

# ***Day 5-Comprehensive Report on Testing, Error Handling, and Backend Refinement***

## **1. Introduction**

This report consolidates the insights and progress made on **Day 5** of the FurniCo Furniture Marketplace project. The primary focus was on testing, debugging, error handling, and optimizing backend performance to prepare the platform for real-world deployment. Key objectives included:

1. Validating system functionality through rigorous testing.
2. Enhancing error handling mechanisms for better user experience.
3. Tuning platform performance to ensure responsiveness and scalability.
4. Ensuring cross-browser and device adaptability.
5. Collecting and implementing feedback from User Acceptance Testing (UAT).

1	TesttCase	TestCaseD	TestSteps	Expected	Actual Res	Status	Severity Le	Assigned T	Remarks		
2	TC001	Validate P	Open proc	Products c	Product di	Passed	Low	-	No issue		
3	TC002	Test API e	Disconnec	Show fallb	Error mes	Passed	Medium	-	Handle gracefully		
4	TC003	Checking c	Add produ	Cart upda	Cart upda	Passed	High	-	Works as expected		
5	TC004	Ensure res	Resize bro	Layout adj	Responsiv	Passed	Medium	-	Test successfully		
6	TC005	VerifiedDy	Product>p	Shows eve	Shows eve	Passed	Medium	-	As expected		
7	TC006	Validate Fi	Apply filte	Filters and	Accurate r	Passed	High	-	Works as expected		
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## 2. Key Achievements

### A. Functional Testing

**Objective:** Ensure seamless operation of core features.

**Tools Used:**

- **Postman:** API testing.
- **Jest & Enzyme:** UI component validation.
- **Cypress:** End-to-end workflow testing.

**Features Evaluated:**

- **Navigation Flow:** Verified menu links and page transitions.
- **Product Page:** Confirmed accurate filtering and display of products.
- **Cart Operations:** Ensured smooth addition, removal, and updating of cart items.

- **User Account Functions:** Validated profile creation and management.
  - **Checkout Workflow:** Simulated complete order processes.
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## **B. Enhanced Error Handling**

**Objective:** Minimize disruptions by providing robust fallback options.

### **Strategies Implemented:**

1. Centralized error logging for simplified debugging.
2. Clear error messages (e.g., "Product currently unavailable").
3. User alerts for stock shortages and system issues.
4. Restricted checkout for out-of-stock items.

### **Example:**

- If an item is unavailable, the system prominently displays “Item is out of stock” and disables checkout.
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## **C. Performance Tuning**

**Goal:** Optimize load times and responsiveness.

**Improvements:**

- Reduced API response times.
  - Introduced lazy-loading for images.
  - Compressed assets (CSS/JavaScript) for faster page loads.
  - Implemented caching strategies for static content.
  - Achieved a **90+ accessibility score** on **Lighthouse**.
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## **D. Device and Browser Compatibility**

**Objective:** Ensure platform reliability across devices and browsers.

**Testing Platforms:**

- **Browsers:** Chrome, Firefox, Safari, and Edge.
- **Devices:** Smartphones, tablets, and desktops.

**Results:**

- Maintained responsiveness across all screen resolutions.
- Verified compatibility with accessibility tools like screen readers.

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## E. User Acceptance Testing (UAT)

**Purpose:** Simulate real-world usage and gather feedback.

**Scenarios Tested:**

- Browsing product categories.
- Adjusting cart items.
- Processing payments using diverse methods.

**Feedback Implemented:**

1. Improved the visibility of "Add to Cart" buttons.
2. Streamlined the checkout process for speed.

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## 3. Testing Summary

Test No.	Feature Tested	Expected Outcome	Actual Outcome	Status	Priority	Notes
T001	Navigation consistency	Links direct accurately	Successful	Pass	Low	None
T002	Product visibility	Accurate product rendering	Verified	Pass	Medium	None
T003	Dynamic Working	Pages render without issues	Functional	Pass	High	None
T004	Cart functionality	Seamless add/remove operation	Confirmed	Pass	High	None

Test No.	Feature Tested	Expected Outcome	Actual Outcome	Status	Priority	Notes
T005	Login/SignUp	Page renders successfully	404 Error	Fail	Low	Under construction
T006	Performance benchmarks	Lighthouse score $\geq 98$	Score: 94	Fail	Medium	Requires tuning
T007	Accessibility	Lighthouse score $\geq 90$	Score: 90	Pass	Medium	Maintain compliance
T008	SEO optimization	Lighthouse score $\geq 90$	Score: 100	Pass	High	None

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## 4. Final Notes

The comprehensive efforts in testing and refinement ensured the platform is robust, scalable, and user-friendly. Error handling, performance tuning, and cross-platform compatibility were key areas of focus, with measurable improvements across all metrics.

### Next Steps:

1. Finalize SEO enhancements.
2. Automate performance monitoring processes.
3. Incorporate user behavior analytics for enhanced UX.