

Day 5 - Testing and Backend Refinement

1. Introduction

This document outlines the testing, performance optimizations, error handling, and security improvements implemented in [Your Marketplace Name]. The goal is to ensure a fully functional, optimized, and secure marketplace for real-world deployment.

2. Functional Testing

- ✓ **Product Listing & Filtering** – Ensured correct product display
- ✓ **Search Functionality** – Verified accurate search results
- ✓ **Cart Operations** – Tested add/update/remove items from the cart
- ✓ **Checkout Process** – Verified secure and smooth checkout flow
- ✓ **User Authentication** – Ensured login/signup processes work properly

Example Test Case:

Test Case ID	Test Description	Expected Result	Actual Result	Status	Severity	Remarks
TC-001	Product listing loads correctly	Products display properly	Products loaded successfully	Passed	Low	No issues detected
TC-002	Search returns accurate results	Relevant products appear	Correct products displayed	Passed	Medium	Works as expected
TC-003	Checkout process completes	Order placed successfully	Checkout completed	Passed	High	Tested with multiple users

3. Error Handling

Implemented Fixes:

- ✓ **API Error Handling:** Wrapped API calls in `try-catch` blocks.
- ✓ **Fallback UI:** Display "No Products Available" message when API returns no data.

Example Code Snippet (Handling API Errors):

```
<div className={cn("flex flex-col items-center justify-center py-10 min-h-80 space-y-4 text-center bg-gray-100 rounded-lg w-full mt-10 ", className)}>
    <motion.div
        initial={{ opacity: 0, y: -20 }}
        animate={{ opacity: 1, y: 0 }}
        transition={{ duration: 0.5 }}>
        <h2 className='text-2xl font-bold text-gray-800'>No Products Available</h2>
    </motion.div>
</div>
```

```

        </motion.div>
        <motion.p className='text-gray-600' initial={{ opacity: 0 }} animate={{ opacity:1}} transition={{delay:0.2 ,duration: 0.5 }}>
            We are sorry, but there are no products matching on the <span
            className="font-bold">{selectedTab}</span> category.
        </motion.p>
        <motion.div className='flex items-center text-blue-600 space-x-2
        ' animate={{scale: [1, 1.1, 1]}} transition={{duration: 1.5, repeat: Infinity}}>
            <Loader2 className='w-4 h-4 animate-spin' /> <span> We are restocking
            shortly. </span>
        </motion.div>
        <motion.p className='text-sm text-gray-600'
            initial={{ opacity: 0 }}
            animate={{ opacity:1}}
            transition={{delay:0.4}}>
            Please check back later or explore our other categories.
        </motion.p>
    </div>

```

4. Performance Optimization

Performance Testing Tools Used:

- **Google Lighthouse**
- **GTmetrix**
- **WebPageTest**

Performance Scores (Before & After Optimization):

Metric	Before	After
Performance	62	97
Accessibility	80	85
Best Practices	87	96
SEO	75	100

5. Cross-Browser & Device Compatibility

Browsers Tested:

- ✓ **Google Chrome**
- ✓ **Microsoft Edge**

Devices Tested:

- ✓ **Desktop (Windows, macOS)**
- ✓ **Tablets (iPad, Android Tablets)**
- ✓ **Mobile (iOS & Android Phones)**

Testing Tools Used:

- **BrowserStack** – Cross-browser testing
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6. Security Measures

- **HTTPS:** Ensured that all communication is done over HTTPS to protect sensitive data.
 - **API Key Handling:** API keys are stored securely in environment variables, never exposed in the frontend code.
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7. User Acceptance Testing (UAT)

Real-World Scenario Testing:

- Simulated **customer journey** (browsing, searching, adding to cart, checkout).
- Gathered feedback from peers & users for **UX/UI improvements**.

Feedback & Improvements Made:

- ✓ **Checkout flow improved** – Faster & fewer steps.
 - ✓ **Search bar accuracy improved** – More relevant results.
 - ✓ **Error messages simplified** – User-friendly error handling.
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8. Conclusion

With comprehensive testing, security improvements, and performance optimizations, [Your Marketplace Name] is now **fully tested and ready for deployment**.

CSV Report:

	A	B	C	D	E	F	G	H	I	J	K
1	Test Case ID	Test Case Descr	Test Steps	Expected Result	Expected Result	Status	Severity Level	Assigned To	Remarks		
2	TC001	Product listing	Open homepage	Products should be listed	Products should be listed	Pass	Low	-	All products displayed correctly		
3	TC002	Search function	Enter product name	Relevant products should be shown	Relevant products should be shown	Pass	Low	-	Search results accurate		
4	TC003	Cart operations	Add a product to cart	Product should be added to cart	Product should be added to cart	Pass	Low	-	Cart functionality smooth		
5	TC004	Checkout process	Select product	Order should be placed	Order should be placed	Pass	Medium	-	No payment issues detected		
6	TC005	API error handling	Disconnect internet	Show 'No internet'	Show 'No internet'	Pass	Medium	-	Fallback UI works fine		
7	TC006	Cross-browser compatibility	Open site in Chrome	Website should work	Website should work	Pass	Low	-	Tested on major browsers		
8	TC007	Mobile responsiveness	Open site on mobile	Website should work	Website should work	Pass	Low	-	Design adapts well		
9	TC008	Security testing	Enter invalid data	Validation errors shown	Validation errors shown	Pass	Medium	-	Validation prevents invalid input		
10	TC009	Secure API calls	Check API requests	All API calls successful	All API calls successful	Pass	High	-	Secure API implementation confirmed		
11	TC010	User authentication	Login with valid credentials	Login should work	Login should work	Pass	Medium	-	Authentication tested with various inputs		
12	TC011	Lighthouse Performance	Run Lighthouse	Performance score	Performance score	Pass	Medium	-	Further optimization possible		

Performance Report: Screenshots of Lighthouse, GTmetrix, etc.

