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

Theory:

In this experiment, we used Google Lighthouse, a developer tool available in Chrome, to analyze and test how well our Progressive Web App (PWA) performs. Lighthouse helps measure a web app's performance in terms of speed, accessibility, best practices, SEO, and specifically PWA compliance.

Lighthouse checks if the app behaves like a proper PWA — including features like:

- Fast loading speed,
- Offline support,
- Mobile responsiveness,
- Add to Home Screen prompt,
- Proper service worker registration.

In our project, we already implemented key PWA features like:

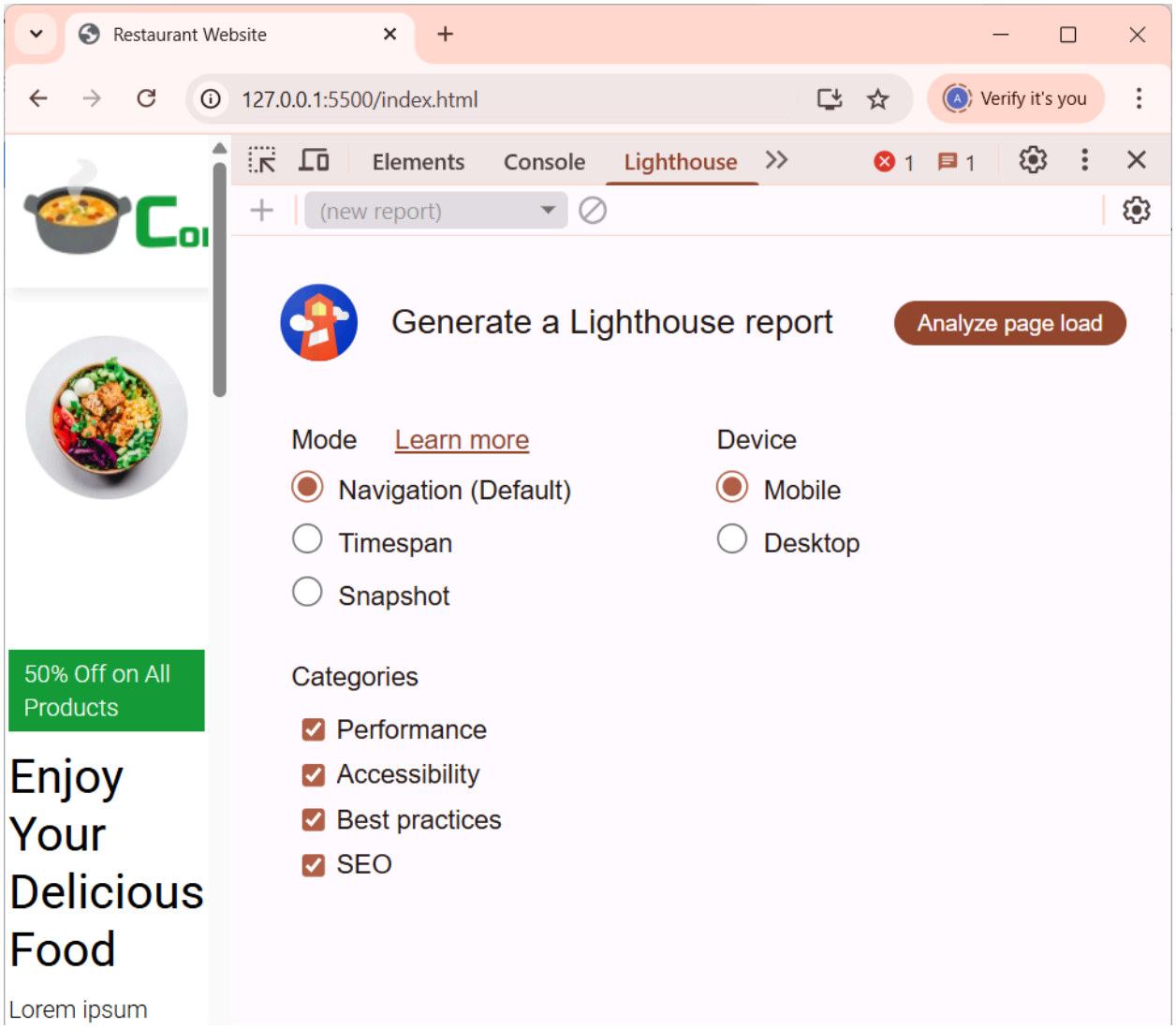
- A registered service worker that handles caching of assets,
- A valid Web App Manifest with app name, icons, and theme colors,
- Offline functionality using cache strategies,
- HTTPS and responsive design for mobile-friendliness.

After running Lighthouse, we got high scores in Performance (96), Accessibility, Best Practices, and SEO. This confirms that our PWA is well-optimized and meets most of the modern standards set for web apps.
This analysis helped us understand the strengths of our PWA and also suggested small improvements, if needed, to make it even better.

manifest.json

```
{
  "name": "Restaurant Website",
  "short_name": "cooking",
  "start_url": "index.html",
  "display": "standalone",
  "background_color": "#5900b3",
  "theme_color": "black",
  "scope": ".",
  "description": "Cooking, also known as cookery or professionally as the culinary arts, is the art, science and craft of using heat to make food more palatable, digestible, nutritious, or safe.",
  "icons": [
    {
      "src": "images/app.png",
      "sizes": "192x192",
      "type": "image/png",
      "purpose": "any maskable"
    },
```

```
    {
      "src": "images/big.png",
      "sizes": "512x512",
      "type": "image/png",
      "purpose": "any maskable"
    }
  ]
}
```



Conclusion

In this experiment, we implemented key PWA features like service worker, manifest, and caching in our restaurant website and used Google Lighthouse to analyze its performance. Initially, the performance score was low due to unoptimized images and unused CSS, but we resolved it by compressing images and removing unnecessary styles, which improved our score significantly.