

DriveBidRent

our One-Stop Platform for Vehicle Auctions, Rentals.

Team Members:-

- 1)MV Tejesh (S20230010137)--->Team Lead
- 2)V Jeevan Guptha (S20230010250)
- 3)Toufee Sk (S20230010222)
- 4)AHHS Kishan (S20230010004)
- 5)M Nithwik Reddy (S20230010143)
- 6)Karthik Sh (S20230010234)

Abstract

The **DriveBidRent** web-based application is an integrated online platform that connects vehicle sellers, buyers, mechanics and auction managers within the automotive marketplace. It streamlines the processes of vehicle auctions, rentals, and service management through a centralized digital interface. The platform offers role-based access for five user categories — **Admin, Seller, Buyer, Mechanic, Auction Manager** — each with specialized features. Sellers can list vehicles for auction or rental, monitor bids, and manage their listings. Buyers can browse vehicles, place bids, book rentals, and track their activities. Mechanics are assigned for vehicle inspections and can update inspection statuses. Auction managers oversee auction approvals and mechanic assignments. The Admin has full oversight of platform analytics and user management. DriveBidRent aims to create a transparent, efficient, and secure environment for all automotive transactions and services.

Introduction

In today's fast-paced automotive market, buying, selling, and renting vehicles can be complex and time-consuming. Communication gaps between sellers, buyers, mechanics, drivers, and auction managers often result in inefficiencies, delays, and a lack of trust.

DriveBidRent addresses these challenges by providing a comprehensive online platform for vehicle auctions, rentals, and related services. Sellers can easily list vehicles for auction or rental, buyers can bid or book vehicles with confidence, and mechanics. Auction managers and administrators oversee the entire process, ensuring transparency and smooth operations.

This project integrates auction systems, rental management and secure communication into a single platform. It delivers a user-friendly experience and fosters trust and productivity among all participants.

Objectives

The main objectives of DriveBidRent are:

- To connect vehicle sellers, buyers, mechanics and auction managers on a unified digital platform.
 - To provide transparency in vehicle auctions, rentals.
 - To enable easy vehicle listing, bidding, booking, and communication.
 - To maintain digital records of auctions, rentals, inspections, and payments.
 - To allow administrators and managers to monitor all activities and ensure platform integrity.
 - To enhance collaboration and trust among all users through integrated tools and notifications.
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System Architecture

Frontend

The frontend of **DriveBidRent** is built using **HTML, CSS, and JavaScript for now**. It offers a clean and easy-to-use interface where each type of user can access their own dashboard. The design includes menus, forms, tables, and pop-up windows that help users manage projects in real time.

Backend

The backend is built with **Node.js and Express.js**, which provide a strong and flexible server framework. It handles routing, user login, authentication, and communication between the frontend and the database. It also manages bid requests, project updates, and securely stores all system activities.

Database

The system uses **MongoDB** as its database. It stores all types of data such as user information, project details, bids, and chat messages. MongoDB is fast, flexible, and works well when many users are using the system at the same time.

Module Description

1. Admin Module

The Admin acts as the system overseer for DriveBidRent.

Features:

- Monitors the total number of registered Sellers, Buyers, Mechanics and Auction Managers.
- Views login insights, user activity logs, and overall platform analytics.
- Tracks ongoing auctions, rentals, and total bids placed.
- Has full access to view earnings, user profiles, and system statistics, but does not interfere with transactions.
- Maintains system performance, data integrity, and can moderate user accounts if necessary.

2. Buyer Module

Buyers are the core users who participate in vehicle auctions and rentals.

Navigation and Features:

- Home: Overview of available vehicles for auction and rental.
- Auctions: Browse live auctions, view vehicle details, and place bids.
- Rentals: Explore available vehicles for rent and book them for specific dates.
- My Bids: Track all bids placed on auctions, including status (winning, outbid, etc.).
- Wishlist: Save favorite vehicles for quick access and future bidding or rental.
- Purchase History: View all completed purchases and rental transactions.
- Notifications: Receive updates on bids, auction results.
- Profile & Settings: Manage personal details, security options, and view activity history.

3. Seller Module

Sellers list vehicles for auction or rental and manage their listings.

Navigation and Features:

- Dashboard: Overview of active auctions, rentals, earnings, and recent activity.
- Add Auction/Rental: Create new auction or rental listings with detailed vehicle information and images.
- View Auctions/Rentals: Manage all current and past listings, monitor bid activity, and update vehicle status.
- View Bids: See all bids placed on auctioned vehicles and accept winning bids.
- Earnings: Track total earnings from auctions and rentals, view payment history, and pending payouts.
- Profile & Settings: Update seller profile, contact details, and account security.

4. Mechanic Module

Mechanics are responsible for vehicle inspections and reporting.

Navigation and Features:

- Dashboard: Overview of assigned inspection tasks and recent activity.
- Current Tasks: View and manage ongoing vehicle inspections.
- Pending Tasks: See upcoming inspections awaiting action.
- Past Tasks: Review completed inspections and reports.
- Inspection Reports: Submit detailed inspection results for vehicles assigned.
- Profile & Settings: Manage mechanic profile, availability, and security preferences.

5. Auction Manager Module

Auction Managers oversee the auction process and coordinate inspections.

Navigation and Features:

- Dashboard: Monitor all ongoing and upcoming auctions.
- Auction Requests: Review new auction listings submitted by sellers.
- Approve/Reject Auctions: Approve or reject auction requests based on platform criteria.
- Assign Mechanic: Assign mechanics to inspect vehicles before auction approval.
- Auction Monitoring: Track auction progress, start/end auctions, and resolve issues.
- Profile & Settings: Manage auction manager profile and account security.

Functional Requirements

- User Authentication & Role-Based Access: Secure login and access control for Admin, Buyer, Seller, Mechanic and Auction Manager roles.
- Auction & Rental Management: Sellers can list vehicles, buyers can bid or rent, and all parties can track status.
- Bid Tracking: Buyers can place and monitor bids; sellers can view bids.
- Inspection Workflow: Auction Managers assign mechanics; mechanics submit inspection reports.
- Earnings & Analytics: Sellers and Admin can view earnings and analytics dashboards.
- Profile & Settings: All users can manage their profiles (Change their password at anytime etc..)
- System Integrity: Admin ensures smooth operation, data integrity, and can moderate users if needed.

Technology Stack

- **Frontend:** HTML, CSS, JavaScript, EJS.(for now)
- **Backend:** Node.js, Express.js
- **Database:** MongoDB
- **Authentication:** JWT token, bcrypt for hashing passwords.
- **Other Tools & Libraries:**
 - Cloudinary (for image uploads)

- Axios / Fetch (for API communication)

Future Enhancements

- **Notification & Alert System:** All users will receive real-time notifications and alerts for important updates, bids, and status changes.
- **Rating & Review System:** Buyers can rate and review rental cars after their rental period, helping others make informed decisions.
- **Chat System:** Buyers and sellers will be able to communicate directly through a secure in-platform chat for better coordination.

Conclusion

The **DriveBidRent** web application creates a dynamic and transparent ecosystem that connects vehicle sellers, buyers, mechanics and auction managers in the automotive marketplace. By digitalizing the processes of vehicle auctioning, renting, inspection, DriveBidRent streamlines complex workflows and enhances user experience for all roles. With its role-based dashboards, real-time notifications, and secure transaction management, DriveBidRent transforms traditional vehicle trading and rental operations into an efficient, accessible, and trustworthy digital platform.