

**Name:** Yukta Bhatia

**RollNo:** 07

**Class:** D15A

## **Experiment-11**

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

### **Theory:**

Google Lighthouse

Lighthouse is an open-source, automated tool for improving the quality of web pages. You can run it against any web page, public or requiring authentication. It has audits for performance, accessibility, progressive web apps, SEO and more.

You can run Lighthouse in Chrome DevTools, from the command line, or as a Nodemodule. You give

Lighthouse a URL to audit, it runs a series of audits against the page, and then it generates a report on how well the page did. From there, use the failing audits as indicators on how to improve the page.

Each audit has a reference doc explaining why the audit is important, as well as how to fix it.

Features of Lighthouse

Google Lighthouse gives a breakdown of your site into the accompanying metrics. Here is a brief explanation of each of the aforementioned metrics:

#### **1. Performance**

Performance is generally viewed as the most valuable metric given by the Google Lighthouse tool. Like the PageSpeed Insights, the Performance area of the Lighthouse report contains a few helpful metrics you can use to advance your site to climb Google's rankings. The Performance segment of the Lighthouse report joins the Opportunities, Field Data, Lab Data, and Diagnostics metrics of the PageSpeed Insights tool.

A great example is the opportunities metric as it flags three types of render-blocking URL's namely stylesheets, scripts, and HTML imports. This merged perspective on performance metrics gives an exact and valuable analysis of your site's performance and any progressions you should make to expand your site's exhibition.

#### **2. Accessibility**

The first of the new regions of Google Lighthouse is the Accessibility metric. Basically what this metric does is feature potential chances to improve the availability and client experience of your mobile app or website.

Following the accessibility improvement report will guarantee that your clients can without much of a stretch explore and utilize your site. Just as guaranteeing that you have the most obvious opportunity with regards to positioning better on web search engines.

### 3. Best Practices

Another segment new to Google's analysis tools is the Best Practices metric. This region of the Lighthouse report doesn't carefully give execution related data. However, it will give you recommendations which can improve both your exhibition and client experience, particularly for mobile sites.

### 4. SEO

The latest and most dynamic of the highlights in Google's Lighthouse instrument is the SEO metric.

PageSpeed Insights doesn't offer this tool. This is why most web designers and SEO specialists prefer to utilize Google Lighthouse to analyze a website. The SEO metric gives fundamental tools to examine your page's streamlining for search engine results rankings. While there are numerous more factors which Lighthouse doesn't consider or quantify, the most essential focuses are secured.

### 5. Progressive Web Applications



The Progressive Web App area is another of Google's most up to date execution measurements incorporated into its Lighthouse tool. While the meaning of a Progressive Web App (PWA) hasn't been especially clear, Google's documentation expresses that there are a few key variables which make a site a PWA. A great feature of this metric is registering service workers which allow you to enable push notifications on your web app

### Code:

#### Manifest.json

```
{
  "short_name": "React App",
  "name": "Create React App Sample",
  "icons": [
    {
      "src": "favicon.ico",
      "sizes": "64x64 32x32 24x24 16x16",
      "type": "image/x-icon",
      "purpose": "any maskable"
    },
    {
      "src": "logo192.png",
      "type": "image/png",
```

```
"sizes": "192x192",
"purpose": "any maskable"
},
{
  "src": "logo512.png",
  "type": "image/png",
  "sizes": "512x512",
  "purpose": "any maskable"
}
],
"start_url": ".",
"display": "standalone",
"theme_color": "#000000",
"background_color": "#ffffff"
}
```



[Generate report](#)

Uses the PSI API


---

## Chrome DevTools

You can also run Lighthouse via the DevTools Lighthouse panel.

Shortcut to open DevTools: F12

Report Generated:

https://yukta-e-commerce-website.netlify.app/

66829696

DIAGNOSTICS

▲ Eliminate render-blocking resources — Potential savings of 1,790 ms

▼

▲ Reduce unused CSS — Potential savings of 23 KiB

▼

▲ Reduce unused JavaScript — Potential savings of 42 KiB

▼

▲ Largest Contentful Paint element — 3,920 ms

▼

▲ Avoid large layout shifts — 3 layout shifts found

▼

■ Properly size images — Potential savings of 178 KiB

▼

■ Serve images in next-gen formats — Potential savings of 60 KiB

▼

■ Avoid serving legacy JavaScript to modern browsers — Potential savings of 0 KiB

▼

■ Image elements do not have explicit width and height

▼

○ Initial server response time was short — Root document took 210 ms

▼

○ Avoids enormous network payloads — Total size was 466 KiB

▼

○ Avoids an excessive DOM size — 78 elements


▼

○ Avoid chaining critical requests — 2 chains found

▼

○ JavaScript execution time — 0.4 s

▼

https://yukta-e-commerce-website.netlify.app/

66829696

96

SEO

These checks ensure that your page is following basic search engine optimization advice. There are many additional factors Lighthouse does not score here that may affect your search ranking, including performance on [Core Web Vitals](#) [Learn more about Google Search Essentials](#).

MOBILE FRIENDLY

▲ Tap targets are not sized appropriately — 50% appropriately sized tap targets

▼

Make sure your pages are mobile friendly so users don't have to pinch or zoom in order to read the content pages. [Learn how to make pages mobile-friendly](#).

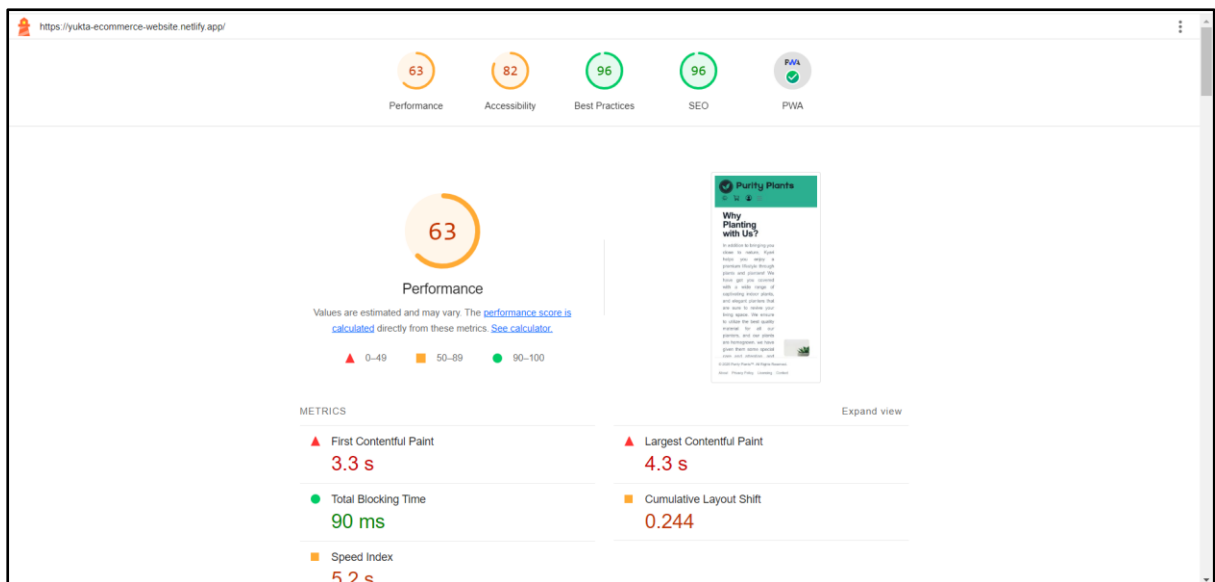
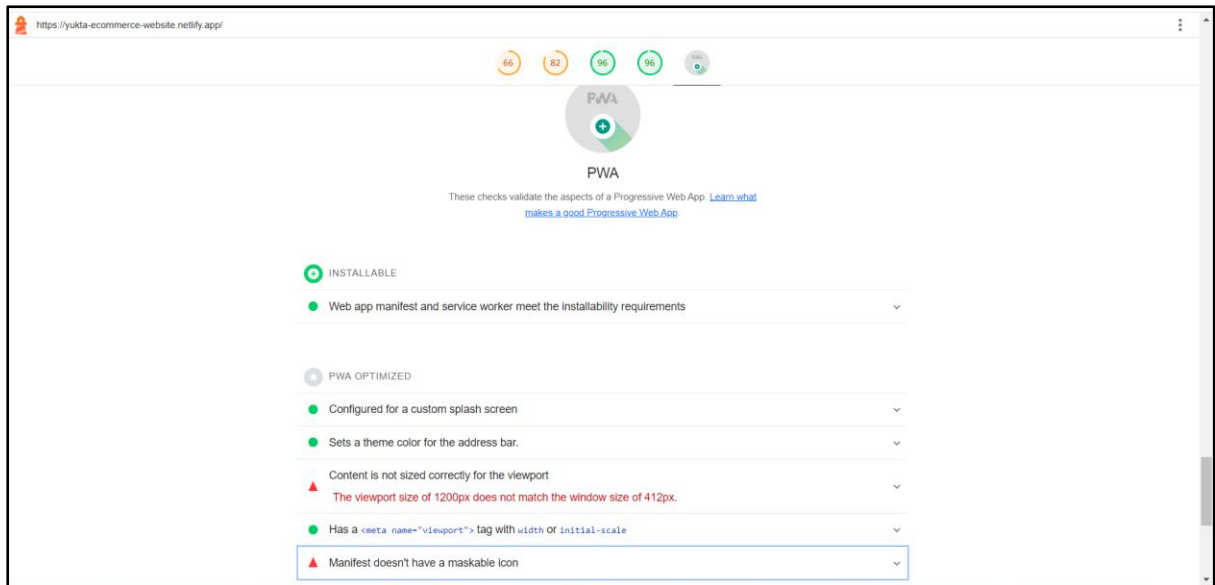
ADDITIONAL ITEMS TO MANUALLY CHECK (1)

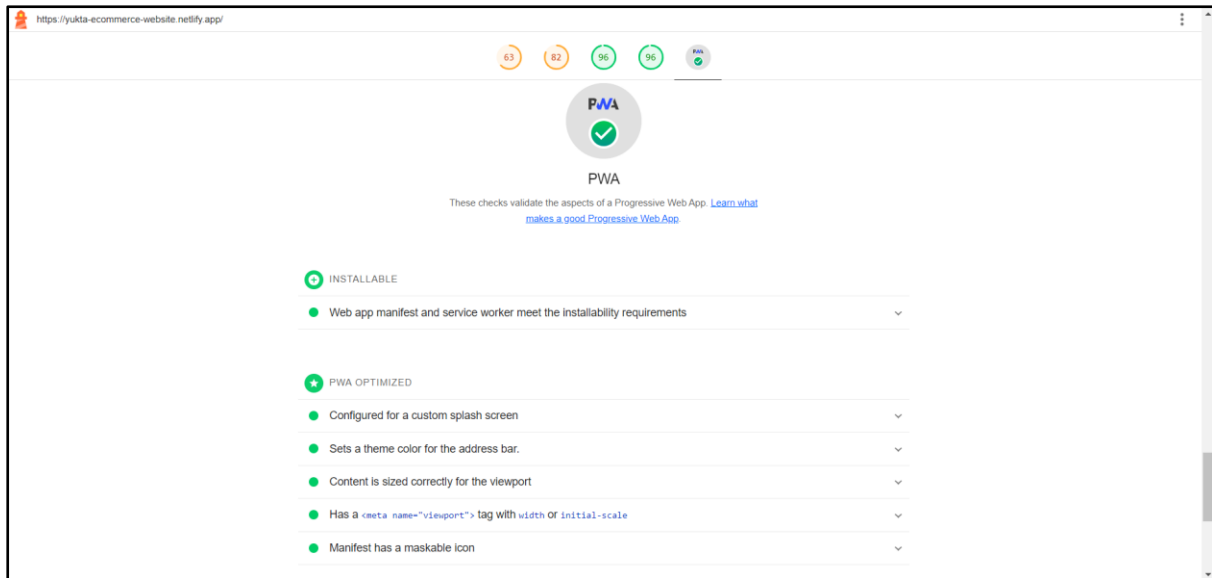
Show

Run these additional validators on your site to check additional SEO best practices.

PASSED AUDITS (12)

Show





**Conclusion:** In this experiment, we have successfully used Google Lighthouse PWA Analysis Tool for testing the PWA functioning.