Day 5

Testing, Error Handling, and Backend Integration Refinement

Overview of My E-commerce Platform:

This document provides an in-depth overview of the development process for our e-commerce platform, which has been meticulously designed to deliver a dynamic, user-friendly, and scalable online shopping experience. Every aspect of the platform, from responsive product listings and intuitive navigation to seamless backend integrations, has been carefully crafted with a focus on performance, scalability, and customer satisfaction.

On Day 5 of the development cycle, the primary focus was on optimizing the platform for deployment. Extensive functional and security testing was conducted across multiple devices and browsers to ensure a consistent, flawless user experience. We implemented robust error handling mechanisms and fallback UI elements to gracefully manage API failures or unexpected issues, enhancing platform reliability.

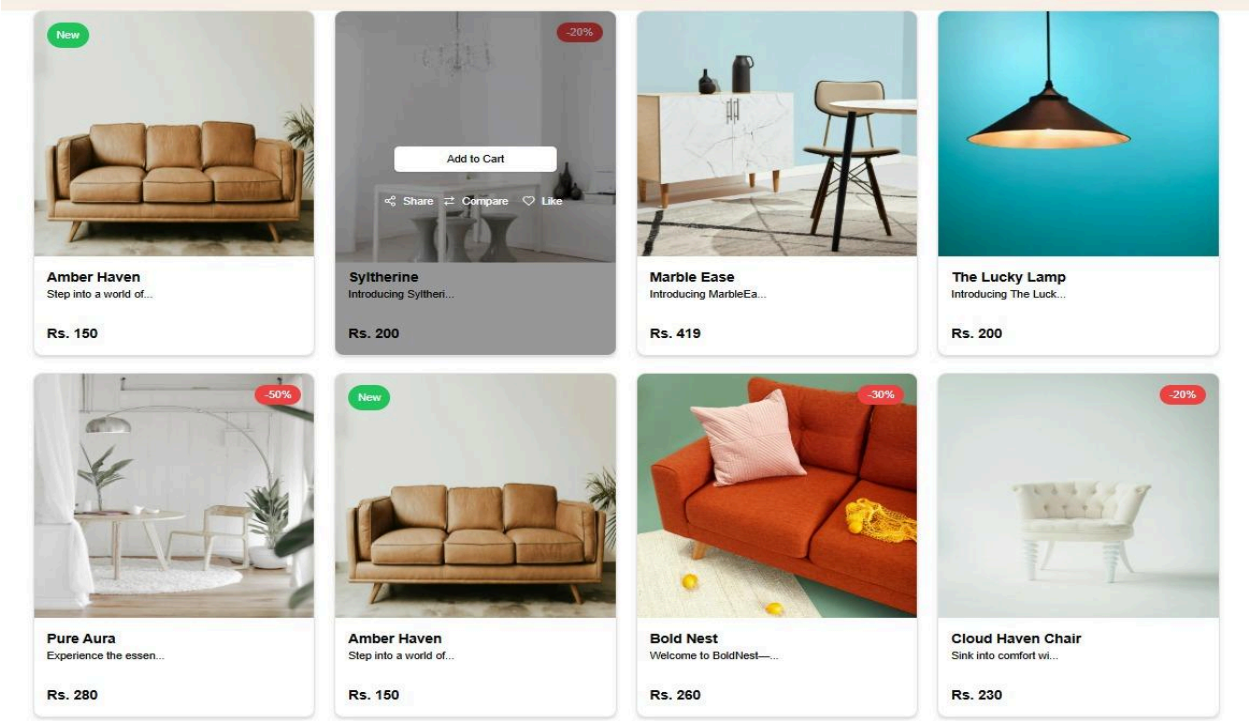
Additionally, the backend integration was refined for improved speed, responsiveness, and performance. We optimized database queries, API calls, and server-side processes to handle high traffic volumes efficiently. Comprehensive testing documentation was created, including a detailed CSV-based test report, to validate the platform's readiness for real-world usage. This document also includes results from load testing, user acceptance testing (UAT), and performance benchmarking to ensure the platform meets industry standards and customer expectations.

In preparation for deployment, we also focused on security measures, ensuring data protection, secure payment processing, and compliance with industry regulations. The platform is designed to scale easily, allowing for future feature enhancements and growth. This document serves as a testament to the hard work, dedication, and expertise invested in creating an e-commerce solution that not only meets but exceeds the needs of modern online shoppers.

1. Product Listing Page:

The Product Listing Page displays products in a grid or list format, featuring essential details like product name, price, image, and stock status. Users can sort products by price, popularity, or rating and apply filters such as size, color, or brand to refine their

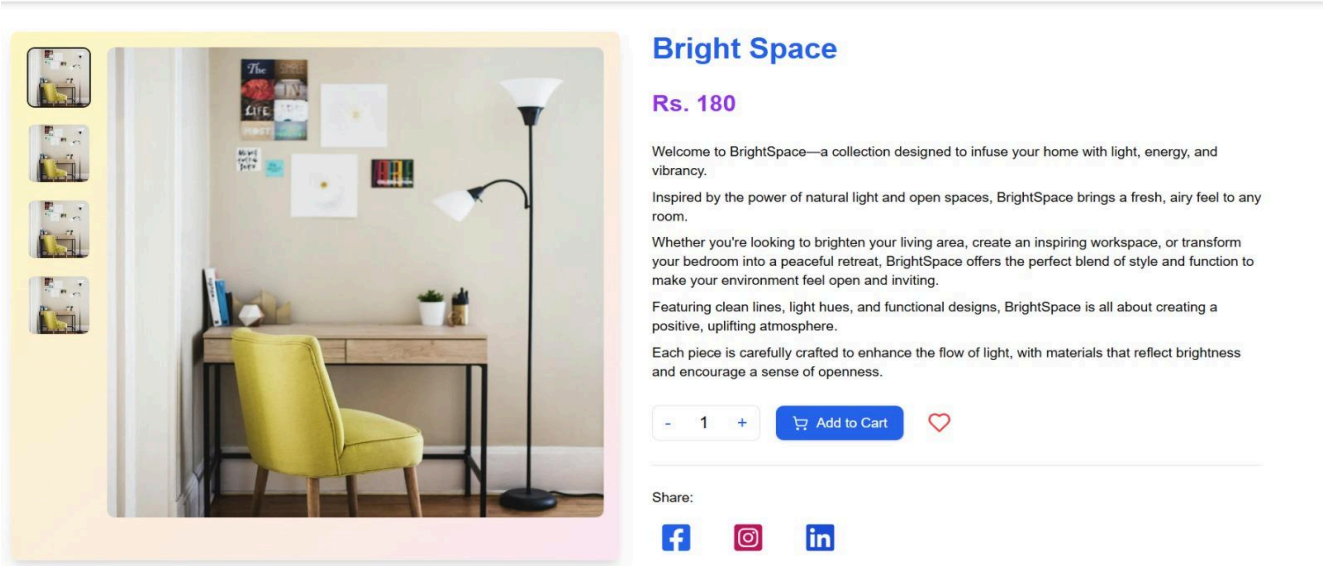
search. Pagination or "Load More" options manage large catalogs, ensuring easy navigation. The page is responsive, optimized for both desktop and mobile devices, providing a smooth browsing experience across all screen sizessizes.



2.Product Details Page:

The Product Details Page offers a comprehensive view of the product, featuring the product name, detailed description, and high-quality images for a clear understanding. It highlights key information such as price, available discounts, and stock status to ensure customers are well-informed. Users can select options like size, color, and quantity before adding the product to their cart or wishlist. Customer reviews and ratings provide valuable insights into the product's quality and help build trust. Related products are recommended to encourage further exploration and increase sales. Shipping details, including delivery times, costs, and methods, are clearly displayed to improve the user experience. The page may also include return policies, warranty information, and product care instructions for transparency. It is designed to be intuitive and user-friendly, with easy navigation to ensure a seamless shopping experience. The overall layout is responsive, ensuring the page looks great on both desktop and mobile devices. This

combination of features ensures that customers have all the information they need to make an informed and confident purchase decision.



3.Shopping Card:

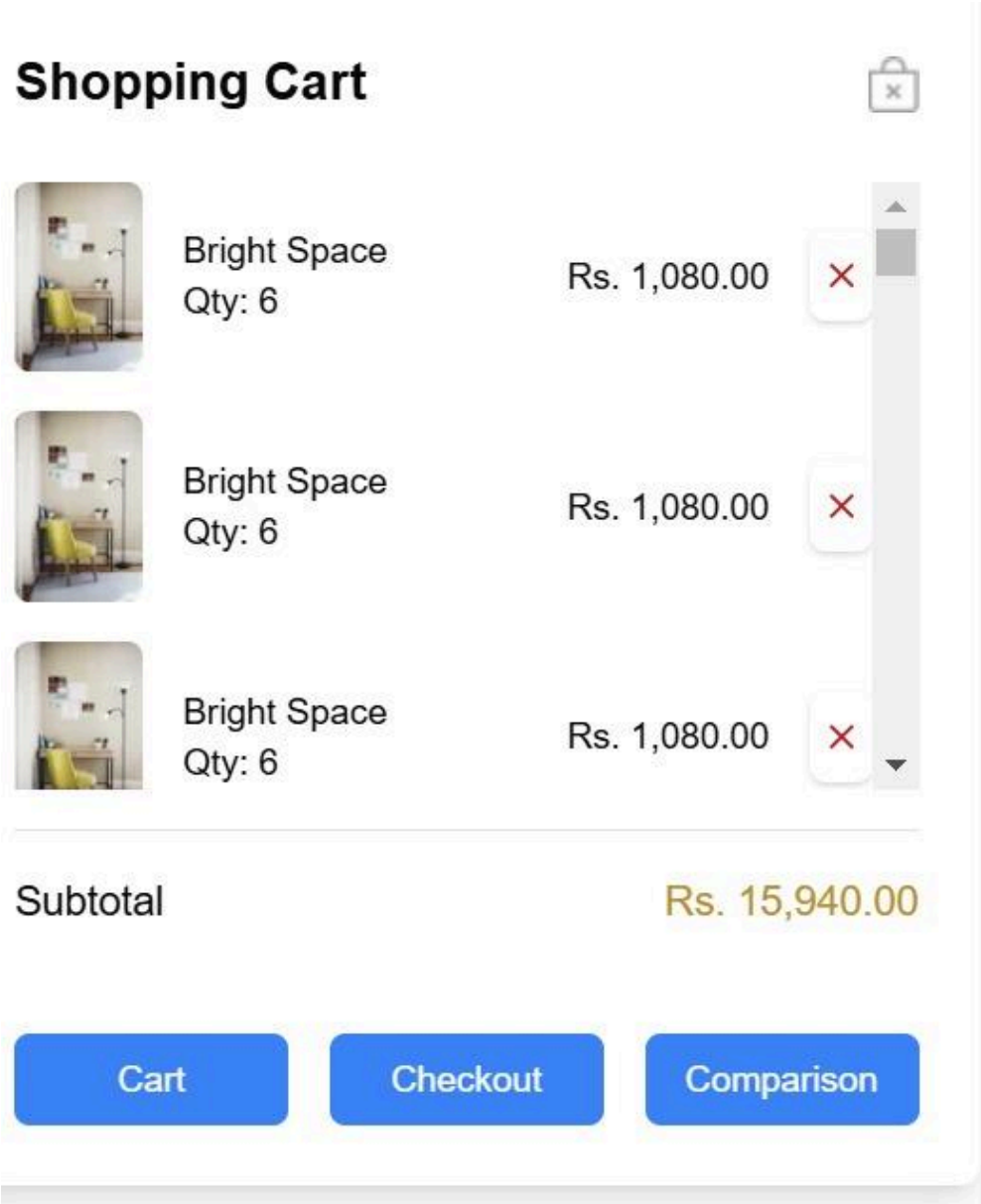
A shopping cart in an e-commerce platform is a crucial feature that allows users to select, store, and manage items they wish to purchase before proceeding to checkout. It provides an intuitive interface for users to add or remove products, adjust quantities, and view updated pricing. The cart typically includes important details such as product names, images, individual prices, total price, and any applied discounts.

In addition to basic functionality, many shopping carts offer features like saving items for later, showing product recommendations, and calculating taxes and shipping costs. The cart can also display stock availability, ensuring users are aware if an item is out of stock or low in inventory. To enhance user experience, the cart can be persistent across sessions, meaning it retains the user's selections even if they leave the site and return later. This can be achieved through local storage, cookies, or backend database integration.

Once users are ready to make a purchase, they can proceed to the checkout process, where they will enter shipping information, select payment methods, and review their order before finalizing the transaction. The shopping cart is often integrated with a secure payment gateway

to ensure safe and seamless transactions. Additionally, some platforms offer guest checkout options, enabling users to complete their purchase without creating an account.

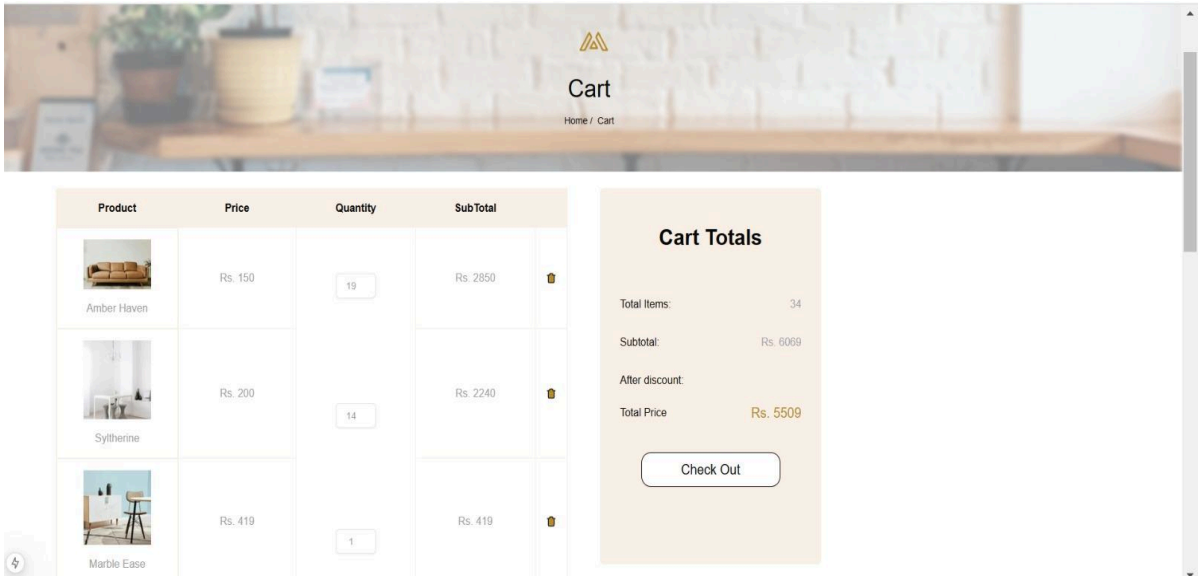
The cart plays a vital role in providing a smooth, efficient, and personalized shopping experience, reducing cart abandonment and increasing conversion rates. It also supports features like promotional codes, loyalty points, and gift card usage, adding more flexibility and value to the shopping process.



4.Cart:

A shopping cart is a key feature in e-commerce platforms that allows users to store items they wish to purchase. It enables customers to add, view, modify quantities, or remove items before proceeding to checkout. The cart displays essential details such as product name, price, quantity, and total cost, offering a clear overview of the selections. Users can apply discount codes, view taxes, and calculate shipping costs directly in the cart.

The cart persists across sessions, so items remain stored even if the user leaves the site and returns later. This is achieved through local storage or backend databases. It may include features like "Save for Later" for future purchases and product recommendations based on the cart contents. Once ready, users can proceed to checkout to enter shipping information, choose a payment method, and finalize the purchase. Secure payment gateway integration ensures safe transactions, making the shopping experience smooth and efficient.

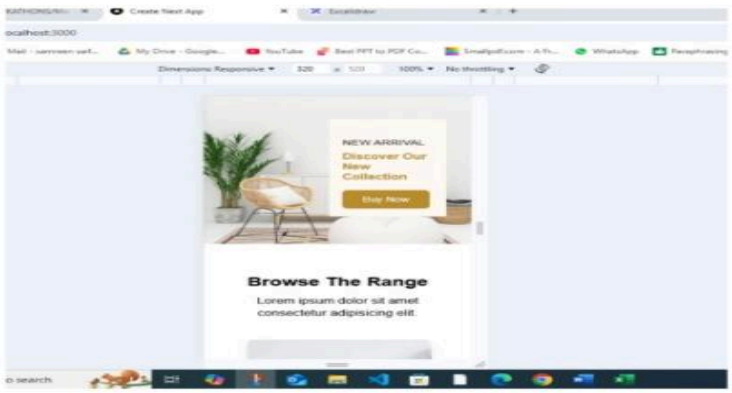


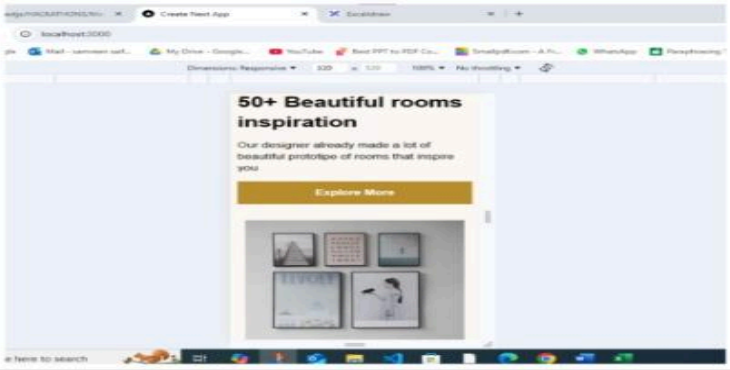
5.Responsive Website:

A responsive website is designed to adapt seamlessly to various screen sizes and devices, ensuring an optimal user experience across desktops, tablets, and smartphones. It

automatically adjusts the layout, images, and content based on the user's device, providing easy navigation and readability. The design elements are fluid, scaling to fit different screen resolutions without compromising functionality. Responsive websites improve user engagement by offering consistent performance and accessibility. They also enhance SEO,search engines prioritize mobile-friendly websites in rankings.

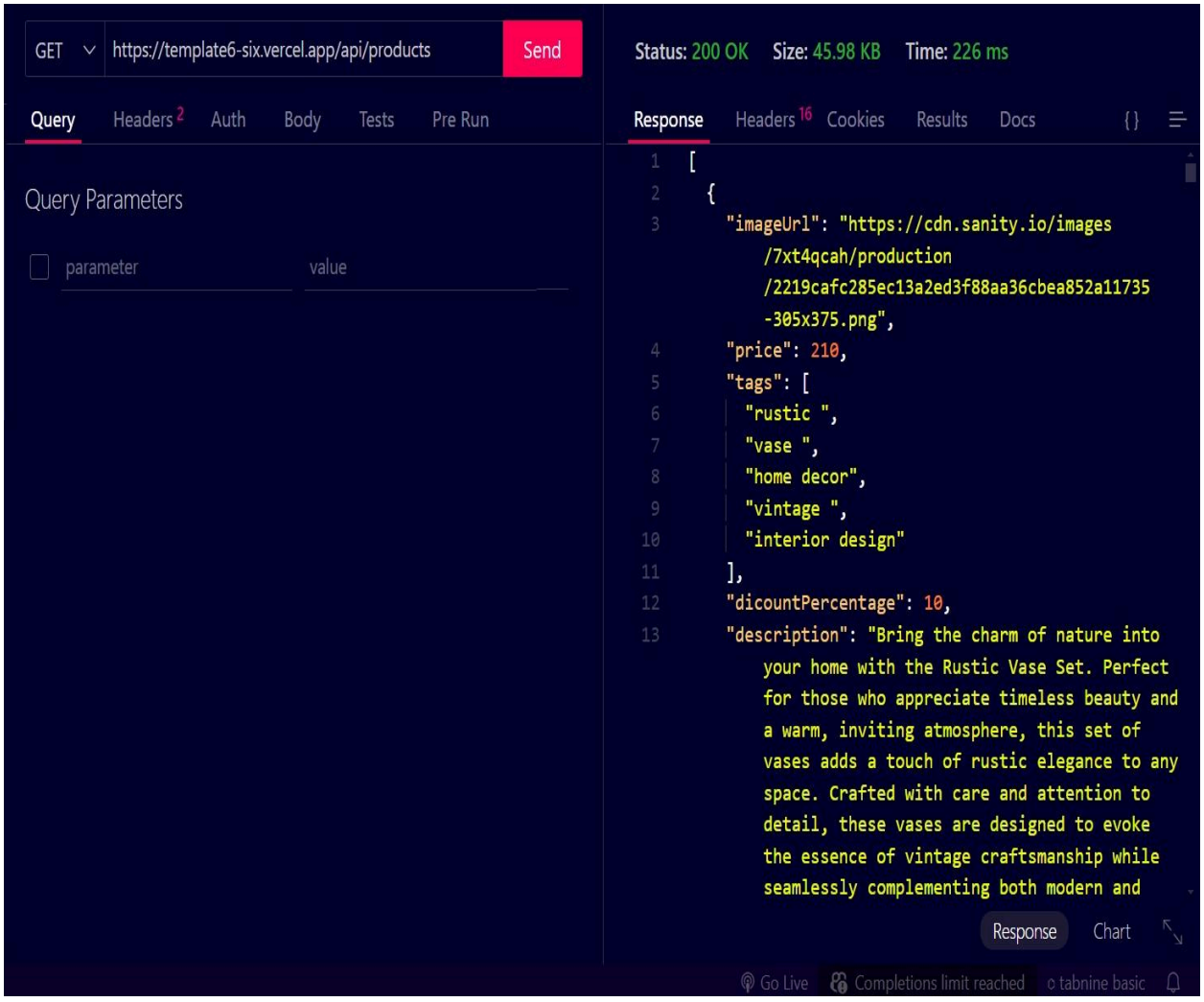
Responsiveness ✓

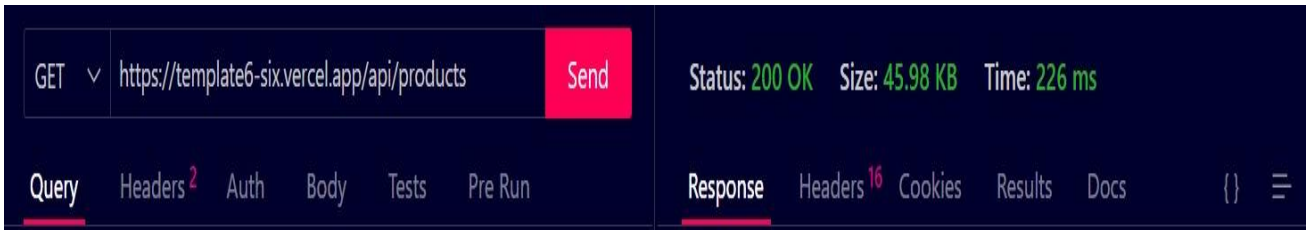


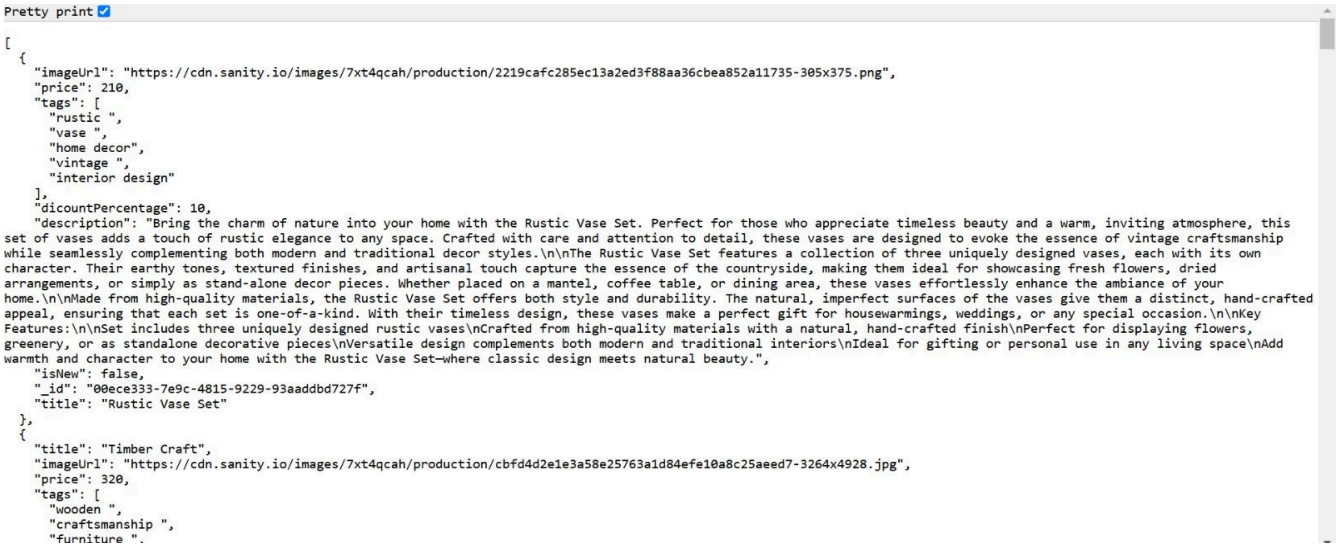


6. API Testing: GET Request

1. A GET request retrieves data from a server without modifying it.
2. It is commonly used to fetch resources like user details, product lists, or specific item data.
3. Testing involves verifying the correct status code (e.g., 200 OK) and expected data in the response body.
4. Ensure headers, query parameters, and endpoint paths are handled correctly.
5. Validate performance, error handling, and security (e.g., authentication for protected resources).







7.:Lighthouse Scoring : Optimize for Peak Performance!

.npm install -g lighthouse
.lighthouse http://localhost:3000 --view
.file:///C:/Users/PMLS/Desktop/figma%20ecommerce%20website/ecommerce-project/localhost_2025-02-04_14-54-38.report.html

http://localhost:3000/

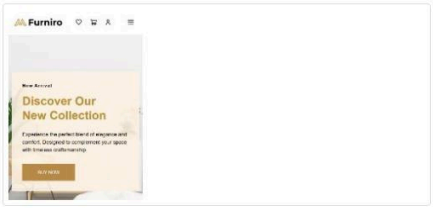
Performance	Accessibility	Best Practices	SEO
43	83	75	100

43

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.

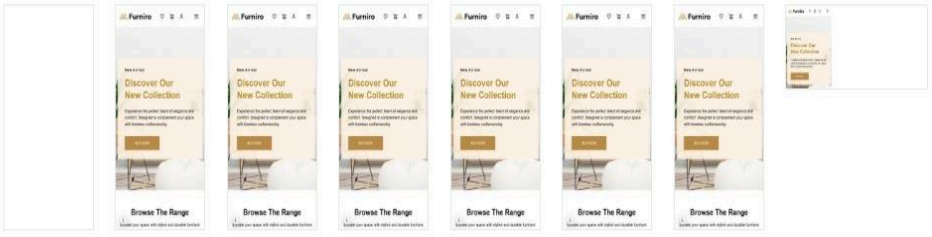
▲ 0–49 ■ 50–89 ● 90–100



METRICS Expand view

First Contentful Paint 2.6 s	Largest Contentful Paint 6.2 s
Total Blocking Time 1,360 ms	Cumulative Layout Shift 0
Speed Index 6.5 s	

View Treemap



Show audits relevant to: All FCP LCP TBT CLS

DIAGNOSTICS

Accessibility

These checks highlight opportunities to improve the accessibility of your web app. Automatic detection can only detect a subset of issues and does not guarantee the accessibility of your web app, so manual testing is also encouraged.

NAMES AND LABELS

- ▲ Buttons do not have an accessible name
- ▲ Links do not have a discernible name

These are opportunities to improve the semantics of the controls in your application. This may enhance the experience for users of assistive technology, like a screen reader.

CONTRAST

- ▲ Background and foreground colors do not have a sufficient contrast ratio.

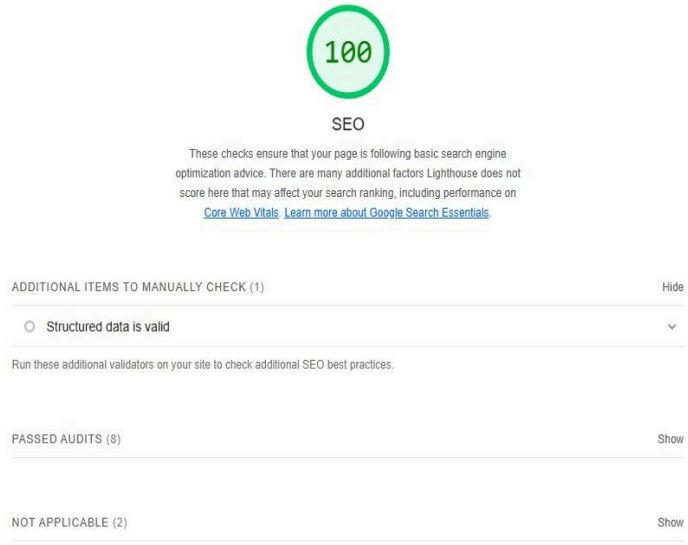
Best Practices

GENERAL

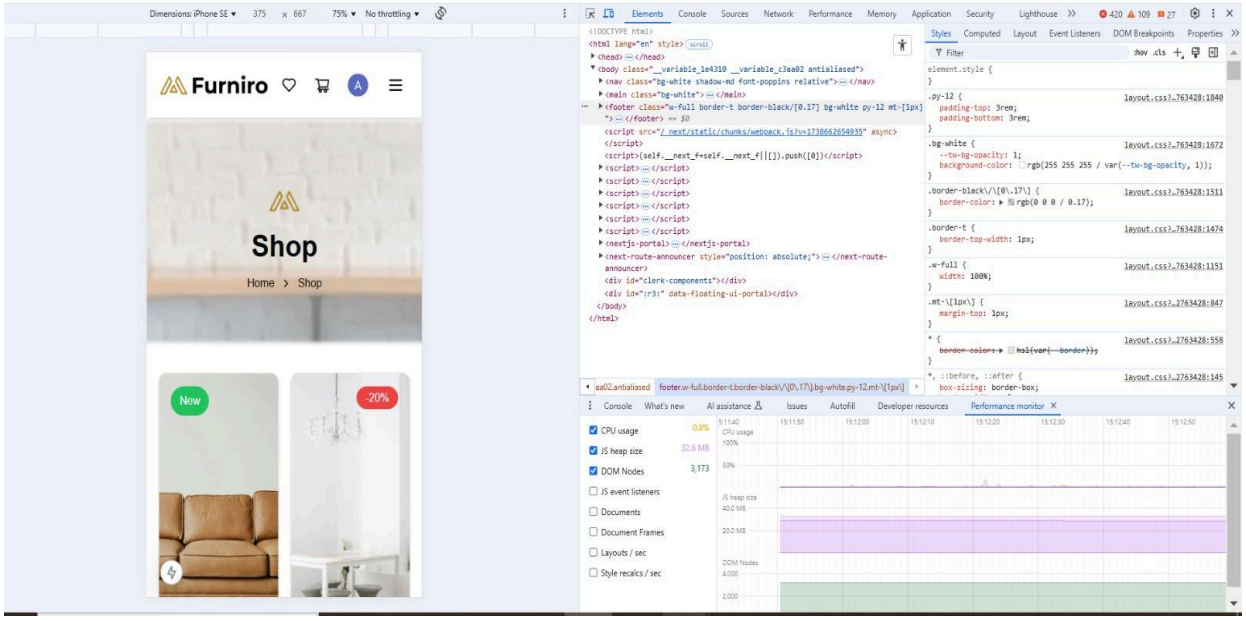
- ▲ Uses third-party cookies — 2 cookies found
- ▲ Browser errors were logged to the console
- ▲ Issues were logged in the `Issues` panel in Chrome Devtools
- ▲ Missing source maps for large first-party JavaScript

TRUST AND SAFETY

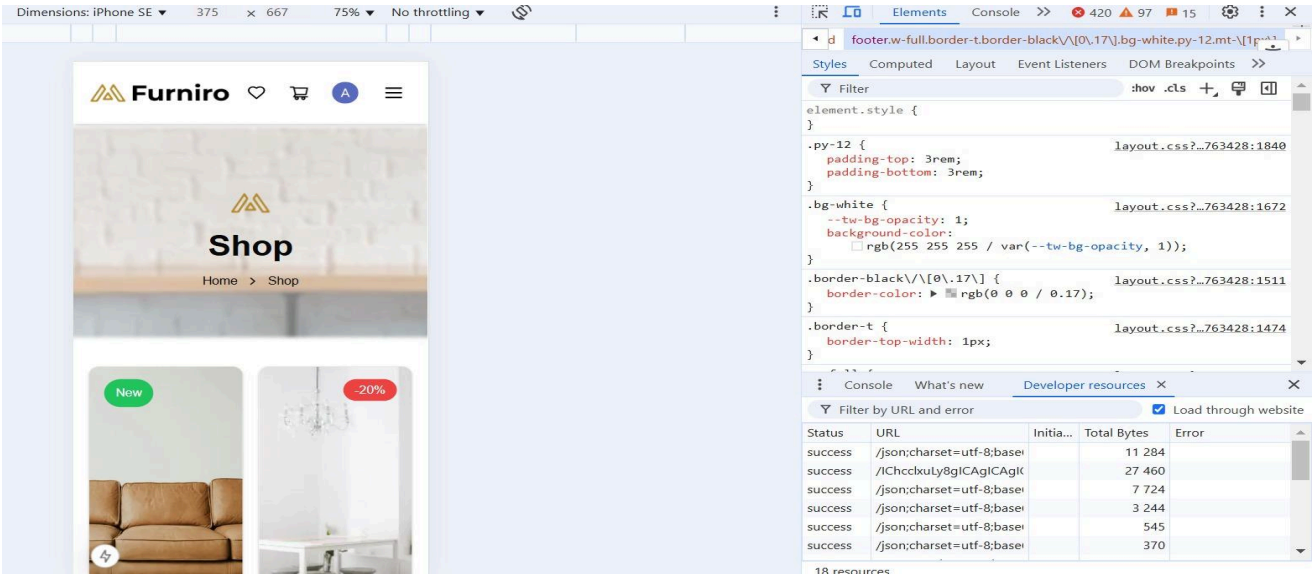
- ○ Ensure CSP is effective against XSS attacks
- ○ Use a strong HSTS policy



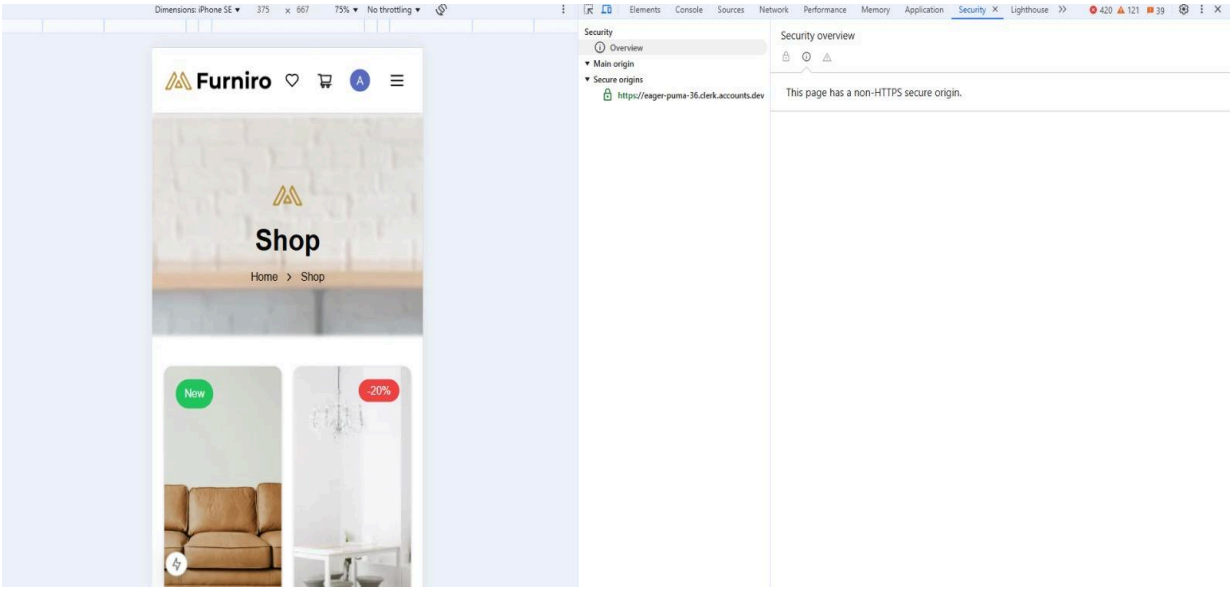
Developer Resources:



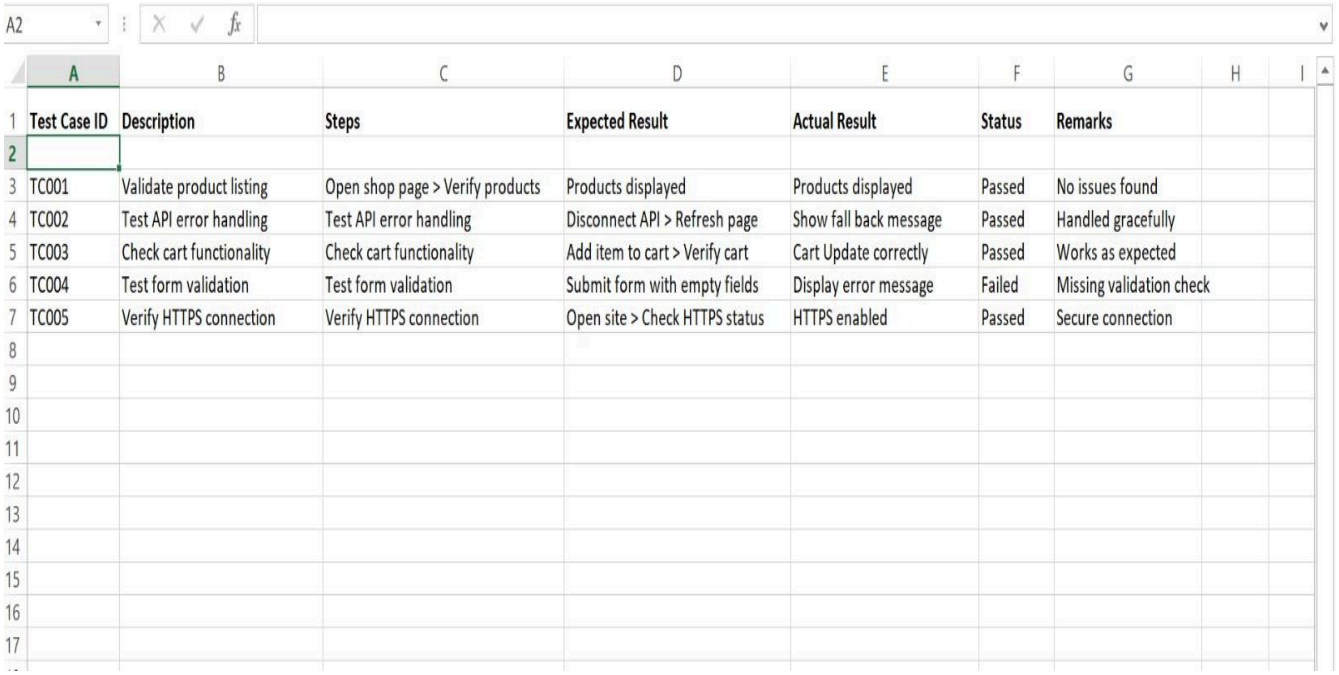
Issues



Security:



8..CheckList:



Test Case ID	Description	Steps	Expected Result	Actual Result	Status	Remarks
TC001	Validate product listing	Open shop page > Verify products	Products displayed	Products displayed	Passed	No issues found
TC002	Test API error handling	Test API error handling	Disconnect API > Refresh page	Show fall back message	Passed	Handled gracefully
TC003	Check cart functionality	Check cart functionality	Add item to cart > Verify cart	Cart Update correctly	Passed	Works as expected
TC004	Test form validation	Test form validation	Submit form with empty fields	Display error message	Failed	Missing validation check
TC005	Verify HTTPS connection	Verify HTTPS connection	Open site > Check HTTPS status	HTTPS enabled	Passed	Secure connection