

Testing, Error Handling, and Backend Integration Refinement Report

Project Overview: This report summarizes the tasks completed on Day 5, including testing, error handling, backend integration refinement, performance optimization, and documentation updates for the e-commerce platform.

1. Functional Testing:

Key Features Tested:

- **Search Bar:** Verified functionality with valid, invalid, and empty inputs. Results displayed correctly, with a fallback UI for no results.
- **Category Filtering:** Ensured accurate product filtering based on selected categories.
- **API Response Validation:** Validated API responses for normal, slow, and failed network conditions. Confirmed fallback UI for empty or failed responses.
- **Product Details Display:** Tested dynamic routing to individual product pages.
- **Add to Cart:** Checked cart updates for adding, removing, and updating quantities.
- **Link Functionality:** Verified all internal and external links worked as expected.

Results: All core functionalities passed the defined test cases without errors.

Test Case Id	Testcase details	Result	Status
TC001	Search products by name or tag	Product searched	Passed
TC002	Sort by Category	Sort by category	Passed
TC003	API response validation	Done	Passed
TC004	Cart functionality	Cart all functionality	Passed
TC005	Link navigation	Routing	Passed

2. Error Handling:

Implemented Measures:

- **API Error Handling:** Used try-catch blocks for all API calls. Displayed user-friendly error messages like "Unable to load products. Please try again later."
- **Error Message Display:** For empty data responses, displayed "No products found" and similar messages.

- **Network Errors:** Tested scenarios with no internet connectivity and ensured graceful degradation of features.

3. Performance Optimization:

Steps Taken:

- **Asset Optimization:** Implemented lazy loading for large assets.
- **Code Optimization:** Minimized unused CSS and JavaScript. Enabled code-splitting for faster page load times.

Results: Faster initial page load. Improved user interaction time.

4. Security Testing:

Measures Implemented:

- **Vulnerability Scanning:** Conducted regular scans to identify and address potential security vulnerabilities.
- **Data Encryption:** Implemented encryption for sensitive data like passwords and payment information.
- **Authentication and Authorization:** Ensured robust authentication and authorization mechanisms to protect user accounts and data.
- **Input Validation:**
 - Used regular expressions for form validation (e.g., email and phone fields).
- **API Security:**
 - Ensured all API calls were made over HTTPS.

Results: No major security vulnerabilities detected. Security measures effectively implemented.

5. Cross-Browser and Device Testing:

Browsers Tested:

- Google Chrome, Microsoft Edge and Opera.

Devices Tested:

- Desktop, tablet, and mobile devices.

Tools Used:

- Developers tool and Manual testing on a physical devices.

Results:

- Verified consistent rendering and functionality across all platforms.

Overall, Day 5 was highly productive. We successfully completed testing, identified and addressed potential issues, and implemented performance and security optimizations. The e-commerce platform is now more robust, user-friendly, and secure.