

Day 5: Testing, Optimization, and Final Submission

Project: Hekto Marketplace

Day 5 Tasks and Implementation

1. Performance Optimization

Largest Contentful Paint (LCP) Improvement:

- **Image Optimization:**
 - Used **next/image** for automatic image optimization.
 - Tools: **TinyPNG**
 - **Image Testing Report (TinyImage Results):**

Metric	Value
Total Images Found	24
Original Image Size	2.6 MB
Optimized Image Size	1.0 MB
Total Size Savings	61%
Faster Page Load Speed	2.2 sec

- Result: Image sizes reduced by 61%, improving LCP.
- **Lazy Loading Implemented:**
- import Image from 'next/image';
 - `<Image src="/image.webp" width={300} height={200} loading="lazy" alt="Product Image" />`
- **Fonts Optimization:**
 - Preloaded fonts for faster rendering.
 - `<link rel="preload" href="/fonts/font.woff2" as="font" type="font/woff2" crossorigin>`

Cumulative Layout Shift (CLS) Reduction:

- **Image Dimensions Specified:**

- `<Image src="/image.webp" width={300} height={200} alt="Product Image" />`

- **Reserved Space for Dynamic Content:**

- Adjusted layout to avoid shifts in loading components.

First Input Delay (FID) Optimization:

- **Removed Unused JavaScript:**

- Cleaned up unnecessary scripts, improving performance.

- **Code Splitting in Next.js:**

- `const ProductList = React.lazy(() => import('../components/ProductList'));`
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2. Best Practices Implementation

- **HTTPS Ensured:**

- Verified all resources load via HTTPS.

- **Console Errors Fixed:**

- Debugged and fixed all browser console errors.
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3. SEO Optimization

- **Metadata Exported Using Next.js Metadata API:**

```
export const metadata = {  
  title: "Hekto - Your Marketplace",  
  description: "Explore a wide range of products on Hekto, your one-stop marketplace."  
};
```

- Structured Data Implemented:

```
<script type="application/ld+json">
{
  "@context": "https://schema.org",
  "@type": "WebSite",
  "name": "Hekto",
  "url": "https://hekto.yusrasaleem.vercel.app"
}
</script>
```

4. Final Testing and Submission Checklist

Task	Status
Functional Testing	✓
Error Handling	✓
Performance Optimization	✓
Cross-Browser and Device Testing	✓
Security Testing	✓
Documentation	✓
Final Review	✓

Final Lighthouse Scores:

Category	Score	Remarks
Performance	97	Unused JS removed, LCP, FID, and CLS improved.
Accessibility	95	Fully optimized with minor adjustments needed.
Best Practices	99	Almost perfect, minor improvements possible.
SEO	100	Fully optimized for search engines.

5. Conclusion:

The **Hekto Marketplace** is now fully optimized, tested, and ready for deployment. With a **Performance Score of 97**, the platform provides a fast, seamless, and secure shopping experience. Key improvements include faster load times, robust error handling, and enhanced security measures.

6. Attachments:

1. Testing Report (CSV): [testing_report link](#)

9. Contact Information:

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 - **Deployment Link:** [Hekto Marketplace](#)
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