

## DV200 Open Brief Progress

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### Caro: Car-Sharing Platform Using MERN Stack

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#### Functional Requirements Checklist

Feature	Status	Description
User Authentication	✓ Completed	Users can register and log in to the platform using JWT-based authentication.
CRUD Operations for Users	✓ Completed	Users can create accounts, update profiles, and delete accounts.
CRUD Operations for Car Listings	✓ Completed	Owners can list cars, edit details, view, and delete cars from the platform.
Car Booking Functionality	✓ In Progress	Drivers can view available cars, select a car, and book it for a specific time.
Responsive Design	✓ Completed	The application is designed to be fully responsive across mobile, tablet, and desktop devices.
Map Integration for Location Selection	✓ Completed	Interactive maps allow users to select locations for their start and destination points.
Displaying Nearby Cars	✓ In Progress	Drivers can view cars near their selected location.
Role-Based Navigation	✓ Completed	Navigation menus dynamically adjust based on the user's role (Driver/Owner).

#### System Documentation

##### 1. Technical Architecture

The application uses the MERN stack:

- **MongoDB:** Stores user data, car details, bookings, and car location data in GeoJSON format.
- **Express:** Manages API routes and handles business logic for user authentication and car management.
- **React:** Provides a responsive, interactive user interface for the web app.

- **Node.js:** Serves as the backend server, handling all requests and interacting with the database.

## 2. Database Schema

- **Users Collection:** Holds data for both Drivers and Owners. Attributes include userID, name, email, password, licenseNumber, and userType.
- **Cars Collection:** Contains carID, ownerID, make, model, location, availability, rented status, and rentedBy.
- **Bookings Collection:** Keeps track of bookingID, carID, driverID, startTime, endTime, and booking status.

## 3. API Endpoints

- **POST /api/auth/signup:** Register a new user (Driver/Owner).
- **POST /api/auth/login:** Log in a user and generate a JWT.
- **POST /api/cars/add:** Add a new car to the system (Owners only).
- **GET /api/cars:** Fetch cars belonging to an owner.
- **GET /api/cars/nearby:** Get cars near a selected location.
- **PUT /api/cars/update/**

: Update car details.

- **DELETE /api/cars/delete/**

: Delete a car from the system.

## 4. User Interface (UI) Design

The application features an intuitive design:

- **Driver Dashboard:** Allows users to choose start and destination points and find nearby cars.
- **Owner Dashboard:** Allows owners to view and manage their listed cars, including adding and deleting cars.
- **Responsive Design:** Adapts to different devices to enhance user experience.

## 5. Instructions for Running the Application

### 1. Setup:

- Clone the repository
- Install dependencies: `npm install` (in both frontend and backend directories).
- Create a `.env` file in the backend with MongoDB URI and JWT secret.

### 2. Run:

- Start the backend server: `npm run dev` (in the backend directory).
- Start the React frontend: `npm start` (in the frontend directory).

- ### 3. Deployment:
- Deploy using Heroku for the backend and Vercel for the frontend or AWS Amplify.

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## Problem Statement

In South Africa, many licensed drivers face the challenge of being unable to afford personal vehicles due to high costs and unreliable public transportation options. This lack of mobility not only hinders access to work opportunities but also affects daily convenience and quality of life, particularly in urban and suburban regions. Caro, a car-sharing platform, addresses this problem by offering an affordable, flexible alternative to car ownership. Drivers can rent cars on-demand, reducing the financial burden and providing a more sustainable transportation model. This platform empowers individuals by improving access to mobility and fostering economic opportunities while contributing to a reduction in the number of private vehicles on the road, lowering congestion and environmental impact.

## Planning wireframes

Caro

The wireframe shows a 'Sign up!' form for the Caro platform. At the top, there is a 'Sign up!' title. Below it are two buttons: 'Login' and 'Sign Up'. Under these is a 'Sign up as:' label followed by two buttons: 'Driver' and 'Owner'. The form contains six input fields arranged in two columns: 'Name:', 'Surname:', 'Email:', 'License number:', 'Password:', and 'ID number:'. Each field is represented by a light gray rounded rectangle. At the bottom center of the form is a large blue 'Sign up' button.

Sign up!

Login Sign Up

Sign up as:

Driver Owner

Name: Surname:

Email: License number:

Password: ID number:

Sign up

Caro

Commute with Caro.

### Sign up!

Login

Sign Up

Sign up as:

Driver

Owner

Name:

Surname:

Email:

License number:

Password:

ID number:

Sign up

Caro

Commute with Caro.

### Let's get you back in

Login

Sign Up

Email:

Password:

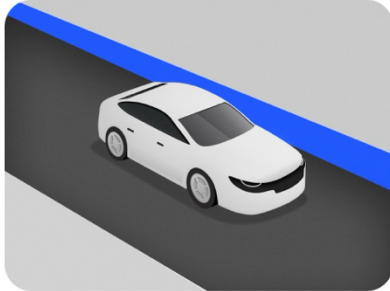
Login

[Caro](#)

Hi, Driver!

[Book](#)[Bookings](#)[Account](#)

## Bookings



### Nissan GT - R

Booked dates: 24 - 31 November

Allowed mileage: 1000km

Type Car	Sport	Capacity	2 Person
Steering	Manual	Gasoline	70L

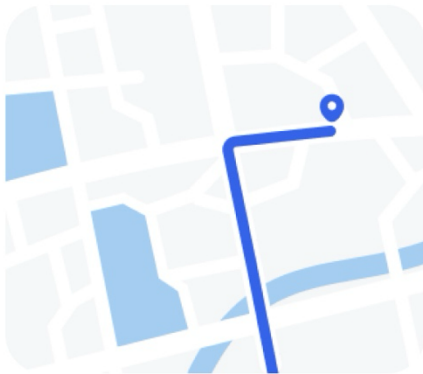
\$80.00/ days

[View key](#)[Return](#)[Cancel](#)[Caro](#)

Hi, Owner!

[Cars](#)[Add Car](#)[Account](#)

## Car



### Nissan GT - R

Booked dates: 24 - 31 November

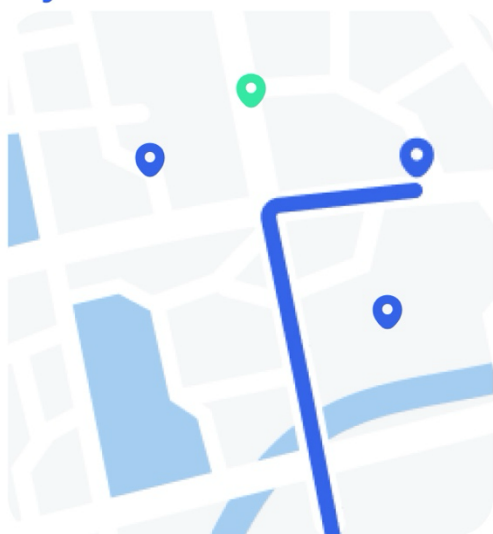
Allowed mileage: 1000km

Type Car	Sport	Capacity	2 Person
Steering	Manual	Gasoline	70L

\$80.00/ days

[View key](#)[Return](#)[Cancel](#)[Delete](#)

## My Cars:



Nissan GT - R

Sport



80L Manual 2 People

R800.00/ day

Rent Now

Nissan GT - R

Sport



80L Manual 2 People

R800.00/ day

Rent Now

Nissan GT - R

Sport



80L Manual 2 People

R800.00/ day

Nissan GT - R

Sport



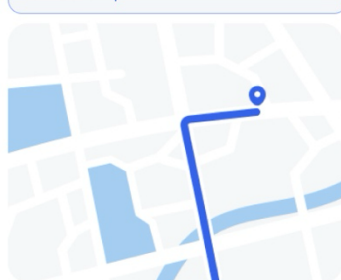
80L Manual 2 People

R800.00/ day

## Add Car:

Where is the car?

Select on map



Make:

Price per day (in Rands):

Model:

License plate:

Transmission:

↓ Manual / Auto

Mileage:

Add car

Caro

Hi, Driver!

Book

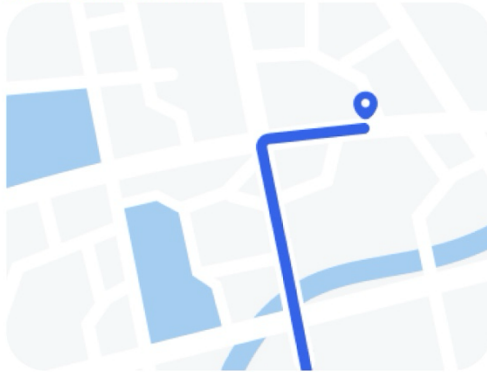
Bookings

Account

## Return Car

Nissan GT - R

Select return location:



Upload current mileage

Select on map

Return car

Caro

Hi, Driver!

Book

Bookings

Account

## Make a Booking

Where are you?

Select on map

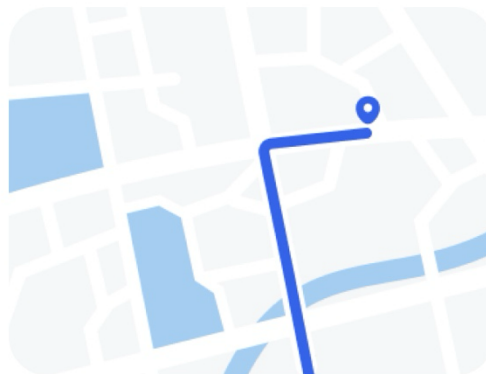
Where are you going?

Select on map

Select your dates:

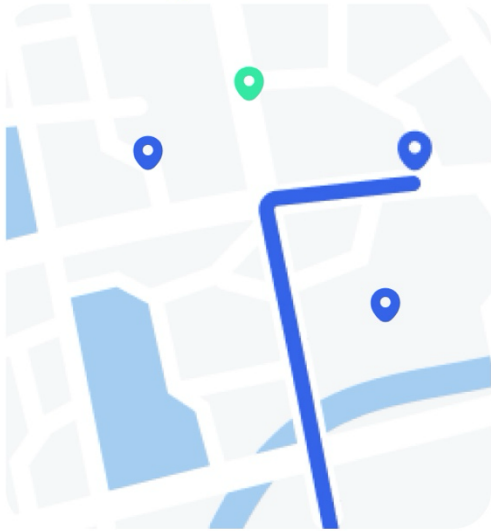
Start date

End date



Find cars

## Cars near you:

Nissan GT - R  
Sport

80L Manual 2 People

R800.00/day

Rent Now

Nissan GT - R  
Sport

80L Manual 2 People

R800.00/day

Rent Now

Nissan GT - R  
Sport

80L Manual 2 People

R800.00/day

Nissan GT - R  
Sport

80L Manual 2 People

R800.00/day