Ride Along

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Car Companion Software Product Proposal

Project Overview

With the increase in car prices and repairs in recent years, car owners want to prolong their vehicle's durability for as long as possible. In addition, buyers are having issues finding vehicles at fair market values and not overpaying for a depreciating car. We, Team Spec, plan to create "Ride Along," a web application that captures all major events of a car during ownership. We will focus on three phases of a car's life cycle: early, middle, and end phase. The early phase facilitates vehicle acquisition then uploads its specifications into our system. The middle phase tracks vehicle maintenance, modification, and damage. The application features and calculations uniquely personalize a user's experience. Lastly, the end phase appraises a vehicle and transfers its history details to the new owner. Web apps such as CarMax and Kelley Blue Book focus on the early and end phases, with little to no focus on the middle phase of the car. Moreover, CarMax excludes salvage titled vehicles, yet our application estimates price ranges accordingly and provides transparency behind that title.

Project Scope

Ride Along will be compatible with the latest Chrome version 116.0.5845.179 for Windows, macOS and Linux. The application will only be available within the United States, using the USD as currency and the imperial system for measurement, as of release it is only supported in the English language due to time constraint and resources.

Target Users and Markets

Ride Along's target user groups include: Car owners, new drivers, and car enthusiasts who simply want to maintain their car for as long as they want and get the full use out of their cars.

Product Value and Vision

Value

The main value of this web application is to have a smoother experience in not only searching for a car to buy, but also during the phases of vehicle ownership as well as when the owner is ready to part with it and look for a replacement.

Vision

The vision behind our application is to create a customer first application that can improve our customers experience with their cars while helping educate those who aren't as knowledgeable in car maintenance. The goal of our project is to provide users a quick and succinct way to access detailed car knowledge and analysis of their own car. The team looks to expand our application to support other mobile platforms like iOS and Android. We also plan on adding more features to the application to improve the accuracy of the application, and make user experience friendlier such as support for multiple languages and currencies.

User Types and Responsibilities

Guest Users

Can find car profiles and history for cars, and get estimates on cars to buy.

End Users (primary users)

All abilities of guest users, along with creating car profiles, inserting and updating car information, sending requests (car and user deletion), and receiving an estimate on the car to sell.

Administrator

All Abilities of end users, along with deleting user profiles, deleting car profiles, viewing all telemetries, and handling user requests.

Root Administrator

All abilities of administrators, along with managing user roles and managing data (input, update, and delete).

Core Features

Core Components

Analytics

Administrators can view telemetries of all data. Users and outside viewers can view basic telemetries of the website. Data will include: successful and unsuccessful logins, successful and unsuccessful registrations, top 3 longest page visits, top 3 most used features, and data filtering based on ranges such as 6 months.

APIs

CarMD - https://www.carmd.com/api/vehicle-repair-parts-and-costs-carmd-api/

CarsXE - https://api.carsxe.com/vehicle-market-value

Vehicle Database - https://vehicledatabases.com/vehicle-market-value-api/

Vehicle Database - https://vehicledatabases.com/vehicle-services-api/

Vin Audit - https://www.vinaudit.com/vehicle-market-value-api

Vin Audit - https://www.vinaudit.com/vehicle-ownership-cost-api

Data Access

We will be using Amazon RDS for our Relational Database Management System.

Error Handling

Handles errors accordingly. Frontend errors will redirect users. Type errors will require users to provide a better input.

Globalization and Localization

Location will be used to track when and where users input data. Imperial measurement system will be the defaults in the database and the user interface. Additional options for metric measurements will be added in the user interface. English will be the default language and as of release, the application will support Pacific Standard Time (PST) and Pacific Daylight Time (PDT).

Logging

Information about our users and errors will be logged and stored in our database. Logging information will be deleted after a certain timespan or requested unless the log entries are archived or requested to be saved.

Security

Application will also record how many requests a specific IP address is asking from the application, and if over the limit we will timeout that IP address for a small time.

User Profile

Create user profiles with username and passwords. Users can also access their personal data (such as login attempts, car information, and logged data). If account logins are forgotten, users can recover their account through account recovery via an email or potentially phone number if two factor authentication. Users can also delete their profile and all data attached to their profile and verify that the user's profile is deleted with adherence to CPRA and CCPA.

Phase 1 release (MVP)

Accident History

Application will not only be based on the user's self reports for minor accidents but it will also provide the vehicles' accident history based on the CarFax API.

Car Modification Tracking

Users manually record installed, third party parts with as much detail as possible including: the price, source, material, and the application. This will log the information and update the car value accordingly.

Car Profile

A user creates specific profiles for each vehicle and is able to put model, maker, year, license plate, and vin. Car profiles will also keep track of modifications, accidents, and maintenance.

Maintenance Reminder and General Repairs

Depending on the vehicle, the application will calculate the mileage for maintenance such as changing fluids, tire rotation, tire pressure, air filters, battery, etc. It can also provide general cost for parts/labor when necessary. The application can also calculate needed information for any basic repairs needed due to wear and tear.

User Input Maintenance/Repair

For the convenience of the user, the application will allow users to select a maintenance option to track when they did maintenance on their vehicle. The application will automatically record the time and date of the maintenance by default, but the user can manually select the time and date if they choose to. Users

can also upload an image of their odometer to provide extra verification on the maintenance/repair.

Phase 2 release

Car Profile Transfer

Allow users to transfer car profiles to another user. The receiving user will have all the previous information provided by the other user on the transferred car profile.

Cost Estimates

The application will help users by giving them cost estimates about selling and buying a car. This way users can make an informed choice of buying or selling. These estimates will come from the CarsXE API.

Multiple languages support

Application will support multiple languages in order to expand our services to a broader audience who are not comfortable with English. Next languages can include Spanish and French.

Upgrade Security

Application will use 2 factor authentication in order to provide more security for the logging in to profile. We will also implement Captcha as a DDOS prevention measure for our application.

Result Filtering

User can filter the result based on different categories:

- Purposes they are looking for like sport, family, comfort daily drive
- Price range
- Specific car brand
- Specific car dealership
- Specific area

Tech Stack

Frontend

ECMAScript (ES6+, recommend ES13), HTML5, CSS 3

Backend

C# 10+, .NET 8, ASP.NET Core 8, SQL Server 2019 Developer Edition (Database Engine), IIS 10+

Database

AWS/Amazon RDS

Glossary of Terms

Business terms

California Consumer Privacy Act (CCPA): An act passed in 2018 that gives consumers in California the ability to have more knowledge and security of their personal data through four prominent privacy rights: right to know, right to delete, right to opt-out, and right to non-discrimination.

California Privacy Rights Act (CPRA): An act expanding on the CCPA giving new expanded rights to consumers and restrictions to businesses while also creating an enforcement agency.

Car Depreciation: The value of a car decreases over a set amount of set time. With new cars, the value will decrease around 15 percent each year until the fourth or fifth year of ownership.

Technical Terms

API (Application Programming Interface): A set of rules and protocols that allow different software components to communicate and interact.

Back-end: The functionality behind the Ride Along platform that handles data storage, processing, and server-side operations.

Captcha: Using google reCAPTCHA service, we will implement this feature as an additional step for logging in to verify the user is a person and not a bot requesting access.

Database: An organized collection of data for efficient retrieval and manipulation. In Ride Along, the database stores data related to user profiles.

Distributed Denial-of-Service (DDOS) Attack: Attack in which different bots or computers purposely request many times from a specific website or web application in order to overload how a service handles those requests which will cause the delay and even shut down the service.

Front-end: The user interface of the Ride Along platform that is visible to users. It includes the design, layout, and interactive elements with which users interact.

Telemetry: Any data that is sent between the server and user's clients.

User Authentication: Verify user identity to ensure safe access to Ride Along platform. It involves username/password authentication and other security measures.