Experiment 11

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

Theory :

Google Lighthouse:-
Google Lighthouse is an open-source, automated tool developed by Google for improving the quality of web pages. It can audit web applications for performance, accessibility, SEO, best practices, and Progressive Web App (PWA) features. Lighthouse provides detailed reports and scores, helping developers identify and fix issues to enhance user experience and optimize site performance. It can be run through Chrome DevTools, the command line, or as a Node module. Lighthouse is especially useful for ensuring that websites meet modern web standards and deliver a fast, accessible, and reliable experience across devices.

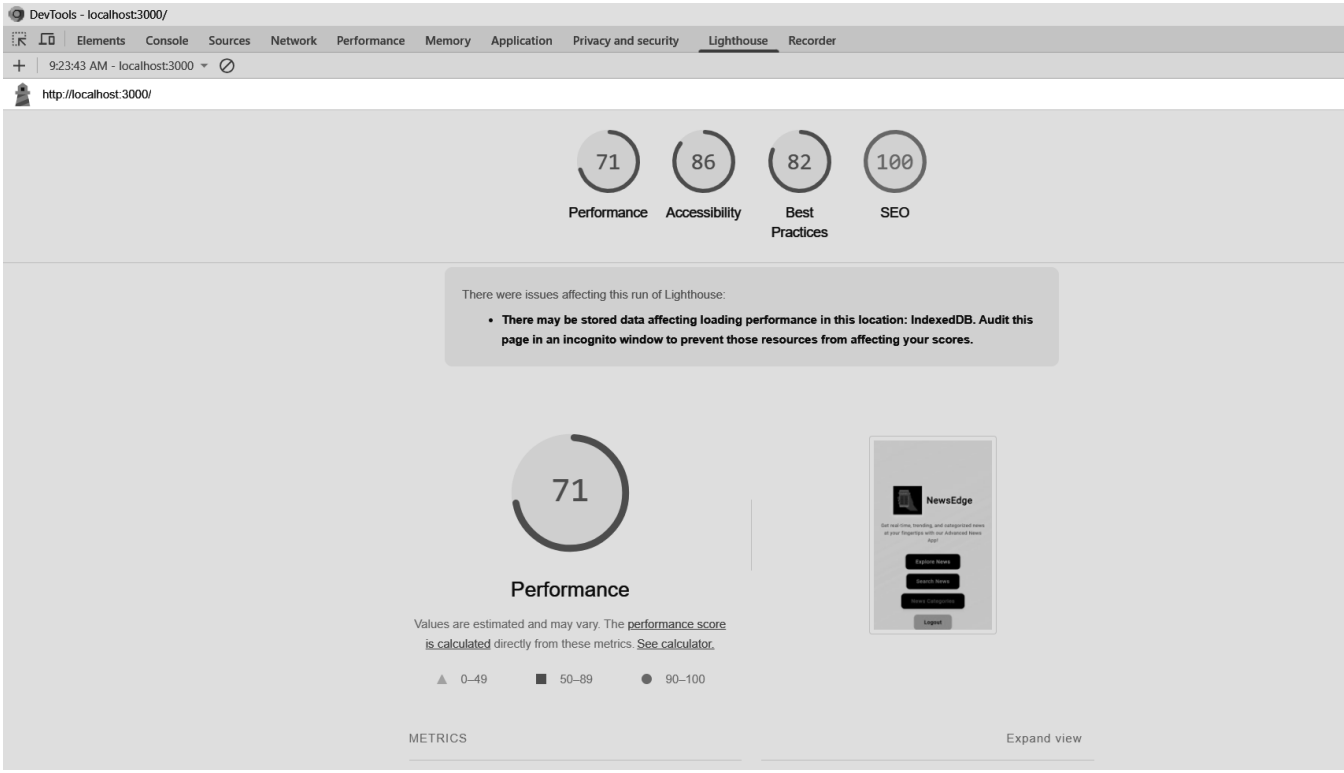
Key Features and Audit Metrics:-

Google Lighthouse evaluates web applications based on several key metrics: Performance, Accessibility, Best Practices, SEO, and Progressive Web App compliance. Each category provides a score out of 100 and includes specific suggestions for improvement. Performance metrics analyze load speed, interactivity, and visual stability using Core Web Vitals like First Contentful Paint (FCP) and Largest Contentful Paint (LCP). Accessibility checks ensure that users with disabilities can navigate and interact with the app effectively. SEO audits assess how well the site is optimized for search engines. These insights help developers build faster, more user-friendly, and search-optimized applications.

Github Link:-

https://github.com/Ishan2611/News_Edge/commit/6171d3b4e5945d00a2fa9eb22b08ced63911cd8e

Output:-



This shows the Lighthouse audit report for a web application running on localhost:3000, displayed within Chrome DevTools. Lighthouse is a tool used to evaluate various aspects of web app quality, including performance and best practices. The audit results show scores of 71 for Performance, 86 for Accessibility, 82 for Best Practices, and a perfect 100 for SEO. A warning is shown indicating that stored data like IndexedDB may affect performance and suggests running the audit in incognito mode. The performance section highlights areas for improvement to enhance the app's speed and responsiveness.

Conclusion:

In this experiment, we used the Google Lighthouse tool to analyze and evaluate the functionality of our News-App PWA. The audit provided insights into key aspects such as performance, accessibility, best practices, SEO, and PWA compliance. Based on the Lighthouse report, we were able to identify areas for improvement and optimize the app accordingly to deliver a better user experience. The tool helped us understand the importance of web performance and the factors that contribute to a high-quality Progressive Web App. This hands-on experience emphasized the value of continuous testing and optimization in web development.

Overall, Lighthouse proved to be a powerful resource for ensuring our PWA meets modern web standards.