

Assignment No.: 11

Title: PWA Testing using Google Lighthouse Analysis Tool

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**Aim:** To use Google Lighthouse PWA Analysis Tool to test the functioning of a Progressive Web App.

**Theory:**

Google Lighthouse is a powerful, open-source auditing tool by Google that evaluates web applications across multiple key metrics including performance, accessibility, best practices, SEO, and Progressive Web App compliance. It provides an automated report highlighting the strengths and weaknesses of a web page.

**Key Features and Audit Metrics:**

1. **Performance:**

Measures loading speed, time to interactive, and visual stability. A score of 100 means the site is among the fastest performing websites.

2. **PWA Compliance (Mobile):**

Validates key Progressive Web App criteria like presence of service worker, manifest, offline capabilities, viewport settings, and script fallback support.

3. **Accessibility:**

Evaluates how accessible the site is to users with disabilities, based on usage of semantic HTML, ARIA attributes, and screen reader compatibility. Scored on a pass/fail basis.

4. **Best Practices:**

Checks for proper HTTPS usage, avoidance of deprecated APIs, safe input handling, and alerts for sensitive actions (like geolocation or cookies).

**Changes Made to Improve Lighthouse Score:**

1. **In index.html:**

```
<meta name="theme-color" content="#4285f4">
<link rel="apple-touch-icon" href="path-to-icon.png">
```

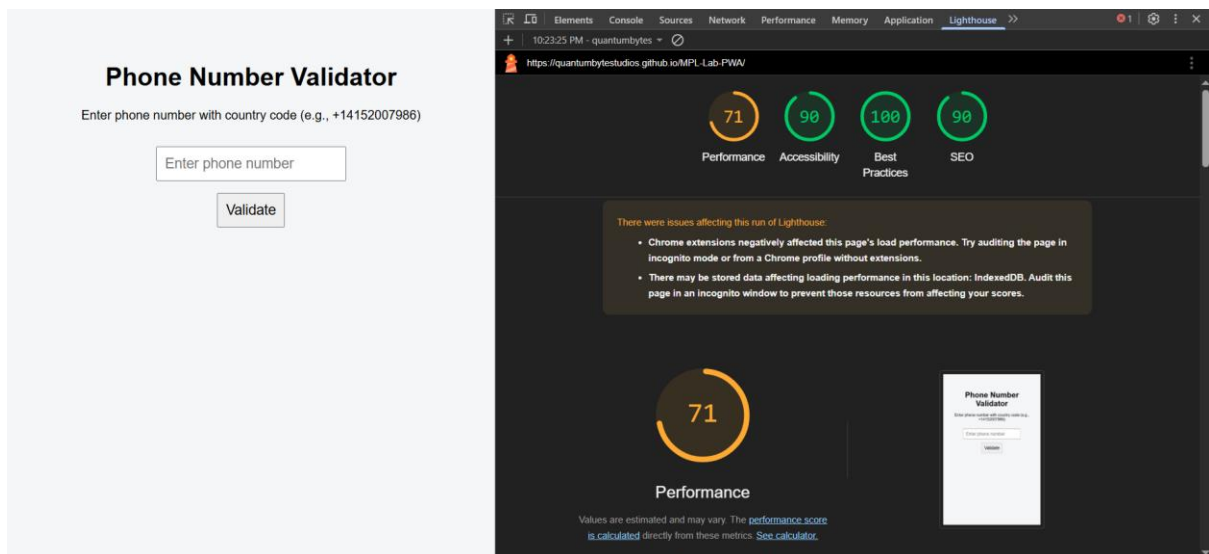
2. **In manifest.json:**

```
{
  "name": "flower shop website",
  "short_name": "flowers",
  "start_url": "index.html",
  "scope": "./",
}
```

```

"theme_color": "#ffd31d",
"background_color": "#333",
"display": "standalone",
"icons": [
  {
    "src": "icon-1.png",
    "sizes": "192x192",
    "type": "image/png",
    "purpose": "any maskable"
  },
  {
    "src": "icon-2.png",
    "sizes": "512x512",
    "type": "image/png",
    "purpose": "any maskable"
  }
]
}

```



## Conclusion:

Thus, the Lighthouse PWA audit was successfully executed. It helped verify PWA compliance and guided necessary improvements in manifest, meta tags, and file structure to optimize the app for better performance, accessibility, and user experience.

Let me know if you want all assignments combined into a single file.