Day 5 - Testing, Error Handling, and Backend Integration Refinement: (Morent Car Rental Service)

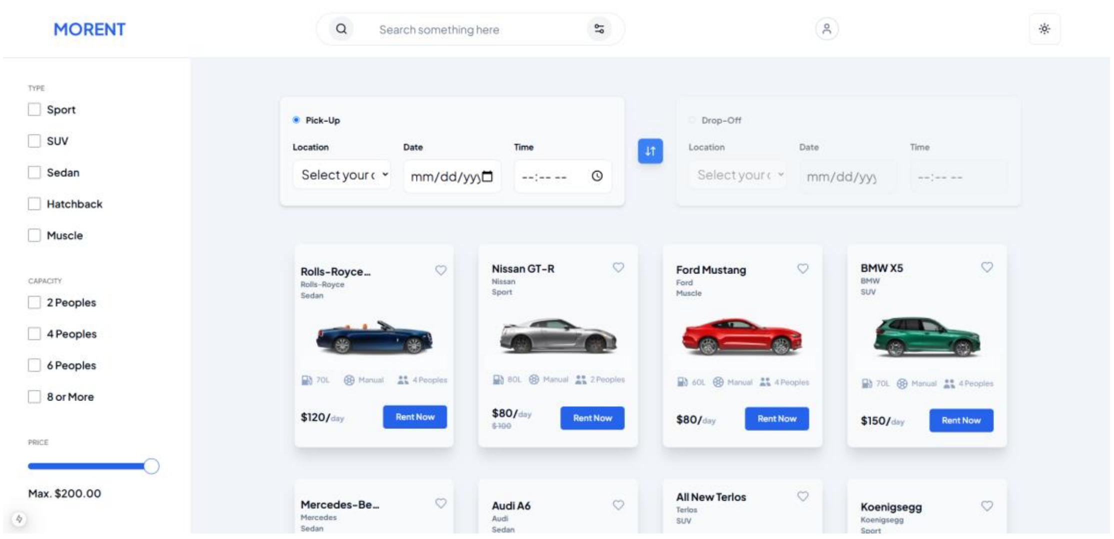
Day 5 focuses on preparing your marketplace for deployment by performing thorough testing (functional, performance, security, and cross-browser), implementing robust error handling with fallback UI and clear messages, refining backend integrations, optimizing performance for speed and responsiveness, and documenting all testing efforts. The goal is to ensure the marketplace is functional, secure, and user-friendly across all platforms.

I. Functional Testing

A. Testing Core Features:

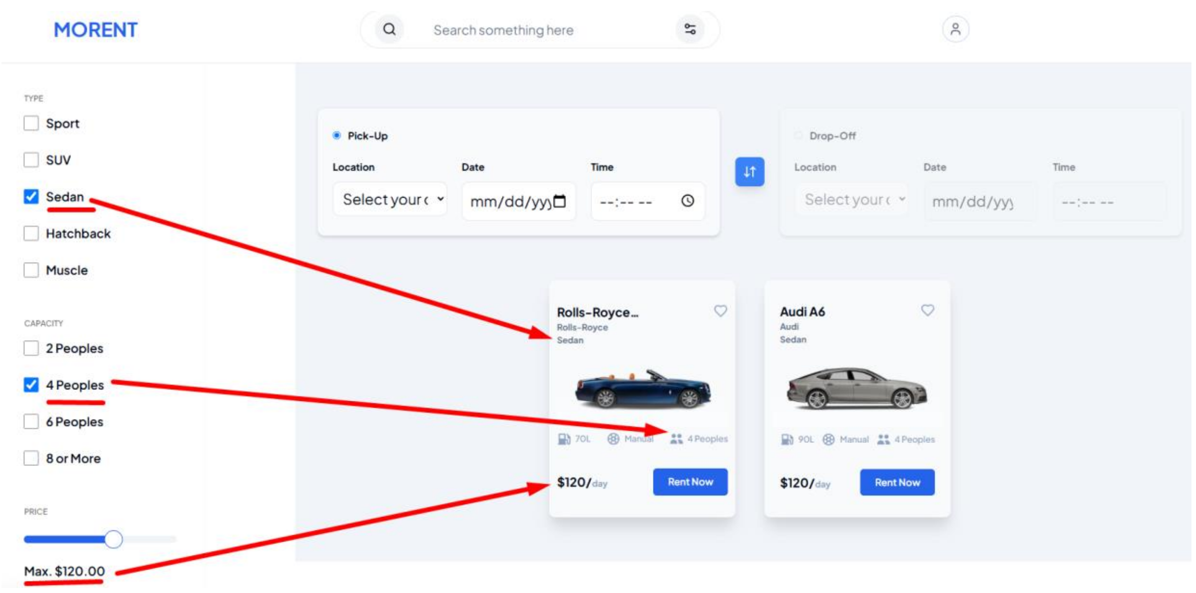
a) ***Verifying Car listing***

Verify that all cars are displayed correctly, including details like car name, type, price, and availability.



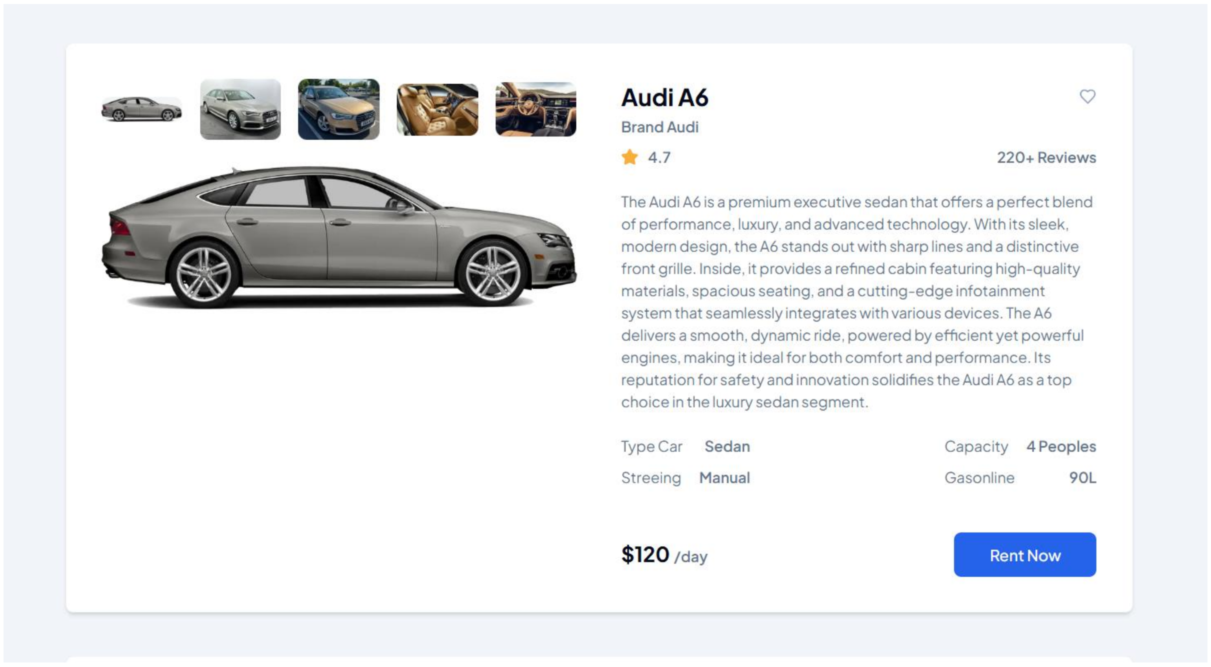
b) ***Filter the results***

Filters (e.g., car type, price range, capacity) functionality return accurate results based on user inputs.



c) ***Dynamic routing***

Individual car detail pages to ensure they load correctly with all relevant information (e.g., description, images, booking options).



Audi A6

Brand Audi

★ 4.7 220+ Reviews

The Audi A6 is a premium executive sedan that offers a perfect blend of performance, luxury, and advanced technology. With its sleek, modern design, the A6 stands out with sharp lines and a distinctive front grille. Inside, it provides a refined cabin featuring high-quality materials, spacious seating, and a cutting-edge infotainment system that seamlessly integrates with various devices. The A6 delivers a smooth, dynamic ride, powered by efficient yet powerful engines, making it ideal for both comfort and performance. Its reputation for safety and innovation solidifies the Audi A6 as a top choice in the luxury sedan segment.

Type Car	Sedan	Capacity	4 Peoples
Streeing	Manual	Gasonline	90L

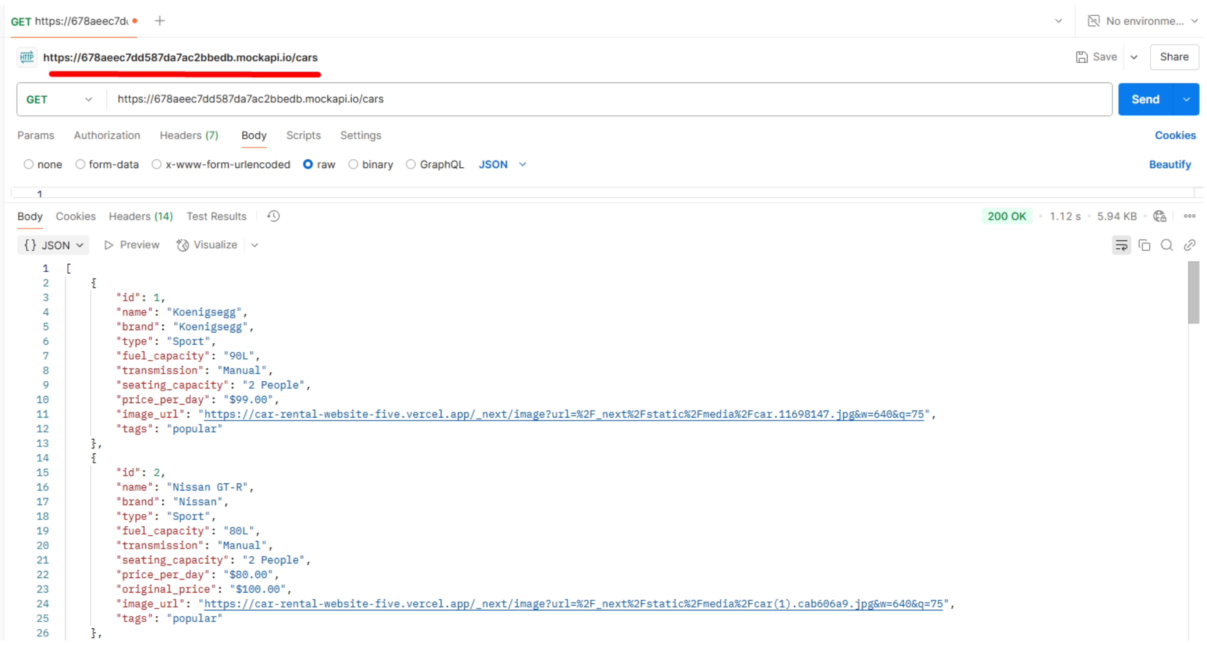
$120 /day

B. Testing Tools

a) ***Postman:***

➢ Send a GET request to your car listing endpoint

➢ Validate the response structure, see below picture



GET https://678aeec7dd587da7ac2bbedb.mockapi.io/cars

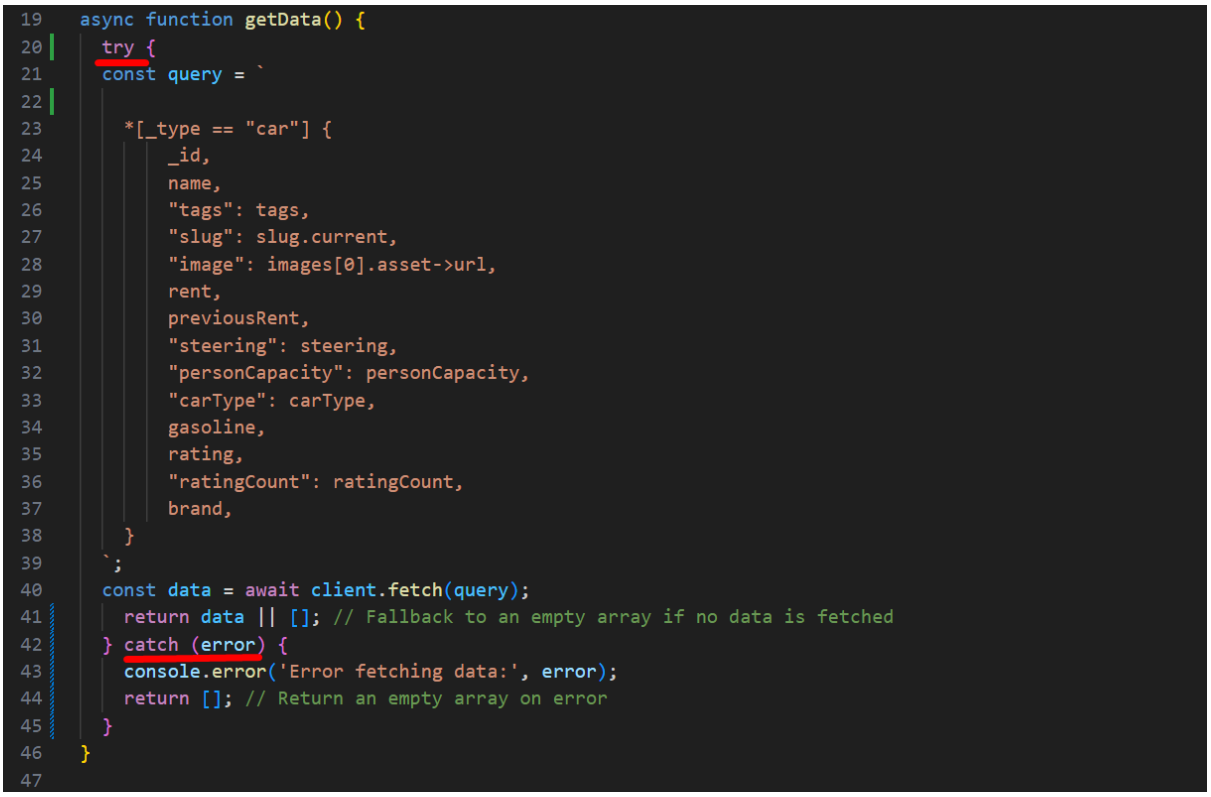
200 OK · 1.12 s · 5.94 KB

```
[
    {
        "id": 1,
        "name": "Koenigsegg",
        "brand": "Koenigsegg",
        "type": "Sport",
        "fuel_capacity": "90L",
        "transmission": "Manual",
        "seating_capacity": "2 People",
        "price_per_day": "$99.00",
        "image_url": "https://car-rental-website-five.vercel.app/_next/image?url=%2F_next%2Fstatic%2Fmedia%2Fcar.11698147.jpg&w=640&q=75",
        "tags": "popular"
    },
    {
        "id": 2,
        "name": "Nissan GT-R",
        "brand": "Nissan",
        "type": "Sport",
        "fuel_capacity": "80L",
        "transmission": "Manual",
        "seating_capacity": "2 People",
        "price_per_day": "$80.00",
        "original_price": "$100.00",
        "image_url": "https://car-rental-website-five.vercel.app/_next/image?url=%2F_next%2Fstatic%2Fmedia%2Fcar(1).cab606a9.jpg&w=640&q=75",
        "tags": "popular"
    },
```

II. Error Handling

A. Add Error Messages:

➢ Utilize try-catch blocks to handle API errors.

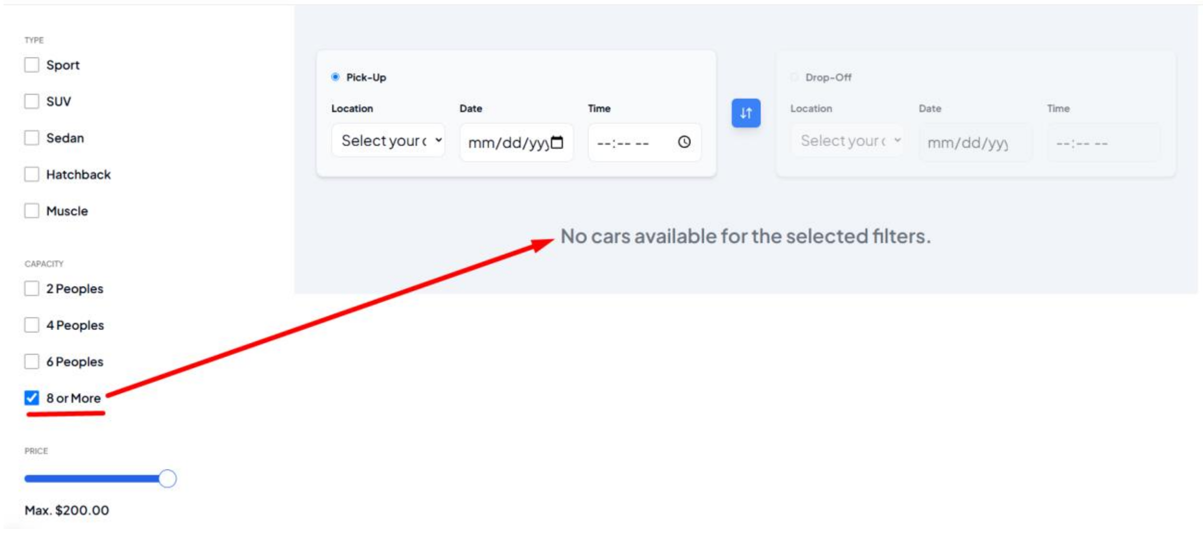


```
async function getData() {
  try {
  const query = `

    *[_type == "car"] {
      _id,
      name,
      "tags": tags,
      "slug": slug.current,
      "image": images[0].asset->url,
      rent,
      previousRent,
      "steering": steering,
      "personCapacity": personCapacity,
      "carType": carType,
      gasoline,
      rating,
      "ratingCount": ratingCount,
      brand,
    }
  `;
  const data = await client.fetch(query);
    return data || []; // Fallback to an empty array if no data is fetched
  } catch (error) {
    console.error('Error fetching data:', error);
    return []; // Return an empty array on error
  }
}
```

B. Fallback UI

- Display fallback UI elements, such as "No cars available for selected filter" when data is unavailable.
- Log errors for debugging purposes.
- Ensure graceful handling of failed API responses to maintain user trust and interface consistency.



No cars available for the selected filters.

III. Performance Optimization

Performance optimization has been done by using Lighthouse.

A. Lighthouse Desktop Report Overview

- Performance Score: **84**
- Accessibility Score: **82**
- Best Practices Score: **74**
- SEO Score: **100**

a) Key Metrics:

- First Contentful Paint (FCP): **0.3 seconds**
- Largest Contentful Paint (LCP): **0.9 seconds**
- Total Blocking Time (TBT): **330 milliseconds**
- Cumulative Layout Shift (CLS): **0.033**
- Speed Index: **1.5 seconds**

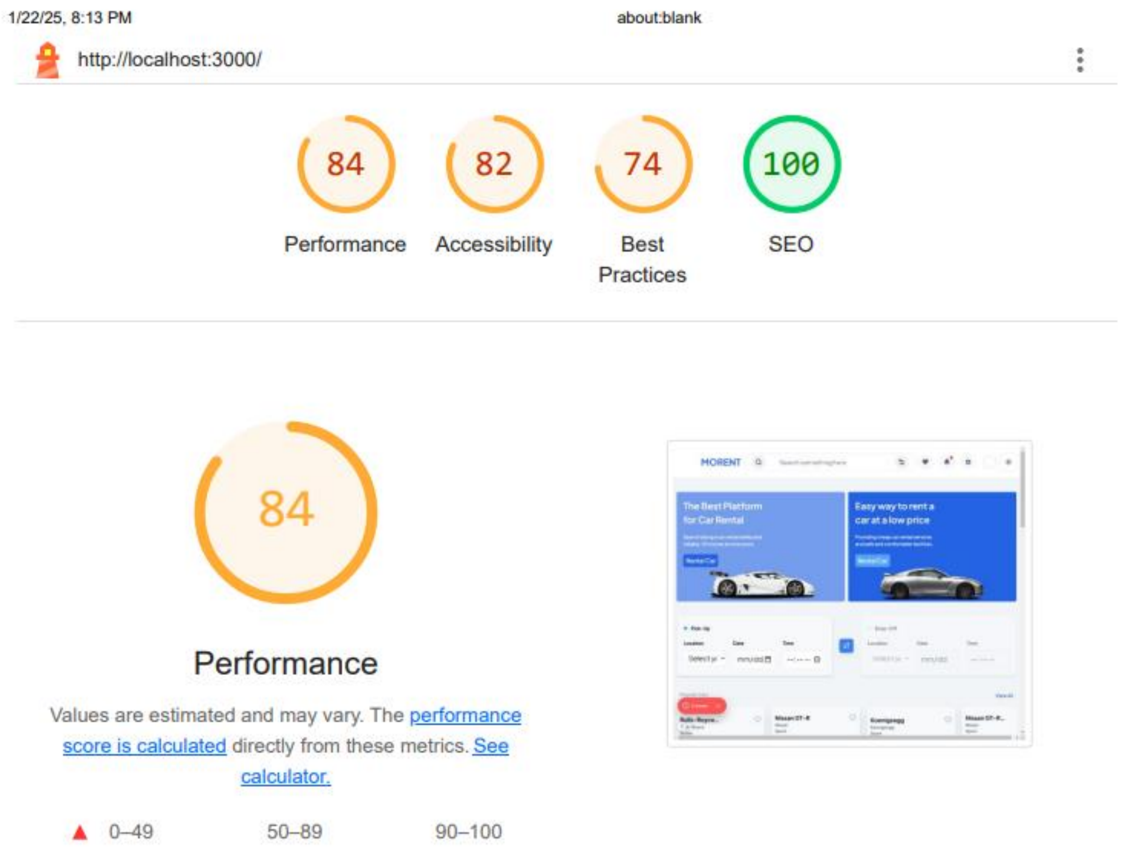
b) Diagnostics:

- Minify JavaScript: **Potential savings of 578 KiB**
- Reduce Initial Server Response Time: **1,590 ms**
- Reduce Unused JavaScript: **Potential savings of 1,403 KiB**
- Eliminate Render-Blocking Resources: **Potential savings of 60 ms**
- Avoid Excessive DOM Size: **960 elements**

c) Passed Audits: **20**

d) Opportunities for Improvement:

- Improve accessibility by ensuring buttons and links have accessible names.
- Enhance contrast ratios for better legibility.



1/22/25, 8:13 PM about:blank

http://localhost:3000/

84 Performance
82 Accessibility
74 Best Practices
100 SEO

84

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 50–89 90–100

B. Lighthouse Mobile Report Overview

- Performance Score: **46**
- Accessibility Score: **86**

- Best Practices Score: **75**
- SEO Score: **100**

a) Key Metrics:

- First Contentful Paint (FCP): **1.0 seconds**
- Largest Contentful Paint (LCP): **10.1 seconds**
- Total Blocking Time (TBT): **3,390 milliseconds**
- Cumulative Layout Shift (CLS): **0.001**
- Speed Index: 1.3 seconds

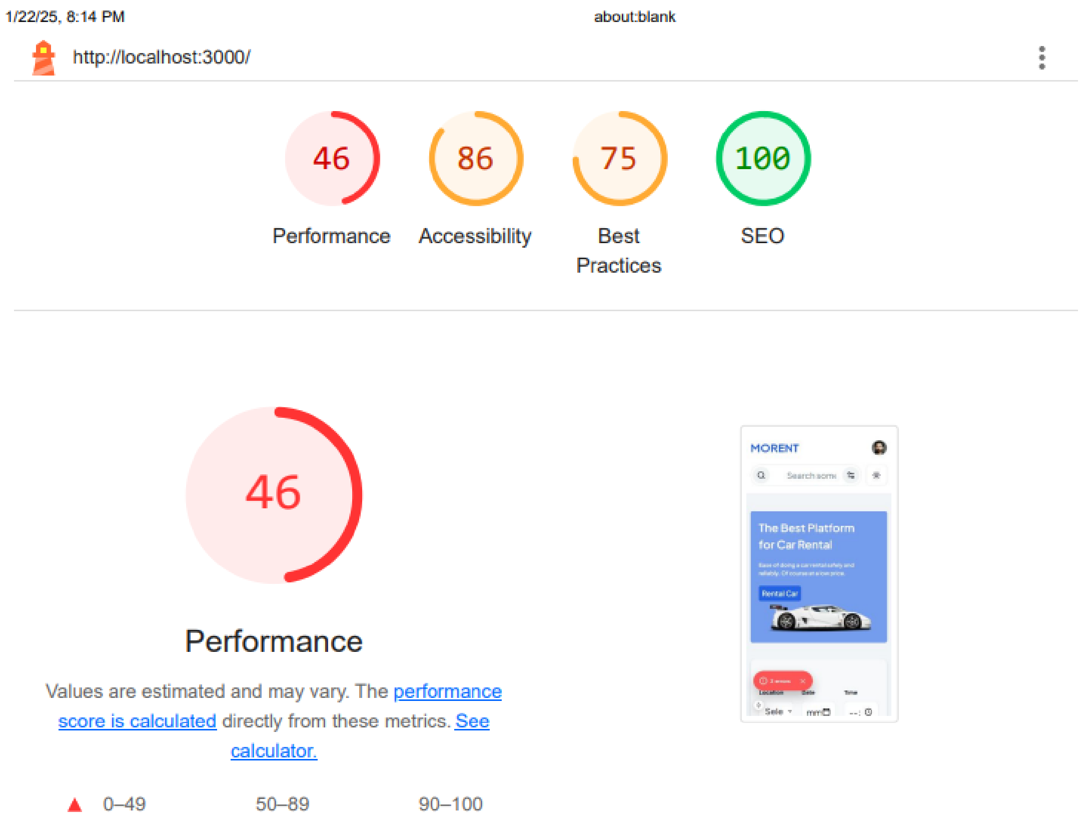
b) Diagnostics:

- Reduce JavaScript Execution Time: **6.2 seconds**
- Minimize Main-Thread Work: **8.3 seconds**
- Reduce Unused JavaScript: **Potential savings of 1,458 KiB**
- Avoid Long Main-Thread Tasks: **20 long tasks found**
- Avoid Excessive DOM Size: **960 elements**

c) Passed Audits: **19**

d) Opportunities for Improvement:

- Similar to the desktop report, improve accessibility by ensuring buttons have accessible names and enhancing contrast ratios.


1/22/25, 8:14 PM about:blank

http://localhost:3000/

46 Performance | 86 Accessibility | 75 Best Practices | 100 SEO

46

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

▲ 0–49 50–89 90–100

IV. Cross-Browser and Device Testing

Ensure consistent functionality and rendering across browsers and devices.

A. Browsers Tested:

- Chrome, Edge.

B. Devices Tested:

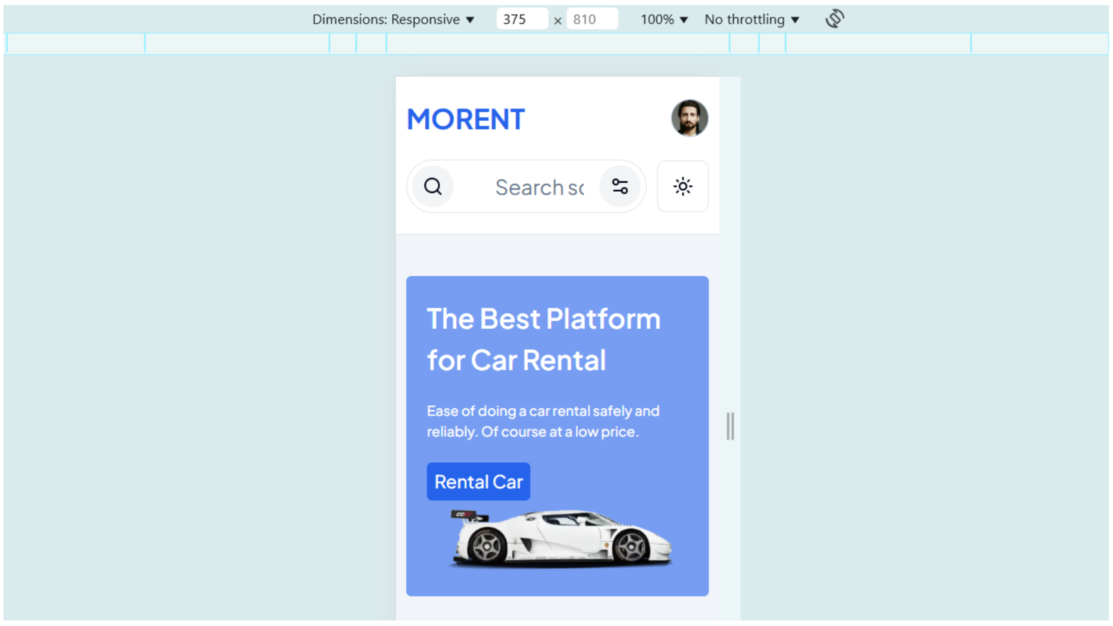
- Desktop, tablet, mobile (using Browser Stack)

C. Focus Areas:

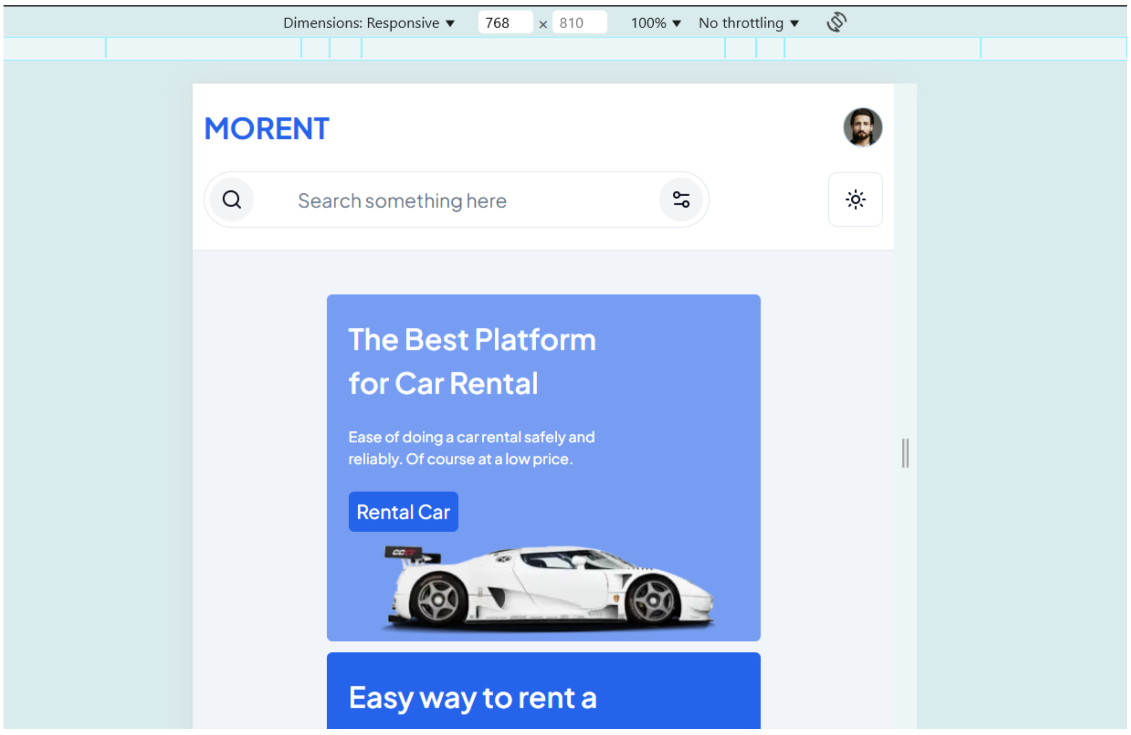
- Responsive design.
- Consistent navigation and interactivity.

D. Devices Pictures

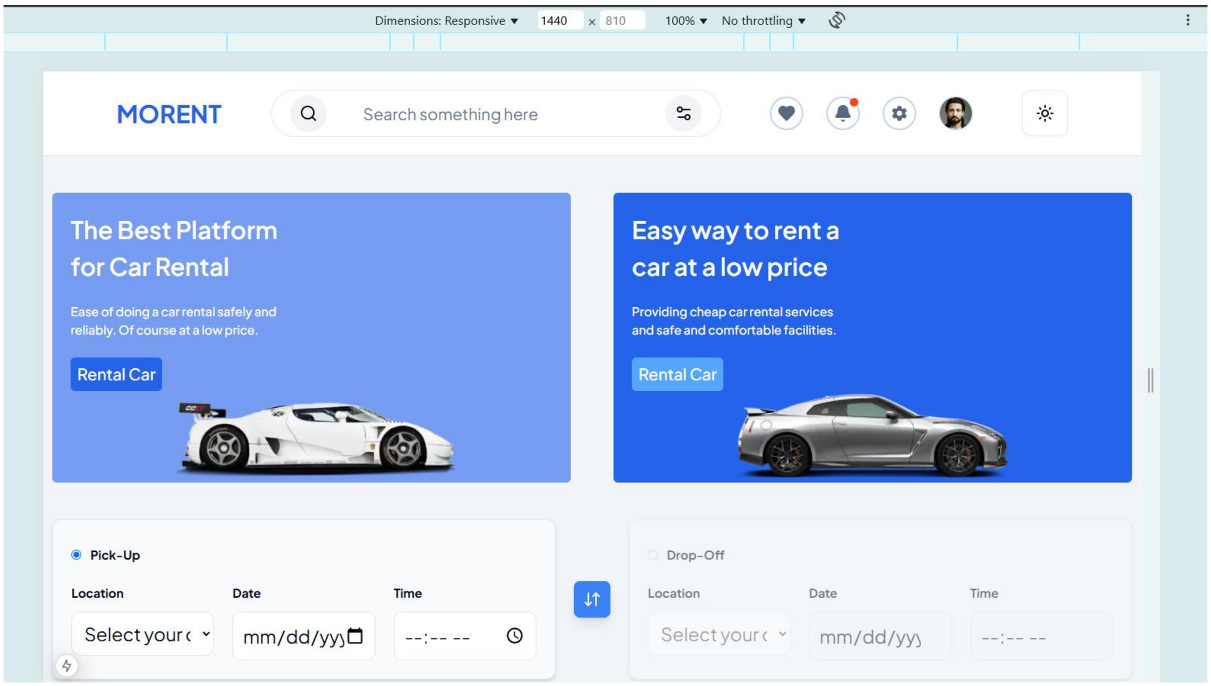
a) Mobile width 375px


Dimensions: Responsive ▾
375 × 810
100% ▾
No throttling ▾
MORENT
Search so
The Best Platform for Car Rental
Ease of doing a car rental safely and reliably. Of course at a low price.
Rental Car

b) Tablet width 768px



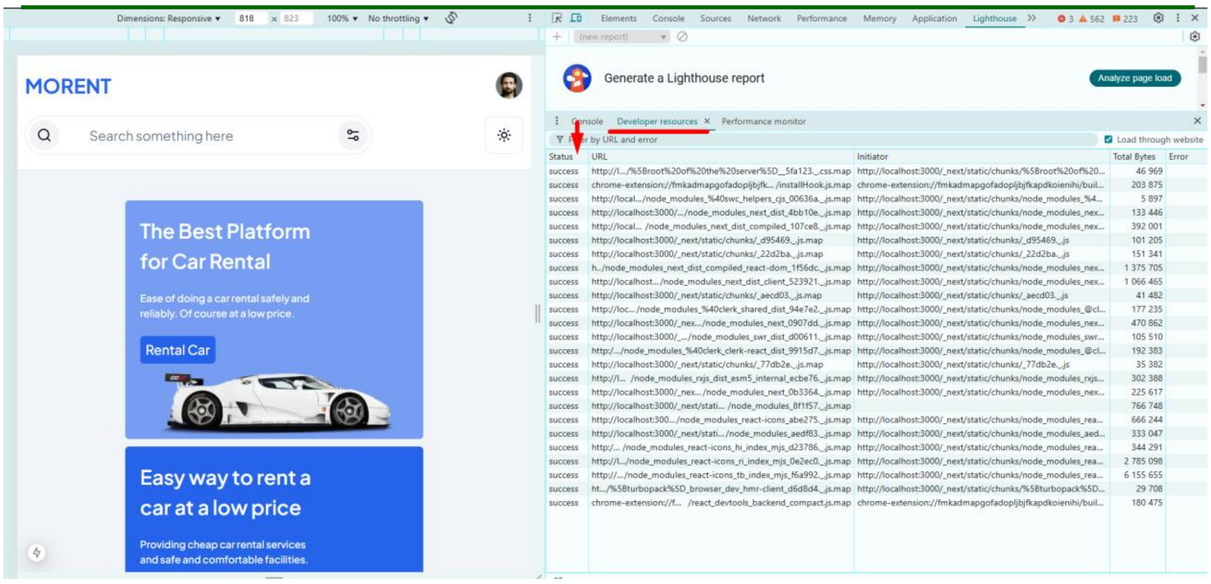
c) *Desktop width 1440px*



Dimensions: Responsive ▾ 1440 × 810 100% ▾ No throttling ▾

MORENT
Search something here
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
Location
Date
Time
Select your c
mm/dd/yyy
--:-- --
Drop-Off
Location
Date
Time
Select your c
mm/dd/yyy
--:-- --

V. Developer Resources

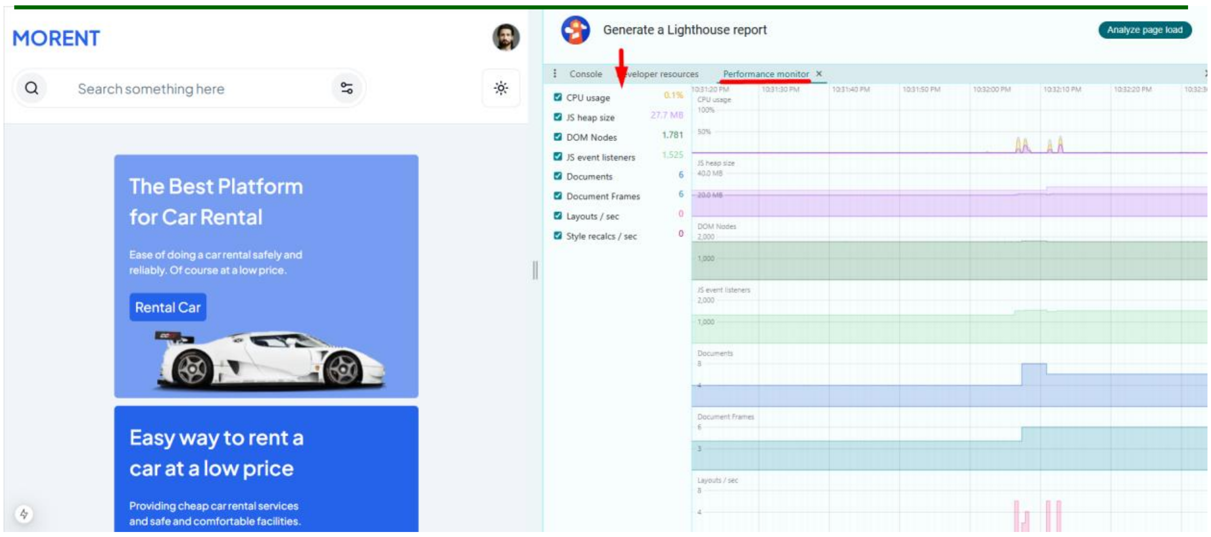


Dimensions: Responsive ▾ 818 × 823 100% ▾ No throttling ▾

Elements
Console
Sources
Network
Performance
Memory
Application
Lighthouse
3
562
223
(new report)
MORENT
Search something here
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.
Generate a Lighthouse report
Analyze page load
Console
Developer resources
Performance monitor
Filter by URL and error
Load through website

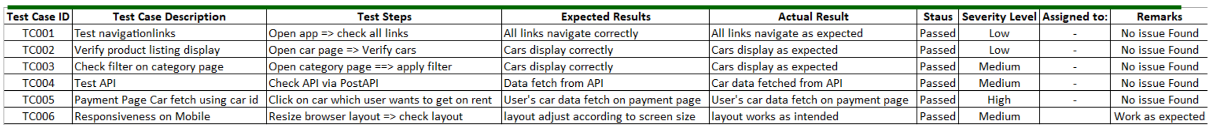
Status	URL	Initiator	Total Bytes	Error
success	http://l.../%5Broot%20of%20the%20server%5D__5fa123._.css.map	http://localhost:3000/_next/static/chunks/%5Broot%20of%20...	46 969	
success	chrome-extension://fmkadmapgofadopljbjfk... /installHook.js.map	chrome-extension://fmkadmapgofadopljbjfkapdkoienihi/buil...	203 875	
success	http://local.../node_modules_%40swc_helpers_cjs_00636a._.js.map	http://localhost:3000/_next/static/chunks/node_modules_%4...	5 897	
success	http://localhost:3000/.../node_modules_next_dist_4bb10e._.js.map	http://localhost:3000/_next/static/chunks/node_modules_nex...	133 446	
success	http://local... /node_modules_next_dist_compiled_107ce8._.js.map	http://localhost:3000/_next/static/chunks/node_modules_nex...	392 001	
success	http://localhost:3000/_next/static/chunks/_d95469._.js.map	http://localhost:3000/_next/static/chunks/_d95469._.js	101 205	
success	http://localhost:3000/_next/static/chunks/_22d2ba._.js.map	http://localhost:3000/_next/static/chunks/_22d2ba._.js	151 341	
success	h../node_modules_next_dist_compiled_react-dom_1f56dc._.js.map	http://localhost:3000/_next/static/chunks/node_modules_nex...	1 375 705	
success	http://localhost.../node_modules_next_dist_client_523921._.js.map	http://localhost:3000/_next/static/chunks/node_modules_nex...	1 066 465	
success	http://localhost:3000/_next/static/chunks/_aecd03._.js.map	http://localhost:3000/_next/static/chunks/_aecd03._.js	41 482	
success	http://loc.../node_modules_%40clerk_shared_dist_94e7e2._.js.map	http://localhost:3000/_next/static/chunks/node_modules_@cl...	177 235	
success	http://localhost:3000/_nex.../node_modules_next_0907dd._.js.map	http://localhost:3000/_next/static/chunks/node_modules_nex...	470 862	
success	http://localhost:3000/_.../node_modules_swr_dist_d00611._.js.map	http://localhost:3000/_next/static/chunks/node_modules_swr...	105 510	
success	http:/.../node_modules_%40clerk_clerk-react_dist_9915d7._.js.map	http://localhost:3000/_next/static/chunks/node_modules_@cl...	192 383	
success	http://localhost:3000/_next/static/chunks/_77db2e._.js.map	http://localhost:3000/_next/static/chunks/_77db2e._.js	35 382	
success	http://l... /node_modules_rxjs_dist_esm5_internal_ecbe76._.js.map	http://localhost:3000/_next/static/chunks/node_modules_rxjs...	302 388	
success	http://localhost:3000/_nex.../node_modules_next_0b3364._.js.map	http://localhost:3000/_next/static/chunks/node_modules_nex...	225 617	
success	http://localhost:3000/_next/stati... /node_modules_8f1f57._.js.map		766 748	
success	http://localhost:300.../node_modules_react-icons_abe275._.js.map	http://localhost:3000/_next/static/chunks/node_modules_rea...	666 244	
success	http://localhost:3000/_next/stati.../node_modules_aedf83._.js.map	http://localhost:3000/_next/static/chunks/node_modules_aed...	333 047	
success	http:/... /node_modules_react-icons_hi_index_mjs_d23786._.js.map	http://localhost:3000/_next/static/chunks/node_modules_rea...	344 291	
success	http://l.../node_modules_react-icons_ri_index_mjs_0e2ec0._.js.map	http://localhost:3000/_next/static/chunks/node_modules_rea...	2 785 098	
success	http://.../node_modules_react-icons_tb_index_mjs_f6a992._.js.map	http://localhost:3000/_next/static/chunks/node_modules_rea...	6 155 655	
success	ht.../%5Bturbopack%5D_browser_dev_hmr-client_d6d8d4._.js.map	http://localhost:3000/_next/static/chunks/%5Bturbopack%5D...	29 708	
success	chrome-extension://f... /react_devtools_backend_compact.js.map	chrome-extension://fmkadmapgofadopljbjfkapdkoienihi/buil...	180 475	

VI. Performance Monitor



✓ CPU usage	0.1%
✓ JS heap size	27.7 MB
✓ DOM Nodes	1,781
✓ JS event listeners	1,525
✓ Documents	6
✓ Document Frames	6
✓ Layouts / sec	0
✓ Style recalcs / sec	0

VII. CSV-Based Testing Report



Test Case ID	Test Case Description	Test Steps	Expected Results	Actual Result	Staus	Severity Level	Assigned to:	Remarks
TC001	Test navigationlinks	Open app => check all links	All links navigate correctly	All links navigate as expected	Passed	Low	-	No issue Found
TC002	Verify product listing display	Open car page => Verify cars	Cars display correctly	Cars display as expected	Passed	Low	-	No issue Found
TC003	Check filter on category page	Open category page ==> apply filter	Cars display correctly	Cars display as expected	Passed	Medium	-	No issue Found
TC004	Test API	Check API via PostAPI	Data fetch from API	Car data fetched from API	Passed	Medium	-	No issue Found
TC005	Payment Page Car fetch using car id	Click on car which user wants to get on rent	User's car data fetch on payment page	User's car data fetch on payment page	Passed	High	-	No issue Found
TC006	Responsiveness on Mobile	Resize browser layout => check layout	layout adjust according to screen size	layout works as intended	Passed	Medium		Work as expected