

Day 5: Testing, Error Handling, and Backend Refinement.

Objective

The goal of Day 5 is to ensure the furniture marketplace is ready for deployment through comprehensive testing, refining performance, and documenting findings. Key tasks include:

1. Thorough testing of core functionalities.
2. Establishing effective error-handling mechanisms.
3. Ensuring compatibility across various browsers and devices.
4. Optimizing performance, accessibility, and SEO.
5. Compiling detailed documentation of findings and resolutions.

Key Learning Outcomes

1. Validate all functionalities through functional and user acceptance testing.
2. Enhance website performance metrics using tools like Lighthouse.
3. Achieve high accessibility scores for inclusive user experiences.
4. Improve SEO to boost search engine visibility.
5. Prepare comprehensive documentation, including a CSV-based test report.

Implementation Steps

Step 1: Functional Testing

Description: Ensure the primary components function as expected.

Features Tested:

- Navigation links: Confirm all links work properly.
- Product listings and details: Verify accurate product display.
- Shopping cart: Test add, update, and remove functionalities.
- Wishlist: Allow users to add, view, and manage their favorite items in a list.
- Filter: Enable users to refine their product search using filters like price, category, and rating.

Tools Used:

- Postman for API testing.
- React Testing Library for component testing.
- Cypress for end-to-end testing.

Step 2: Error Handling

Description: Implement measures to manage errors effectively and enhance

Approach:

- Use try-catch blocks for API error handling.
- Provide fallback UI elements (e.g., "No products available" when data is
- Gracefully manage failed API responses to maintain user trust and interf
- Log errors for debugging.

Step 3: Performance Optimization

Description: Address performance bottlenecks using tools like Google Light

Performance Metrics:

- Performance: 85
- Accessibility: 100
- Best Practices: 85
- SEO: 80

Key Improvements:

1. Reduce initial server response time (currently 632 ms).
2. Optimize images and serve next-gen formats (savings: 356 KiB).
3. Fix cumulative layout shift (CLS: 0.496).
4. Minimize unused JavaScript (savings: 28 KiB).
5. Implement lazy loading for large images.
6. Compress static assets and enable browser caching.

Step 4: Cross-Browser and Device Testing

Description : Verify functionality and rendering consistency across different

Browsers Tested:

- Chrome, Edge, Firefox.

Devices Tested:

- Desktop, tablet, mobile (via BrowserStack).

Focus Areas:

- Responsive design.
- Consistent navigation and interactivity.
- Accessibility features, including keyboard navigation and screen readers

Step 5: Security Testing

Description: Ensure the website is secure from vulnerabilities.

Key Actions:

- Sanitize user inputs to prevent SQL injection and XSS attacks.
- Use HTTPS for all API calls.
- Store sensitive data in environment variables.

- Conduct penetration testing to uncover hidden vulnerabilities.

Tools Used:

- Manual verification for additional vulnerabilities.
- OWASP ZAP for automated scanning.
- Burp Suite for penetration testing.

Step C: User Acceptance Testing (UAT)

Description: Simulate real-world scenarios to identify usability issues

Scenarios Tested:

- Browsing products.
- Adding/removing items from the cart.
- Completing the checkout process.
- Testing multi-step workflows for an intuitive experience.

Feedback Collected:

- Resolved minor UI inconsistencies.
- Streamlined workflows for better user experience.

Step 7: Documentation Updates

Description: Consolidate findings and actions into a detailed report.

Includes:

- Test case descriptions and results.
- Performance improvement steps.
- Security measures implemented.
- Additional insights into areas for future improvement.

CSV-Based Testing Report

Test Case ID	Description	Expected Result	Actual Result	Status	Severity
TC001	Test navigation links	All links navigate correctly	All links function as intended	Pass	Low
TC002	Verify product listing display	Products display correctly	Products display correctly	Pass	Medium

TC00 3	Test shopping cart functionality	Items add/remove/update correctly	Cart functions as expected	P a s s	Hi gh
TC00 4	Test wishlist functionality	Items add/remove correctly	Items add/remove correctly	P a s s	Medi um
TC00 5	Test Filter and SearchBar functionlity	Filter and SearchBar are working	Filter and SearchBar are working	P a s s	M ed ium
TC00 6	Analyze performance metrics	Performance score ≥ 90	Score: 80	F a il	Hi gh
TC00 7	Check accessibility features	Accessibility score ≥ 90	Score: 100	P a s s	M ed iu m
TC00 8	Evaluate SEO metrics	SEO score ≥ 90	Score: 75	F a il	M ed iu m

CSV Content

Test Case ID,Description,Expected Result,Actual Result,Status,
TC001,Test navigation links,All links navigate correctly,All 1
intended,Pass,Low,None

TC002,Verify product listing display,Products display correctl
correctly,Pass,Medium,None TC003,Test shopping cart functional
add/remove/update correctly,Cart functions as expected,Pass,Hi
TC004,Check Wishlist functionality,Items add/remove correctly,
correctly,Pass,Medium,None

TC005,Test Filter and SearchBar functionlity,Filter and Search
,Filter and SearchBar are working ,Pass,Medium,None

TC006,Analyze performance metrics,Performance score ≥ 90 ,Score
80,Fail,High,Optimization needed

TC007,Check accessibility features,Accessibility score ≥ 90 ,Sc
100,Pass,Medium,Ensure ongoing compliance

TC008,Evaluate SEO metrics,SEO score ≥ 90 ,Score:

75,Fail,Medium,Implement recommended SEO practices

Conclusion

Day 5 focused on enhancing reliability, performance, and user experience for the marketplace. Rigorous testing validated functionalities, while performance testing ensured accessibility and responsiveness. Remaining SEO enhancements and optimizations will refine the platform for deployment.

Future Recommendations:

- Continuously monitor performance scores through regular testing cycles.
- Introduce AI-driven recommendations for personalized user experiences.
- Conduct periodic security audits to ensure long-term protection.

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Optimization needed
Ensure ongoing compliance
Implement recommended SEO practices

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