

1.1 Purpose

The purpose of this document is to provide a detailed specification for the development of a website that facilitates the buying and selling of cars and spare parts. The website will include features such as displaying new/used cars with filters, enabling users to request spare parts, automatic notifications for insurance and maintenance, automatic estimation of car costs, payment plans with down payments, user accounts and registration functionality, OTP-based account creation using Twilio, a demo user account with complete features, automatic license plate recognition, and a test drive request feature that sends requests to the agency's email.

1.2 Scope

The website aims to create a platform where users can browse and search for new/used cars, request spare parts, receive automated notifications for insurance and maintenance, estimate car costs, access payment plans with down payments, create user accounts, utilize a demo user account, enable automatic license plate recognition, request test drives, and communicate with the agency.

2. Overall Description

2.1 Product Perspective The website will act as a comprehensive marketplace for buying and selling cars and spare parts. It will provide a user-friendly interface for users to perform various actions, including browsing cars, requesting spare parts, receiving notifications, estimating car costs, managing payments, creating user accounts, accessing demo features, utilizing license plate recognition, requesting test drives, and communicating with the agency.

2.2 User Characteristics The website will cater to two main user roles: buyers and sellers. Buyers will be individuals interested in purchasing cars or spare parts, while sellers will be individuals or businesses offering cars or

spare parts for sale. Additionally, agency staff will handle test drive requests, email communication, and user registration management.

2.3 Operating Environment

The website should be accessible through common web browsers and compatible with popular operating systems. It should incorporate responsive design principles to ensure usability across different devices.

3. Functional Requirements

3.1 User Registration

- Users should be able to create personal accounts on the website.
- During the registration process, users should provide their personal information, including name, email, phone number, and desired username/password.
- The system should validate the provided information and ensure that the username is unique
- Upon successful registration, users should receive a confirmation email.

3.2 Display New/Used Cars for Sale with Filters

- Users should be able to view a list of new/used cars available for sale.
- The website should provide filters to refine search results based on criteria such as make, model, year, price, etc.

3.3 Request Spare Parts from the Website

- Users should be able to browse and search for spare parts available on the website.
 - The website should provide filters to refine search results based on criteria such as part type, make, model, etc.
 - Users should be able to submit requests for specific spare parts if they are not available in the listings.
- ### 3.4 Buy Spare Parts
- Users should be able to

purchase spare parts directly from the website if they are available in the listings.

- The website should provide a shopping cart functionality for users to add selected spare parts and proceed to the checkout process.

3.5 Sell Spare Parts

- Sellers should be able to list spare parts for sale on the website.
- Sellers should be able to specify details such as part type, make, model, price, quantity, and condition when listing spare parts.
- Sellers should have the ability to manage their listings, including adding, editing, and removing spare parts.

3.6 Automatic Notifications for Insurance and Maintenance

- The website should send automated notifications to users for insurance and maintenance reminders every three months.
- Users should have the option to opt-in or opt-out of these notifications.

3.7 Automatic Estimation of Car Cost

- The website should provide an automatic estimation of the cost of a car based on its make, model, year, and condition.
 - The estimation algorithm should consider market trends and other relevant factors.
- ### 3.8 Payment Plans - Down Payments

- The website should support payment plans for car purchases, including options for down payments.
- Users should be able to view and select suitable payment plans during the purchasing process.

3.9 Demo User with All Features Granted

- The website should provide a demo user account that showcases all features of the platform.

- The demo user account should be accessible to all visitors without requiring registration.

3.10 Automatic License Plate Recognition

- The website should support automatic license plate recognition for capturing and processing license plate data.
- The system should be able to extract relevant information from the license plate images accurately.

3.11 Request Test Drive Feature and Send to Agency Email

- Users should be able to request test drives for specific cars through the website.
- Test drive requests should include user contact details and preferred dates/times.
- The system should send the test drive requests to the agency's designated email address.

4. Non-Functional Requirements

4.1 Performance

- The website should be able to handle a large number of concurrent users without significant performance degradation.
- Response times for user actions, such as searching for cars or spare parts, should be fast to ensure a seamless user experience.

4.2 Security

- User passwords should be securely stored using industry-standard encryption techniques.
- The website should implement measures to protect against common security vulnerabilities, such as SQL injection and cross-site scripting (XSS) attacks.
- Secure Socket Layer (SSL) should be used to encrypt data transmitted between the website and users.

4.3 Usability

- The website should have an intuitive and user-friendly interface, making it easy for users to navigate and perform desired actions.
- The design should be responsive and adapt to different screen sizes and devices.

4.4 Reliability

- The website should have a high level of availability to ensure users can access it at any time.
- Measures should be in place to handle system failures or crashes gracefully, minimizing disruption to users.

4.5 Scalability

- The website should be designed to accommodate future growth and increasing user demand.
- The system architecture should support horizontal scalability, allowing for the addition of more servers or resources as needed.

5. System Constraints

- The website development should adhere to industry-standard web development frameworks and best practices.
- The system should be compatible with modern web browsers, including Chrome, Firefox, Safari, and Edge.
- The website should be developed using a combination of front-end and back-end technologies that best suit the project requirements, such as HTML, CSS, JavaScript, Python, and a suitable database management system.

6. User Interface Design

- The user interface should be visually appealing, with a clean and modern design.

- Navigation should be clear and intuitive, with consistent placement of menus and controls.
- The website should provide appropriate feedback to users when they perform actions, such as submitting forms or making purchases.

7. System Concerns

7.1 Maintenance and Upgrades

- The website should be designed and implemented in a modular and extensible manner, allowing for easier maintenance and future upgrades.
- Regular backups of the website's data should be performed to prevent data loss in case of system failures or other incidents.
- The system should have a version control mechanism in place to track and manage changes to the source code.

7.2 Integration

- The website should be able to integrate with external systems or APIs, such as payment gateways or shipping services, to facilitate online transactions.
- Integration with social media platforms should be considered to allow users to share listings or interact with the website through their social accounts.

7.3 Monitoring and Analytics

- The system should include monitoring tools to track website performance, identify bottlenecks, and generate usage statistics.
- Analytics capabilities should be implemented to gather insights about user behavior, popular car models, and other relevant metrics.
- Error logging and reporting should be in place to capture and track system errors, enabling prompt troubleshooting and issue resolution.

7.4 Compliance and Regulations

- The website should adhere to relevant legal and regulatory requirements, such as data protection and privacy laws.

- If the website allows users to post listings or engage in transactions, appropriate measures should be taken to prevent fraudulent activities and ensure compliance with applicable laws.
- Accessibility guidelines, such as WCAG 2.1, should be followed to ensure the website is accessible to users with disabilities.

7.5 Documentation

- Comprehensive documentation should be provided, including system architecture, database schema, code structure, and user manuals, to aid in system maintenance, troubleshooting, and future development. Some possible

Use Cases :

1. User Registration

- A user signs up for an account on the website by providing their personal details.

2. Browsing Cars for Sale

- A user browses the inventory of new/used cars available for sale on the website using various search filters.

3. Requesting a Spare Part

- A user searches for a spare part and submits a request if it's not currently in stock.

4. Purchasing a Spare Part

- A user adds a spare part to their cart and checkout to complete the purchase.

5. Selling a Spare Part

- A dealer lists a spare part for sale on the website by providing the required details.

6. Receiving Insurance/Maintenance Notifications

- The system automatically sends reminder notifications to a user about upcoming insurance renewals or car maintenance.

7. Estimating Car Costs

- A user gets an estimated cost of ownership for a vehicle based on make, model, year, etc.

8. Choosing a Payment Plan

- A user selects an installment payment plan option during the car purchase process.

9. Demoing the Website Features

- A new visitor explores the full capabilities of the website using the demo user account.

10. Automatic License Plate Recognition

- The system extracts license plate details from an image using OCR technology.

11. Requesting a Test Drive

- A user schedules a test drive for a vehicle by submitting a request to the dealership.