

MAD and PWA Lab

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Experiment - 11

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 explanation of 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": "Xploreskill",
  "name": "Xploreskill Website",
  "icons": [
    {
      "src": "library.png",
      "type": "image/png",
      "sizes": "192x192",
      "purpose": "maskable"
    },
    {
      "src": "library.png",
```

```
    "type": "image/png",
    "sizes": "512x512"
  }
],
"start_url": "https://explore-skills.vercel.app/",
"display": "standalone",
"theme_color": "#000000",
"background_color": "#ffffff"
}
```

FOR DESKTOP DEVICE



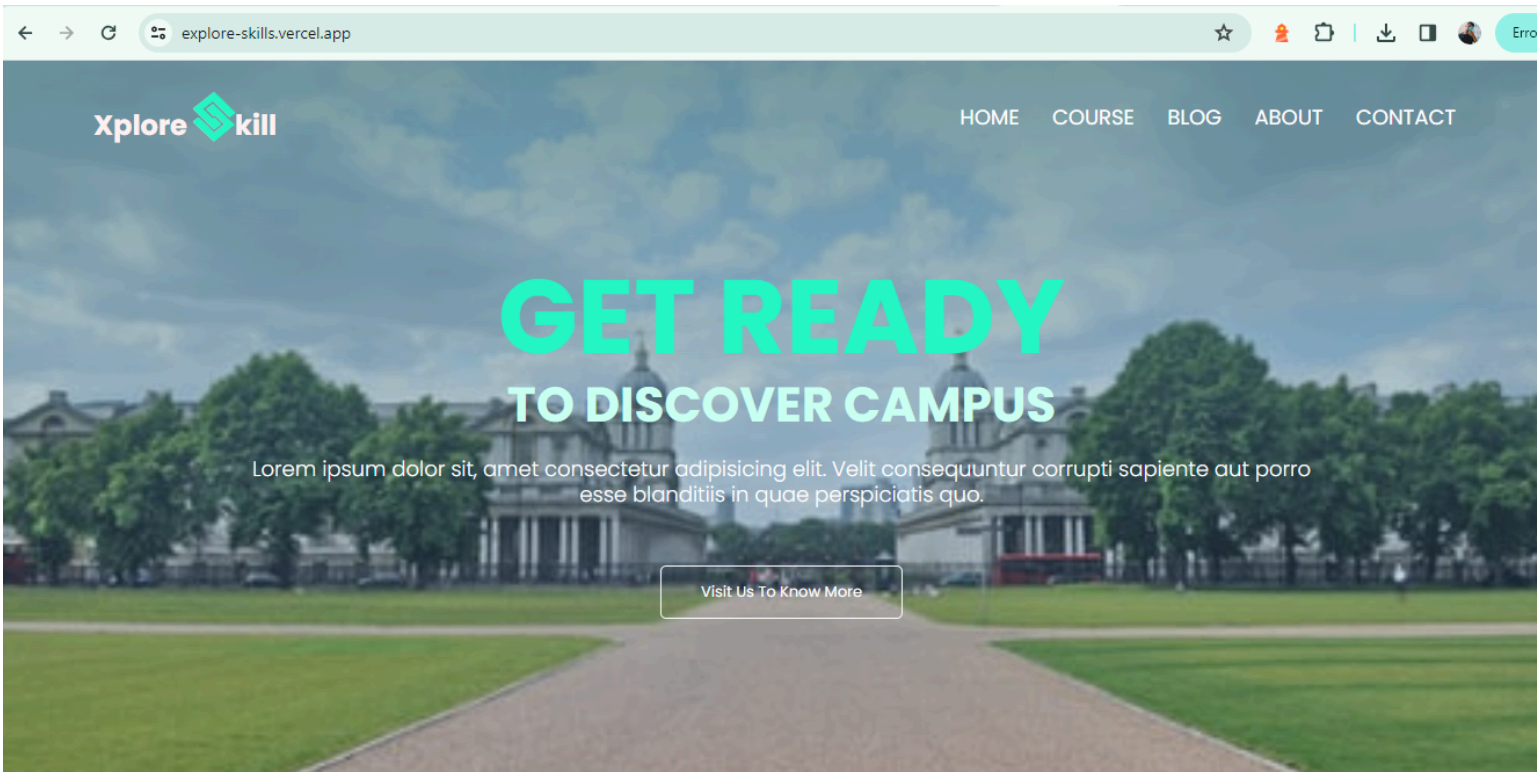
Generate report

Uses the PSI API

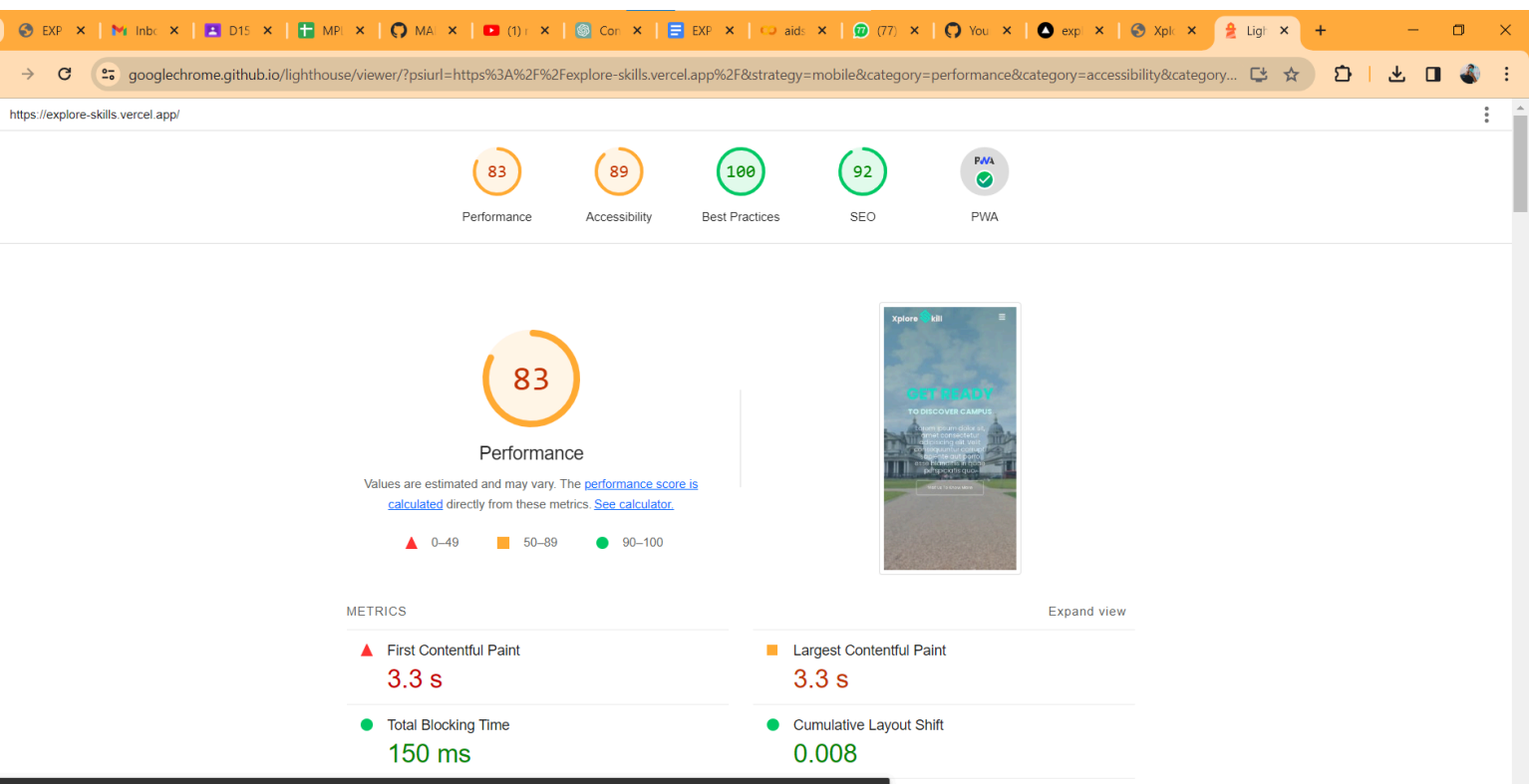
Chrome DevTools

You can also run Lighthouse via the DevTools Lighthouse panel.

Shortcut to open DevTools: F12



REPORT GENERATED:



googlechrome.github.io/lighthouse/viewer/?psiurl=https%3A%2F%2Fexplore-skills.vercel.app%2F&strategy=mobile&category=performance&category=accessibility&category=...

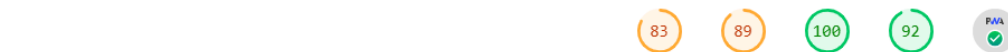
https://explore-skills.vercel.app/

83 89 100 92 PWA

DIAGNOSTICS

- ▲ Eliminate render-blocking resources — Potential savings of 2,100 ms
- ▲ Reduce the impact of third-party code — Third-party code blocked the main thread for 260 ms
- ▲ Largest Contentful Paint element — 3,340 ms
- Properly size images — Potential savings of 21 KiB
- Reduce unused CSS — Potential savings of 10 KiB
- Reduce unused JavaScript — Potential savings of 36 KiB
- Serve images in next-gen formats — Potential savings of 135 KiB
- Image elements do not have explicit width and height
- Initial server response time was short — Root document took 510 ms
- Avoids enormous network payloads — Total size was 653 KiB
- Avoids an excessive DOM size — 124 elements
- Avoid chaining critical requests — 8 chains found
- JavaScript execution time — 0.4 s

googlechrome.github.io/lighthouse/viewer/?psiurl=https%3A%2F%2Fexplore-skills.vercel.app%2F&strategy=mobile&category=performance&category=accessibility&category=...
l.app/



PASSED AUDITS (21)

Show



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.



Best Practices

TRUST AND SAFETY

- Ensure CSP is effective against XSS attacks



PASSED AUDITS (14)

Show

NOT APPLICABLE (2)

Show



SEO

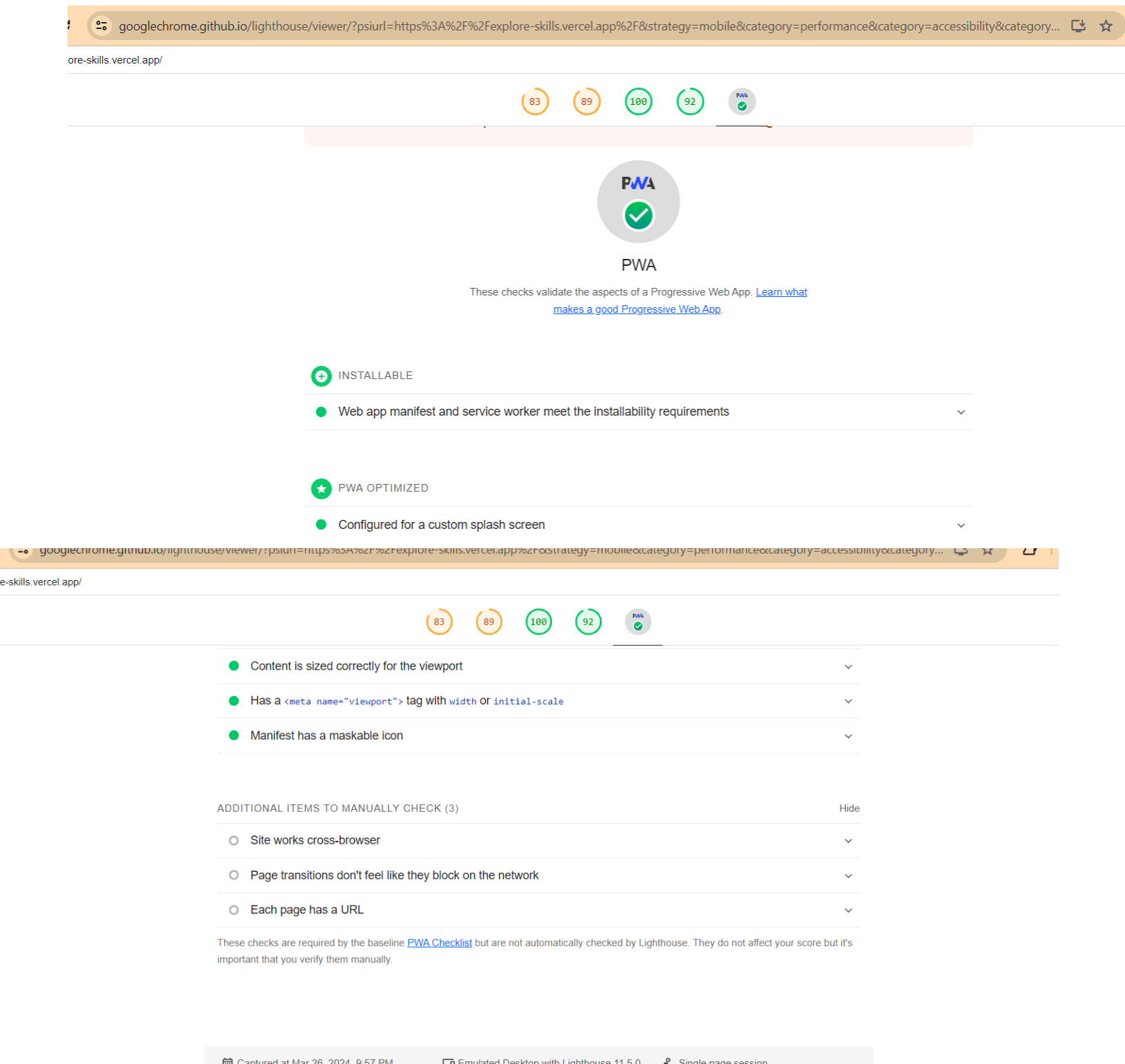
These checks ensure that your page is following basic search engine optimization advice. There are many additional factors Lighthouse does not score here that may affect your search ranking, including performance on [Core Web Vitals](#). [Learn more about Google Search Essentials](#).

CONTENT BEST PRACTICES

- ▲ Document does not have a meta description



Format your HTML in a way that enables crawlers to better understand your app's content.



Conclusion:

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