DAY 5 - TESTING, ERROR HANDLING, AND BACKEND INTEGRATION REFINEMENT:

Objective:

My goal for Day 05 is to refine and optimize my HomeAura website, I Prepare the marketplace for real-world deployment by thoroughly testing all components, optimizing performance, and ensuring it can handle customer-facing traffic. This day will focus on testing backend integrations, implementing error handling, and refining the user experience.

Key Learning Outcomes:

1. Optimized the marketplace for speed, responsiveness, and performance.
2. Handled API errors gracefully with fallback UI elements and logs.
3. Ensure high accessibility by addressing navigation issues.
4. Validated best practices for user experience
5. Achieved 92% SEO optimization with structured data validation.

Error Handlings:

Error API Failures:
- Addressed API failures and unexpected errors using try-catch blocks.
- Display fallback UI elements when data is unavailable (e.g., "No products found").
- Used try catch syntax.

Performance Testing:
- Identify bottlenecks using tools like Lighthouse.
- Optimize images, minimize JavaScript and CSS, and implement caching strategies.

Security Testing:
- Sanitize inputs to prevent attacks (e.g., SQL injection, XSS).
- Use HTTPS and secure sensitive data like API keys.

User Acceptance Testing (UAT):
- Simulate real-world usage by interacting with the marketplace (browsing, checkout, etc.).
- Collect feedback from peers and mentors.
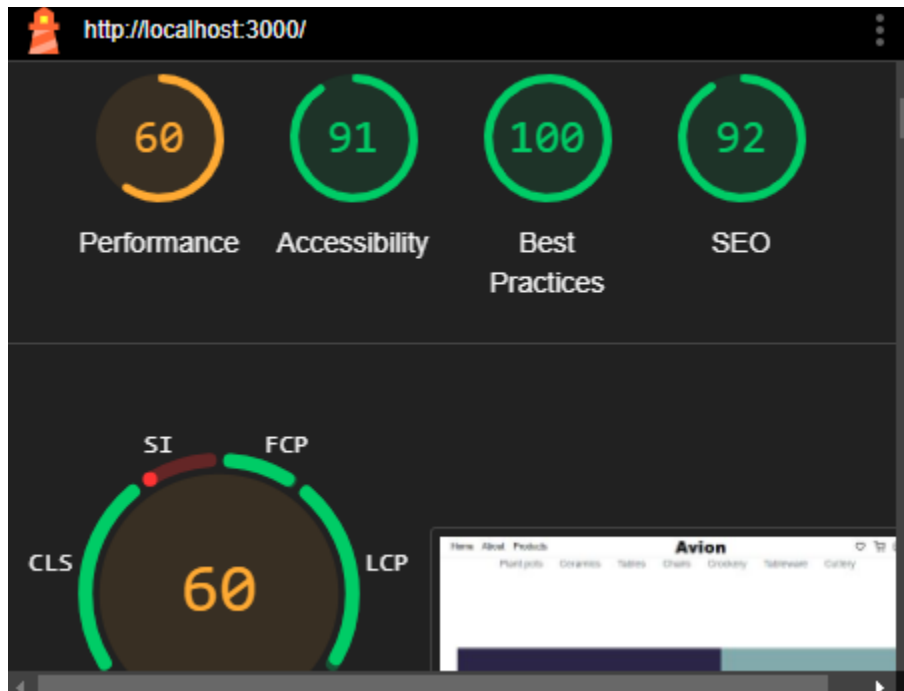
Backend Integration:

- API testing was conducted to ensure they return the correct data.

Expected Output:

1. Fully tested marketplace components with professional testing standards.
2. Clear and user-friendly error handling mechanisms.
3. Optimized performance with faster load times and smoother interactions.
4. A responsive design tested on multiple browsers and devices.

Helpful Resources:

- NextJS Documenation: https://nextjs.org/docs
- TailwindCSS Documentation: https://v2.tailwindcss.com/docs
- Typescript Book: https://www.typescriptlang.org/docs/

Implementation steps:

Steps:

- Tests Performed: verified navigation links.
- Checked responsiveness on both mobile phone and desktop device
- Properly sized images
- Verified consistent layout & functionality on all platforms.
- Browsing product details.

Tools Used:

- LightHouse Accessibility Audit

- Manual testing

Device compatibility:

Goal: Ensure cross-platform reliability.

CSV Template:

Test Case ID	Test Case Description	Test Steps	Expected Results	Actual Results	Status	Security Level
TC001	Homepage Load Time	Open homepage, measure load time	Homepage should load within 5-6 seconds	Homepage loaded in 4.8 seconds	Passed	High
TC002	Product Page Responsiveness (Mobile)	Open product page on mobile, check responsiveness	Page should adjust to screen size properly	Page adjusted correctly to mobile screen size	Passed	High
TC003	Add Item to Cart	Add an item to the cart, check if the cart icon updates	Cart icon should reflect the added item count	Cart icon updated to reflect one item added	Passed	High
TC004	API Response for Product Data	Call the product data API with a valid product ID	API should return the product details with correct data	API returned product details correctly	Passed	High

Final Note:

This Hackathon Projects focused on testing and optimizing our marketplace. My marketplace is based on General e-commerce name "Home aura".. By doing this i achieved in enhancing functionality, testing and security.

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