

AutoHub Project Proposal

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Open Window, School of Fundamentals

Interactive Development 200

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Client Conceptualisation & Problem Statement

Overview:

AutoHub is a CRUD-based web application built for the car enthusiast community. It serves as a digital hub where users can create profiles, showcase their vehicles, share modification updates, browse other car builds, and buy/sell car parts or vehicles via a marketplace.

Problem Statement:

The car enthusiast community lacks a centralised, community-driven platform tailored to their niche needs. Currently, users depend on scattered Facebook groups, forums, or generic marketplaces which lack car-specific features like mod logs or custom build profiles.

Necessity:

AutoHub offers a dedicated digital space with features specifically designed for petrolheads: vehicle galleries, community feeds, and a marketplace. This software will promote connection, expression, and secure trading within the car community.

Constraints:

- Image uploads must be optimised to reduce cloud storage costs.
- Content moderation system will be minimal for MVP.

Brand Identity:

- App Name: AutoHub
- Logo:



System Architecture

High-Level Architecture Diagram Includes:

- **Frontend:** React (TypeScript)
- **Backend:** Node.js with Express.js
- **Database:** MySQL (hosted on cloud service)

Interactions:

- React sends HTTP requests to Express API
- Express handles routing, authentication, and validation
- MySQL stores all persistent data

Technology Justification:

- **React:** Ideal for fast, responsive UIs and reusable components.
- **Node.js/Express:** Lightweight, asynchronous, and ideal for CRUD REST APIs.
- **MySQL:** A relational database suited for managing structured, related data like users, vehicles, and marketplace listings.

Feature Requirements & Scope

Scope Includes:

- Authentication (JWT-based login/signup)
- User Profiles with car galleries
- Vehicle CRUD
- Community Post CRUD
- Marketplace Listings CRUD
- Admin dashboard

Scope Excludes:

- Real-time messaging
- Payment gateway integration

SMART Objectives:

- Develop an MVP by Week 10 with all CRUD operations functional
- Deploy on at least one cloud provider by Week 11
- Achieve responsive layout across devices by Week 8

Feature Prioritisation:

- **MVP:** Authentication, Profile Management, Vehicle Management, Marketplace
- **Nice-to-Have:** Post reactions (likes), Image cropping
- **Future Considerations:** Chat system, Car meet events

User Roles:

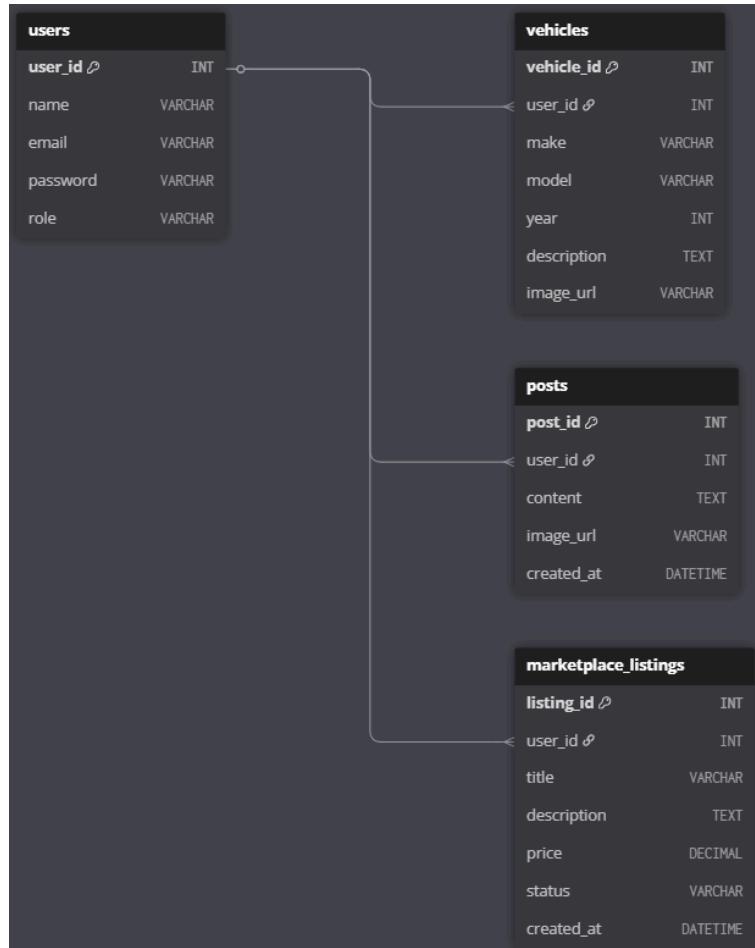
- **Standard User:** Full access to profile, cars, and marketplace
- **Admin:** Content moderation & user management

User Stories:

- As a user, I want to add a new vehicle with images so I can showcase my build
- As an admin, I want to delete inappropriate listings
- As a visitor, I want to browse public profiles without logging in

Data Planning

Entity-Relationship Diagram (ERD):



Explanation:

The ER diagram illustrates the relationships between **users**, **vehicles**, **posts**, and **marketplace listings**. Each entity is connected through foreign keys referencing **user_id** to ensure integrity.

Key Tables:

- **users** (`user_id`, `name`, `email`, `password`, `role`)
- **vehicles** (`vehicle_id`, `user_id`, `make`, `model`, `year`, `description`, `image_url`)
- **posts** (`post_id`, `user_id`, `content`, `image_url`, `created_at`)
- **marketplace_listings** (`listing_id`, `user_id`, `title`, `description`, `price`, `status`, `created_at`)

Constraints:

- Unique: `email`
- Foreign keys: `vehicles`, `posts`, and `listings` link to `users`
- Enum: user roles and listing status

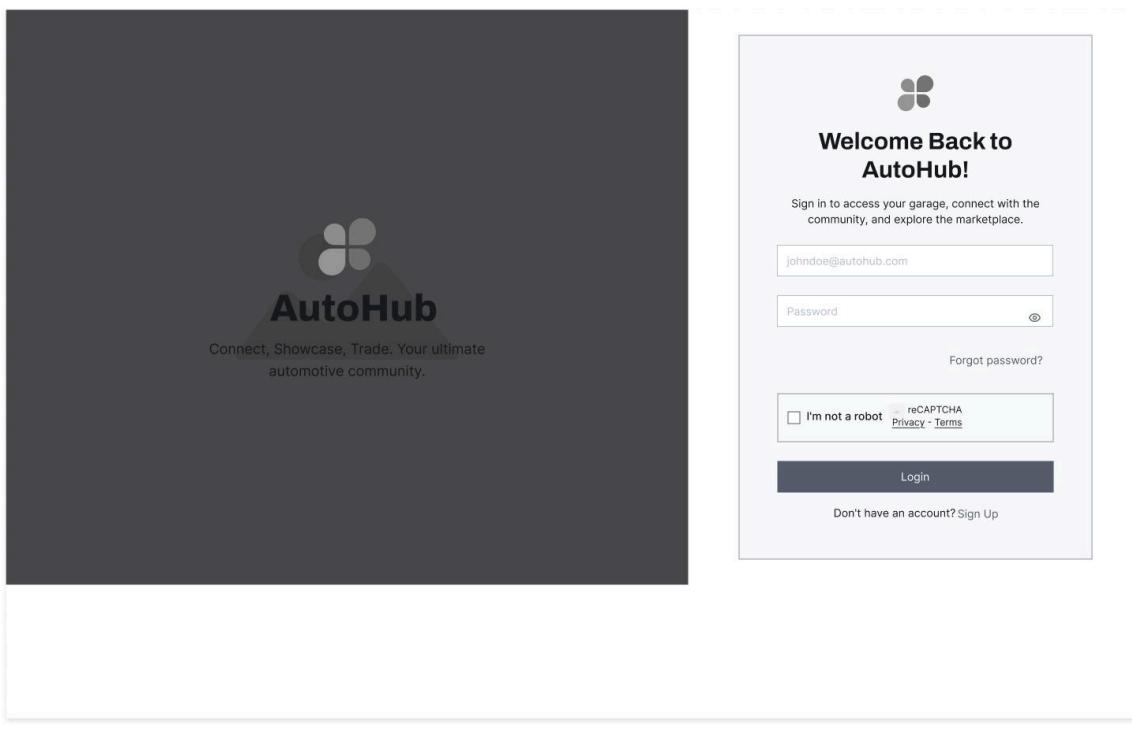
Wireframes & UI/UX Considerations

Moodboard:

- Dark theme with metallic accents inspired by car interiors
- Fonts: Eurostile or Roboto
- Visual style: Techy, clean, modern with hints of racing aesthetics

Wireframes:

- **Login Page**
- **Dashboard (User Home)**
- **Vehicle Management Page**
- **Marketplace**
- **Post Feed**



AutoHub Community Marketplace My Garage

Search for new parts, users...

Explore Communities

View 100+ communities

Join a community

Post Media

Trending Posts

Top 5 Engine Design of All Time

DIY Detuning Guide for Your Car

Review: New Performance Tire, Winter Tires

How to Choose Your Fitment Size

15,000 Members 2,345 Posts

Just finished installing the new torque on my Summit! The power delivery is mind-blowing. Can't wait to hit the dyno next week! What's everyone else working on this weekend?

Rally_Queen_Mia

What a blast at the local autocross event last Sunday! Performed flawlessly. Managed to shave off 0.5 seconds from my previous best! Any tips for improving cornering speed?

Classic_Rides_Ken

Restoring this vintage Ford Mustang Fawback. Found some original parts today! It's a slow process but incredibly rewarding. Any other classic car restorers out there?

EV_JohnNolan_Zoe

Just picked up my new electric sports car! The instant torque is addictive. Invited to join the EV community here on AutoHub. Any charging tips for long road trips?

DJH_King_Hiko

Practicing some tandem drifts with the crew tonight. Getting better at transitions! Always learning. Check out the drone footage from last session!

Custom_Paint_Chris

New custom paint job on a client's show car! This metallic rose-pink really pops in the sun. What are your favorite custom paint colors?

My Garage

8 Total Vehicles

2 Featured

3 Upcoming Events

Add New Vehicle

Showcase your ride by adding a new car profile to your garage. Includes stunning images and detailed descriptions.

Drag & drop your vehicle image here, or click to browse

Make Model
e.g., Toyota e.g., Supra

Year Color
e.g., 1988 e.g., Red

Description
Tell us about your vehicle...

+ Save New Vehicle

Nissan Skyline R31 GTS

Nissan Skyline R31 GTS (1984)

Legendary JDM icon, a true tuner's dream with AWD and twin-turbo power. Known for

Porsche 911 GT3 (997)

Porsche 911 GT3 (2007)

Track-focused perfection with a naturally aspirated flat-six and sublime handling

Ford Mustang Shelby GT500

Ford Shelby GT500 (2013)

American muscle redefined, supercharged V8 delivering immense power and

Toyota Supra MK4

Toyota Supra MK4 (1998)

The timeless Japanese legend, highly tunable 2.2L engine and iconic design. A

BMW M3 E90

BMW M3 E90 (2009)

Precision Bavarian engineering, combining daily usability with track capability. A

Mazda RX-7 (FD3S)

Mazda RX-7 (FD3S) (2001)

A rotary engine masterpiece, offering unique driving dynamics and a distinct,

Audi R8 V10

Audi R8 V10 (2020)

Everyday supercar with a glorious V10 engine, combining luxury with thrilling

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Custom 2020 Honda Civic Type R - Heavily Modified

R 745,494.63

Used Honda 2020

Description

This meticulously maintained 2020 Honda Civic Type R is a true enthusiast's dream, boasting an impressive list of modifications. It has been striping and tuning, resulting in only one owner, and a clean title. The car has been battle-tested and regularly serviced, built for both track performance and daily driving comfort, delivering an exhilarating experience every time. The engine has been professionally tuned and all modifications were installed by certified technicians. Ready for its next adventure, whether it's conquering winding roads or turning heads at car meets.

Specifications

Make
Model
Year
Mileage
Engine
Transmission
Location

About the Seller

Alex "Gearhead" Chen
Joined January 2013
Cape Town, South Africa

R 745,494.63

Cape Town, South Africa

Message Seller

Add to Watchlist

Share Listing

More Listings You Might Like

2022 Ford Mustang GT Premium R 684,083.41 View Details	2018 Porsche 911 Carrera S R 1,490,989.25 View Details	2021 BMW M3 Competition R 1,262,955.60 View Details	2017 Nissan GT-R Black Edition R 1,668,399.75 View Details
1991 Mazda RX-7 FC3S R 491,140.40 View Details	2023 Audi RS7 Sportback R 2,017,220.75 View Details	2020 Mercedes-AMG C63 S R 1,192,791.40 View Details	2022 Subaru WRX STI Limited R 788,117.78 View Details

Marketplace

Featured Listings

1969 Ford Mustang Fastback Iconic classic muscle car. Restored/reduced with a prove 5.0 V8 engine. A true head turner. R 1,315,578.75 View Details	Toyota Supra MK4 Turbo Legendary JDM sports car, highly sought after by collectors and tuners. Immediate condition. R 1,096,315.63 View Details	Jeep Wrangler Rubicon Unlimited Fully customized off-road beast with lifted suspension and new tires. Ready for any. R 857,757.35 View Details	Audi R8 V10 plus Everyday supercar with a unique personality and level of performance. R 1,719,022.90 View Details

Shop by Category

Coupes	Trucks	Motorcycles	Performance Parts	Exterior	Interior	Wheels & Tires	Tools & Equipment

All Listings

Search Settings	Category	Condition	Sort By:
<input type="text"/>	<input type="text"/>	<input type="text"/>	Newest
<input type="button" value="Min Price"/>	<input type="button" value="Max Price"/>	<input type="button" value="Apply Filters"/>	<input type="button" value="Clear Filters"/>

Forged Alloy Racing Wheels (Set of 4) R 49,114.94 <small>Cape Town, South Africa</small> <small>New</small> <small>SpeedDeman Parts</small>	Recaro Sportster CS Seats (Pair) R 26,311.58 <small>Durban, South Africa</small> <small>Used - Excellent</small> <small>TrackDay Gear</small>	Garrett GT35R Turbo Kit R 21,040.28 <small>Pretoria, South Africa</small> <small>Used - Good</small> <small>Reutsch Performance</small>	AUS 55 OEM LED Headlights (Pair) R 18,684.00 <small>Chicago, IL</small> <small>New</small> <small>LuxuryCar Parts</small>
Boria Cat-Back Exhaust System R 13,682.02 <small>Port Elizabeth, South Africa</small> <small>Used - Minor Scratches</small> <small>SoundWave Mods</small>	Carbon Fiber Rear Spoiler R 7,893.47 <small>Western Cape, South Africa</small> <small>New</small> <small>AeroDynamics</small>	Brembo GT Brake Kit Front R 56,131.36 <small>Johannesburg, South Africa</small> <small>Used - Good</small> <small>StepGrip Racing</small>	Ohlins Road & Track Coilovers R 36,836.21 <small>Pretoria, South Africa</small> <small>New</small> <small>RideComfort Tuning</small>
MOMO Racing Steering Wheel R 5,262.32 <small>Cape Town, South Africa</small> <small>Used - Like New</small> <small>RingMeeters</small>	HellaTech Elite 2500 ECU R 31,573.89 <small>Johannesburg, South Africa</small> <small>New</small> <small>EnginesLabs Tech</small>	BlackVue DR900X Plus Dashcam R 6,139.37 <small>Pretoria, South Africa</small> <small>New</small> <small>RoadGuard Safety</small>	JL Audio 12WVw3 Subwoofer R 10,524.63 <small>Western Cape, South Africa</small> <small>Used - Excellent</small> <small>BaseHeads Audio</small>

AutoHub				
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<small>© 2023 AutoHub.</small>	<small>English</small>	<small>Facebook</small>	<small>Twitter</small>	<small>Instagram</small>

UI Framework Justification:

- **React:** Component-driven, allows efficient UI reuse (e.g., Card for Vehicle vs Listing)

Accessibility:

- High-contrast design
- Tab navigation
- ALT tags on all images

Project Timeline & Workflow

Week	Milestone
1	Finalise planning document + ERD
2-3	Set up database schema and Express.js API structure
4-5	Implement authentication and user CRUD
6-7	Build vehicle and post features
8	Add marketplace listing functionality
9	UI/UX polish, responsive layout adjustments
10	Begin cloud deployment (Vercel, Railway)
11	Device testing, bug fixing, accessibility pass
12	Final documentation and submission

Tools:

- GitHub (version control)
- Postman (API testing)

Risks, Challenges & Conclusion

Risks:

- **Image upload issues:** May exceed file size limits
- **Cloud configuration:** Learning curve for deploying MySQL alongside Express
- **User data privacy:** Risk if proper security is not enforced

Mitigation Strategies:

- Limit image sizes and compress before upload
- Start cloud deployment trials early (Week 10)
- Use environment variables and hashed passwords for security

Conclusion:

AutoHub is a purpose-built application designed to solve real needs in the car enthusiast space. It offers targeted features, a scalable stack, and a clear development plan that aligns with DV200's full-stack, CRUD-focused requirements.