Day 5 - Testing, Error Handling, and Backend Integration Refinement-[Comfy]

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Overview

This document provides a comprehensive report on the testing process conducted for the e-commerce website. The testing focused on ensuring the website's functionality, error handling, performance optimization, and cross-browser/device compatibility. Below are the key components of the testing report, along with examples, challenges faced, and solutions implemented.

Deliverables:

- Functional Testing

- Error Handling

- Performance Optimization

- Cross-Browser and Device Testing

- CSV Report

1. Functional Testing

Objective: Validate the core functionalities of the e-commerce website to ensure they work as intended.

Test Cases:

- **Product Listing**:
  - Ensure products are displayed correctly with accurate details (name, price, image).
  - Validate pagination to show the correct number of products per page.
- **Filters and Search**:
  - Verify accurate results based on user inputs for product names and categories.
  - Test multiple filter combinations for consistent behavior.
- **Cart Operations**:
  - Add items to the cart and verify updates in cart totals.
  - Update item quantities and remove items to ensure changes reflect correctly.
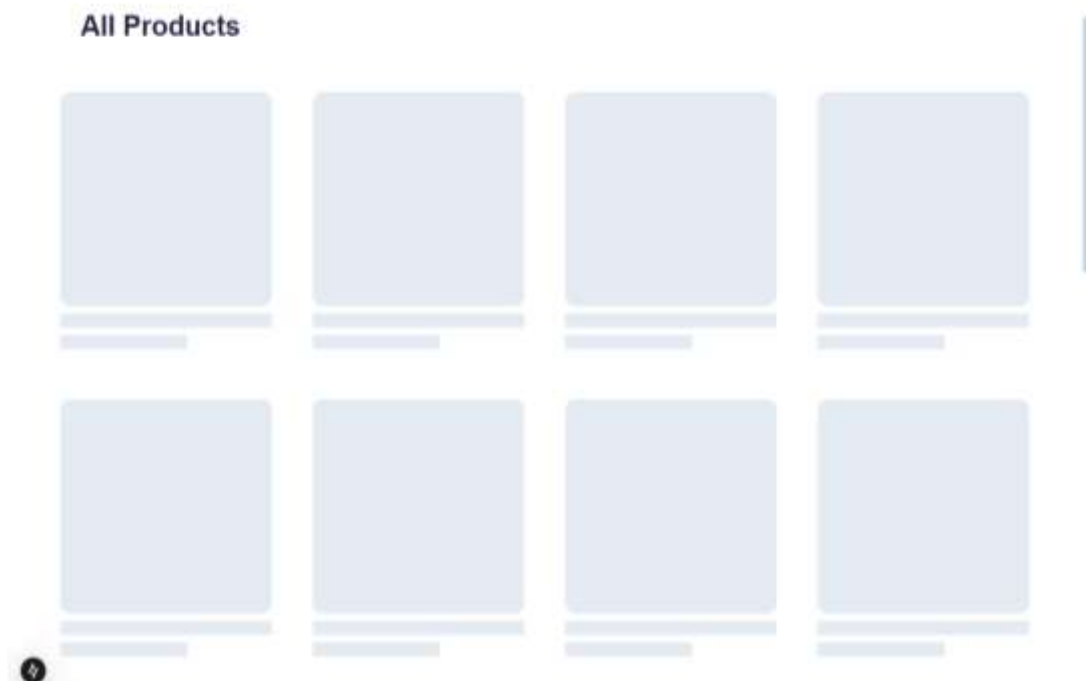
Challenges & Resolutions:

- **Challenge:** Search results displayed irrelevant products for partial matches.
  - **Solution**: Improved the GROQ query to include stricter matching criteria.

- **Challenge**: Cart total calculations were occasionally incorrect after updating item quantities.
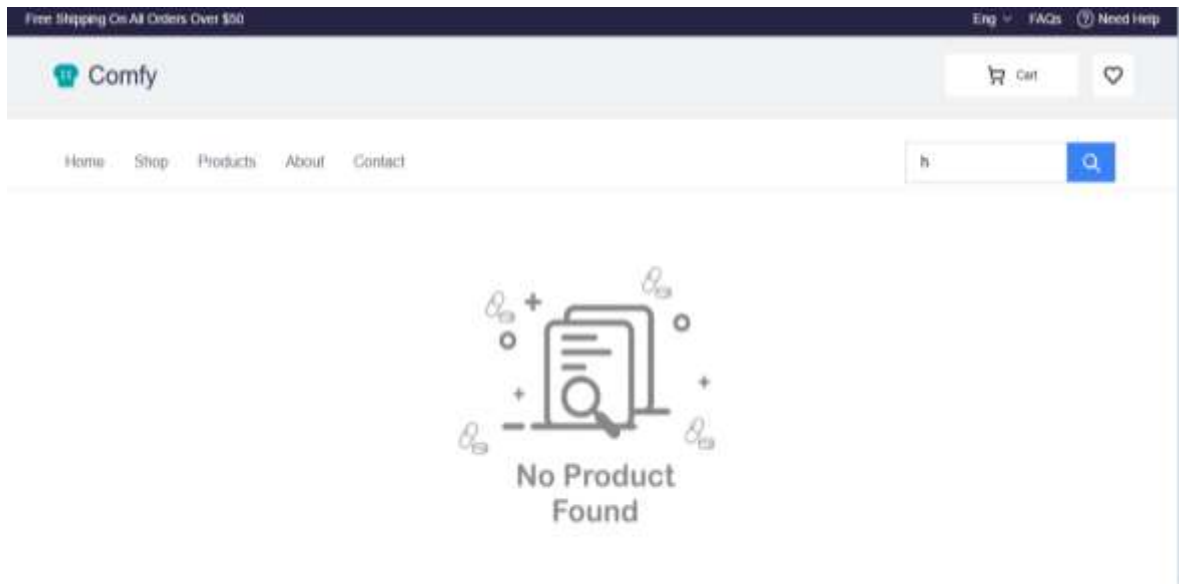 - **Solution:** Imporoved cart logic to ensure real-time synchronization with the Redux state.

2. Error Handling

Objective: Implement mechanisms to manage errors and provide meaningful feedback to users.

Test Cases:

- **API Error Handling**:
    - Used try-catch blocks to gracefully manage network and server errors.

- **Fallback UI Element**:
    - Shown "No products found" when search results were empty.
    - Rendered skeleton loaders while waiting for API responses to improve user experience.
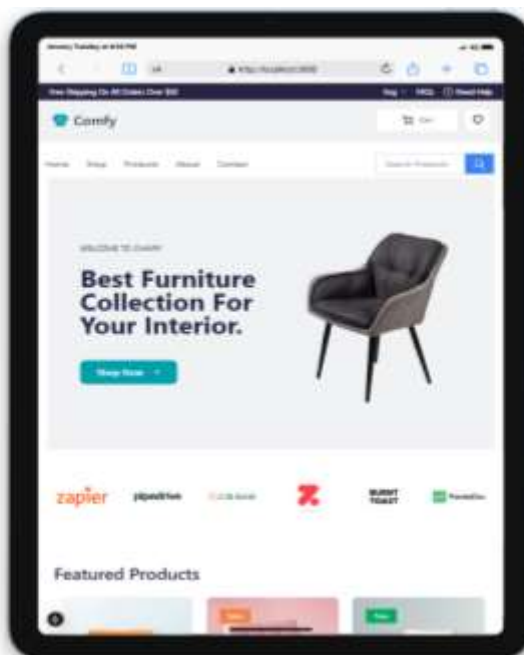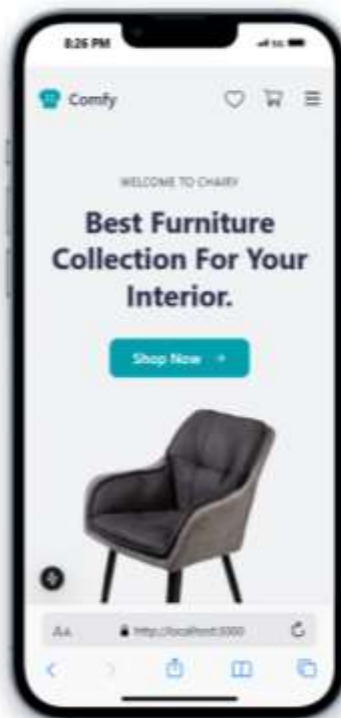
Challenge & Resolution:

- **Challenge:** Search functionality occasionally failed due to network errors.

  o **Solution**: Implemented retry logic and fallback data to ensure a smoother user experience**.**

3. Cross-Browser and Device Testing

Objective: Ensure the website is responsive and functions seamlessly across different browsers and devices.

Testing Tools & Methods:

- Used mobile simulators and browser developer tools to validate responsiveness.
- Tested across major browsers: Chrome, Firefox, Safari, and Edge.
- Checked compatibility on mobile devices, tablets, and desktops.

Challenges & Resolutions:

- **Challenge**: Inconsistent styling across browsers.

    - Solution: Added vendor-specific prefixes to ensure consistency.

- **Challenge:** Misaligned elements on smaller screens.

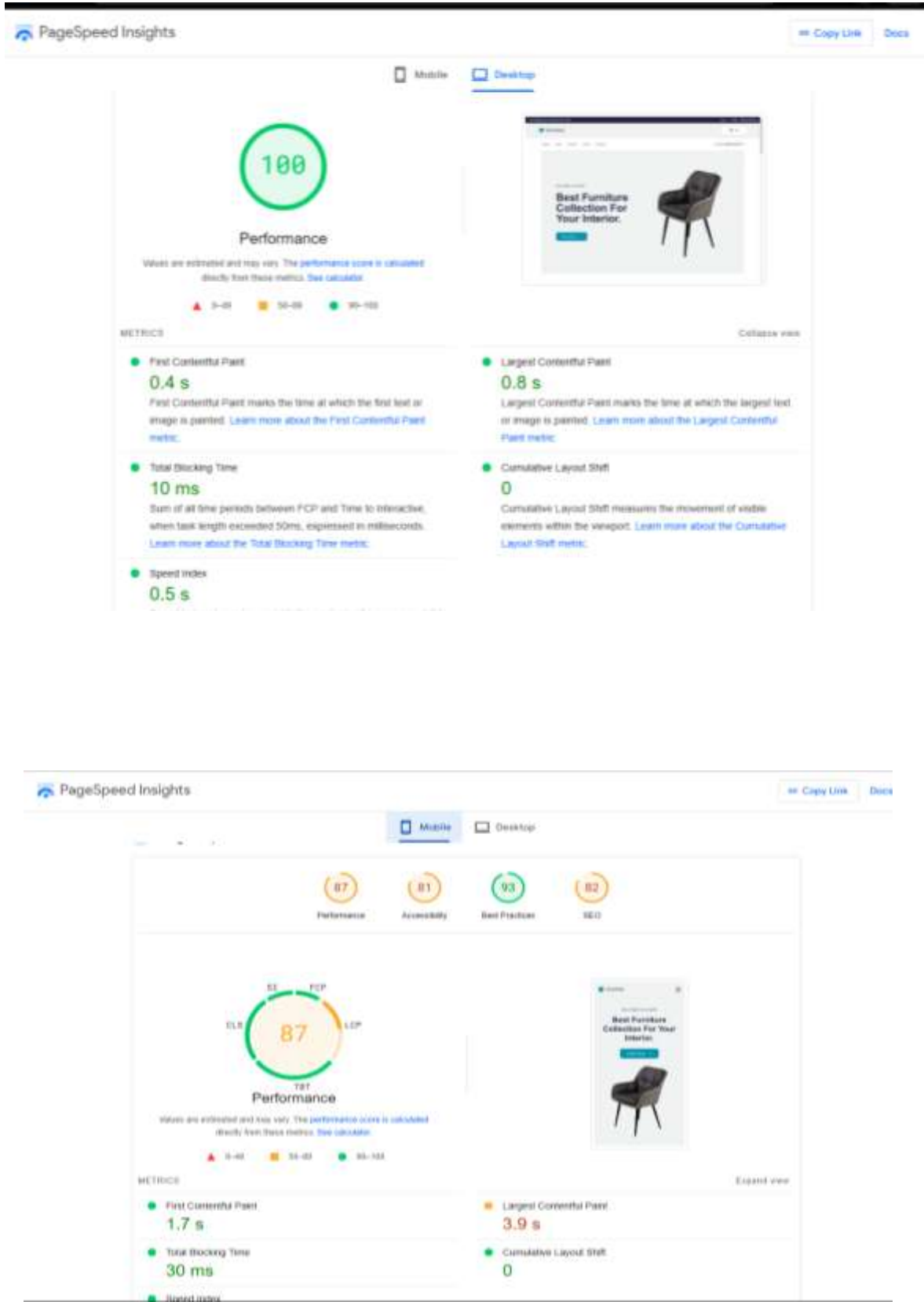   - **Solution:** Refined tailwind classes and thoroughly tested on multiple screen sizes.

4.Performance Optimization:

Objective: Enhance the website's performance for a faster and smoother user experience.

Optimizations Implemented:

- Reduced API calls by building helper functions to frequently accessed data.

- Implemented NextJS Image for images and components to reduce initial load times.

Lighthouse Testing Report For Comfy:

CSV TESTING REPORT FOR COMFY:

The tests validate core functionalities such as product listing, search, cart, and wishlist operations. They also assess advanced features like category filtering, API error handling, and responsiveness across devices. All tests passed successfully, with no issues found except for API error handling, which was gracefully managed. The detailed report ensures the system adheres to functional and user experience standards.

Test Case ID	Test Case Description	Test Steps	Expected Result	Actual Result	Status	Severity Level	Assigned To	Remarks
TC001	Product listing validation	Open product listing page > Verify product details	Products displayed correctly	Products displayed correctly	Passed	Low	-	No issues found
TC002	Product search bar	Enter a product name in the search bar > Click search	Products matching the query displayed	Products matching the query displayed	Passed	Medium	-	No issues found
TC003	Cart functionality	Add product to cart > Go to cart > Verify added product	Product added to the cart	Product added to the cart	Passed	High	-	No issues found
TC004	Wishlist functionality	Add product to wishlist > Go to wishlist > Verify added product	Product added to wishlist	Product added to wishlist	Passed	Medium	-	No issues found
TC005	Category filtration	Select a category > Verify products displayed	Products filtered by category	Products filtered by category	Passed	Low	-	No issues found
TC006	API testing and error handling	Disconnect API > Refresh page	Show fallback UI with error message	Error message shown	Passed	High	-	Handled gracefully
TC007	Responsive test	Open website on mobile, tablet, and desktop	Website should be responsive	Website responsive across all devices	Passed	Medium	-	No issues found