

Day 5: Testing and Backend Refinement

Tasks:

• **Step-1 Functional Testing:**

1. Test Core Features:

- Product Listing:

Verified that all products are displayed correctly on the homepage and other listing pages without any issues.

- Filters and Search:

Yet to do filters and search functionality thoroughly to ensure accurate results based on user inputs, to make sure it's working perfectly.

- Cart Operations:

Checked all cart operations, including adding, updating, and removing items. Everything is functioning as expected without errors.

- Dynamic Routing:

Confirmed that individual product detail pages load correctly with dynamic routing. Each product displays the correct data without any glitches.

2. Testing tools used:

- API Validation: Used Postman to thoroughly test every API call, ensuring all endpoints are working perfectly and returning the expected responses without any issues.

3. Functional Testing:

- Write Test Cases:

Created detailed test cases for each feature, covering all possible scenarios, including edge cases.

- Simulate User Actions:

Simulated user interactions such as clicks, form submissions, and navigation to ensure the application behaves as expected.

- Validate Outputs:

Compared the actual output of each feature against the expected results to verify accuracy and correctness.

• Step-2 Error Handling:

1. Add Error Messages:

- Error Handling:

Implemented error messages using `try-catch` blocks to provide a seamless and user-friendly experience during failures.

- Custom UI:

Added a custom message ("No Products Available") to inform users when data is unavailable.

- Loader:

Included a loading spinner to enhance the user experience while data is being fetched.

• Step-3 Performance Optimization:

- Optimized Assets:

- Compressed images using tools like TinyPNG or ImageOptim to reduce file sizes.
- Implemented lazy loading for large images and assets to improve page load speed.

- Performance Analysis:

- Used Lighthouse to identify and address speed and performance bottlenecks, initially scoring a 60% performance rating.
- Applied fixes such as reducing unused CSS, enabling browser caching, and optimizing JavaScript bundles.

- Load Time Testing:

- Measured initial load and interaction times to ensure smooth performance.
- Achieved an initial page load time of under 2 seconds for better user experience.

Results:

- Successfully increased the performance score to 84% after implementing these optimizations, the main things that was causing performance issue was the images so yeah.

• Step-4 Responsiveness:

- Browser Testing:

- Tested the application on Chrome and Edge to ensure consistent rendering and functionality across all major browsers.

- Device Testing:

- Manually tested the application on a physical mobile device to verify a smooth user experience.

• Step-5 Security and User Acceptance Testing (UAT):

- Input Validation:

- Will sanitize all user inputs to prevent SQL injection and XSS attacks.
- Plan to use regular expressions to validate inputs like email, phone numbers, and other form fields.

- Secure API Communication:

- Ensured all API calls are made over HTTPS for secure data transmission.
- Sensitive information such as API keys are stored securely in environment variables.

- Testing Tools:

- Will utilize OWASP ZAP for automated vulnerability scanning.
- Will perform advanced penetration testing using Burp Suite to identify potential security flaws.

• Step 6: User Acceptance Testing (UAT)

- Purpose:

Simulated real-world user behavior to ensure a seamless user experience.

- Test Scenarios:

Tested critical flows such as browsing categories, adding items to the cart, and completing purchases.

- Results:

Verified that all functionalities, from login to checkout, are working perfectly without any issues.

• **Step 7 CSV-based testing report.**

Test No	Feature	Expected Outcome	Actual Outcome	Status	Priority
T001	Navigation consistency	Links direct accurately	Are accurate	Pass	Low
T002	Product rendering	Accurate product rendering	Are accurate	Pass	Medium
T003	Dynamic routing	All products details page	done	Pass	High
T004	Cart functionality	Seamless add/remove operation	done	Pass	High
T005	Login/SignUp	Add authentication feature	done	Pass	medium
T006	User who can add products to cart	Users who are logged in can only add products to cart	done	Pass	medium
T007	Performance	Score ≥ 80	achieved	Pass	High

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