Experiment 11

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

THEORY : Google Lighthouse is an open-source tool developed by Google that helps developers improve the quality and performance of web pages and web applications. It is commonly used to audit and analyze various aspects of a website, including performance, accessibility, best practices, SEO (Search Engine Optimization), and Progressive Web App (PWA) functionality. Features of Google Lighthouse:

1. Audit Capabilities:

- Google Lighthouse can perform audits on different aspects of a web page or web application.
- It evaluates performance metrics such as load time, page speed, and resource optimization.
- It checks accessibility standards to ensure that websites are usable by people with disabilities.
- It assesses best practices to identify areas where coding standards can be improved.
- It analyzes SEO factors to help improve search engine rankings.
- It examines PWA features to verify if a web app meets the criteria for being considered a Progressive Web App.

2. Scoring System:

- Lighthouse provides a scoring system for each audit category, ranging from 0 to 100.
- Higher scores indicate better performance, accessibility, best practices, SEO, and PWA compliance.
- The scores are accompanied by detailed information and recommendations for improving each aspect.

3. Detailed Reports:

- After running an audit, Lighthouse generates a detailed report that includes scores, metrics, and recommendations.
- The report highlights areas of concern and provides actionable insights to optimize web pages and web apps.

4. Integration with DevTools: - Lighthouse is integrated into Chrome DevTools, making it easily accessible for developers. - It can be launched directly from DevTools to audit a specific web page or web app.

5. Open-Source and Extensible:

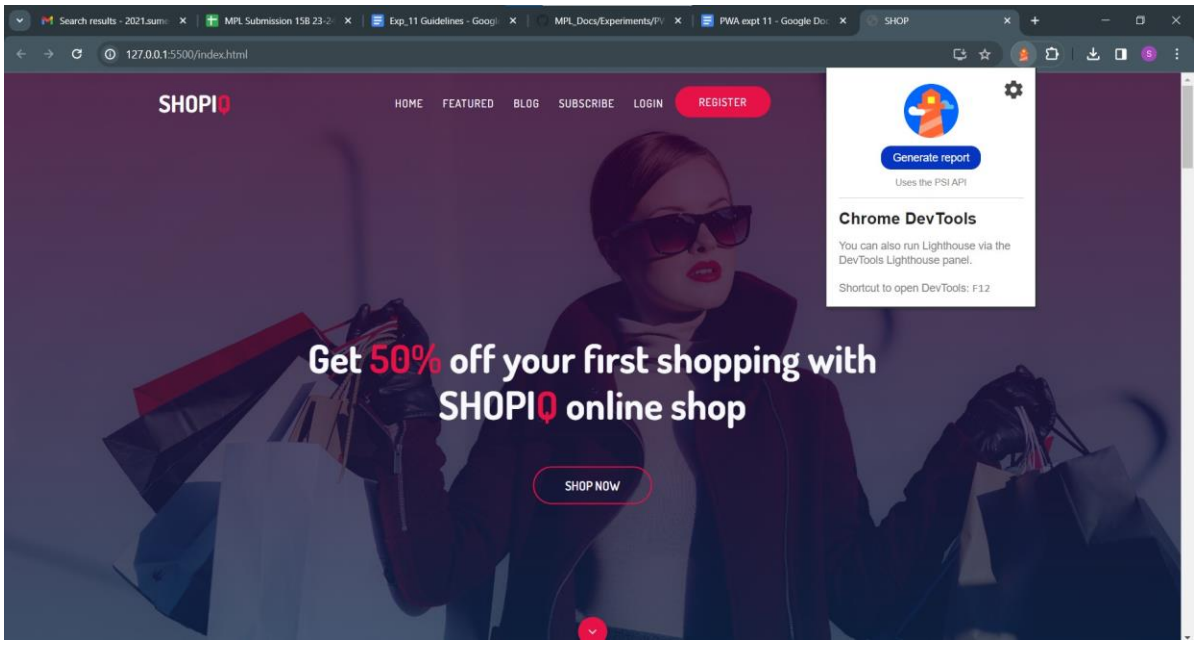
- Lighthouse is an open-source tool, allowing developers to contribute to its development and customize its functionality.
- It supports plugins and extensions, enabling additional capabilities and integrations.

6. Focus on Performance Optimization:

- One of Lighthouse's primary focuses is on performance optimization, helping developers identify and address issues that impact page load times and user Experience.

Steps : To use Google Lighthouse to test the Progressive Web App (PWA) functioning, follow these steps:

1. Open Chrome DevTools: - Open Google Chrome browser. - Go to the website you want to test as a PWA. - Right-click on the page and select "Inspect" or press `Ctrl+Shift+I` (Windows/Linux) or `Cmd+Option+I` (Mac) to open Chrome DevTools.



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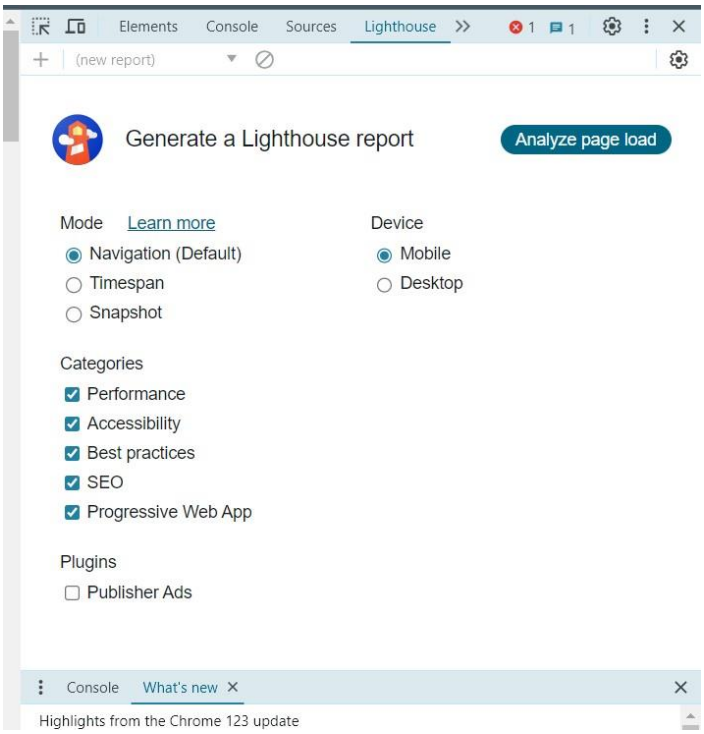
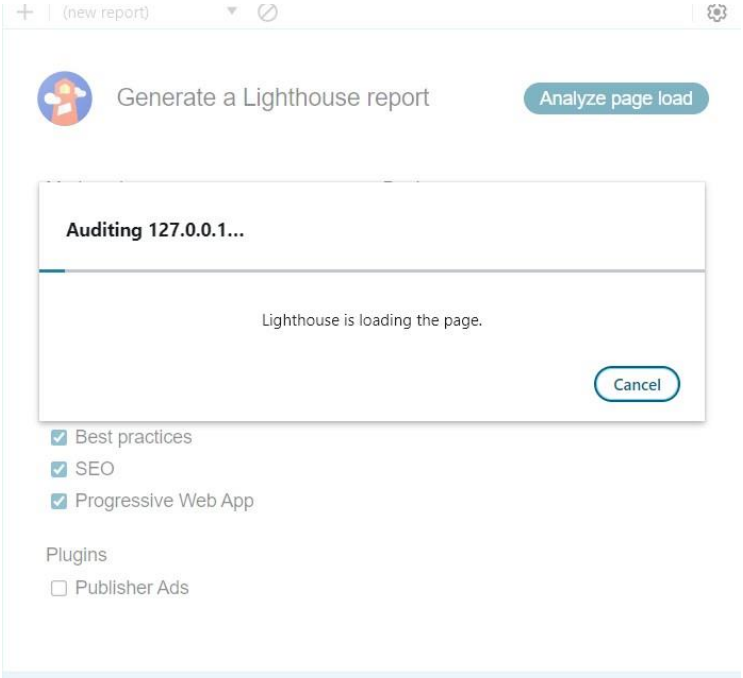
2. Navigate to the Lighthouse Tab: - In Chrome DevTools, click on the "Lighthouse" tab at the top of the DevTools panel.

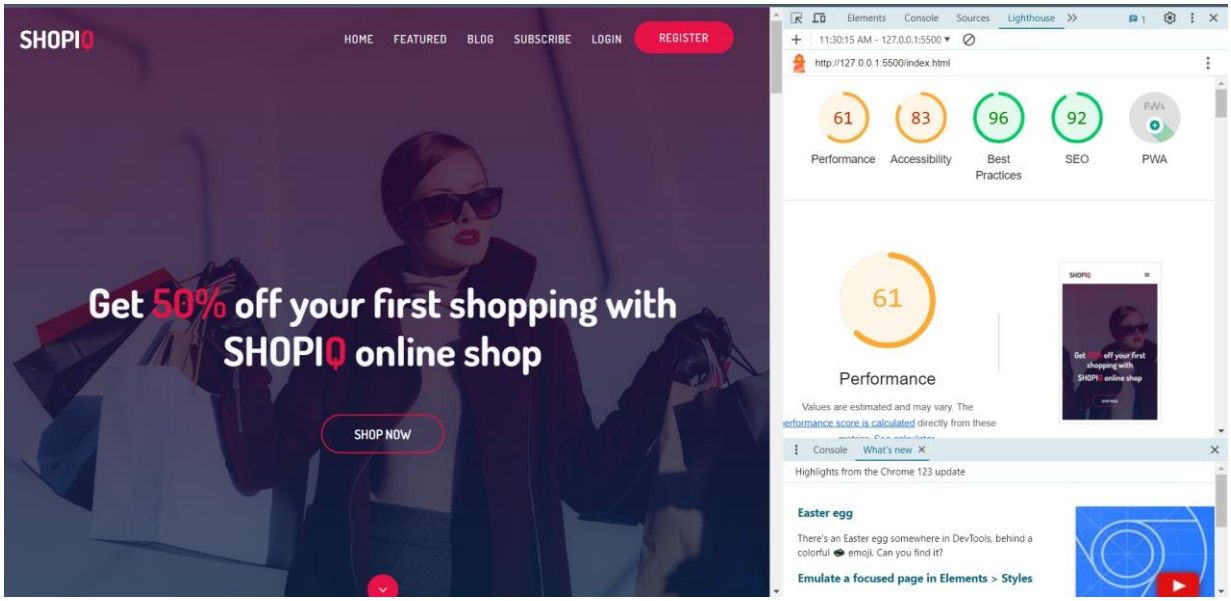


Step 3: Click on analyze page load to generate report



4. View the Audit Results:

- After the audit is complete, Lighthouse will display a report with scores and detailed information for each category.
- In the PWA section, you can check if your website meets the PWA criteria, such as having a service worker, being responsive on different devices, having a valid manifest file, etc.
- Lighthouse will provide suggestions for improvements and optimizations to enhance your PWA functionality.



Conclusion: Hence we have understood the working of Google Lighthouse PWA analysis tool, and used Google Lighthouse tool to test and analyze the performance statistics of our E-commerce Progressive web application.