
Day 5: Testing, Error Handling, and Backend Integration Refinement [E-Commerce (HELLO NIKE)]

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1. Introduction

This document provides a detailed report on the testing, error handling, and backend integration refinement for the marketplace project. It covers the executed test cases, performance optimizations, security measures, and challenges faced during development.

2. Functional Deliverables

The following components were tested for functionality and responsiveness:

- **Wishlist Feature:** Users can add and remove products from their wishlist.



Nike Air Force 1 Mid '07

Men's Shoes

The Nike Air Force 1 Mid '07 delivers timeless style with premium leather and mid-cut design. Perfect for everyday wear, it provides exceptional comfort and durability. The iconic Air-Sole cushioning adds responsive support for long-lasting performance.

PKR: 10795

Color: White

Quantity

Add to Cart

Add to Wishlist 

Your Wishlist



Nike Air Force 1 Mid '07

Price: 10795 PKR

[View Product](#)

[Remove](#)

[Continue Shopping](#)

- Add to Cart Feature:** Users can add products to their cart and remove them if necessary. The cart maintains the selected items until checkout, ensuring a smooth shopping experience. Product quantities can also be adjusted within the cart.



Nike Air Force 1 Mid '07

Men's Shoes

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PKR: 10795

Color: White

Quantity

[Add to Cart](#)

[Add to Wishlist](#)

localhost:3000 says

Product added to cart! Do you want to view your cart?

[OK](#)

[Cancel](#)

Your Shopping Cart



Nike Air Force 1 Mid '07

PKR 10795 x 1

[Remove](#)

[Continue Shopping](#)

Cart Summary

Subtotal

PKR 10795.00


[Clear Cart](#)

[Proceed to Checkout](#)

- **Order Confirmation:** Order details are displayed correctly after checkout.


localhost:3000/checkout

Find a Shoe | Help



New & FeaturedMenWomenKidsSaleSNKRS

Checkout



Nike Air Force 1 Mid '07
PKR 10795 x 1

Continue Shopping

Order Summary

Subtotal**PKR 10795.00**

Place Order

Order Summary

Subtotal**PKR 10795.00**

Place Order

Order Placed Successfully!

Thank you for your purchase! We are processing your order, and you will be redirected to the homepage shortly.

Order ID: #12345
Estimated Delivery: 3-5 business days



Your order is confirmed and is being processed by our team. You will receive a confirmation email shortly.

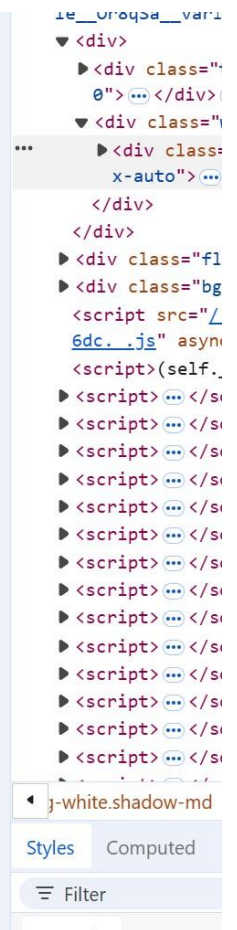
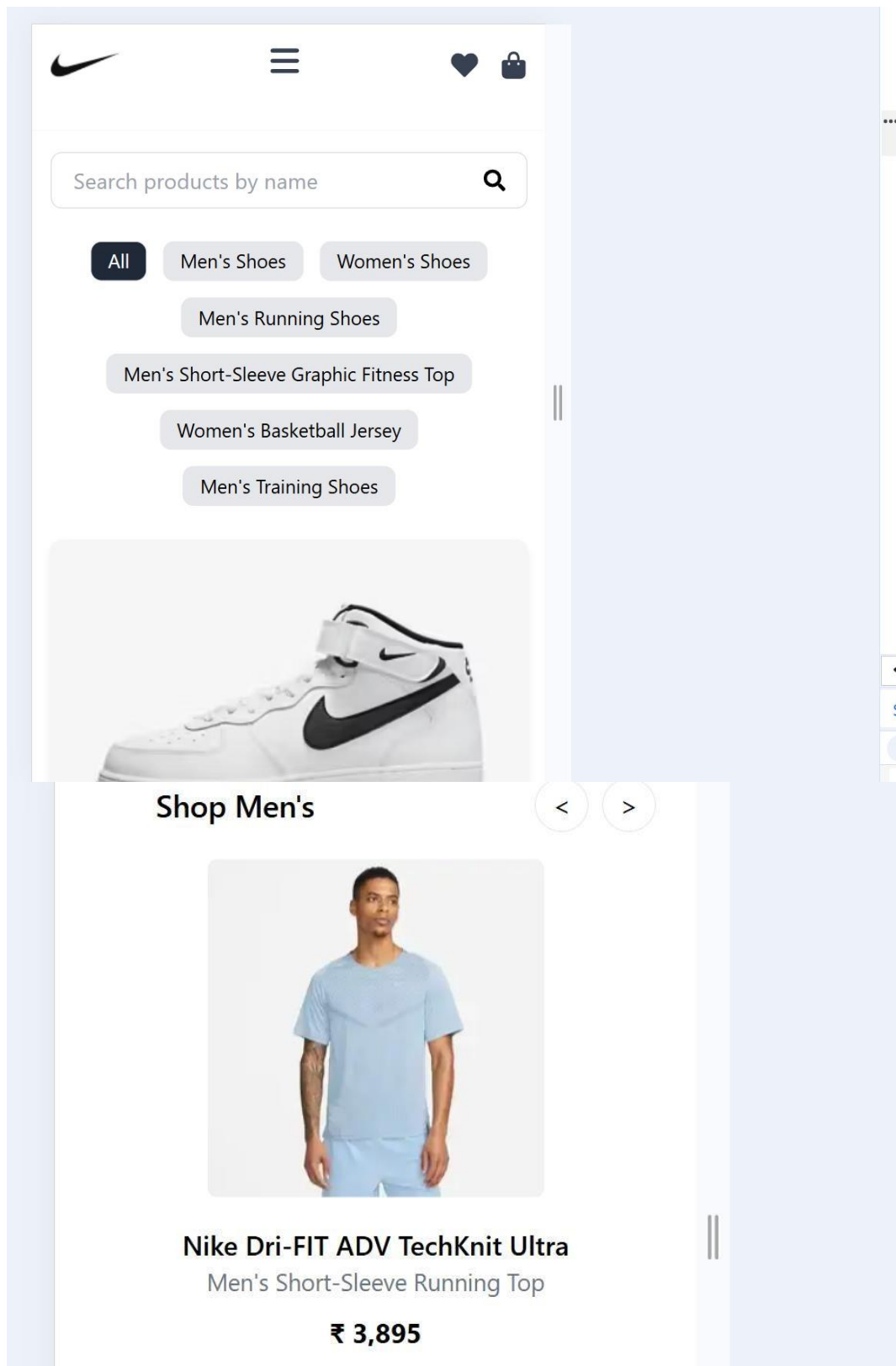
[Go to Homepage](#)

If you are not redirected in a few seconds, click the button above.

- **Filter by Category:** Users can filter products based on selected categories.



- **Mobile Responsiveness:** All pages adjust properly on different screen sizes.



3. Testing Report

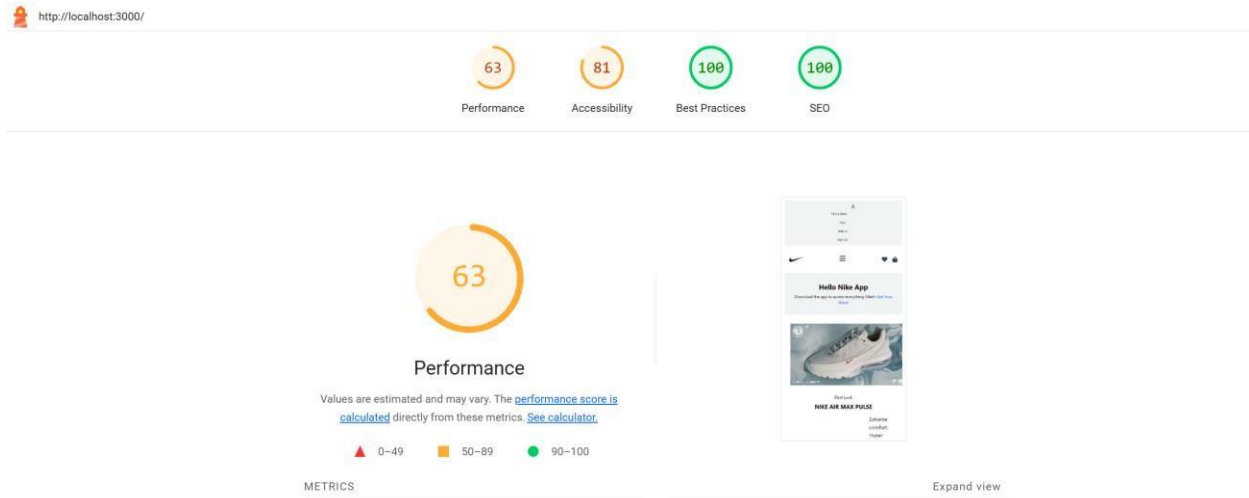
Test Case ID	Test Case Description	Test Steps	Expected Result	Actual Result	Status	Severity Level	Assigned To	Remarks
TC001	Validate product listing page	Open product page > Verify products	Products displayed correctly	Products displayed correctly	Passed	High	-	No issues found
TC002	Test API error handling	Disconnect API > Refresh page	Show fallback UI with error message	Error message shown	Passed	Medium	-	Handled gracefully
TC003	Check cart functionality	Add product to cart > Verify cart contents	Cart updates with added product	Cart updates as expected	Passed	High	-	Works as expected
TC004	Ensure responsiveness on mobile	Resize browser window > Check layout	Layout adjusts properly to screen size	Responsive layout working as intended	Passed	Medium	-	Test successful

4. Performance Optimization

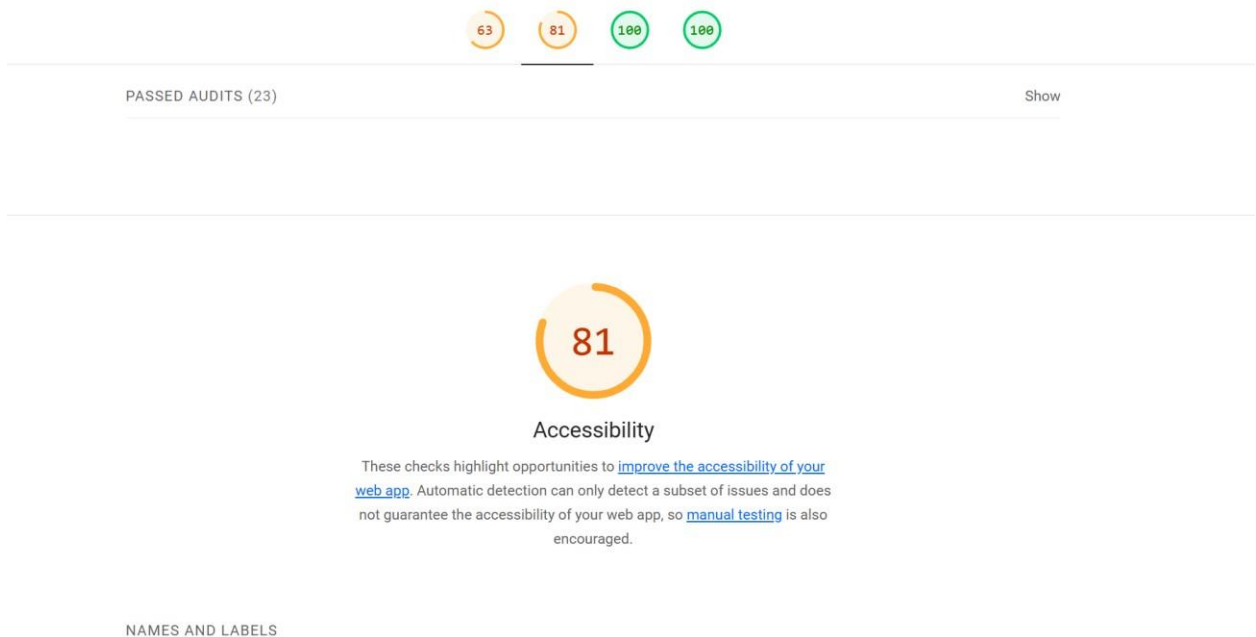
After implementing the core functionalities, various testing tools were used to analyze and optimize the website’s performance, accessibility, and security. Below are the key testing areas:



1. **Performance Testing** – Evaluated loading speed, rendering efficiency, and optimization using tools like Lighthouse and Performance Monitor.



2. **Accessibility Testing** – Ensured compliance with accessibility standards to provide an inclusive experience for all users.

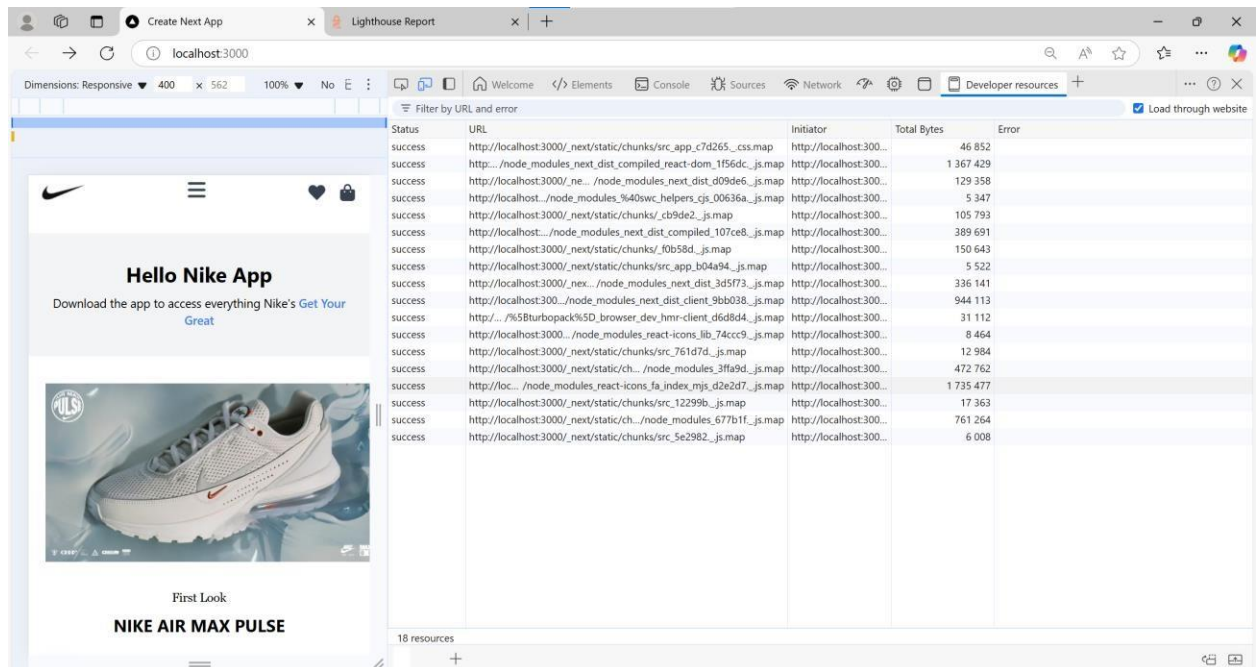


3. **Best Practices** – Verified adherence to web development best practices, including structured coding, SEO-friendly architecture, and user experience enhancements.

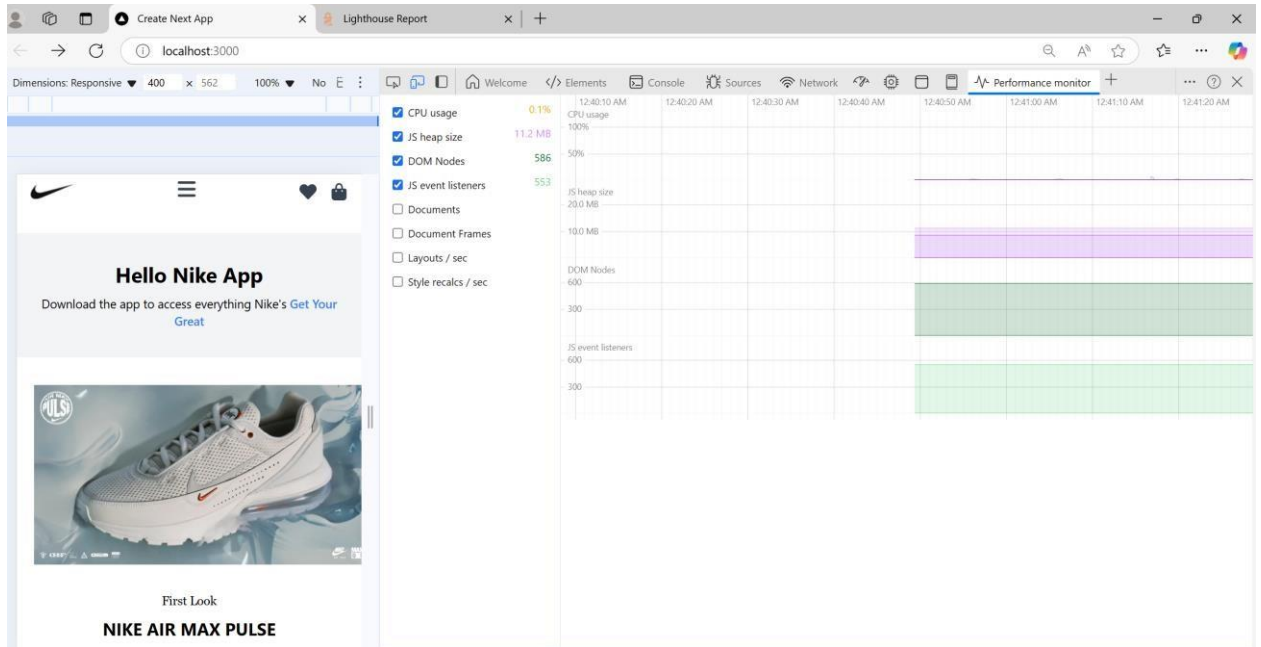


Best Practices

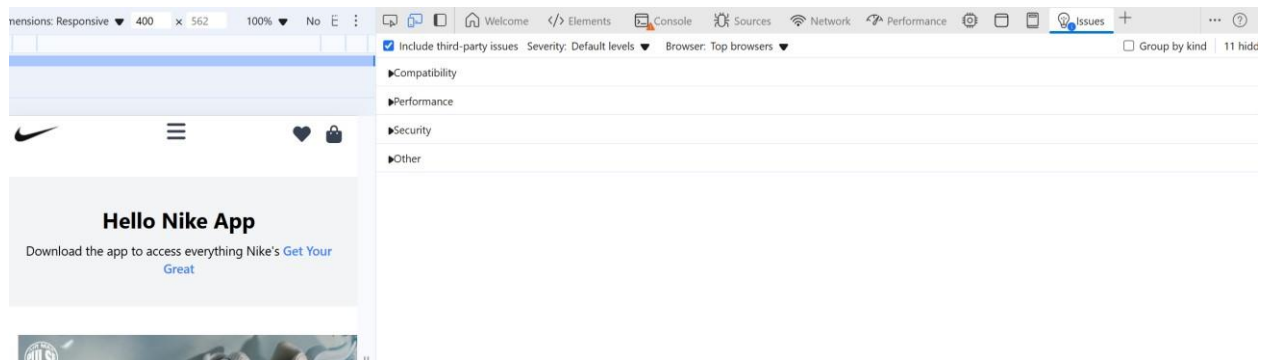
4. **Developer Resources** – Checked console logs, network activity, and debugging tools to optimize frontend and backend performance.



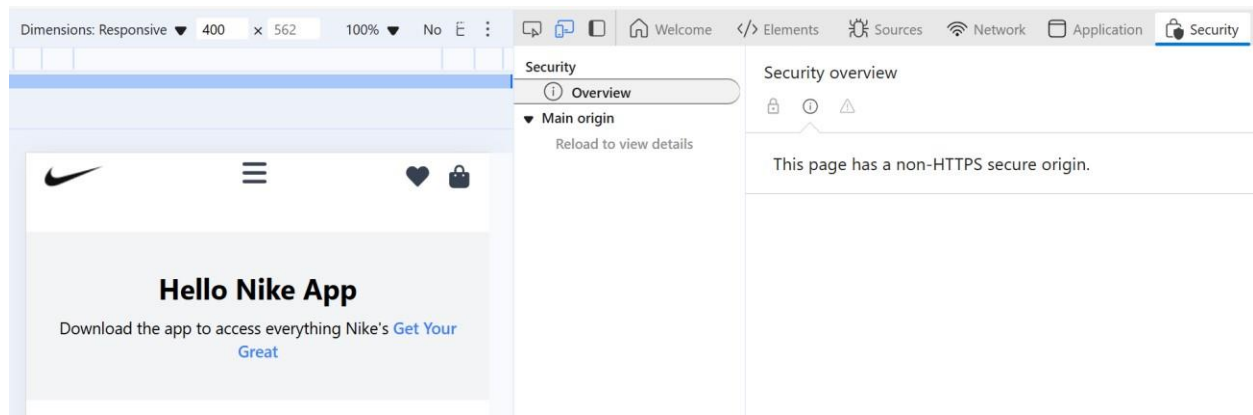
5. **Performance Monitor** – Used Chrome DevTools to analyze real-time performance metrics and eliminate bottlenecks.



6. Issues & Debugging – Identified and resolved errors, warnings, and potential vulnerabilities.



7. Security Testing – Conducted vulnerability assessments to ensure a secure browsing and checkout experience.



5. Challenges & Solutions

Challenge 1: API Response Delays

- **Issue:** Some API requests were taking longer than expected.
- **Solution:** Optimized database queries and implemented response caching.

Challenge 2: Wishlist Data Not Updating in Real-time

- **Issue:** Wishlist changes were not reflecting instantly.
- **Solution:** Used state management (Context API) to update the UI in real-time.

Challenge 3: Cart Management Issues

- **Issue:** Users were unable to update product quantities easily.
- **Solution:** Implemented real-time cart updates and validation checks.

Challenge 4: Mobile Responsiveness Issues

- **Issue:** Some UI elements were not displaying correctly on small screens. □
- **Solution:** Applied Tailwind CSS flexbox and grid layout fixes.

6. Conclusion

The marketplace project has successfully passed all major functional and performance tests. The backend integration has been refined to handle errors efficiently, and security enhancements have been applied. The project is now more robust, user-friendly, and optimized for a seamless shopping experience.

For further improvements, additional security testing and UI enhancements can be considered in future iterations.



