Experiment 11

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

Theory:

Lighthouse is an open-source, automated tool for improving the quality of web pages. It is commonly used to audit web pages for performance, accessibility, best practices, SEO, and Progressive Web App (PWA) compliance.

1. What is Lighthouse?:
   - Lighthouse is an automated tool developed by Google that runs audits on web pages, providing insights and recommendations to improve their quality.
   - It can be used as a Chrome DevTools extension, as a Node.js module, or via the online web.dev tool.

2. Progressive Web App (PWA) Analysis:
   - Lighthouse includes a set of audits specifically designed to assess the compliance of a web page with the principles of Progressive Web Apps (PWAs).
   - PWAs are web applications that leverage modern web technologies to provide users with a native app-like experience, including offline functionality, push notifications, and home screen installation.

3. PWA Audit Metrics:
   - Lighthouse PWA analysis evaluates various metrics related to the core characteristics of PWAs:
     - Progressive Enhancement: Ensuring that the web app works for all users, regardless of the browser or device they use.
     - Fast and Reliable Performance: Assessing factors such as page load time, time to interactive, and offline capabilities.
     - Engagement and Retention: Examining features like push notifications and installation prompts to increase user engagement and retention.
     - Accessibility: Checking for accessibility issues to ensure the web app is usable by all users, including those with disabilities.
     - Best Practices: Evaluating adherence to best practices for web development, security, and performance optimization.

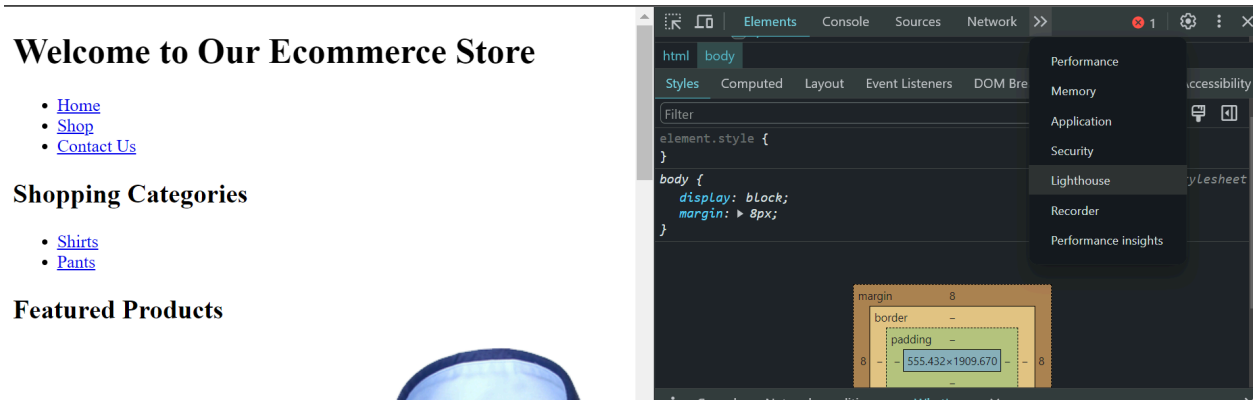
4. PWA Audit Results:
   - After running the PWA analysis, Lighthouse provides a report with detailed information about the performance of the web page as a Progressive Web App.
   - It includes a score out of 100, along with specific recommendations for improving the PWA characteristics of the web page.
   - The report highlights areas where the web page meets the criteria for a PWA and identifies areas for improvement to enhance the user experience.

5. Benefits of PWA Compliance:
- Achieving PWA compliance improves the overall user experience of a web application, leading to increased user engagement, higher conversion rates, and improved search engine rankings.
- PWAs offer benefits such as offline access, faster load times, push notifications, and the ability to install the app on the user's home screen, enhancing user convenience and satisfaction.

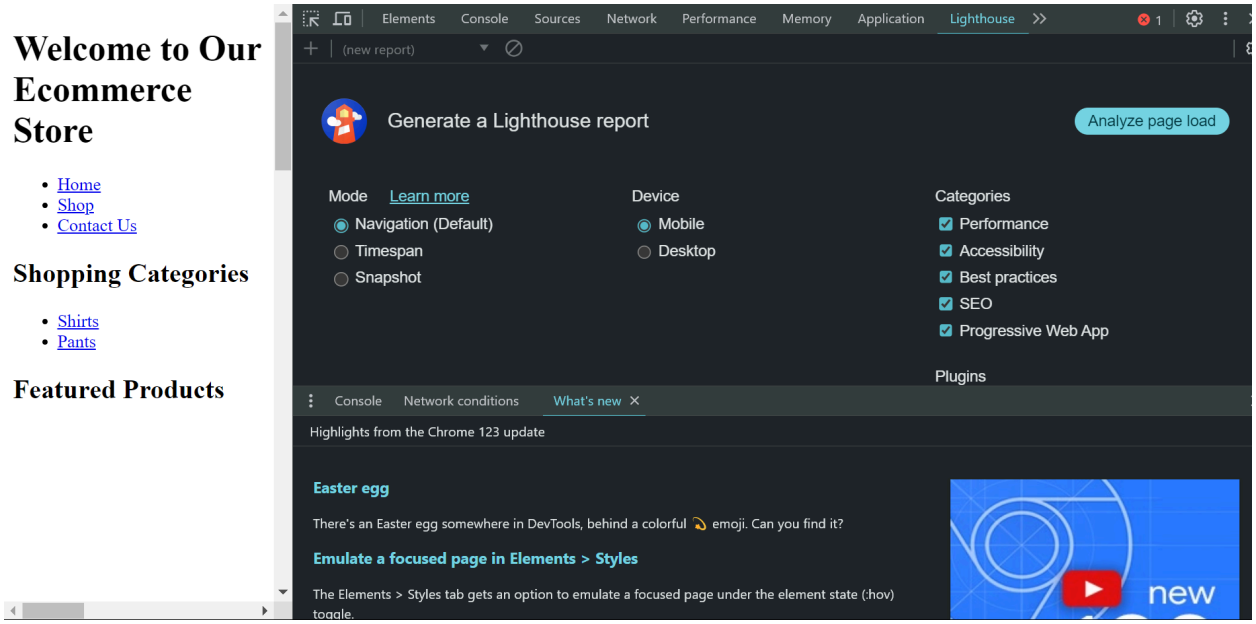
Implementation:

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.

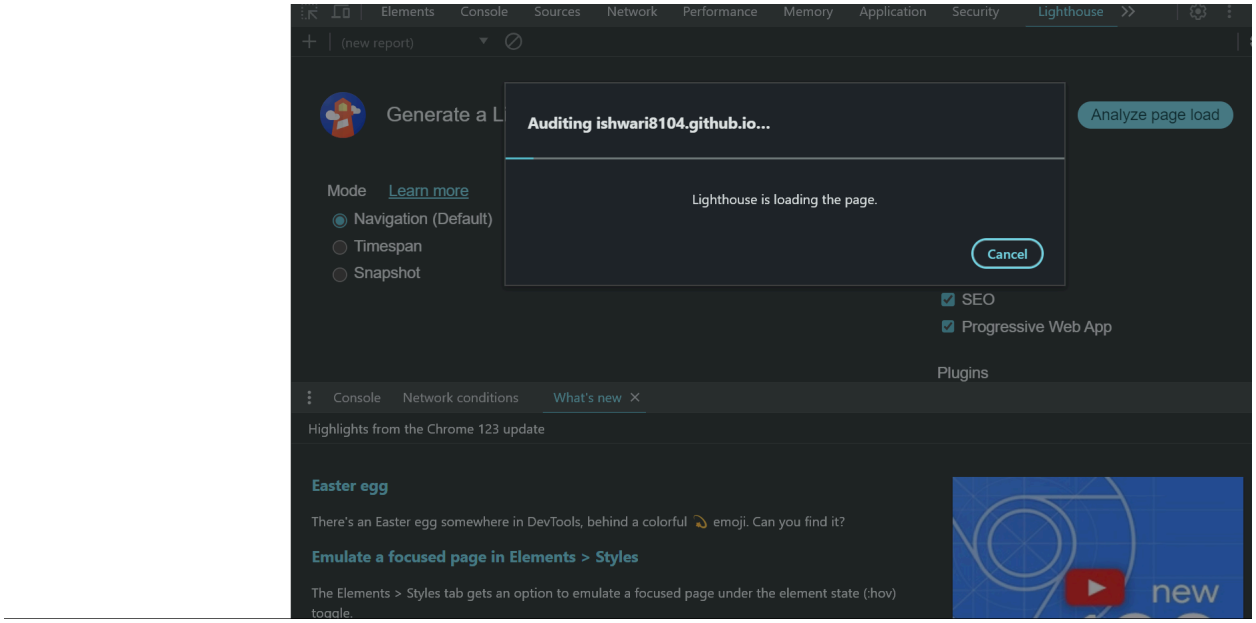
2. Navigate to the Lighthouse Tab:
- In Chrome DevTools, click on the "Lighthouse" tab at the top of the DevTools panel.

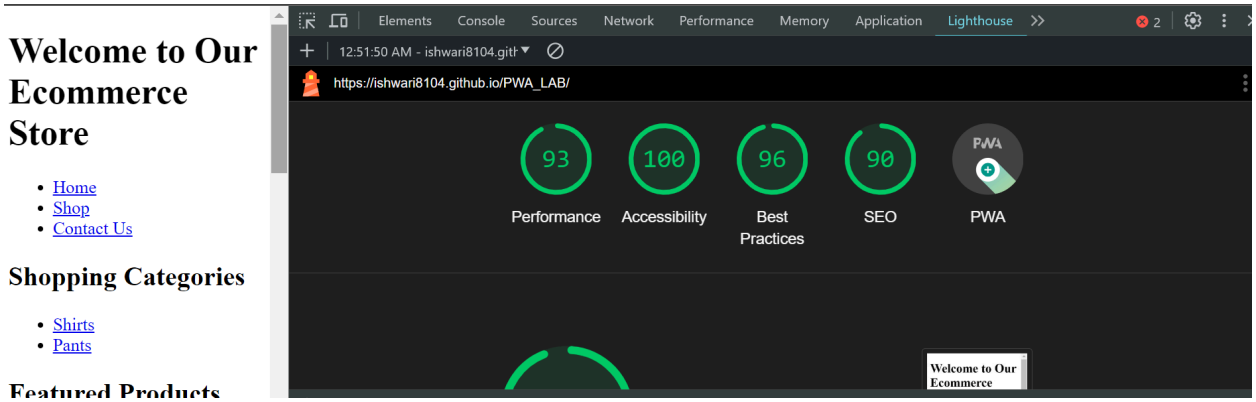


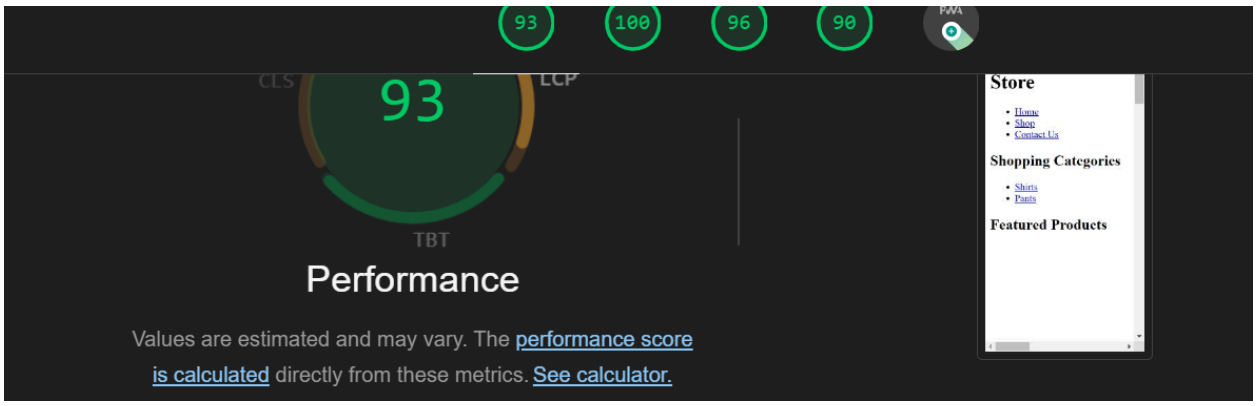
3. Run the Lighthouse Audit:
- Click on the "Generate report" button to start the audit process.
You can choose to audit for Performance, Accessibility, Best Practices, SEO, and Progressive Web App (PWA) functionality. Make sure to select the "Progressive Web App" checkbox.

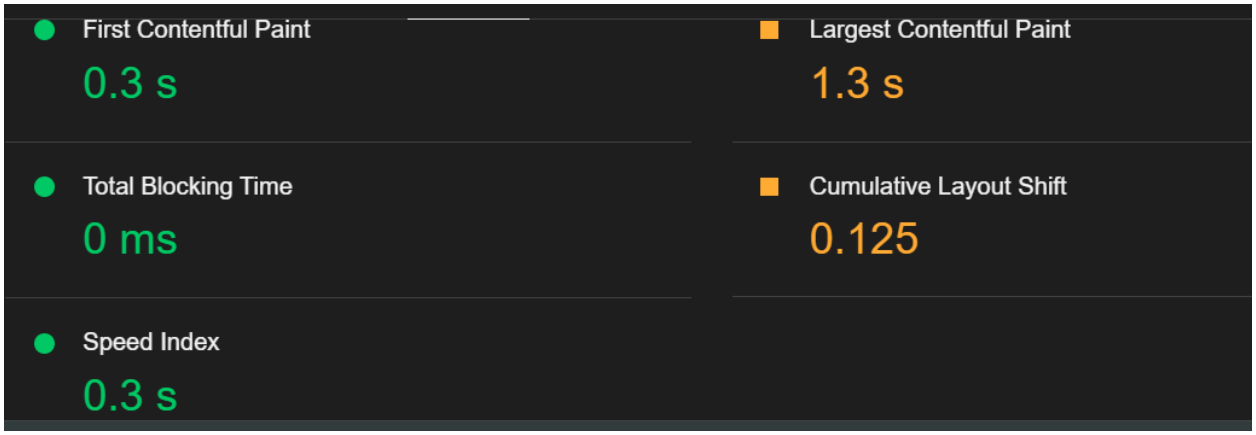


4. View the Audit Results:
- After the audit is complete, Lighthouse will display a report with scores and detailed information for each category.
- In the PWA section, you can check if your website meets the PWA criteria, such as having a service worker, being responsive on different devices, having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




Welcome to Our Ecommerce Store
Home
Shop
Contact Us
Shopping Categories
Shirts
Pants
Featured Products
Elements
Console
Sources
Network
Performance
Memory
Application
Lighthouse
https://ishwari8104.github.io/PWA_LAB/
93
100
96
90
Performance
Accessibility
Best Practices
SEO
PWA


93
100
96
90
CLS
LCP
TBT
Performance
Values are estimated and may vary. The performance score is calculated directly from these metrics. See calculator.
Store
Shopping Categories
Featured Products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Total Blocking Time
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Speed Index
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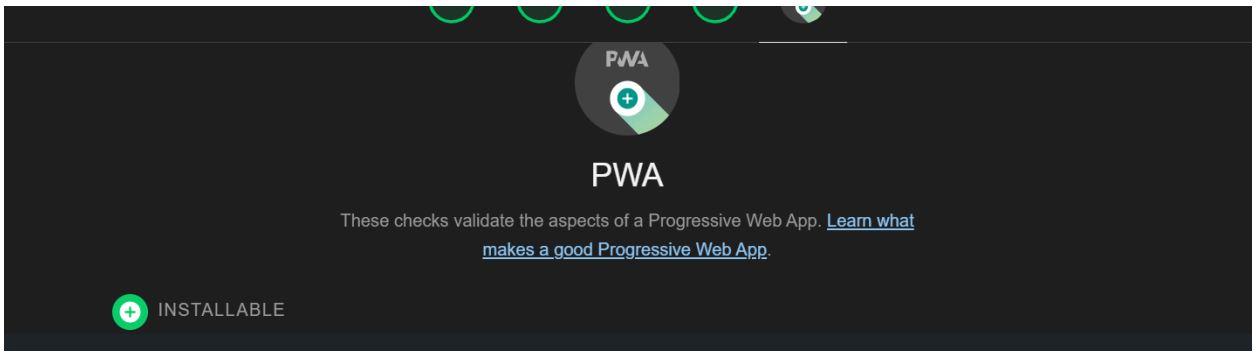
PWA
PWA
These checks validate the aspects of a Progressive Web App. Learn what makes a good Progressive Web App.
INSTALLABLE

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.