MAD and PWA Lab

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Experiment - 7

Aim: To use google Lighthouse PWA Analysis Tool to test the PWA functioning.

Theory:

Google Lighthouse

Lighthouse is an open-source, automated tool for improving the quality of web pages. You can run it against any web page, public or requiring authentication. It has audits for performance, accessibility, progressive web apps, SEO and more.

You can run Lighthouse in Chrome DevTools, from the command line, or as a Node module. You give

Lighthouse a URL to audit, it runs a series of audits against the page, and then it generates a report on how well the page did. From there, use the failing audits as indicators on how to improve the page. Each audit has a reference doc explaining why the audit is important, as well as how to fix it.

Features of Lighthouse

Google Lighthouse gives a breakdown of your site into the accompanying metrics. Here is a brief explanationof each of the aforementioned metrics:

1. Performance

Performance is generally viewed as the most valuable metric given by the Google Lighthouse tool. Like the PageSpeed Insights, the Performance area of the Lighthouse report contains a few helpful metrics you can use to advance your site to climb Google's rankings. The Performance segment of the Lighthouse report joins the Opportunities, Field Data, Lab Data, and Diagnostics metrics of the PageSpeed Insights tool.

A great example is the opportunities metric as it flags three types of render-blocking URL’s namely stylesheets, scripts, and HTML imports. This merged perspective on performance metrics gives an exact and valuable analysis of your site's performance and any progressions you should make to expand your site's exhibition.

2. Accessibility

The first of the new regions of Google Lighthouse is the Accessibility metric. Basically what this metric does is feature potential chances to improve the availability and client experience of your mobile app or website.

Following the accessibility improvement report will guarantee that your clients can without much of a stretch explore and utilize your site. Just as guaranteeing that you have the most obvious opportunity with regards to positioning better on web search engines.

3. Best Practices
Another segment new to Google's analysis tools is the Best Practices metric. This region of the Lighthouse report doesn't carefully give execution related data. However, it will give you recommendations which can improve both your exhibition and client experience, particularly for mobile sites.

4. SEO
The latest and most dynamic of the highlights in Google's Lighthouse instrument is the SEO metric.
PageSpeed Insights doesn't offer this tool. This is why most web designers and SEO specialists prefer to utilize Google Lighthouse to analyze a website. The SEO metric gives fundamental tools to examine your page's streamlining for search engine results rankings. While there are numerous more factors which Lighthouse doesn't consider or quantify, the most essential focuses are secured.

5. Progressive Web Applications
The Progressive Web App area is another of Google's most up to date execution measurements incorporated into its Lighthouse tool. While the meaning of a Progressive Web App (PWA) hasn't been especially clear, Google's documentation expresses that there are a few key variables which make a site a PWA. A great feature of this metric is registering service workers which allow you to enable push notifications on your web app

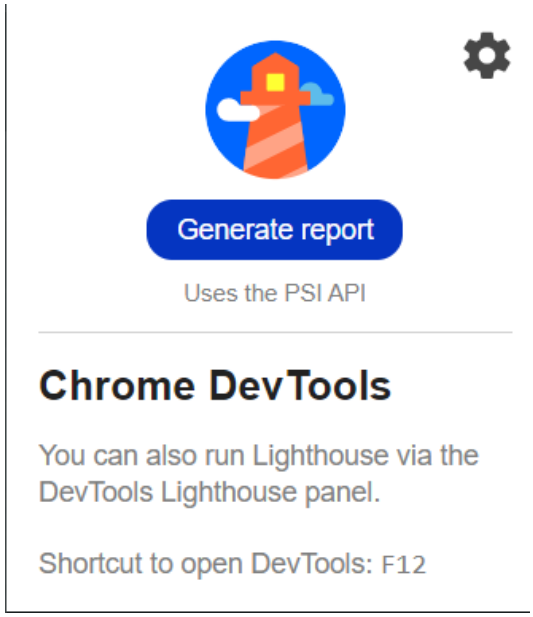
IMPLEMENTATION:

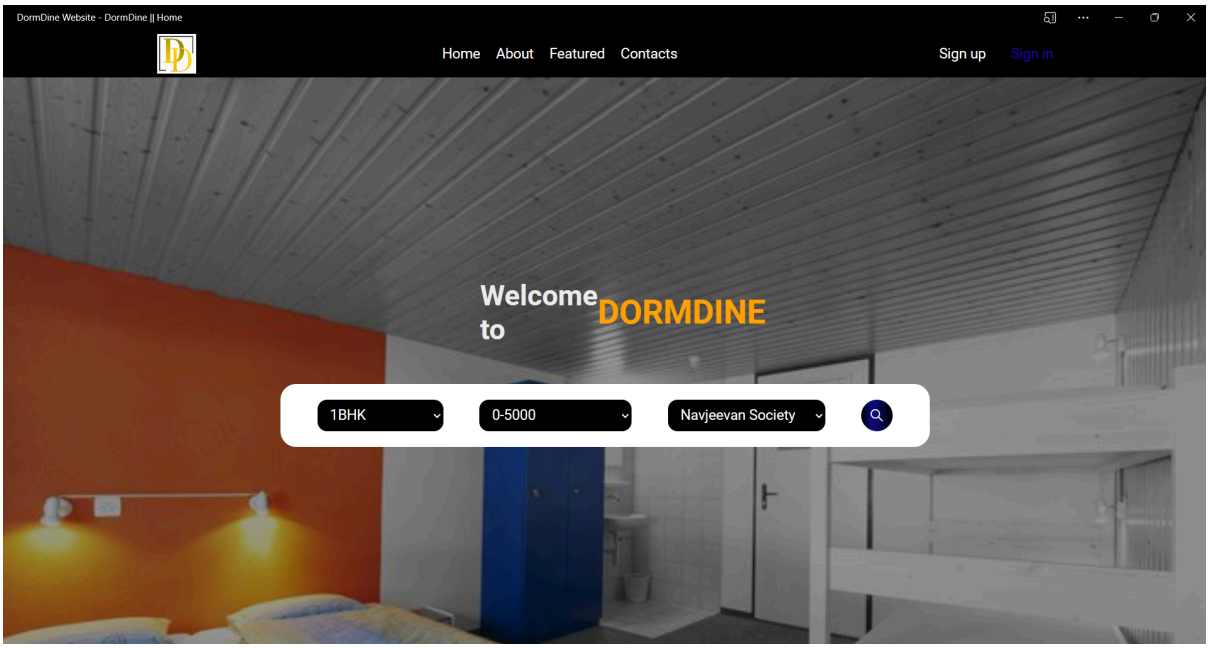
Manifest.json :

```
{
 "short_name": "DormDine",
 "name": "DormDine Website",
 "icons": [
   {
    "src": "logo192.png",
    "type": "image/png",
    "sizes": "192x192",
    "purpose": "maskable"
   },
   {
    "src": "logo512.png",
    "type": "image/png",
```

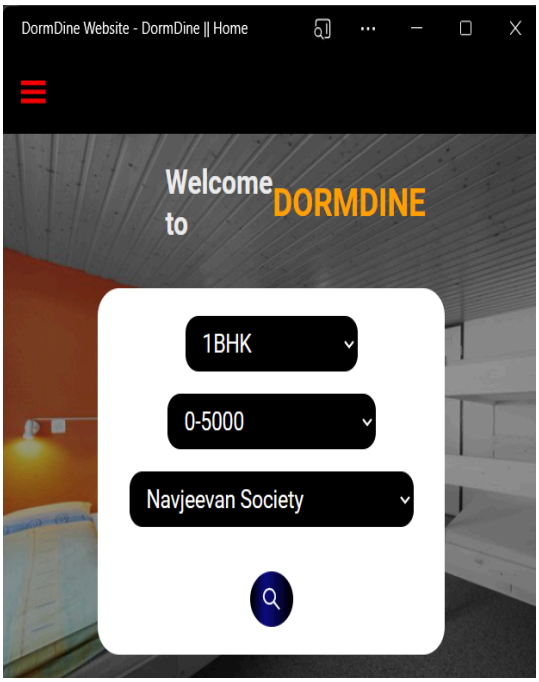
```
    "sizes": "512x512"
   }
  ],
  "start_url": ".",
  "display": "standalone",
  "theme_color": "#000000",
  "background_color": "#ffffff"
}
```

FOR DESKTOP DEVICE

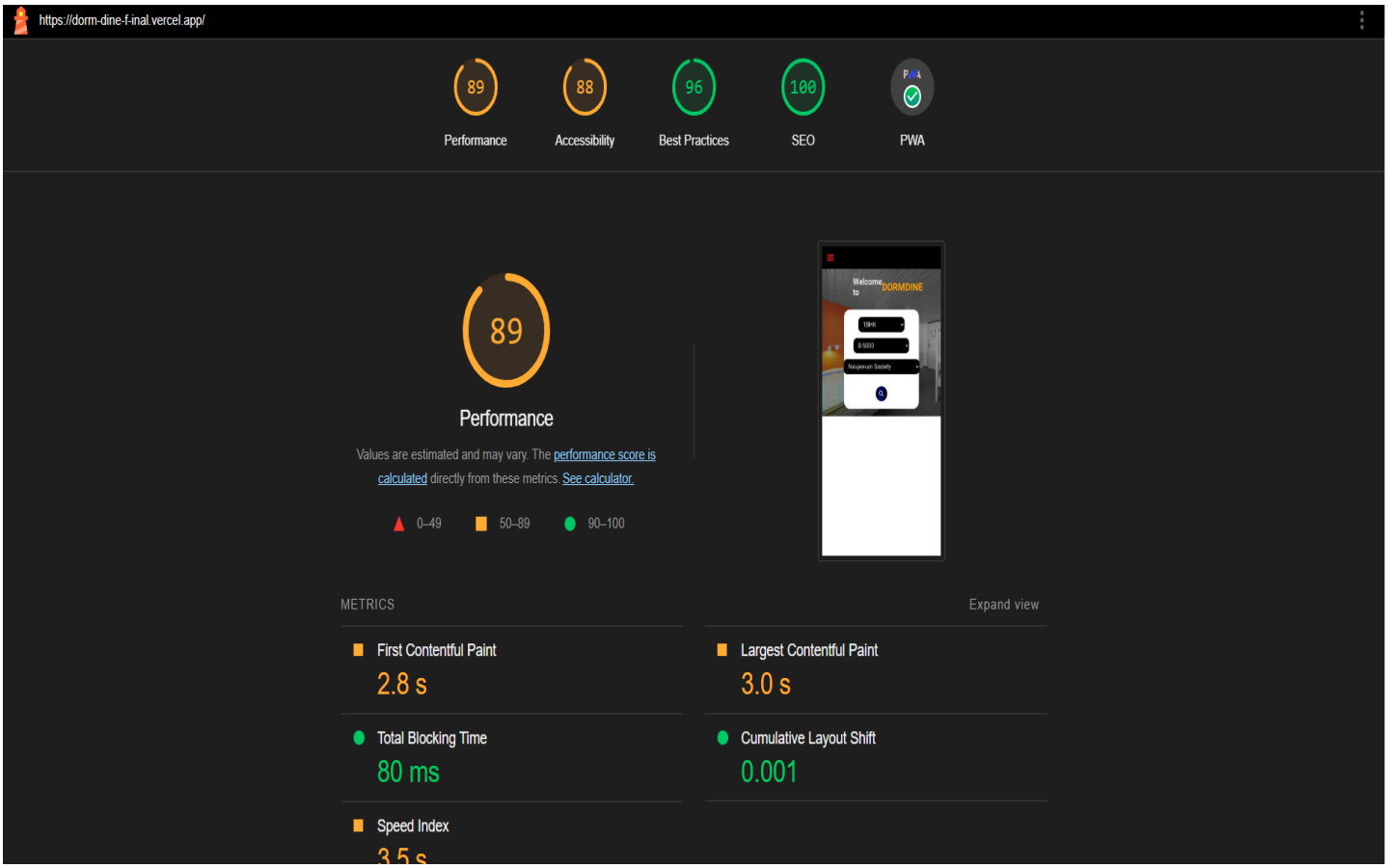


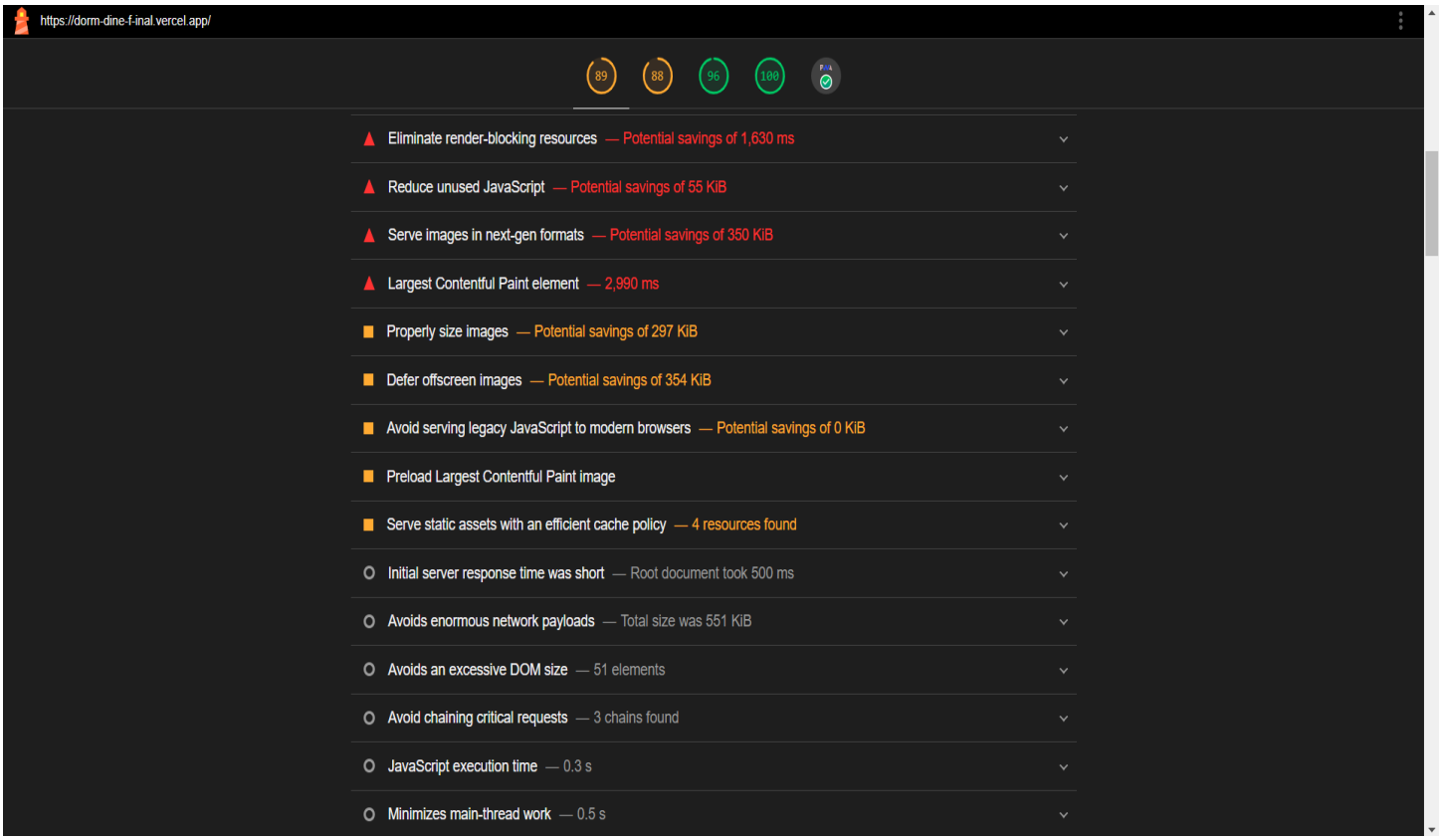


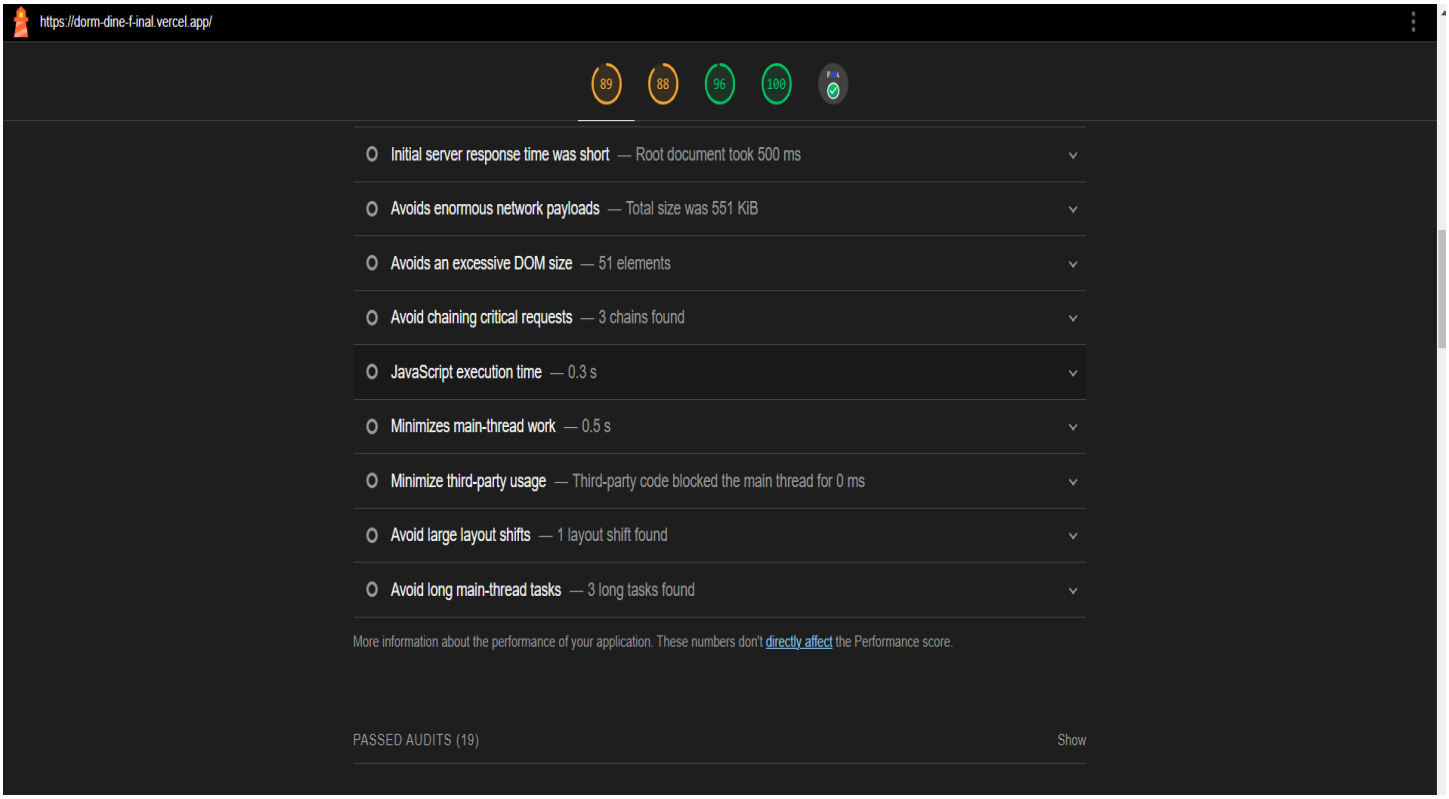
FOR MOBILE DEVICES



REPORT GENERATED:




https://dorm-dine-f-inal.vercel.app/
89
88
96
100
Eliminate render-blocking resources — Potential savings of 1,630 ms
Reduce unused JavaScript — Potential savings of 55 KiB
Serve images in next-gen formats — Potential savings of 350 KiB
Largest Contentful Paint element — 2,990 ms
Properly size images — Potential savings of 297 KiB
Defer offscreen images — Potential savings of 354 KiB
Avoid serving legacy JavaScript to modern browsers — Potential savings of 0 KiB
Preload Largest Contentful Paint image
Serve static assets with an efficient cache policy — 4 resources found
Initial server response time was short — Root document took 500 ms
Avoids enormous network payloads — Total size was 551 KiB
Avoids an excessive DOM size — 51 elements
Avoid chaining critical requests — 3 chains found
JavaScript execution time — 0.3 s
Minimizes main-thread work — 0.5 s


https://dorm-dine-f-inal.vercel.app/
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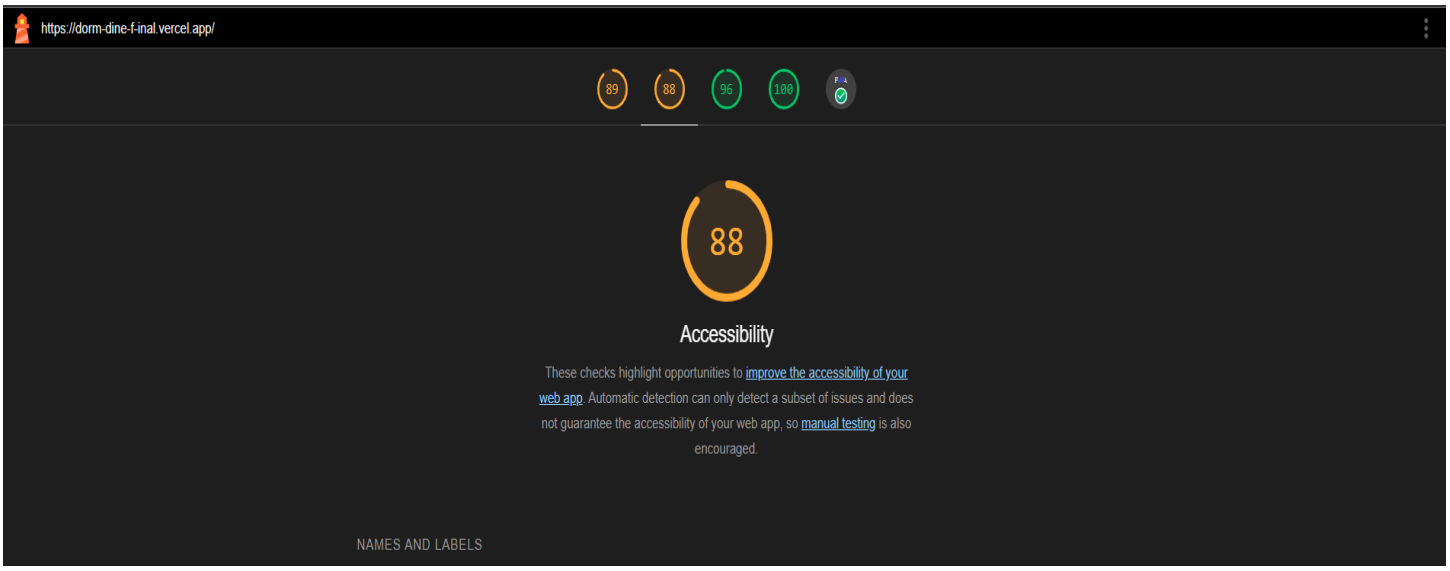
Initial server response time was short — Root document took 500 ms
Avoids enormous network payloads — Total size was 551 KiB
Avoids an excessive DOM size — 51 elements
Avoid chaining critical requests — 3 chains found
JavaScript execution time — 0.3 s
Minimizes main-thread work — 0.5 s
Minimize third-party usage — Third-party code blocked the main thread for 0 ms
Avoid large layout shifts — 1 layout shift found
Avoid long main-thread tasks — 3 long tasks found
More information about the performance of your application. These numbers don't directly affect the Performance score.
PASSED AUDITS (19)
Show


https://dorm-dine-f-inal.vercel.app/
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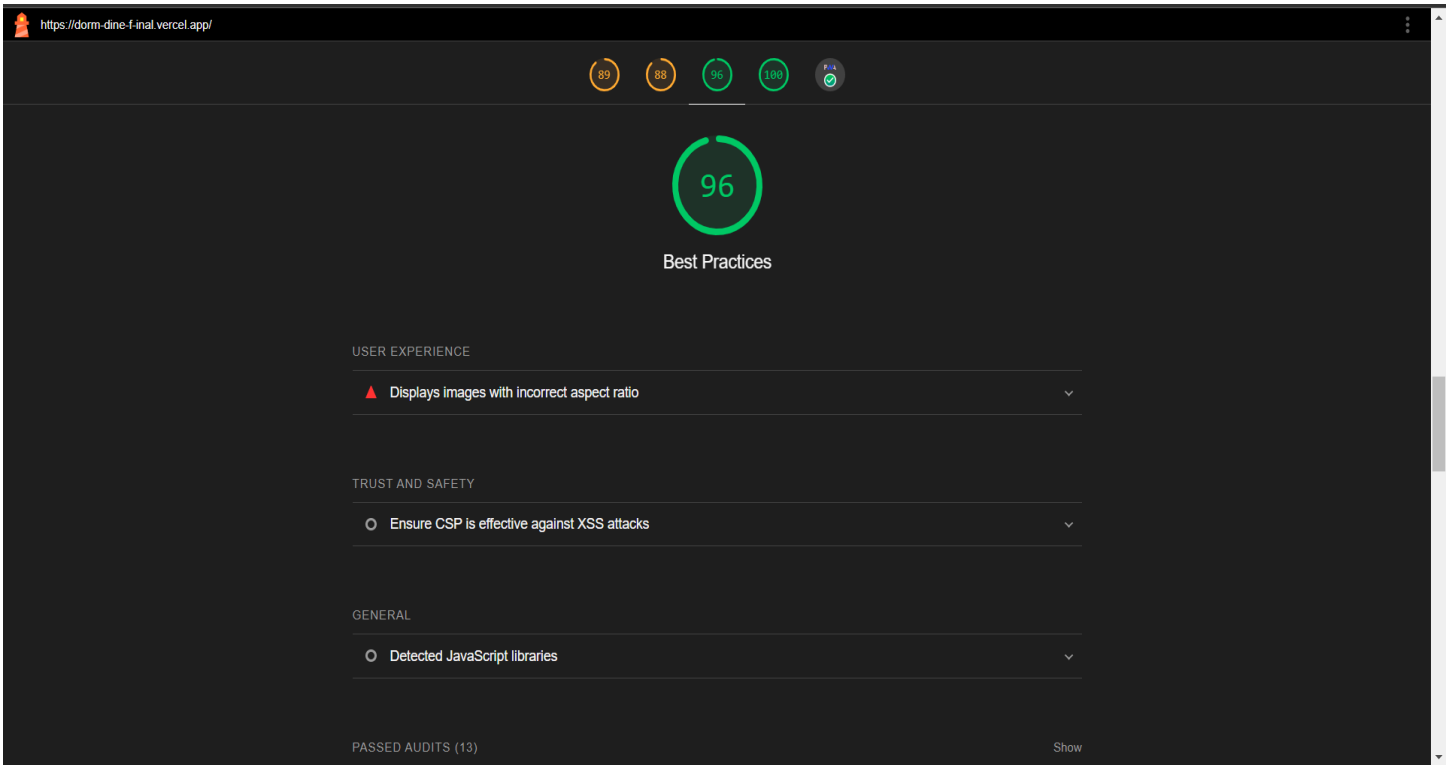
Accessibility
These checks highlight opportunities to improve the accessibility of your web app. Automatic detection can only detect a subset of issues and does not guarantee the accessibility of your web app, so manual testing is also encouraged.
NAMES AND LABELS


https://dorm-dine-f-inal.vercel.app/
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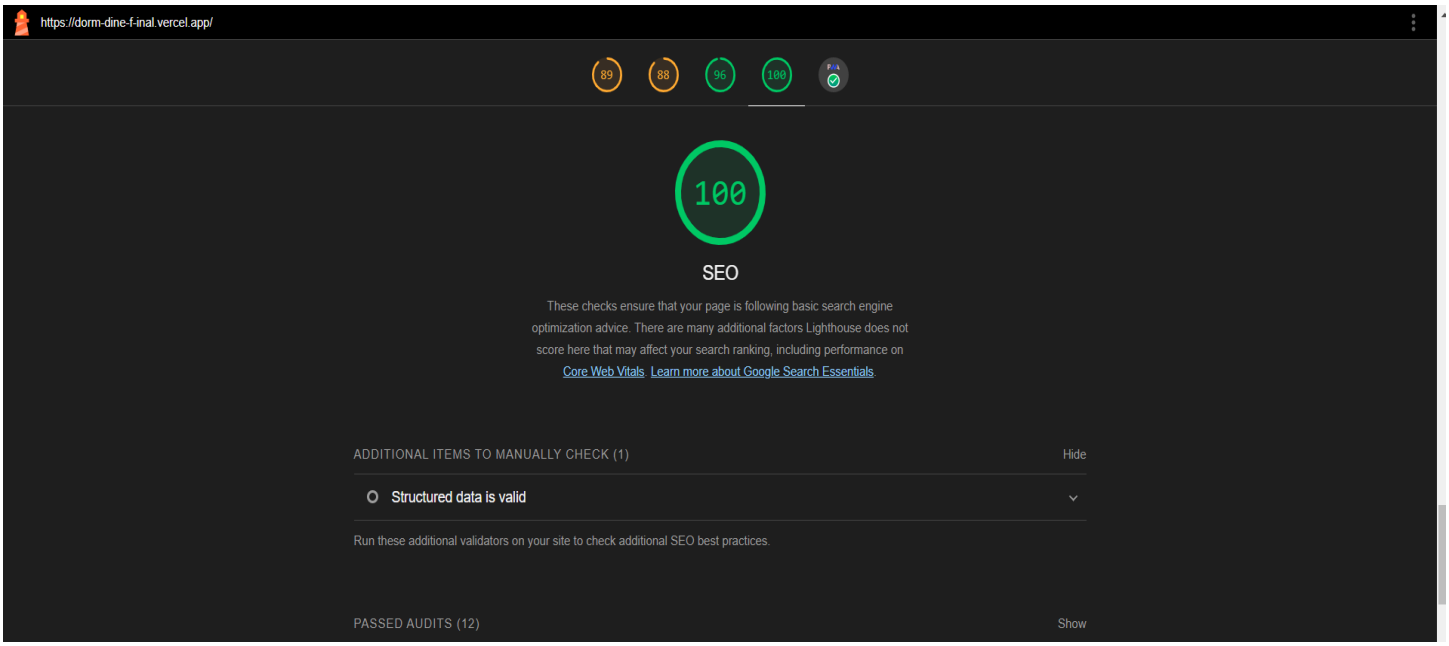
Best Practices
USER EXPERIENCE
Displays images with incorrect aspect ratio
TRUST AND SAFETY
Ensure CSP is effective against XSS attacks
GENERAL
Detected JavaScript libraries
PASSED AUDITS (13)
Show


https://dorm-dine-f-inal.vercel.app/
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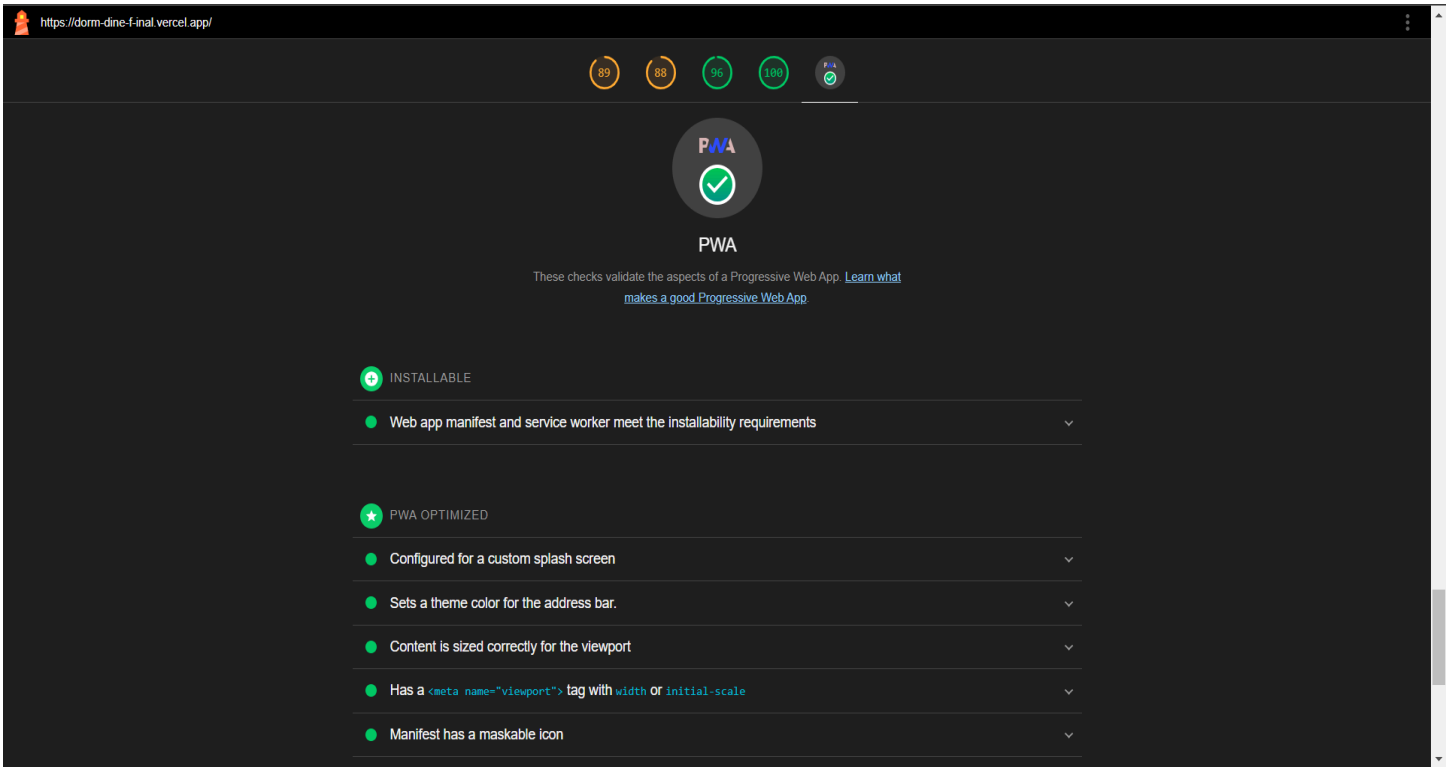
SEO
These checks ensure that your page is following basic search engine optimization advice. There are many additional factors Lighthouse does not score here that may affect your search ranking, including performance on Core Web Vitals. Learn more about Google Search Essentials.
ADDITIONAL ITEMS TO MANUALLY CHECK (1)
Hide
Structured data is valid
Run these additional validators on your site to check additional SEO best practices.
PASSED AUDITS (12)
Show


https://dorm-dine-f-inal.vercel.app/
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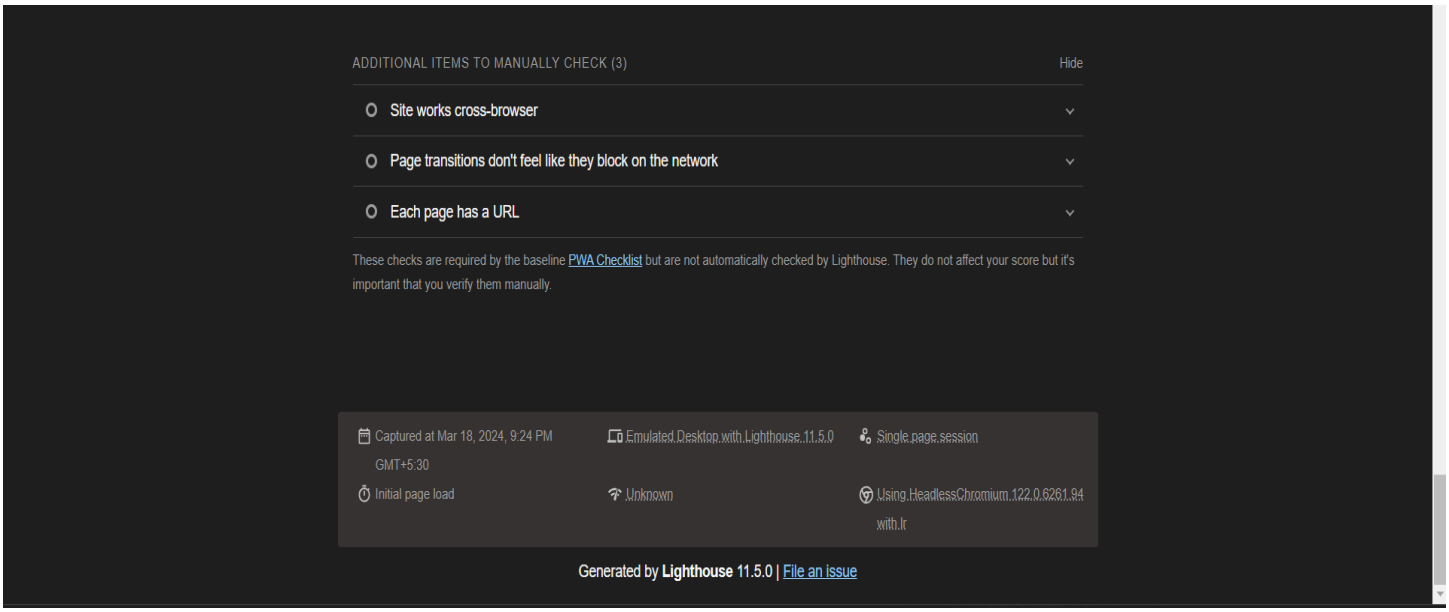
PWA
These checks validate the aspects of a Progressive Web App. Learn what makes a good Progressive Web App.
INSTALLABLE
Web app manifest and service worker meet the installability requirements
PWA OPTIMIZED
Configured for a custom splash screen
Sets a theme color for the address bar.
Content is sized correctly for the viewport
Has a <meta name="viewport"> tag with width or initial-scale
Manifest has a maskable icon



Conclusion:

In this experiment, we have successfully used Google Lighthouse PWA Analysis Tool for testing the PWA functioning.