

# Experiment 11

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

## Theory :

### Google Lighthouse :

Google Lighthouse is a tool that lets you audit your web application based on a number of parameters including (but not limited to) performance, based on a number of metrics, mobile compatibility, Progressive Web App (PWA) implementations, etc. All you have to do is run it on a page or pass it a URL, sit back for a couple of minutes and get a very elaborate report, not much short of one that a professional auditor would have compiled in about a week.

The best part is that you have to set up almost nothing to get started. Let's begin by looking at some of the top features and audit criteria used by Lighthouse.

### Key Features and Audit Metrics

Google Lighthouse has the option of running the Audit for Desktop as well as mobile version of your page(s). The top metrics that will be measured in the Audit are:

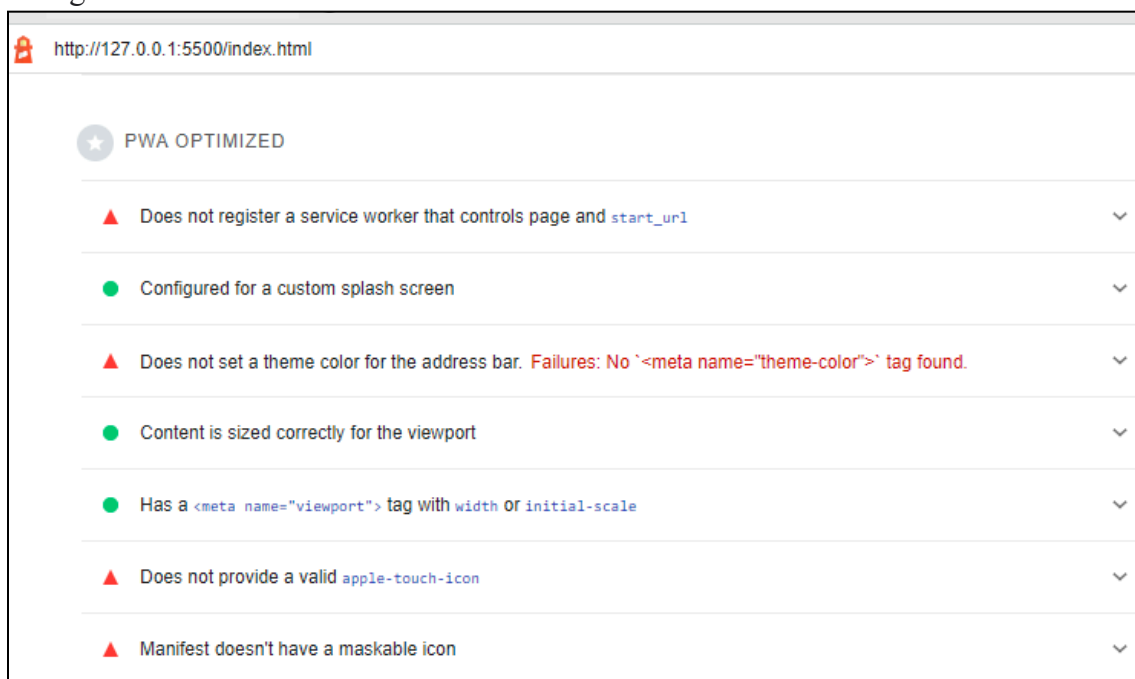
1. **Performance:** This score is an aggregation of how the page fared in aspects such as (but not limited to) loading speed, time taken for loading for basic frame(s), displaying meaningful content to the user, etc. To a layman, this score is indicative of how decently the site performs, with a score of 100 meaning that you figure in the 98th percentile, 50 meaning that you figure in the 75th percentile and so on.
2. **PWA Score (Mobile):** Thanks to the rise of Service Workers, app manifests, etc., a lot of modern web applications are moving towards the PWA paradigm, where the objective is to make the application behave as close as possible to native mobile applications. Scoring points are based on the Baseline PWA checklist laid down by Google which includes Service Worker implementation(s), viewport handling, offline

functionality, performance in script-disabled environments, etc.

3. **Accessibility:** As you might have guessed, this metric is a measure of how accessible your website is, across a plethora of accessibility features that can be implemented in your page (such as the ‘aria-’ attributes like aria-required, audio captions, button names, etc.). Unlike the other metrics though, Accessibility metrics score on a pass/fail basis i.e. if all possible elements of the page are not screen-reader friendly (HTML5 introduced features that would make pages easy to interpret for screen readers used by visually challenged people like tag names, tags such as <section>, <article>, etc.), you get a 0 on that score. The aggregate of these scores is your Accessibility metric score.

4. **Best Practices:** As any developer would know, there are a number of practices that have been deemed ‘best’ based on empirical data. This metric is an aggregation of many such points, including but not limited to: Use of HTTPS  
Avoiding the use of deprecated code elements like tags, directives, libraries, etc. Password input with paste-into disabled Geo-Location and cookie usage alerts on load, etc.

Changes made to the code :



For theme color add a meta tag in index.html-

```
<meta name="theme-color" content="#4285f4">
```

For a maskable icon add "purpose": "any maskable" to the icons in

manifest.json file For apple touch icon add the following meta tag in

index.html-

### Changes in manifest.json

```
{
  "name": "PWA Tutorial",
  "short_name": "PWA",
  "start_url": "index.html",
  "display": "standalone",
  "background_color": "#5900b3",
  "theme_color": "black",
  "scope": ".",
  "description": "This is a PWA tutorial.",
  "icons": [
    {
      "src": "app ui ecom/assets/img/aclogoshop.png",

      "sizes": "192x192",
      "type": "image/png",
      "purpose": "maskable"
    },
    {
      "src": "app ui ecom\\assets\\img\\company6.png",

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



## Generate a Lighthouse report

Analyze page load

Mode [Learn more](#)

- ☒ Navigation (Default)
- ☐ Timespan
- ☐ Snapshot

Device

- ☒ Mobile
- ☐ Desktop

Categories

- ☒ Performance
- ☒ Accessibility
- ☒ Best practices
- ☒ SEO
- ☒ Progressive Web App

Plugins

- ☐ Publisher Ads

The screenshot shows a mobile web browser interface with a shopping app. The app has a header with the 'Shop Local' logo, a search bar, and a navigation menu. Below the header are product cards for various items, including a TV, a person, a washing machine, and a smartphone. A yellow banner advertises '15% OFF iWatch' with a 'VISA Buy on 1450.00 Using Credit Card' button. At the bottom, there are four product cards for smartphones: LAVA 3500 (\$459.00), Galaxy S20 (\$459.00), iPhone 12SR (\$1012.00), and LAVA 3500 (\$459.00). The browser's address bar shows the URL '127.0.0.1:5500/app%20ui%20ecom/index.html'. The Lighthouse report overlay is visible on the right side of the screen, showing the 'PWA' (Progressive Web App) section. The report indicates that the app is 'PWA' and provides a list of checks that validate the aspects of a Progressive Web App. The checks include 'Web app manifest and service worker meet the installability requirements', 'PWA OPTIMIZED', 'Configured for a custom splash screen', and 'Sets a theme color for the address bar'. The report also shows a score of 93 for the PWA category.

Mobile web

127.0.0.1:5500/app%20ui%20ecom/index.html

Shop Local

15% OFF iWatch

VISA Buy on 1450.00 Using Credit Card

LAVA 3500 \$459.00

Galaxy S20 \$459.00

iPhone 12SR \$1012.00

LAVA 3500 \$459.00

Home Statistics Shop Wallet

Lighthouse

The Lighthouse tool provides links to content hosted on third-party websites. Don't show again Show more

10:25:18 am - 127.0.0.1:5500

http://127.0.0.1:5500/app%20ui%20ecom/index.html

52 81 93 83 PWA

PWA

These checks validate the aspects of a Progressive Web App. [Learn what makes a good Progressive Web App.](#)


INSTALLABLE

- Web app manifest and service worker meet the installability requirements

PWA OPTIMIZED

- Configured for a custom splash screen
- Sets a theme color for the address bar.

Console Issues



## Generate a Lighthouse report

Analyze page load

Mode [Learn more](#)

☒ Navigation (Default)

☐ Timespan

☐ Snapshot

Device

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Categories

☒ Performance

☒ Accessibility

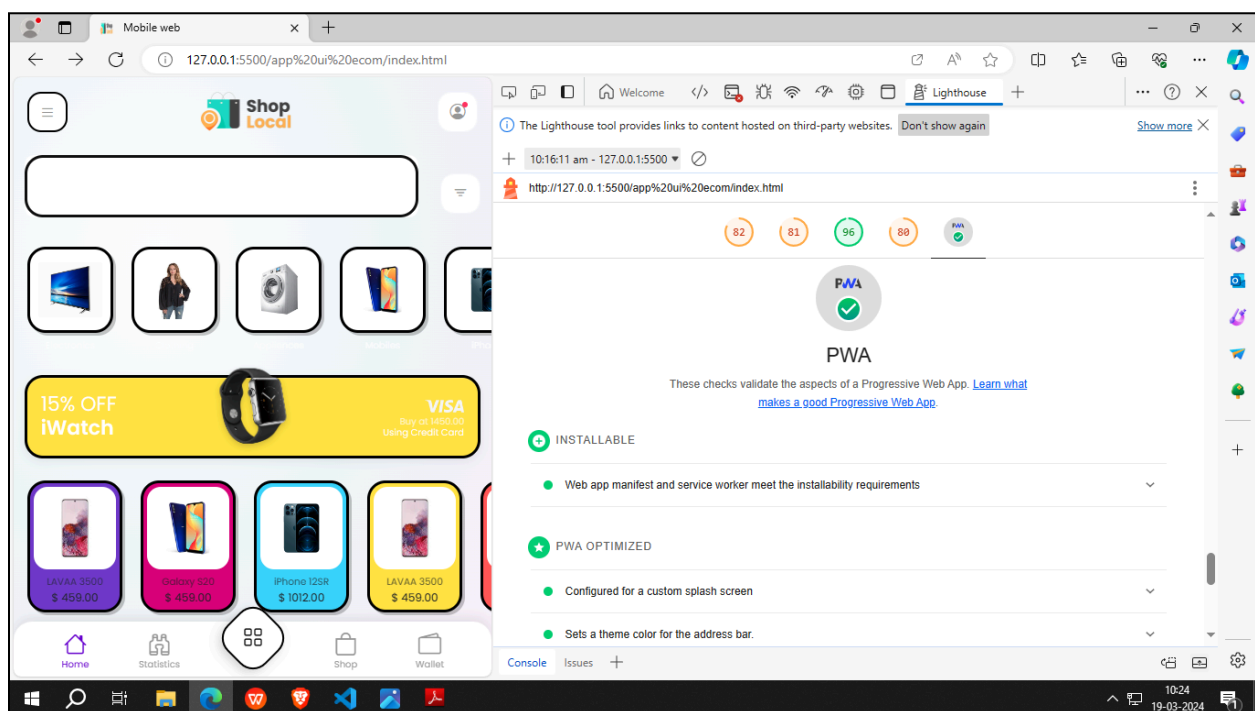
☒ Best practices

☒ SEO

☒ Progressive Web App

Plugins

☐ Publisher Ads



**Conclusion:** Thus we successfully used google Lighthouse PWA Analysis Tool for testing the PWA functioning.