

Experiment No: - 11

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

Theory:-

Google Lighthouse is a Google-developed automated tool integrated into Chrome browser, assessing web page performance, accessibility, best practices, and SEO. It includes a Progressive Web App (PWA) Analysis Tool, focusing on PWA-specific features like service worker, offline capabilities, app-like behavior, and responsive design.

To utilize the PWA Analysis Tool:

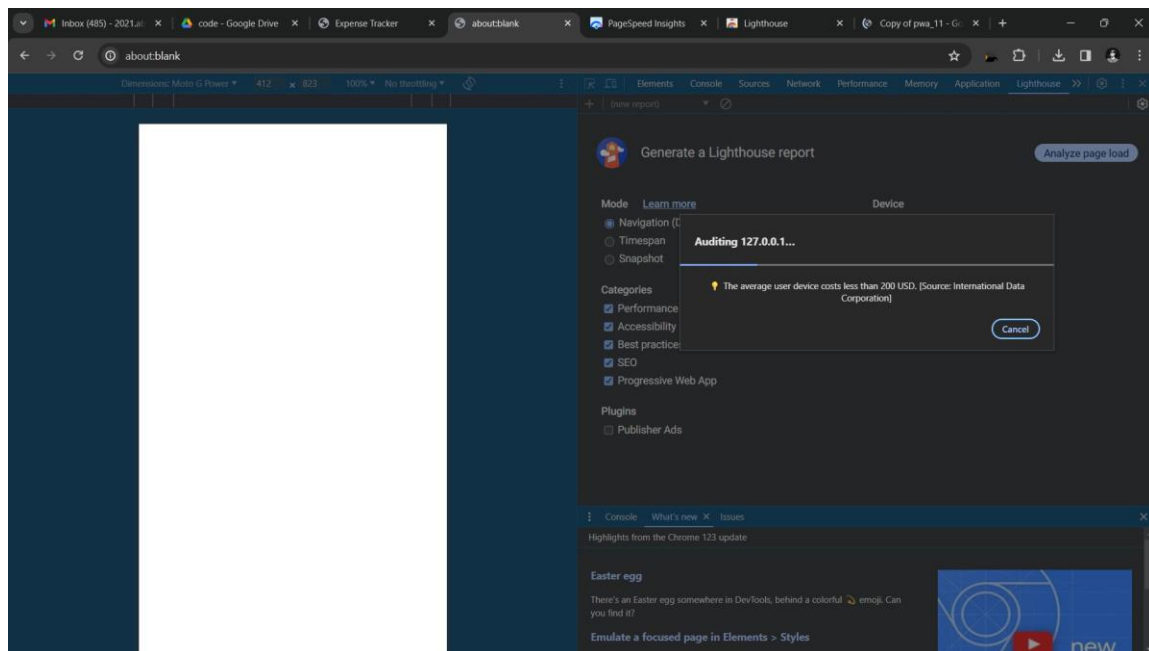
1. Launch Chrome and navigate to your PWA's webpage.
2. Right-click and select "Inspect" to open Chrome DevTools.
3. Navigate to the "Audits" tab and choose "Progressive Web App."
4. Click "Run audits" and wait for analysis completion.
5. Review results, including performance metrics and PWA-specific features.
6. Utilize feedback to optimize and enhance your PWA's functionality and user experience.

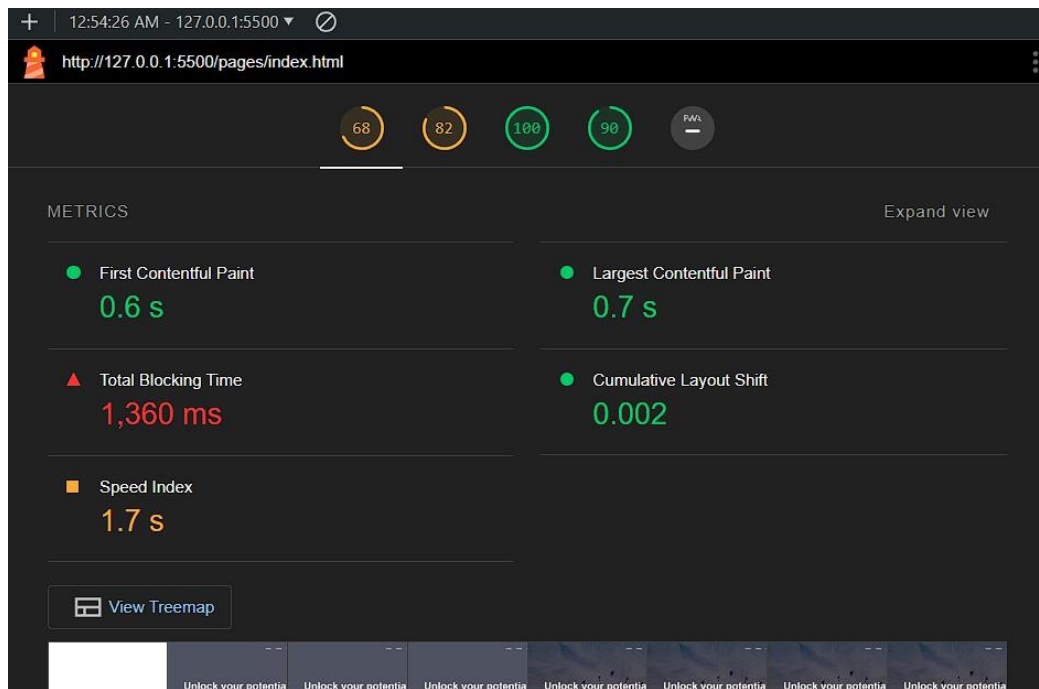
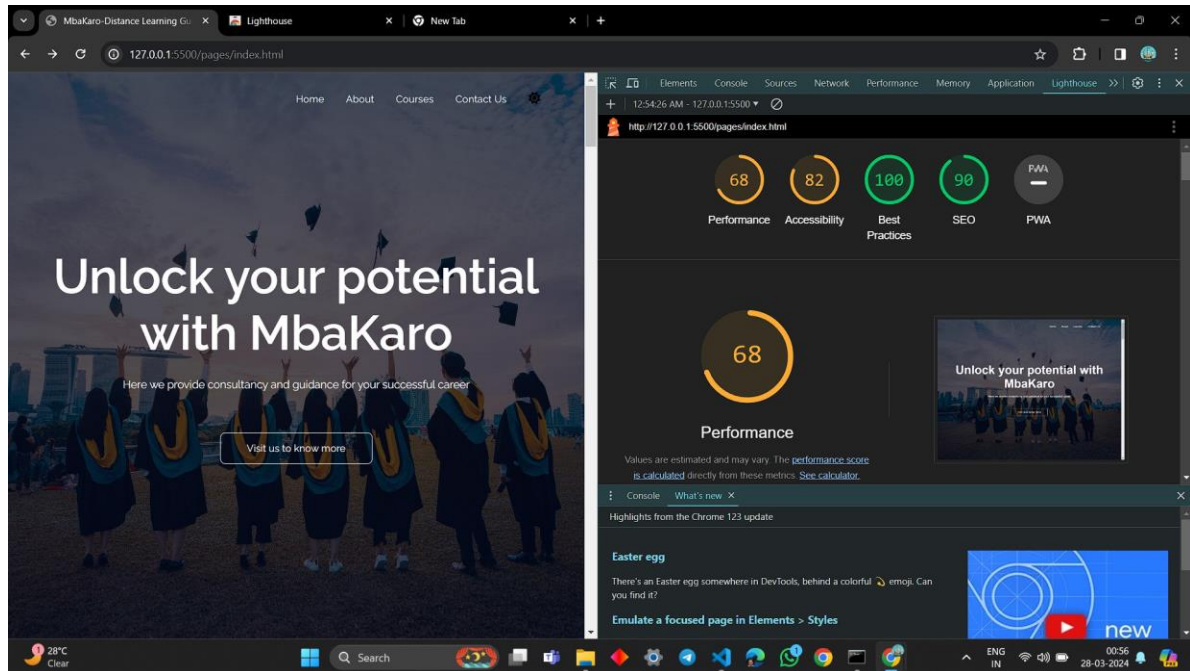
Lighthouse evaluates several key factors:

1. Service Worker: Lighthouse checks if the web page has a service worker registered and properly configured. Service workers are essential for enabling features like offline caching and background sync in PWAs.
2. Offline Capabilities: Lighthouse assesses whether the PWA can function offline by caching essential resources and providing a meaningful offline experience to users.
3. App-like Behavior: Lighthouse examines if the PWA behaves like a native app, including features such as a splash screen, full-screen mode, and home screen installation prompts.

4. Responsive Design: Lighthouse verifies that the PWA is responsive and works well across various devices and screen sizes, ensuring a consistent user experience.
5. Performance: While not specific to PWAs, Lighthouse evaluates the performance of the web page, including metrics such as load time, speed index, and time to interactive. A fast and optimized PWA enhances user engagement and satisfaction.

Output:





The image shows two screenshots from the Lighthouse tool. The top screenshot displays the 'DIAGNOSTICS' section with several performance optimization opportunities. The bottom screenshot shows the 'Accessibility' audit results for a web page.

DIAGNOSTICS

- ▲ Minimize main-thread work — 2.5 s
- ▲ Eliminate render-blocking resources — Potential savings of 160 ms
- ▲ Properly size images — Potential savings of 575 KiB
- ▲ Serve images in next-gen formats — Potential savings of 444 KiB

Warnings: Unable to locate resource /images/college.jpg

- ▲ Enable text compression — Potential savings of 22 KiB
- ▲ Page prevented back/forward cache restoration — 1 failure reason

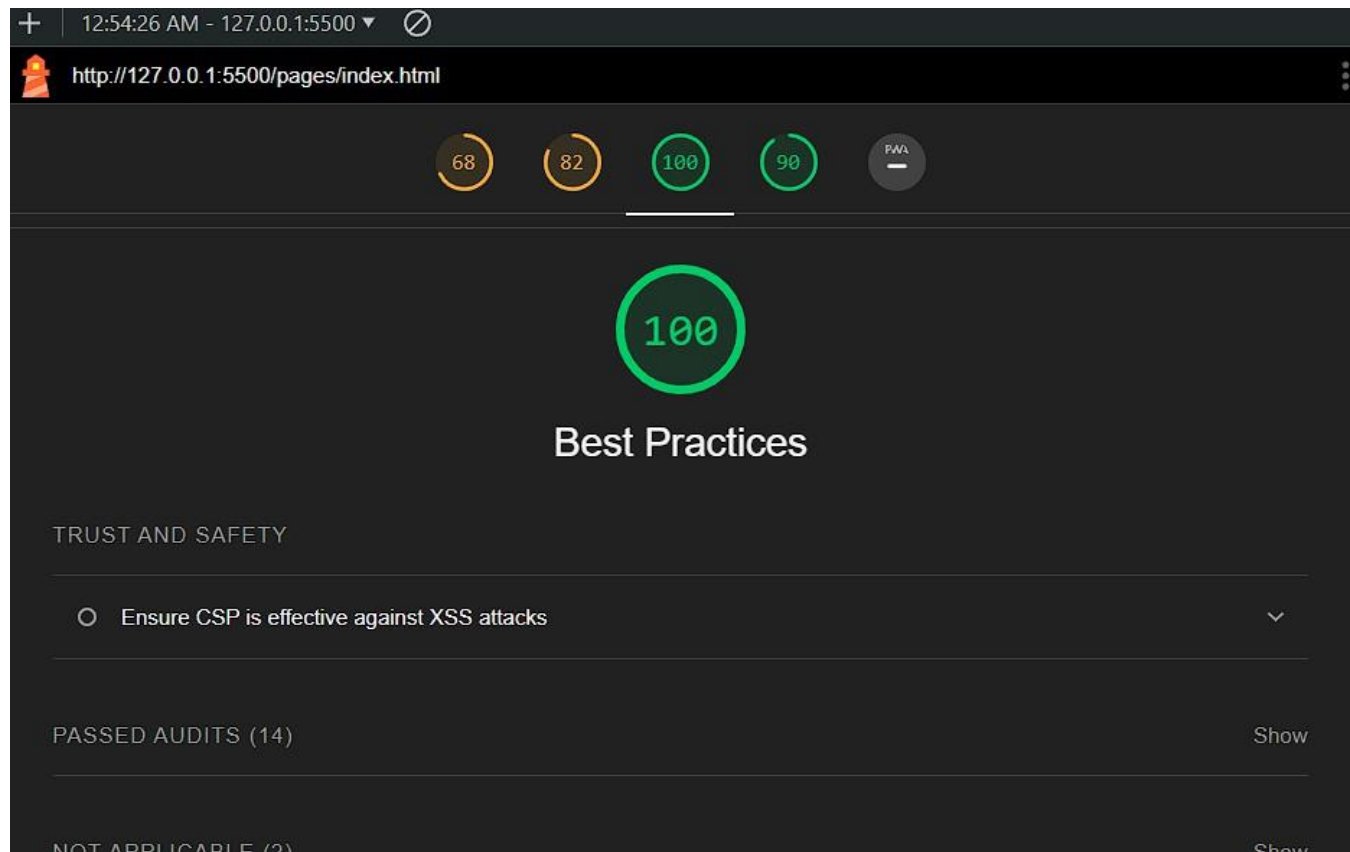
Accessibility

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.

CONTRAST

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

These are opportunities to improve the legibility of your content.



Conclusion:

In conclusion, utilizing Google Lighthouse PWA Analysis Tool to test the PWA functionality has provided valuable insights into its performance, accessibility, and best practices. This comprehensive analysis helps identify areas for improvement, ensuring that the PWA delivers an optimal user experience across various devices and network conditions.