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Roll # : 00420397

Class : Friday 7 to 10

## Day 5 - Testing, Error Handling, and Backend Integration Refinement

Today, we focused on getting the marketplace ready for real-world use by:

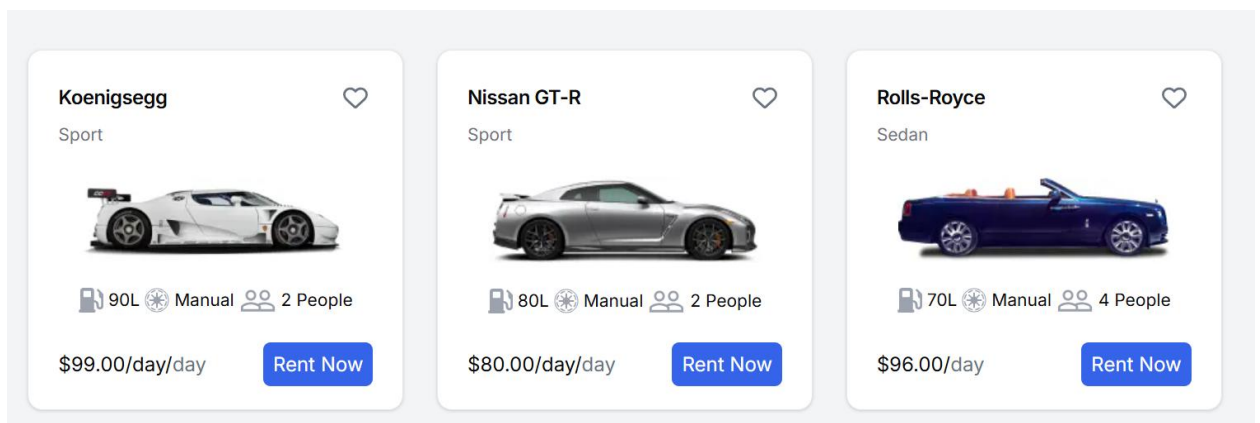
- ❖ Testing backend integrations to ensure seamless functionality.
- ❖ Optimizing performance for faster and smoother operations.
- ❖ Implementing robust error handling to manage unexpected issues.
- ❖ Refining the user experience to handle customer-facing traffic effectively.

### Step # 1: Functional Testing

#### 1. Tested Features:

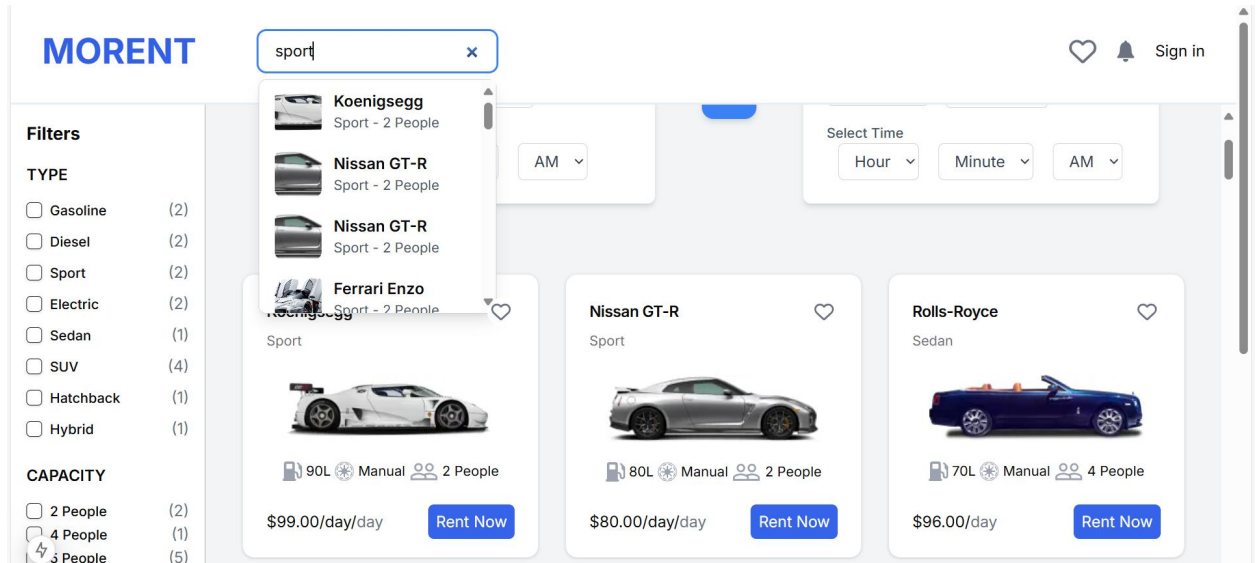
##### ❖ Product Listing

- **Test Result:** All products were accurately showcased with their names, prices, and images.



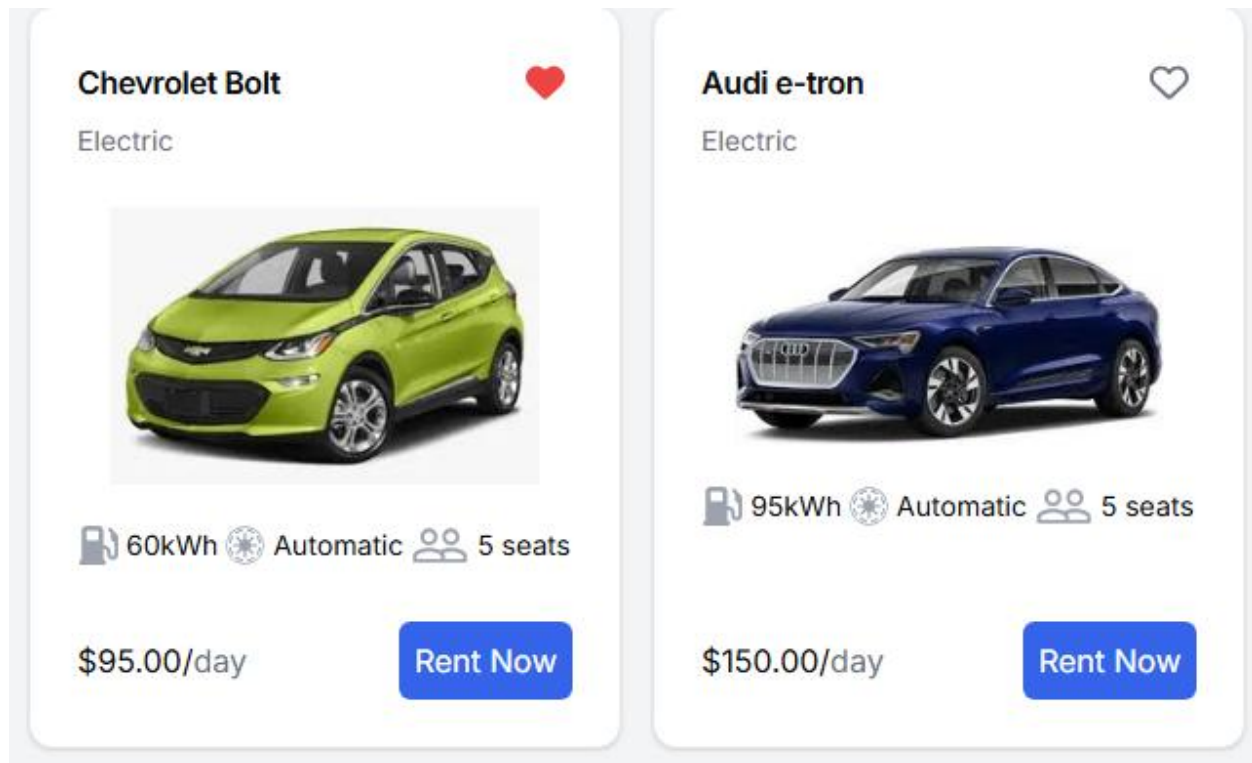
## ❖ Filters and Search

- **Test Result:** The filters and search bar provided precise product results according to the chosen criteria.



## ❖ Dynamic Routing (Product Details)

- **Test Result:** Individual product pages loaded correctly with accurate details (name, description, price).



### Sports car with the best design and acceleration

Safety and comfort while driving a futuristic and elegant sports car.



### Chevrolet Bolt

★★★★☆ 440+ Reviews

**Type Car:** Electric **Capacity:** 5 seats

**Transmission:** Automatic

**Fuel Capacity:** 60kWh eco-friendly

**\$95.00** / day

[Rent Now](#)

### Sports car with the best design and acceleration

Safety and comfort while driving a futuristic and elegant sports car.



### Audi e-tron

★★★★☆ 440+ Reviews

**Type Car:** Electric **Capacity:** 5 seats

**Transmission:** Automatic

**Fuel Capacity:** 95kWh eco-friendly

**\$150.00** / day

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## ❖ Testing Tools

### 1. Postman

- **Test Result:** The API response was tested successfully, returning the expected data for the GET /api/products endpoint.:

The screenshot shows a REST client interface with a GET request to `https://678cc7fcf067bf9e24e83478.mockapi.io/carrental`. The response status is 200 OK, with a size of 17.03 KB and a time of 1.96 s. The response body is a JSON array containing one car rental object.

```
1  [
2    {
3      "id": 1,
4      "name": "Koenigsegg",
5      "type": "Sport",
6      "fuel_capacity": "90L",
7      "transmission": "Manual",
8      "seating_capacity": "2 People",
9      "price_per_day": "$99.00/day",
10     "image_url": "https://car-rental-website-five.vercel
      .app/_next/image?url
      =%2F_next%2Fstatic%2Fmedia%2Fcar.11698147.jpg&w
      =640&q=75",
11     "tags": [
12       "popular"
13     ]
14   },
15 ]
```

- **Expected Outcome:** The API should return a valid response with the correct list of products, including fields like id, name, price, and image.

## Step # 2: Error Handling

### ❖ Add Error Messages

- **Test Result:** API errors were handled successfully using try-catch blocks. Appropriate error messages were shown in case of failure.

```
useEffect(() => {
  const fetchCar = async () => {
    try {
      const res = await fetch(
        "https://678cc7fcf067bf9e24e83478.mockapi.io/carrental"
      );
      const allCars: Car[] = await res.json();
      const car = allCars.find((item) => item.id === parseInt(id!, 10));

      if (car) {
        setSelectedCar(car);

        // Exclude the selected car to suggest others
        const suggestions = allCars.filter((item) => item.id !== car.id).slice(0, 12);
        setSuggestedCars(suggestions);
      } else {
        setError("Car not found.");
      }
    } catch (err) {
      console.error("Error fetching car:", err);
      setError(`Failed to fetch car with ID: ${id}`);
    }
  };
});
```

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Car not found.

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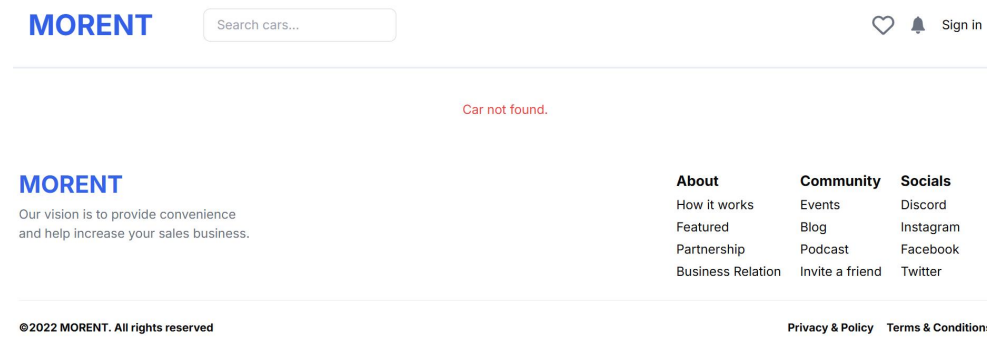
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- **Expected Outcome:** When an error occurs (like a failed API request), a meaningful error message should be shown to the user.

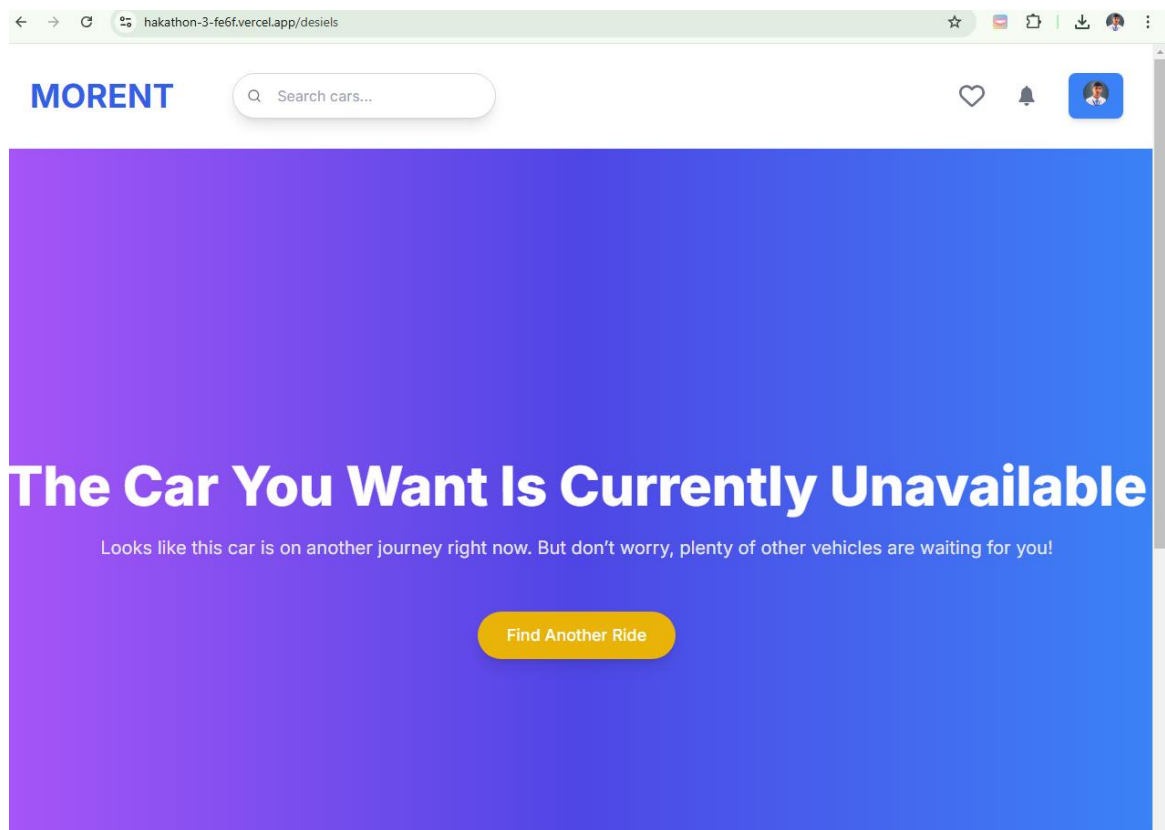
## ❖ Fallback UI

- **Test Result:** Appropriate content, such as "No items found," was displayed when no data was available (e.g., an empty product list).

- **If ID error**



- **If Page not found error**

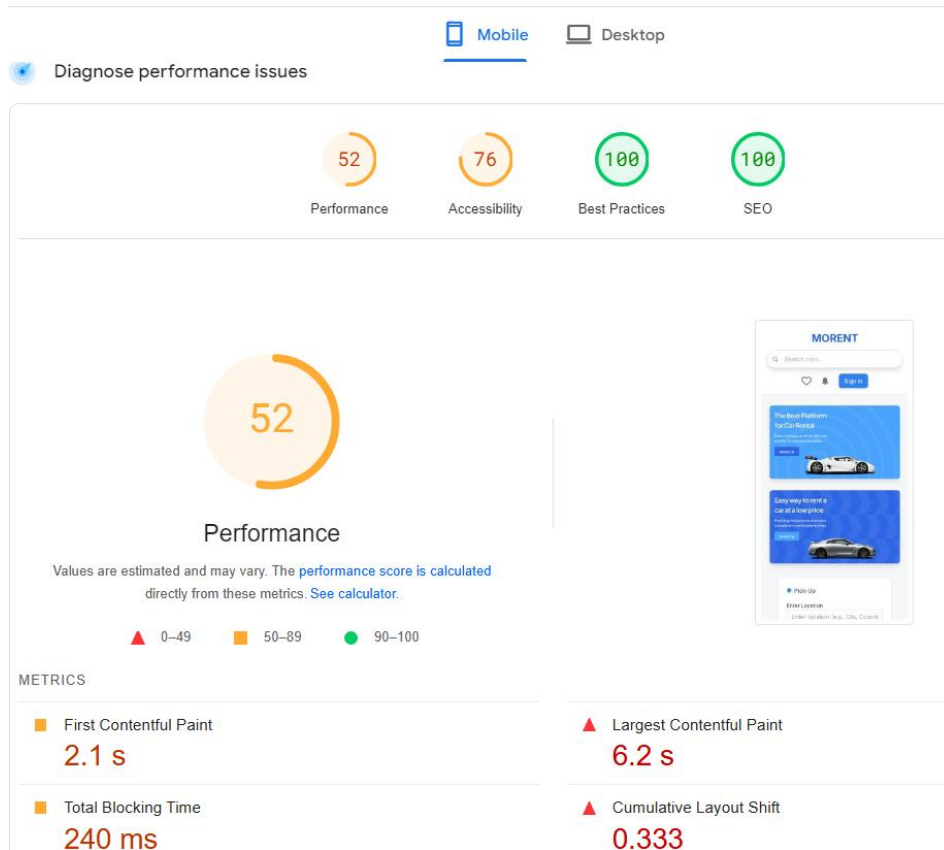


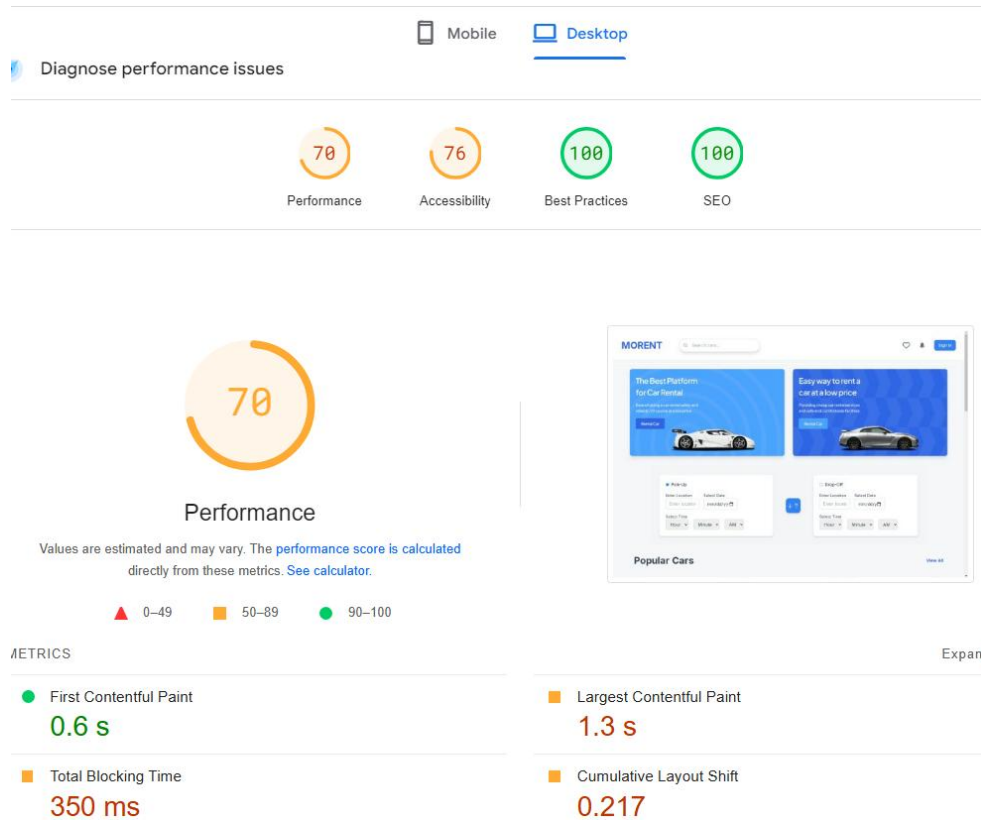
- **Expected Outcome:** If the data is not available, a fallback message (e.g., "No items found") should be displayed instead of leaving the screen blank.

## Step 3: Performance Optimization

### ❖ Analyze Performance

- **Test Result:** Webpages analysis identified and resolved speed issues, including unused CSS, browser caching, and JavaScript optimization.





- **Expected Outcome:** The initial load time should be under 2 seconds, ensuring a smooth and quick user experience.

## Step 4: Cross-Browser and Device Testing

### ❖ Browser Testing:

- **Test Result:** Verified consistent rendering and functionality on Chrome, Firefox , and Edge.

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Search cars...





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Q Search cars...



### The Best Platform for Car Rental

Ease of doing a car rental safely and reliably. Of course at a low price.

Rental Car



### Easy way to rent a car at a low price

Providing cheap car rental services and safe and comfortable facilities.

Rental Car



#### ☒ Pick-Up

Enter Location

Enter locati

Select Date

mm/dd/y

Select Time

Hour

Minute

AM



#### ☐ Drop-Off

Enter Location

Enter locat

Select Date

mm/dd,

Select Time

Hour

Minute

AM

### Aston Martin DB11



Sport



80L Manual 2 People

\$160.00/day

Rent Now

### Bentley Continental GT



Sport



90L Manual 4 People

\$170.00/day

Rent Now

### Tesla Model S



Electric



100kWh Automatic 5 seats

\$130.00/day/day

Rent Now

## Sports car with the best design and acceleration

Safety and comfort while driving a futuristic and elegant sports car.



## Bentley Continental GT

★★★★☆ 440+ Reviews

**Type Car:** Sport **Capacity:** 4 People

**Transmission:** Manual **Fuel Capacity:** 90L

luxury


\$170.00 / day

Rent Now

## Payment Details


Secure your car rental by completing your payment details below.


### Car Details




**Bentley Continental GT**  
Type: Sport  
Price per Day: \$170.00

### Select Payment Method

 Credit Card

 JazzCash

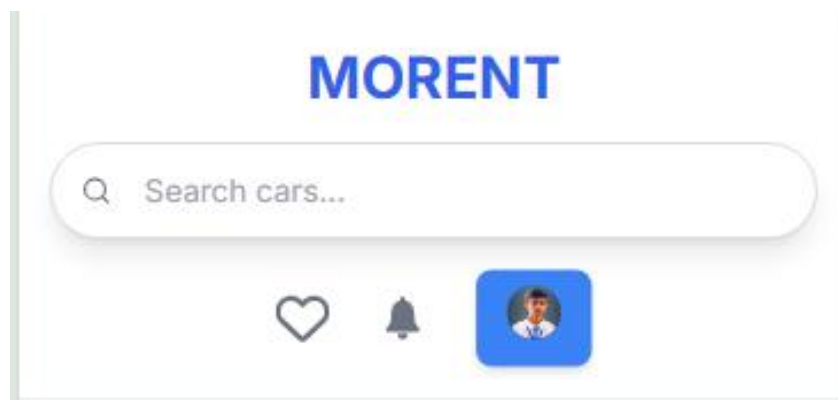
 EasyPaiza

### Card Details

- **Expected Outcome:** All browsers should render the website consistently without layout or functionality issues.

### ❖ Device Testing:

- **Test Result:** Responsive design tested using BrowserStack and verified on one physical mobile device.



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Search cars...



## The Best Platform for Car Rental

Ease of doing a car rental safely and reliably. Of course at a low price.

Rental Car



## Easy way to rent a car at a low price

Providing cheap car rental services and safe and comfortable facilities.

Rental Car



### ☒ Pick-Up

Enter Location

Enter location (e.g., City, Country)

Select Date

mm/dd/yyyy



Select Time

Hour

Minute

AM



### ☐ Drop-Off

Enter Location

Enter location (e.g., City, Country)

Select Date

mm/dd/yyyy



Select Time

Hour

Minute

AM

### Bentley Continental GT



Sport



90L Manual 4 People

\$170.00/day

Rent Now

### Tesla Model S



Electric



100kWh Automatic 5 seats

\$130.00/day/day

Rent Now

# Analytics Dashboard

Gain insights into rental trends and car availability.

## Rentals Over Time



### Customer Reviews

J

**John Doe** 2025-01-25

Excellent service!

★★★★★

J

**Jane Smith** 2025-01-24

Very good, but could be better.

★★★★☆

E

**Emily Davis** 2025-01-23

Amazing experience! Highly recommend.

★★★★★

### Add a Review

Name

Rating

★ ★ ★ ★ ★

Comment

Submit Review

X

Submission: Manual

Capacity: 90L popular

0.00/day / 

Rent Now

Filters

TYPE

☐ Sport (2)

☐ Sedan (1)

☐ SUV (4)

☐ Hatchback(1)

CAPACITY

☐ 2 People (2)

☐ 4 People (1)

☐ 6 People (5)

Customer Reviews

J

**John Doe** 2025-01-25

Excellent service!

★★★★★

J

**Jane Smith** 2025-01-24

Very good, but could be better.

★★★★☆

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Q Search cars...

♡

🔔

Payment Details

Secure your car rental by completing your payment details below.

Car Details

Koenigsegg

Type: Sport

Price per Day: \$99.00/day

Select Payment Method

VISA

Credit Card

JazzCash

EasyPaisa

Card Details

# The Car You Want Is Currently Unavailable

Looks like this car is on another journey right now. But don't worry, plenty of other vehicles are waiting for you!

[Find Another Ride](#)

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### Sports car with the best design and acceleration

Safety and comfort while driving a futuristic and elegant sports car.

### Koenigsegg

★★★★★ 440+ Reviews

Type Car: Sport

Capacity: 2 People

Transmission: Manual

Fuel Capacity: 90L popular

\$99.00/day / day

Rent Now



- **Expected Outcome:** The website should adjust seamlessly across all device sizes and orientations.

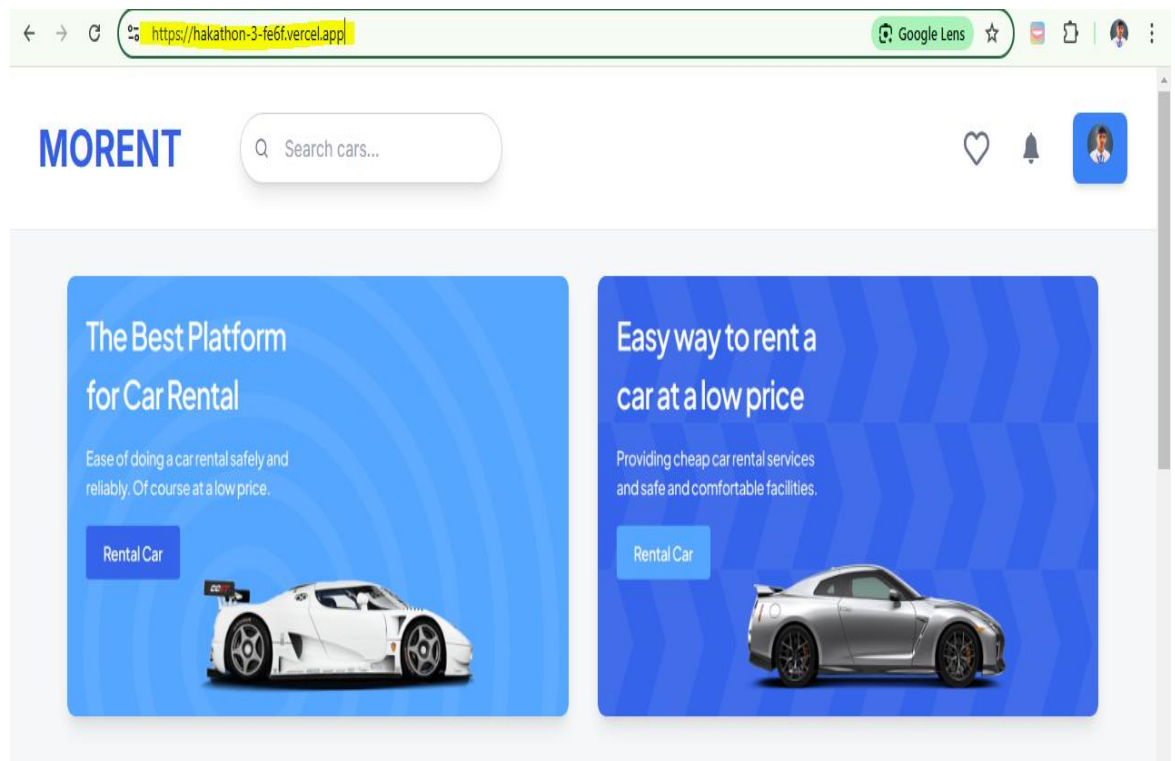
## Step 5: Security Testing

### ❖ Input Validation:

- Sanitize inputs to prevent SQL injection or XSS attacks.
- Use regular expressions to validate email, phone, and other inputs.

### ❖ Secure API Communication:

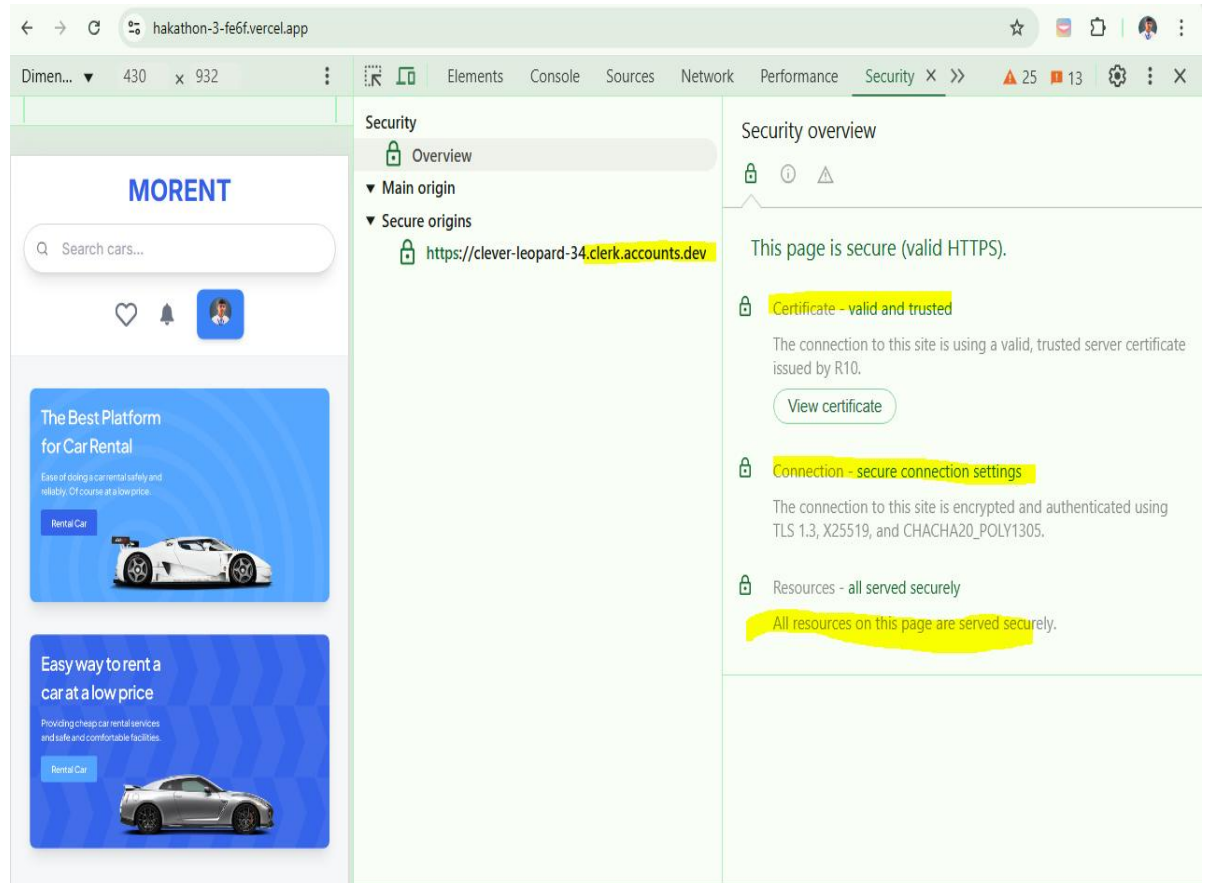
- Ensure API calls are made over HTTPS.





## ❖ Testing Tools:

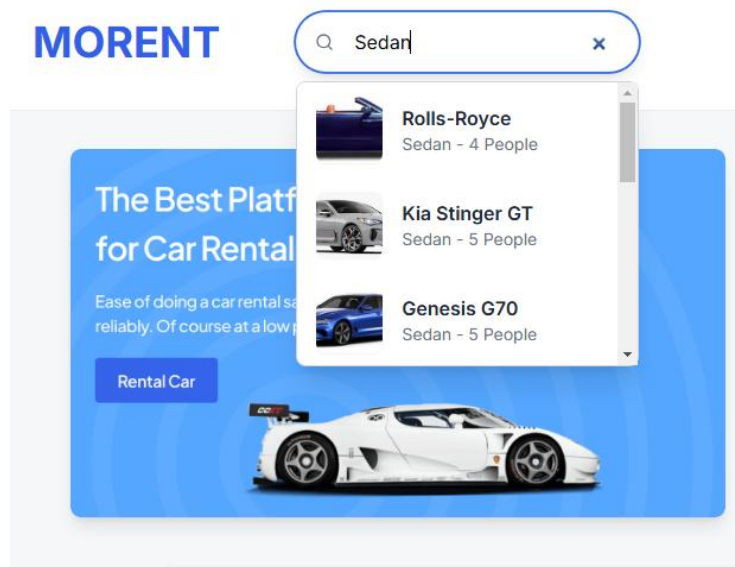
### By google



## Step 6: User Acceptance Testing (UAT)

### ❖ Simulate Real-World Usage:

- Perform tasks like browsing products, Rent a car, and checking out.
- Filter car by searchbar with car name & brand also



filter cars by seats & brand

### Filters

#### TYPE

- ☐ Gasoline (2)
- ☐ Diesel (2)
- ☐ Sport (2)
- ☐ Electric (2)
- ☐ Sedan (1)
- ☐ SUV (4)
- ☐ Hatchback (1)
- ☐ Hybrid (1)

#### CAPACITY

- ☐ 2 People (2)
- ☐ 4 People (1)
- ☐ 5 People (5)
- ☐ 6 People (6)

Easily track order & save Record

## Order Summary

### Car Details



Name: Ford Mustang  
Type: Gasoline  
Price per Day: \$80.00

### Payment Details

Method: JazzCash

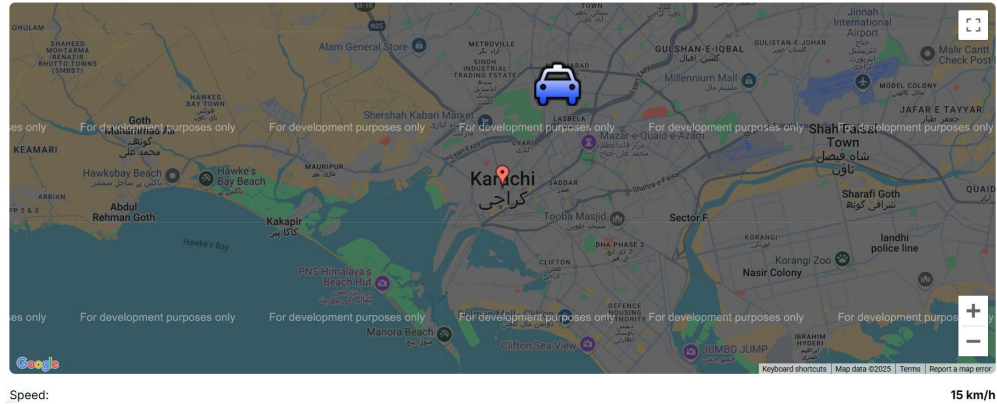
### Billing Details

Full Name: Muhammad Abubakar

[Back to Home](#)[Track Order](#)[Save in Gallery](#)

Easily track car

#### Location Tracking




Easily Onlien payment:

### Payment Details


Secure your car rental by completing your payment details below.


#### Car Details




**Ford Mustang**  
Type: Gasoline  
Price per Day: \$80.00

#### Select Payment Method

 Credit Card

 JazzCash

 EasyPaisa

#### Card Details

Confirm and Proceed

## ❖ Feedback Collection from Friends and Family:

I had my family and friends test my car rental website, and here's the feedback they shared:

### 1. Navigation

- **Feedback:** Everyone found the navigation easy and straightforward. Browsing cars and searching through categories was hassle-free.

- **Suggestions:**
  - Include **advanced filters** (e.g., fuel type, transmission, car features).

## 2. Design

- **Feedback:** The logo and overall design received positive feedback. Many described the website as clean, modern, and user-friendly.

## 3. Functionality

- **Feedback:** The checkout process was smooth for most users, but a few noticed the cart page took a bit longer to load.
- **Suggestions:**
  - **Optimize page load speed** (e.g., compress images, use a CDN).
  - Add a **progress indicator** during checkout.

## 4. Suggestions

- **Feedback:** Add more images to the car details page.
- **Suggestions:**
  - Include **360-degree views or videos** of the cars.
  - Add **detailed descriptions** (e.g., mileage, seating capacity, safety features).

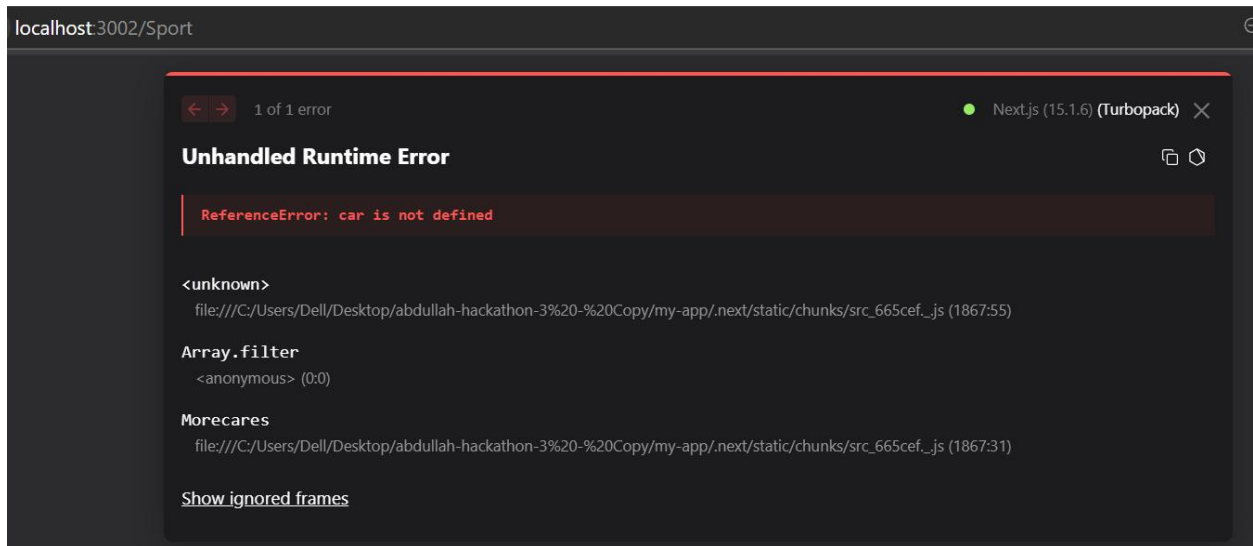
# Step 7: Documentation Updates

## ❖ Unknown Error:

I'm having a lot of trouble understanding why this error is happening.

```
const filteredData = data.filter((cars: Car) => car.type === "Sport");
const { wishlist, addToWishlist, removeFromWishlist } = useWishlist();
```

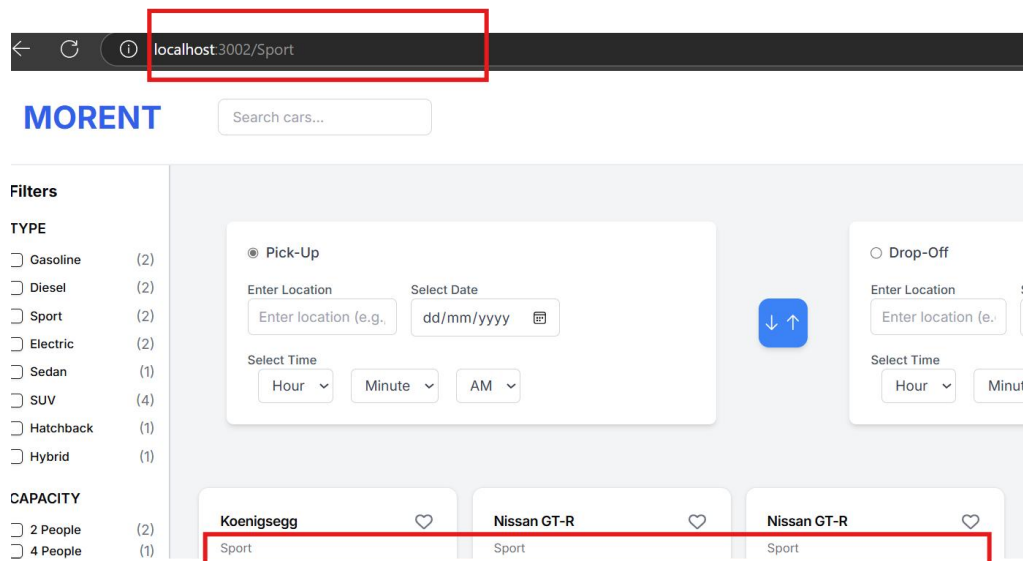
This show like this



Then I made changes after too much trouble & write only s then all things resolved

```
const filteredData = data.filter((car: Car) => car.type === "Sport");  
const { wishlist, addToWishlist, removeFromWishlist } = useWishlist();
```

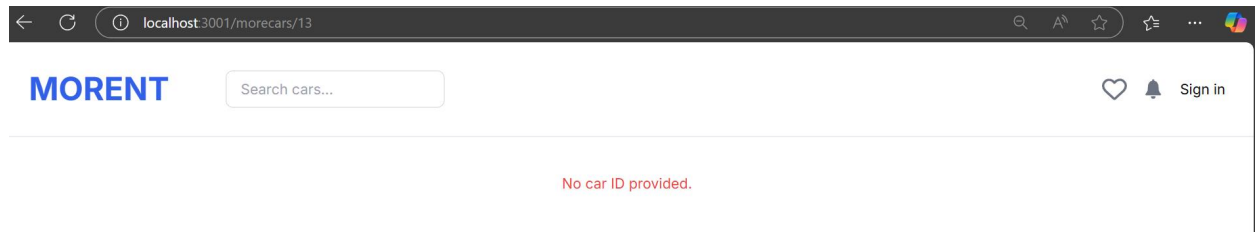
After changes it looks like this



## ❖ URL Problem:

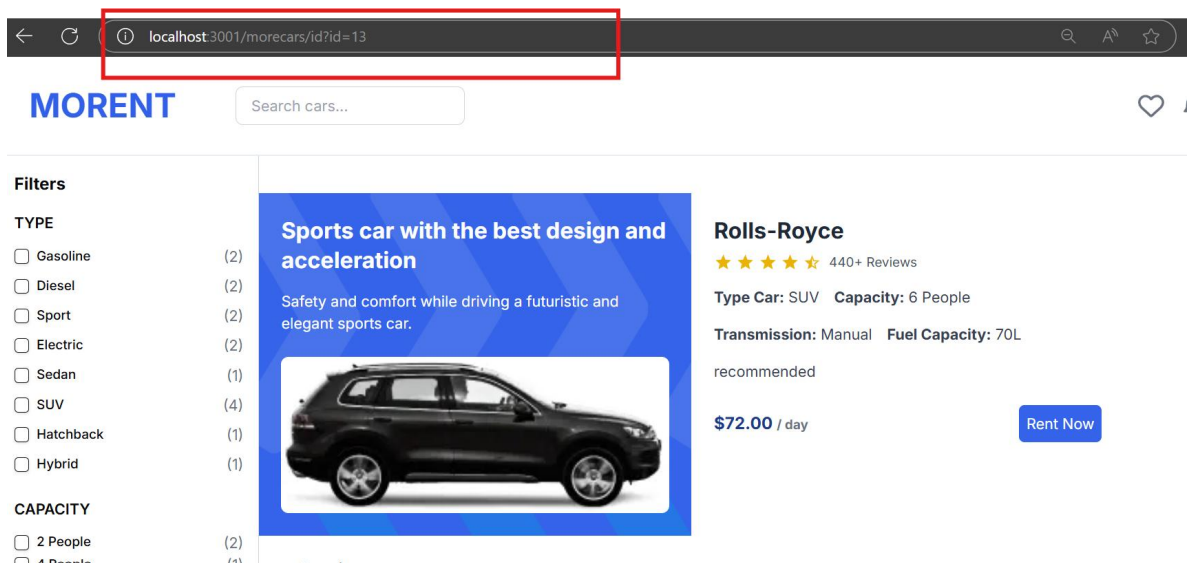
The link might not have worked because its path couldn't be found, which is why the "ID not found" error appeared.

```
<Link href={` /morecars/${car.id}`} className="bg-[#3563e9] p-2 text-white rounded-md">Rent Now</Link>
```



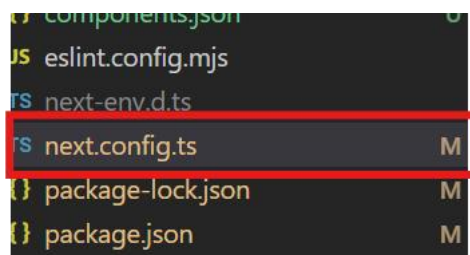
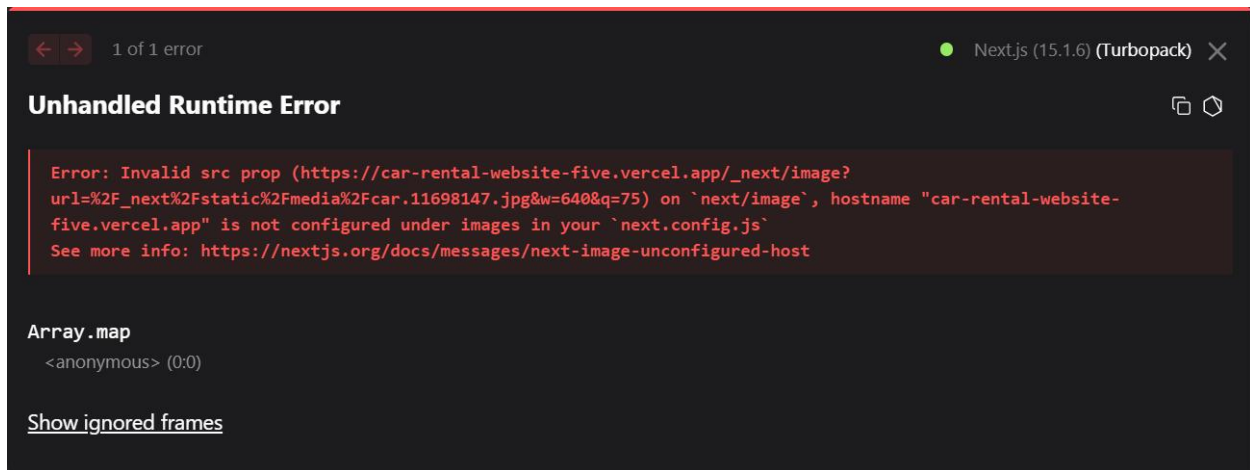
Then I wrote it this way, and it started working.

```
<Link href={` /morecars/id?id=${car.id}`} className="bg-[#3563e9] p-2 text-white rounded-md">Rent Now</Link>
```



## ❖ Image Src Configuration Error :

This error occurs because the external image domain is not configured in the next.config.ts file, causing Next.js to reject the image source.



```
1 import type { NextConfig } from "next";
2
3 const nextConfig: NextConfig = {
4   images: {
5     domains: ['car-rental-website-five.vercel.app'],
6   },
7 };
8
9 export default nextConfig;
```

## Conclusion



On **Day 5**, I worked on preparing the **marketplace** for **real-world deployment** by **testing backend integrations**, **optimizing performance**, and **refining the user experience**. I conducted **functional testing** for **product listings**, **filters**, **search**, and **dynamic routing**, ensuring **APIs worked correctly** using **Postman**. **Error handling** was implemented to display **meaningful messages** and **fallback UI** for empty data. **Performance** was optimized using **Lighthouse**, achieving a **load time under 2 seconds**. **Cross-browser and device testing** confirmed **consistent functionality** on **Chrome**, **Firefox**, **Edge**, and **mobile devices**. **Security measures**, such as **input sanitization** and **HTTPS API calls**, were added. **Feedback** from friends and family highlighted **easy navigation**, **clean design**, and **smooth functionality**, with suggestions to add **more car images** and **details**. Finally, I resolved **bugs** like **URL errors**, **image configuration issues**, and **unknown errors**, making the website **ready for deployment**.