

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

Theory:

Lighthouse is a tool provided by Google that helps us check how well our web app performs as a Progressive Web App (PWA). It analyzes important factors like performance, accessibility, SEO, best practices, and PWA features.

In this experiment, we used Lighthouse in Chrome DevTools to test our deployed PWA. Lighthouse runs a series of audits and gives a score out of 100 for each category. These scores show how well our app performs and where we can improve.

What we implemented:

- We deployed our PWA (EcoGadgetHubPWA) on GitHub Pages.
- Then, we ran Lighthouse from Chrome DevTools on the live site.
- Lighthouse gave us excellent scores:
 - Performance: 100
 - Accessibility: 89
 - Best Practices: 93
 - SEO: 91

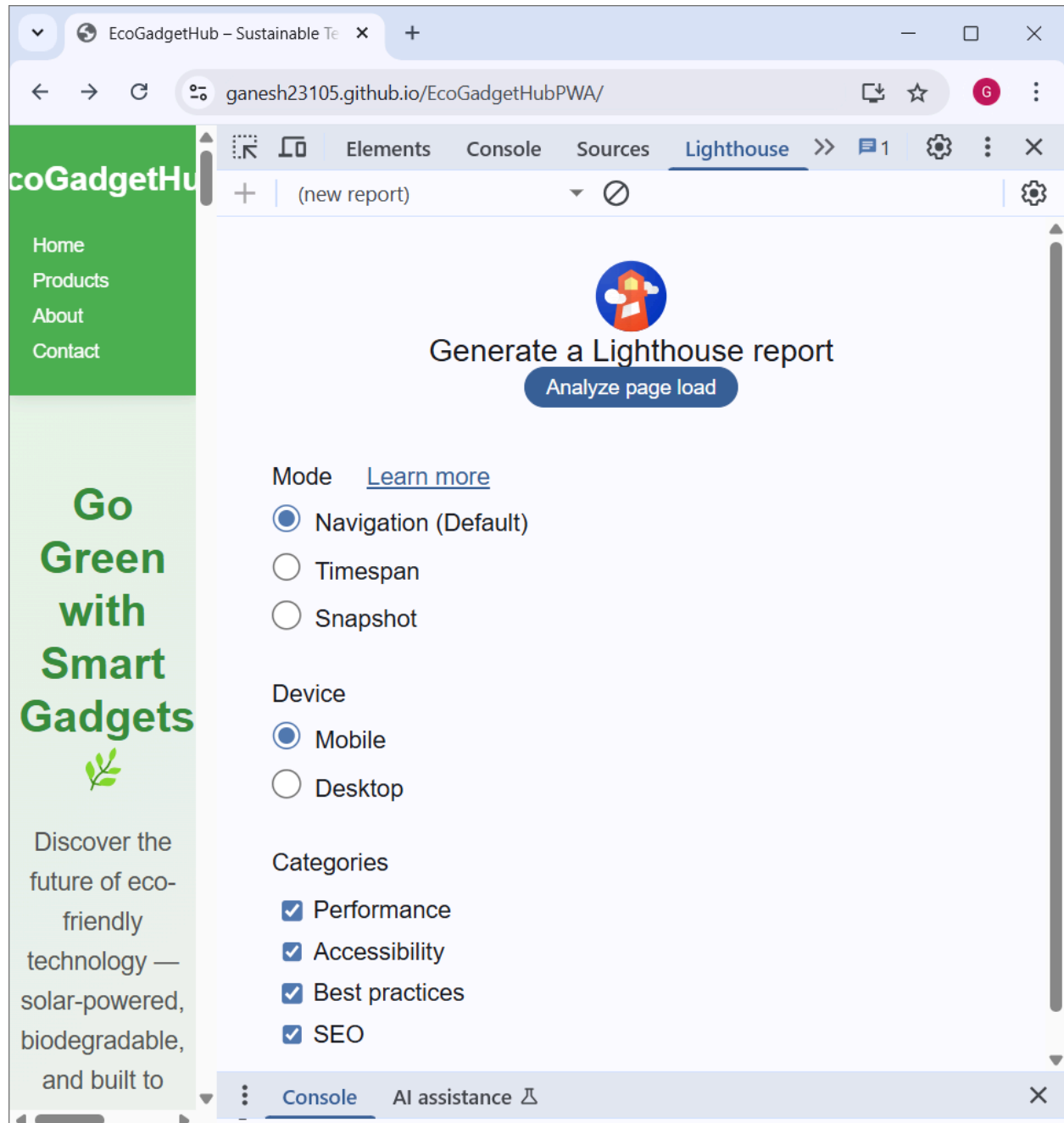
These high scores show that our app is fast, user-friendly, and optimized for search engines.

Some minor suggestions were also given, like improving color contrast and adding a meta description, which can help make the app even better.

manifest.json

```
{
  "name": "Eco Friendly Gadget Collection",
  "short_name": "Ecogadgethub",
  "start_url": "/index.html",
  "display": "standalone",
  "background_color": "#ffffff",
  "theme_color": "#4caf50",
  "orientation": "portrait",
  "scope": "/",
  "icons": [
    {
      "src": "icons/icon-192x192.png",
      "sizes": "192x192",
      "type": "image/png",
      "purpose": "any maskable"
    },
    {
      "src": "icons/icon-512x512.png",
```

```
"sizes": "512x512",  
"type": "image/png",  
"purpose": "any maskable"  
}  
]  
}
```



Conclusion

In this experiment, we tested the EcoGadgetHub PWA using Google Lighthouse and achieved high scores in performance, accessibility, best practices, and SEO. Initially, we faced a layout shift warning due to missing image dimensions, which we resolved by adding explicit **width** and **height** to all image tags.