Experiment No. 11

Aim : To study and implement deployment of Ecommerce PWA to GitHub Pages.

Theory :
Google Lighthouse:
Google Lighthouse is an invaluable tool for auditing web applications, offering insights into various performance metrics, mobile compatibility, and Progressive Web App (PWA) implementations. It provides a comprehensive report in just a few minutes, comparable to what a professional auditor might take weeks to compile.

Key Features and Audit Metrics:

1. **Performance:** This score reflects the page's loading speed, time to display meaningful content, and other performance-related aspects. A higher score indicates better performance, with 100 representing the 98th percentile.

2. **PWA Score (Mobile):** Google Lighthouse evaluates the Progressive Web App features of your site, such as Service Worker implementation, viewport handling, offline functionality, and performance in script-disabled environments. It follows Google's Baseline PWA checklist to assign scores.

3. **Accessibility:** This metric assesses how accessible your website is, particularly for users with disabilities. It considers elements like 'aria-' attributes, audio captions, button names, etc. Accessibility scores are pass/fail, with a 0 if elements are not screen-reader friendly.

4. **Best Practices:** Google Lighthouse checks for adherence to best practices in web development, such as using HTTPS, avoiding deprecated code elements, and ensuring secure password input. It also looks for alerts regarding geo-location and cookie usage on page load.
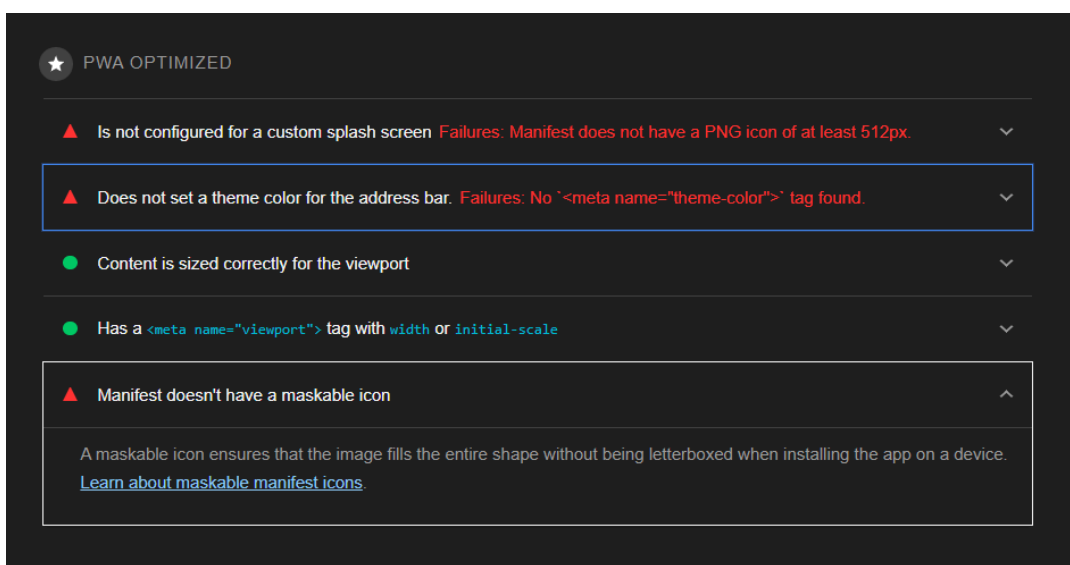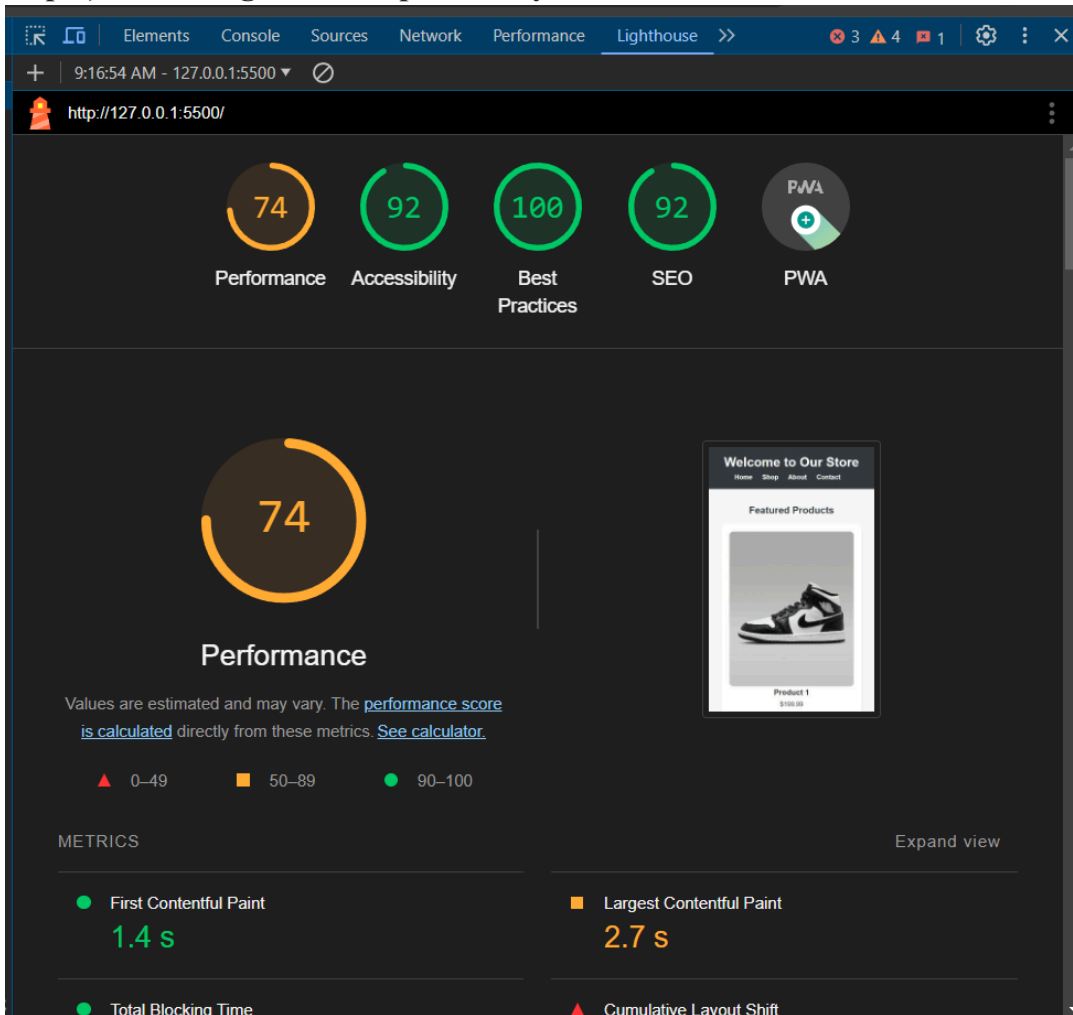
Steps:

Step 1) Open the html page with liveserver and go to inspect element or developer tools and go to Lighthouse section.
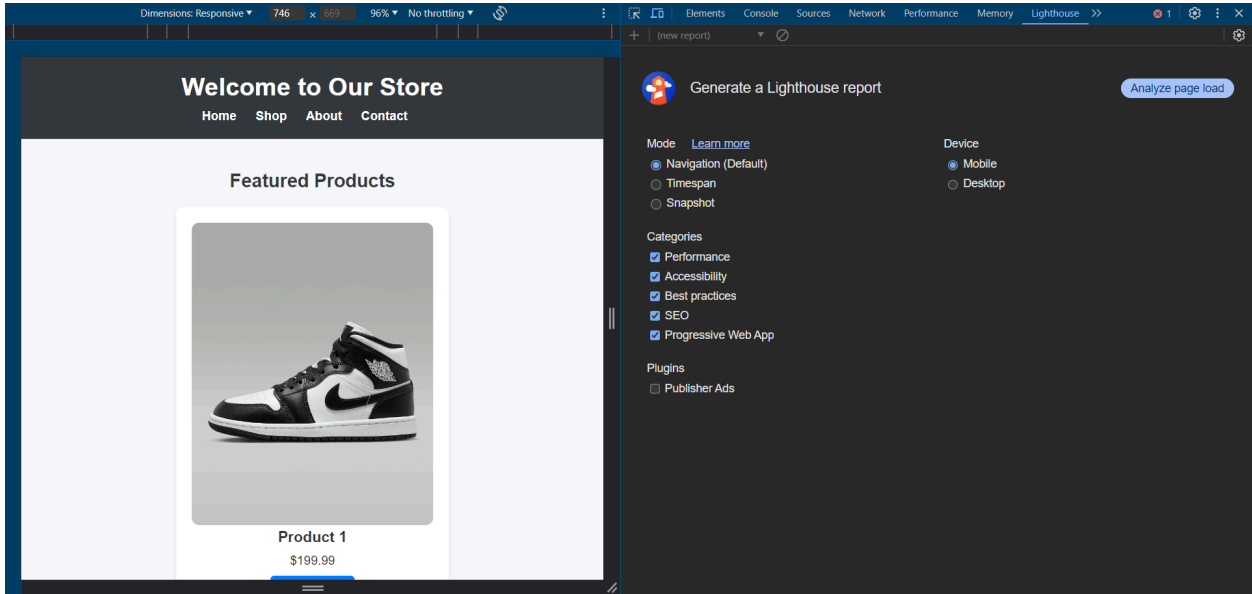
Step 2) Click on Analyze Page Load
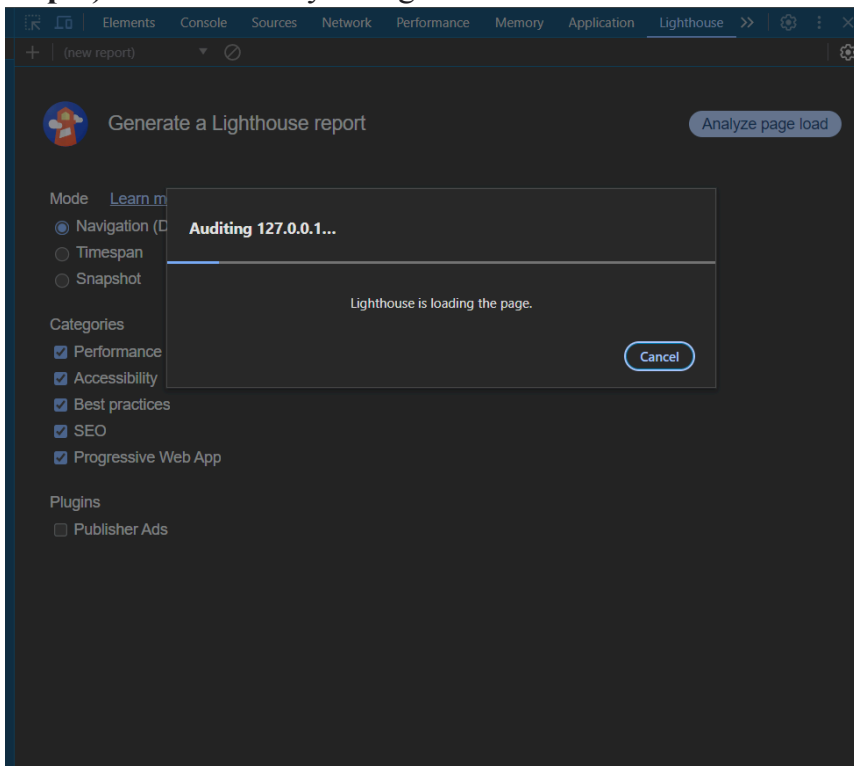
Step 3) This will generate reports for your website

Step 4) Make changes to the file by adding
<meta name="theme-color" content="#007bff" /> to index.html
And adding "purpose": "any maskable" to icons

Changes in manifest.json:

```
{
 "name": "Ecommerce Homepage",
 "short_name": "Ecommerce",
 "start_url": "/",
 "display": "standalone",
 "theme_color": "#007bff",
 "background_color": "#ffffff",
 "icons": [
   {
    "src": "images/Jordans1.jpeg",
    "type": "image/png",
    "sizes": "225x225"
   },
   {
    "src": "images/Jordans2.jpeg",
    "type": "image/png",
    "sizes": "225x225",
    "purpose": "any maskable"
   },
   {
    "src": "images/Jordans3.jpeg",
    "type": "image/png",
    "sizes": "225x225",
    "purpose": "any maskable"
   },
   {
    "src": "images/Jordans5.jpeg",
    "type": "image/png",
    "sizes": "512x512",
    "purpose": "any maskable"
   }
 ],
 "splash": {
  "imagePath": "images/splash.png",
  "backgroundColor": "#ffffff",
  "resizeMode": "cover"
 },
 "description": "Homepage for our Ecommerce store.",
 "categories": ["shopping", "business"],
 "prefer_related_applications": false,
 "related_applications": [],
```

```
 "scope": "/",
 "serviceworker": {
   "src": "path/to/serviceworker.js",
   "use_cache": true
}
}
```

Step 5) Open Lighthouse again and analyze page load again
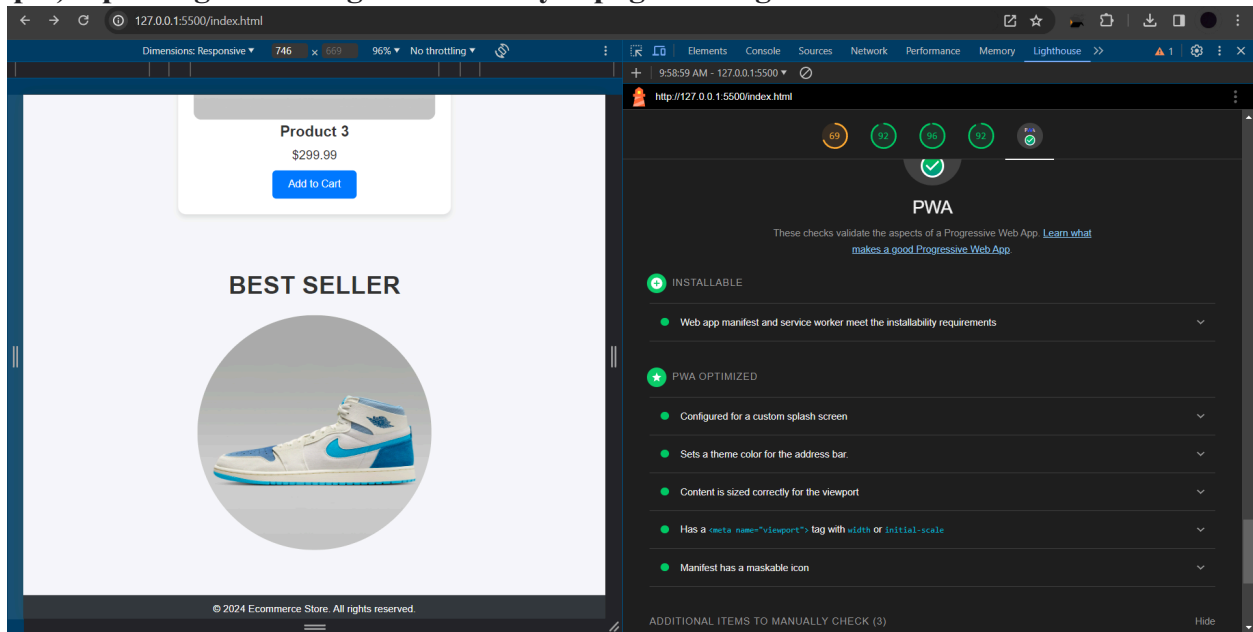
Conclusion: Thus we successfully used google Lighthouse PWA Analysis Tool for testing the PWA functioning.