Day 5

Testing, Error Handling, and Backend Integration Refinement

Objective

The goal of Day 5 was to refine the marketplace for real-world deployment by ensuring that all components were rigorously tested, optimized for performance, and equipped with robust error-handling mechanisms

Key Activities and Achievements

1. ### Comprehensive Testing
    - Conducted **functional testing** to verify core functionalities like search bar shopping cart operations, and checkout workflows.
    - Performed **non-functional testing** to measure performance, load times, and stresstest the backend APIs under heavy traffic.
    - Implemented **user acceptance testing (UAT)** by gathering feedback from test users to identify usability issues.

2. ### Error Handling Mechanisms

- Developed robust error-handling logic for frontend.
- Created fallback messages for common issues like failed API calls, slow network responses, or unavailable resources.
- Introduced logging mechanisms to track backend and API errors for future debugging

```
useEffect(() => {
  const fetchProducts = async () => {
    setLoading(true); // Start loading
    setError(null); // Reset error state
    try {
      const productsData = await client.fetch(
        `*[_type == "food"]{
          name,
          price,
          description,
          category,
          originalPrice,
          "image": image.asset->url,
          "slug": slug.current,
        }`
      );
      setProducts(productsData);
      setFilteredProducts(productsData);
    } catch (err) {
      console.error("Error fetching products:", err);
      setError("Failed to fetch products. Please try again later.");
    } finally {
      setLoading(false); // Stop loading
    }
  };
  fetchProducts();
}, []);
```

Performance Optimization

- Optimized frontend assets by minimizing JavaScript and CSS bundles.
- Implemented lazy loading for images and components to improve initial page load times.
- Utilized caching strategies for frequently accessed data.
- Enhanced database queries for faster response times on API endpoints.

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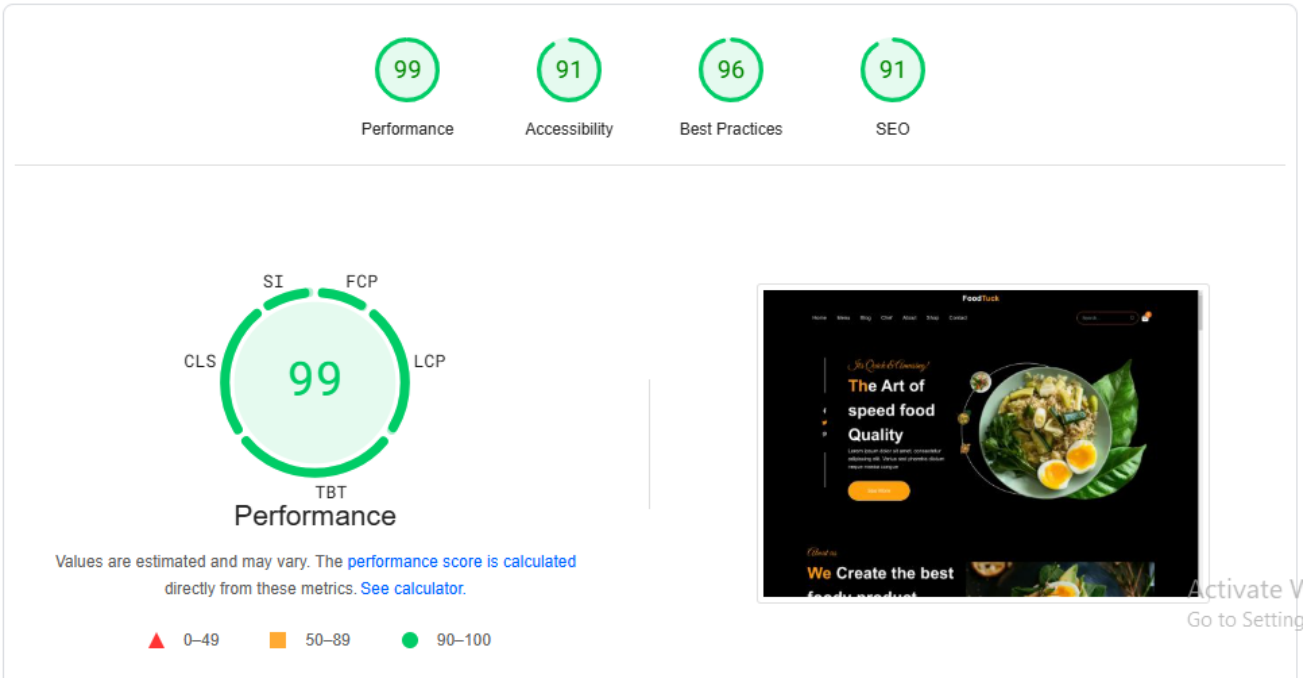
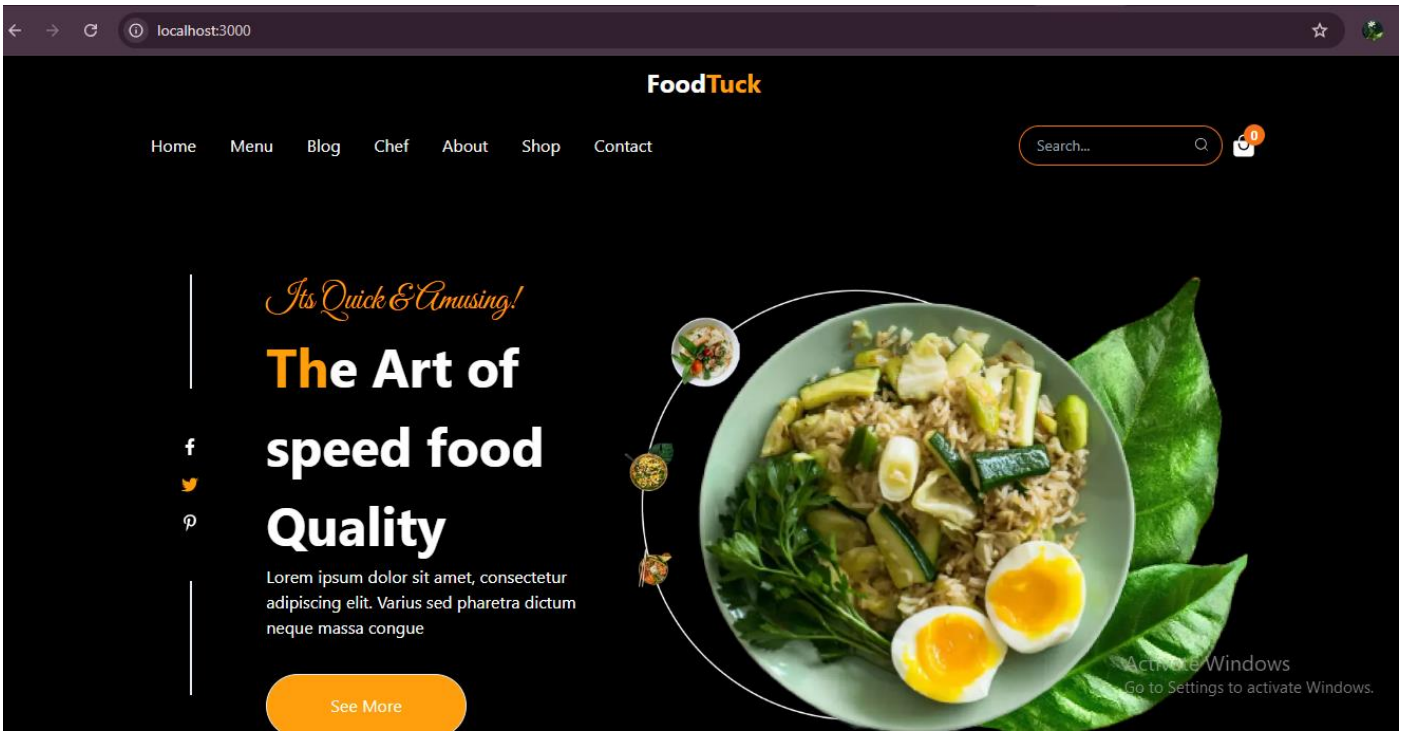


Cross-Browser and Device Compatibility

- Ensured compatibility across all major browsers, including Chrome, Firefox, Edge, and Safari.
- Verified responsiveness on multiple device resolutions, including mobile, tablet, and desktop.
- Resolved inconsistencies in styling and layout for seamless user experiences across platforms.



- **Professional Testing Documentation**

    - Prepared detailed testing documentation that meets industry standards.
    - Compiled a **CSV-based test report** outlining test cases, expected results, actual results, and resolutions for failed cases.

- **Fallback UI Elements**

    - Designed fallback UI components that displayed user-friendly messages when APIs returned errors. Examples included retry buttons, placeholder content, and informative modals for unresolved issues.

Challenges and Resolutions

- **Challenge:** Handling API errors without disrupting user experience.
  Resolution: Implemented fallback UI and retry mechanisms to ensure a seamless experience even during backend failures.
- **Challenge:** Ensuring smooth performance under high traffic.
  Resolution: Optimized server-side rendering (SSR) processes and enabled caching for frequently accessed endpoints.
- **Challenge:** Documenting test results professionally.
  Resolution: Used spreadsheet tools to organize test cases into a CSV format, providing detailed insights into test execution and outcomes.

Future Recommendations

1. Conduct periodic testing post-deployment to ensure continued platform stability.
2. Monitor real-world performance metrics using tools lighthouse.com.

By the end of Day 5, the marketplace was refined, optimized, and ready for real-world deployment. The focus on robust testing, error handling, and documentation laid a strong foundation for success.