updates the vehicle's status.

7. Failed Payment Handling

Test the system's response to failed payment attempts and ensure the buyer can choose a different payment method.

8. Deposit for Reservation

Validate that the system allows the buyer to pay a deposit and marks the vehicle as "Reserved" instead of "Sold."

Test Cases

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Pass/Fail
TC_PAYMENT_001	Successful Payment	1. Log in as a buyer. 2. Select a vehicle. 3. Confirm purchase. 4. Select a valid payment method. 5. Enter valid payment details. 6. Submit.	Valid credit card info with sufficient balance	Payment is processed successfully; confirmation message displayed; vehicle status updated to "Sold."	Payment processed successfully; confirmation message displayed; vehicle status updated to "Sold."	Pass
TC_PAYMENT_002	Invalid Payment Details	1. Log in as a buyer. 2. Select a vehicle. 3. Confirm purchase. 4. Select a payment method. 5. Enter invalid payment details (e.g., incorrect CVV). 6. Submit.	Incorrect CVV code	System detects invalid payment details; notifies buyer; prompts for re-entry of correct information.	System detected invalid payment details; notified buyer; prompted for re-entry.	Pass
TC_PAYMENT_003	Payment Failure Due to Insufficient Funds	1. Log in as a buyer. 2. Select a vehicle. 3. Confirm purchase. 4. Select a payment method. 5. Enter details with insufficient funds (e.g., credit card with low balance). 6. Submit.	Payment method with insufficient funds	System notifies buyer of payment failure; suggests alternative payment methods.	System notified buyer of payment failure; suggested alternative payment methods.	Pass

TC_PAYMENT_004	Payment Declined by Processing System	1. Log in as a buyer. 2. Select a vehicle. 3. Confirm purchase. 4. Select a payment method. 5. Enter valid payment details; the system declines the transaction. 6. Submit.	Valid payment details; transaction declined	System notifies buyer of payment decline; suggests retrying or using a different payment method.	System notified buyer of payment decline; suggested retrying or using a different payment method.	Pass
TC_PAYMENT_005	Reservation with Deposit Payment	1. Log in as a buyer. 2. Select a vehicle. 3. Choose to reserve with a deposit. 4. Enter deposit amount and payment details. 5. Submit.	Valid deposit payment information	Deposit payment processed; vehicle status updated to "Reserved"; confirmation message displayed to buyer.	Deposit payment processed; vehicle status updated to "Reserved"; confirmation displayed to buyer.	Pass
TC_PAYMENT_006	Verify Payment Receipt	1. Log in as a buyer. 2. Make a purchase. 3. Navigate to payment receipt section. 4. View receipt.	N/A	Buyer views the payment receipt with transaction date, amount, payment method, and vehicle details.	Payment receipt displayed correctly with all relevant details.	Pass
TC_PAYMENT_007	Verify Payment History	1. Log in as a buyer. 2. Navigate to payment history. 3. View past transactions.	N/A	Buyer views a list of past transactions with dates, amounts, and statuses.	Payment history displayed correctly with all past transactions.	Pass

TC_PAYMENT_008	Successful Refund Process	1. Log in as a buyer. 2. Select a previous transaction. 3. Request a refund. 4. Confirm refund request.	Previous transaction details	System processes the refund successfully; confirmation of refund displayed to buyer.	Refund processed successfully; confirmation displayed to buyer.	Pass
TC_PAYMENT_009	Refund Failure Due to Processing Error	1. Log in as a buyer. 2. Select a previous transaction. 3. Request a refund. 4. System encounters an error. 5. Confirm refund request.	Previous transaction details; system error	System notifies buyer of refund failure; provides error details and alternative actions.	System notified buyer of refund failure; provided error details and alternatives.	Pass
TC_PAYMENT_010	Multiple Payment Methods Selection	1. Log in as a buyer. 2. Select a vehicle. 3. Confirm purchase. 4. Select different payment methods for multiple vehicles. 5. Enter valid details.	Valid details for credit card and cash payments	System allows selection of different payment methods for multiple transactions; processes each successfully.	System allowed different payment methods; all transactions processed successfully.	Pass
TC_PAYMENT_011	Payment Method Management for Dealerships	1. Log in as an admin. 2. Navigate to payment methods management. 3. Add a new payment method for dealerships. 4. Save changes.	New payment method details	System allows admin to add and manage payment methods for dealerships successfully.	Admin was able to add and manage payment methods successfully.	Pass

Manage Report and Feedback

Interaction Scenario

Actors Intentions

- 1.The user completes the car purchase and navigates to the reports section.
- 3.The user selects a report type (e.g., payment history) to view.
- 5.The user exports the report to their preferred format.
- 7.The user accesses the feedback section to submit their experience.
9. The user fills out the feedback form with their comments and ratings.
- 11.The user submits the feedback and receives confirmation.
- 13.The user navigates to view their submitted feedback and the dealership's response.

System Responsibility

2. The system displays the reports after the user completes the car purchase.
4. The system generates and displays the selected report based on the user's request.
6. The system allows the user to export the report successfully.
8. The system display feedback submission form to the user.
10. The system validates the feedback submission and confirms successful submission.
12. The system displays the user's submitted feedback along with any responses from the dealership.

Alternative Courses

- Step 2: If the report is unavailable, the system displays a message indicating that the report is currently being generated or is not available.
- Step 5: If the user submits feedback with incomplete fields, the system highlights the missing fields and prompts the user to complete them.

UseCase Description

- **Actors:** guest(user), admin
- **Type:** secondary and essential
- **Description:**
 1. The user can view reports related to their transactions with the dealership.
 2. Reports includes payment history, purchase history, rating the seller and market trends.
 3. Users can submit feedback about their buying or selling experience.
 4. Feedback includes ratings and comments on service quality, vehicle condition, and transaction satisfaction.
 5. The user has the ability to check back how the dealership has responded to their feedback.
- **Cross Ref:** MRF-O1, MRF-O2, MRF-O3, MRF-O4
- **Preconditions:**
 1. The user must have access to the reporting feature in the system.
 2. The system must have all transaction data available for generating reports.
 3. The user must have access to the feedback submission section of the system.
 4. The user must complete a transaction with the dealership to provide feedback.
- **Postconditions:**
 1. The system generates a report according to the desire of the user.
 2. The report is displayed to the user, and the user has options to view, print, or export it.
 3. Any actions taken are recorded in the system for future reference.
 4. The submitted feedback is saved in the system.
 5. The user can view any responses from the dealership related to their feedback.

- **Alternate Scenarios:**

1. If the user tries to view a report that has not been generated yet, the system informs the user that the report is unavailable.
2. If the user submits feedback without filling out all required fields, the system prompts the user to complete the missing information.
3. If the user attempts to check feedback responses before any feedback has been submitted, the system notifies the user that no feedback responses are available.

Test requirements:

1. Verify user must be logged in.
2. Verify user must select the report section
3. Verify that the system can generate reports according to user selection
4. Verify that the system allow user to view the reports.
5. Verify user must select the feedback section.
6. Verify user can submit the feedback experience.
7. Verify user can view their feedback.
8. Verify that the system record everything about the user.

Test Cases

Test case id	Test scenario	Test step	Expected result	actual result	test data
tc_001	verify user to login	1. Navigate to the login page. 2. Enter valid username and password. 3. Click the "Login" button.	User is successfully logged in	User is logged in without errors	Username: fares Password: 1234
tc_002	verify user to access report section	click on report section	The report section is displayed with available report options.	The report section appears with options for various reports	Click on button labeled "Reports"
tc_003	verify user can view transaction reports.	. Select a specific report	The selected report is displayed by details	The "Payment History" report loads with complete transaction details.	Select report titled "Payment History"
tc_004	verify user can view transaction reports.	1. Click the "Export" button on the report page.	The report downloads successfully in the chosen format.	The report is downloaded as a PDF file without any errors.	Choose export format: PDF
tc_005	Verify access to the feedback section.	Click on the "Feedback" section	The feedback submission form	The feedback submission form will appear	Click on button labeled "Feedback"
tc_006	Verify users can submit feedback.	1. Fill out the feedback form with comments and ratings. 2. Click on the "Submit" button.	Feedback is submitted successfully and message is displayed.	Feedback submission is successful, and the confirmation message appears	Comments: "Great service, very satisfied!" Rating: 5/5
tc_007	Verify user can view their submission	1. Navigate to the feedback section.	The submitted feedback is displayed with details	The user's feedback is listed by all details and	Click on "View My Feedback"
tc_008	Verify user can view feedback for other people	1. Navigate to the feedback section. 2. Select "View others"	The submitted feedback is displayed with details	Feedback from other users is visible with complete details and ratings.	Click on "View Others' Feedback"

IDENTIFIED SUBSYSTEMS

Subsystem Name	Subsystem Functions	Subsystem Interface
1. User Account Management	Allow users to sign up, log in, and update their information. Admin can manage user accounts.	<pre data-bbox="975 698 1457 1208">interface UserAccountManagement { +void signUp(String email, String password, String phoneNumber, String location); +void login(String email, String password); +void updateUserInfo(String userId, String phoneNumber, String location); +void adminManageAccount(String userId, String action); }</pre>
2. Vehicle Listing Management	Allow sellers to add, update, and delete vehicle listings. Buyers can search and view car listings.	<pre data-bbox="975 1304 1457 1994">interface VehicleListingManagement { +void addVehicleListing(String userId, Vehicle vehicle); +void updateVehicleListing(String listingId, Vehicle updatedVehicle); +void deleteVehicleListing(String listingId); +void searchVehicle(String filterCriteria); +void viewVehicleDetails(String listingId); }</pre>

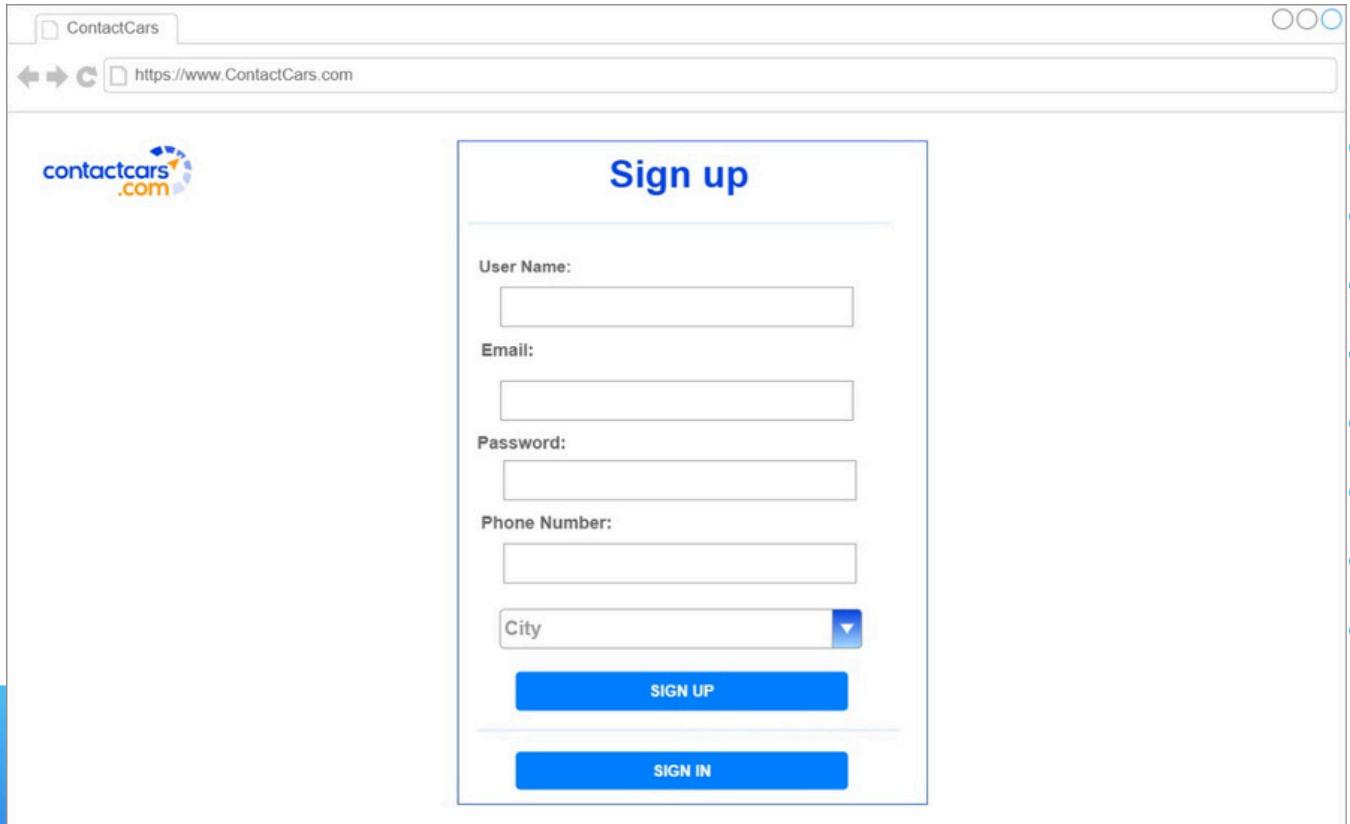
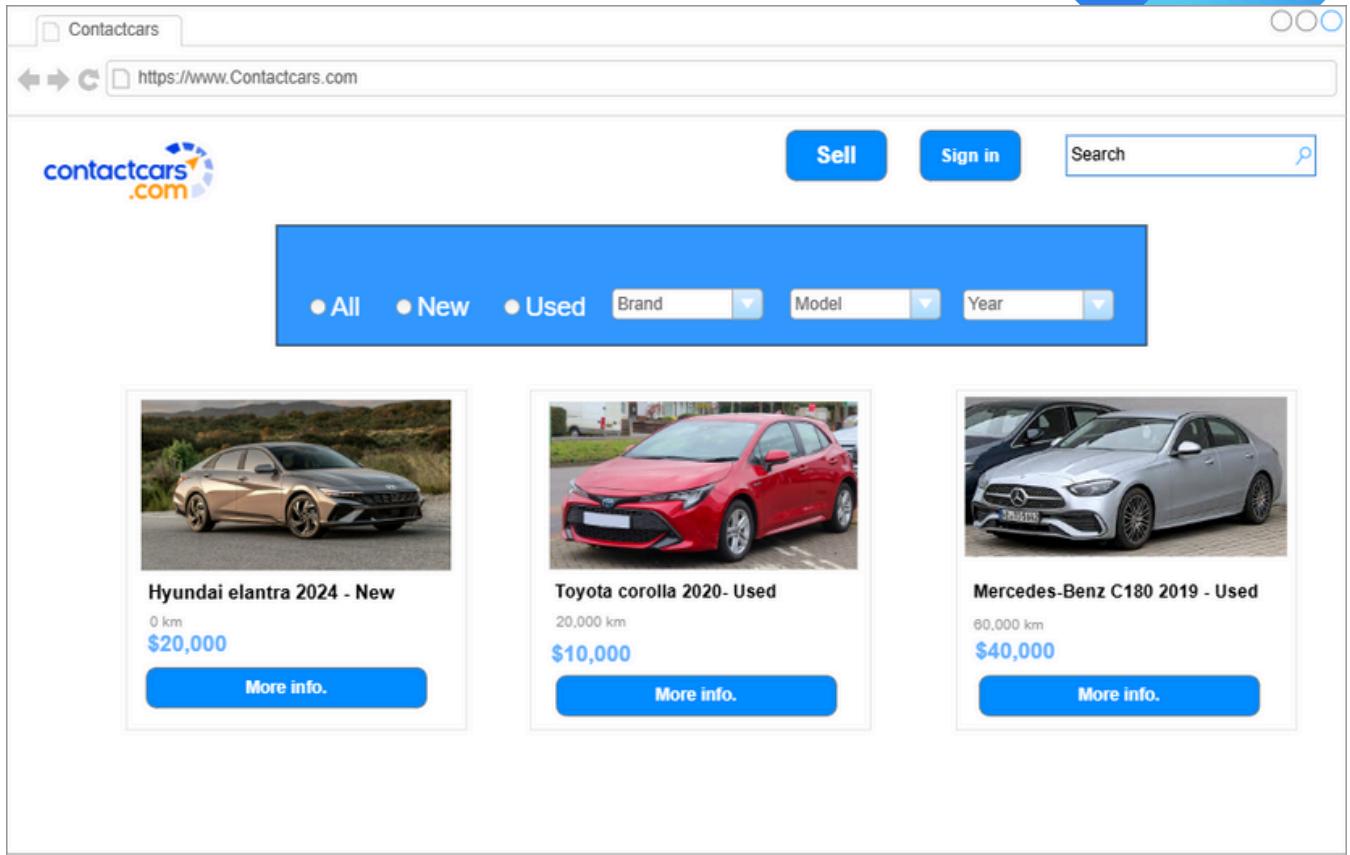
3. Offer Management (New Cars)	Allow sellers of new cars (dealerships) to provide special offers. Buyers can view and accept offers.	<pre>interface OfferManagement { +void adminAddOffer(String listingId, Offer offer); +void viewOffers(String listingId); +void acceptOffer(String offerId); }</pre>
4. Messaging Management	Enable messaging between buyers and sellers. Admin can monitor communications.	<pre>interface MessagingManagement { +void sendMessage(String senderId, String receiverId, String message); +void viewMessages(String conversationId); +void adminMonitorMessages(); }</pre>
5. Payment Processing	Allow users to select payment methods (cash, credit card, etc.). Restrict payments for used cars to cash.	<pre>interface PaymentProcessing { +void selectPaymentMethod(String userId, String paymentMethod); +void processPayment(String userId, String listingId, String paymentInfo); }</pre>
6. Search and Filter Operations	Allow users to search for vehicles based on specific criteria (new, used, brand, model, etc.).	<pre>interface SearchAndFilterOperations { +void searchVehicles(String criteria); +void applyFilter(String filterCriteria); +void adminManageFilters(String filterAction); }</pre>
7. Guest Access Control	Allow guest users to view vehicle listings without signing in.	<pre>interface GuestAccessControl { +void guestViewVehicles(); }</pre>

8. Notification Services	Send notifications to users regarding updates (offers, messages, etc.). Users can manage preferences.	<pre>interface NotificationServices { +void sendNotification(String userId, String notification); +void manageNotificationPreferences (String userId, String preferences); }</pre>
9. Wishlist Operations	Allow users to add vehicles to a wishlist, view and edit it later.	<pre>interface WishlistOperations { +void addToWishlist(String userId, String listingId); +void viewWishlist(String userId); +void removeFromWishlist(String userId, String listingId); }</pre>
10. Dealership Contract Management (Contract-Based)	Manage contracts with dealerships to display new cars. Admin adds/edit vehicles.	<pre>interface DealershipContractManagement { +void adminManageDealershipContract(String dealershipId, List<Vehicle> vehicles); +void adminAddVehicle(String dealershipId, Vehicle vehicle); +void adminUpdateVehicle(String listingId, Vehicle updatedVehicle); }</pre>
11. Rating and Review System	Allow buyers and sellers to leave ratings. Display ratings on listings.	<pre>interface RatingAndReviewSystem { +void leaveRating(String userId, String listingId, int rating, String review); +void viewRatings(String listingId); }</pre>

TRACEABILITY MATRIX

Features/Customer Requirements	Accessing The System	Selling Used Cars	Buying Used Cars	Selling New Cars	Buying New Cars	Manage User Accounts	Guest Access Management	Manage Vehicle Listings	Search and Filter Management	Notification Management	Wishlist Management	Dealer Management (Contract-Based)	Manage Offers (New Cars)	Communication Management	Payment Management	Rating and Review Management
Allow guest access	✓						✓									
Account creation (Sign up)	✓						✓									
Login to access buying/selling	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Stay logged in for payments	✓			✓	✓	✓						✓				✓
Add/edit/delete car listings		✓						✓				✓				
View car details (new/used cars)	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Search/filter cars by brand, model, etc.			✓		✓			✓	✓		✓	✓	✓			
Manage user wishlist			✓		✓						✓					
Dealership management				✓	✓			✓				✓			✓	✓
Set offers for new cars				✓	✓							✓	✓			
Communication between buyers/sellers		✓	✓	✓	✓			✓		✓		✓	✓	✓		
Payment methods for cars			✓	✓	✓							✓				✓
Rating/reviews for sellers/buyers	✓	✓	✓	✓	✓			✓				✓	✓	✓		✓
Notifications for offers/listings	✓	✓	✓	✓	✓				✓			✓	✓	✓	✓	✓

GUI REPRESENTATION



contactcars.com

Sign In

User Name:

Password:

[Forgot Password?](#)

SIGN IN

SIGN UP

contactcars.com

Upload Car Photos

Description

Title

Brand

Model

Year

Body Shape

Transmission

Fuel Type

Engine Capacity

Save

ContactCars <https://www.ContactCars.com>



Toyota corolla 2020- Used

Los angeles,USA

\$10,000

Description: toyota corolla 202 full service history in , family car single owned never had any accident, mechanically perfect

Contact Seller
+1323456789

Chat

Sedan
Body Shape

Automatic
Transmission

20,000 KM
Mileage

Gas
Fuel Type

1500 CC
Engine Capacity

ContactCars <https://www.ContactCars.com>



Hyundai elantra 2024 - New

Washington DC,USA

\$20,000

Description: Hyundai Elantra 2024
Card Payment Available.
3 Years Unlimited Millage Warranty.

Contact Us

Buy Now

Reserve your Car
Down payment 20%

Reserve

New
Car Status

Coupe
Body Shape

Automatic
Transmission

Gas
Fuel Type

1300 CC
Engine Capacity

ContactCars

https://www.ContactCars.com

Checkout

CardHolder Name

Card Number

MM/YYYY

CVV

 Hyundai elantra 2024 - New

Subtotal : \$20,000

Downpayment : \$0

Gift : Free Service

Total : \$20,000

Pay