Day 5 - Testing, Error Handling, and Backend Integration Refinement - Tech Store PK

Today marked a crucial phase in preparing the marketplace for real-world deployment by refining performance, implementing error handling, and conducting rigorous testing. Our focus was on ensuring seamless backend integration, a flawless user experience, and comprehensive documentation.

Objectives:

1. Perform functional, non-functional, and security testing.
2. Implement robust error handling with user-friendly fallback messages.
3. Optimize performance metrics for speed and responsiveness.
4. Ensure cross-browser and cross-device compatibility.
5. Document testing results, issues, and resolutions professionally.

Step-by-Step Breakdown:

1. Functional Testing:

- Validating core features like product listing, filters, cart, and dynamic routing.
- Tools used: Postman for API testing.
- Verified accurate output against expected results for all components.

Use Cases:

- Ensure all components work as intended for a seamless user journey.
- Identify and resolve functionality gaps before deployment.

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2. Error Handling:

- Used try-catch blocks to handle API errors gracefully.
- Displayed fallback UI for missing data (e.g., "No products available").
- Logged errors for debugging and maintenance.

Use Cases:

- Improve user trust with clear error messages.
- Ensure system stability during unexpected scenarios.

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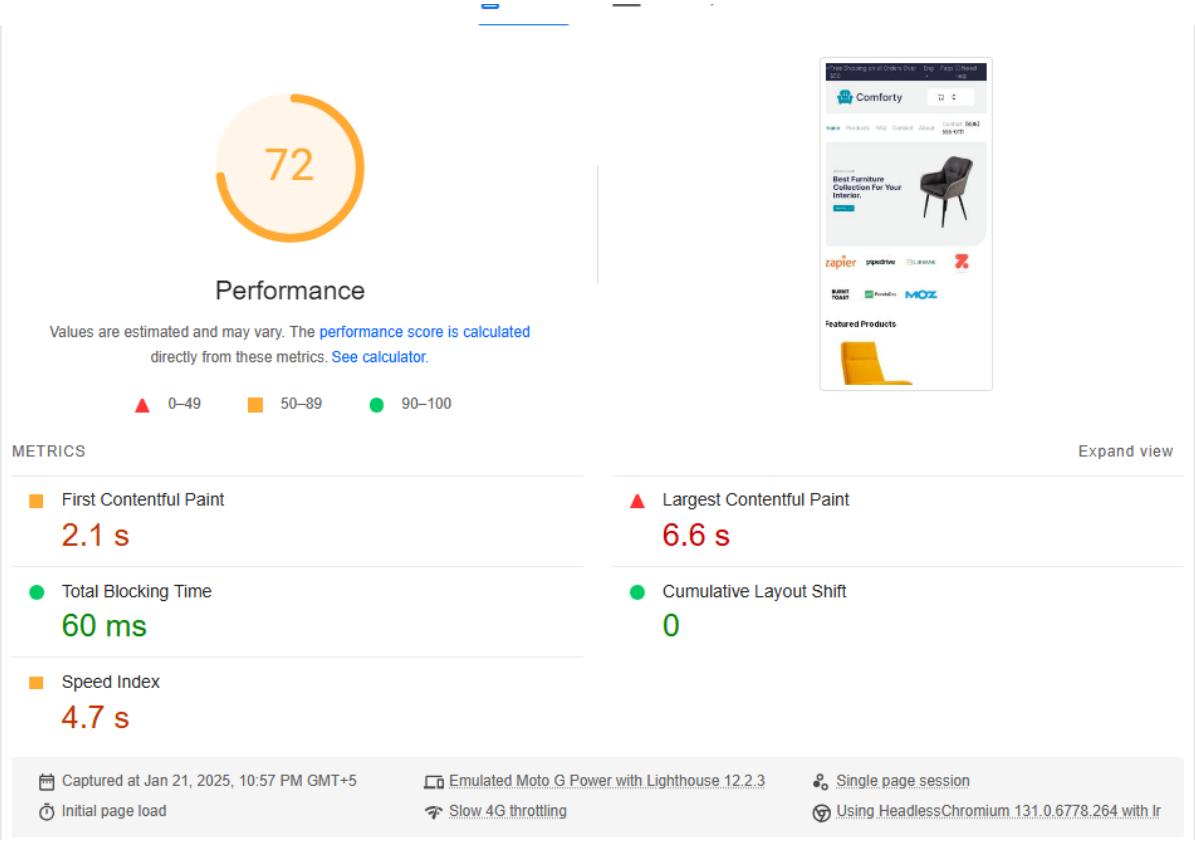
3. Performance Optimization:

- Optimized assets using Next Image, Next Link for avoid lazy loading.
- Identified bottlenecks with Google PageSpeed.
- Implemented caching and minimized JavaScript/CSS bundles.

Use Cases:

- Faster page loads to improve user retention.
- Reduce resource usage and enhance mobile performance.

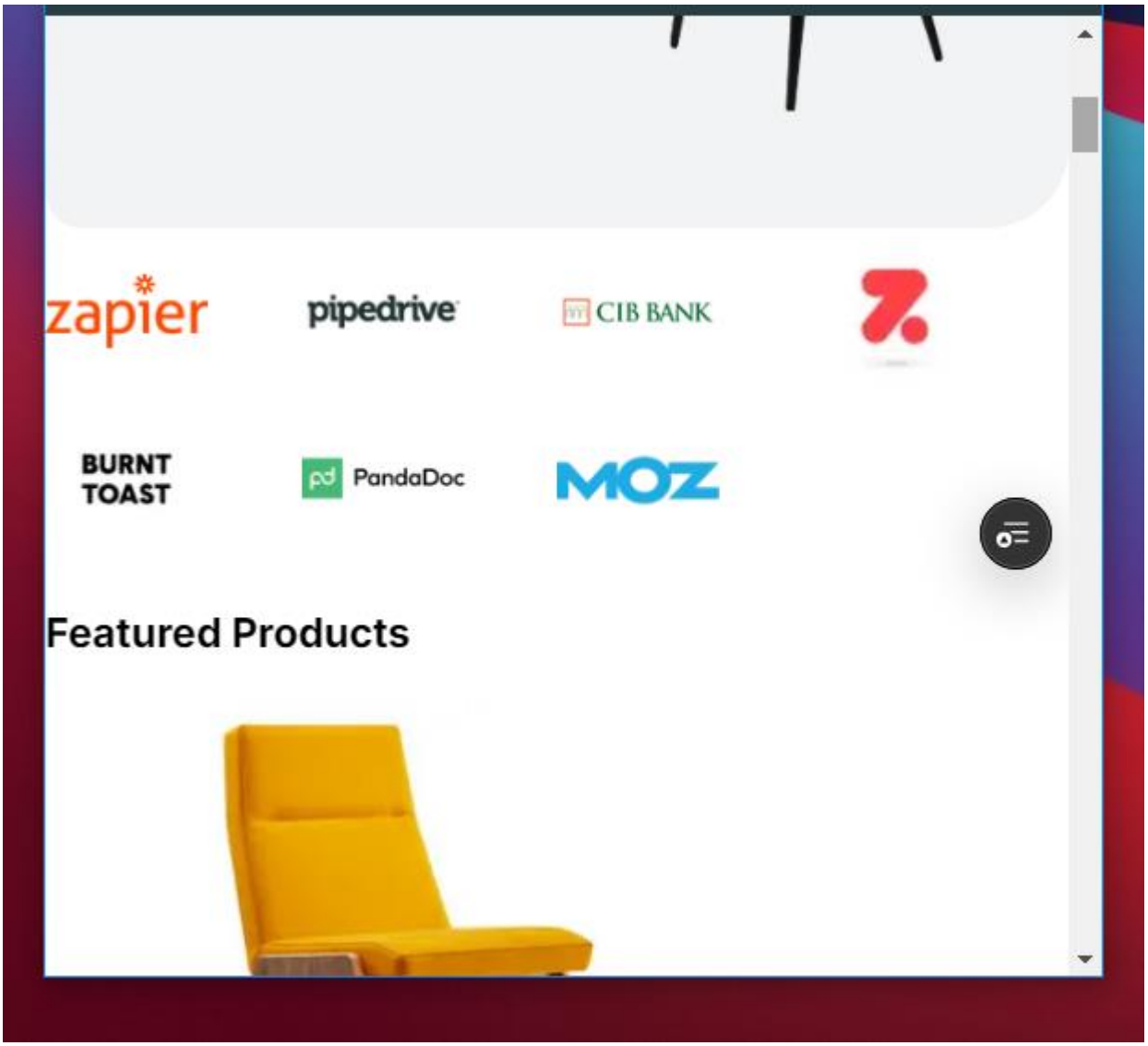


4. Cross-Browser and Device Testing:

- Tested on Chrome, Safari, and Edge.
- Verified responsiveness across desktop, tablet, and mobile.

Use Cases:

- Deliver a consistent experience across all platforms.
- Ensure device compatibility for a broader audience reach.



5. Security Testing:

- Validated input fields to prevent injection attacks.

- Secured API calls with HTTPS and environment variables.
- Tools: Zod/ React for validation.
- Created .env.local file for secret keys and API's.

Use Cases:

- Safeguard user data and maintain system integrity.
- Build trust with a secure and reliable platform.

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6. User Acceptance Testing (UAT):

- Simulated real-world scenarios like browsing and checkout.
- Gathered peer feedback to improve usability.

Use Cases:

- Align the marketplace with user expectations.
- Identify overlooked issues and refine workflows.

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7. Documentation Updates:

- Created a detailed CSV-based test report with structured test cases, results, and resolutions.
- A Detailed report summarizing key findings and optimizations.

Use Cases:

- Provide clear insights into testing outcomes.
- Ensure a solid reference for future maintenance.

Key Achievements:

✓ Fully tested and functional marketplace components.
✓ Robust error handling and fallback mechanisms.
✓ Optimized for performance, speed, and responsiveness.
✓ Verified compatibility across browsers and devices.
✓ Comprehensive documentation of testing and fixes.

Future Enhancements:

Admin Dashboard: Centralized control for products, orders, and users.
Payment Gateway: Secure integrations like Stripe or PayPal.
ShipEngine API: Real-time shipment tracking and updates.
User Profile Component: Personalized user experience.
Analytics Dashboard: Data-driven insights for growth.
Multilanguage Support: Broader audience reach.
Discounts & Promotions: Attract customers with deals and offers.
Social Media Sharing: Enhance product visibility online.
Gift Cards & Vouchers: Boost customer loyalty.
Customer Feedback: Improve service through user insights.

Day 5 was pivotal in preparing Tech Store PK for deployment, ensuring functionality, performance, and security. We are now one step closer to launching a cutting-edge e-commerce platform!