PWA Experiment -7

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AIM: To write meta data of your Ecommerce PWA in a Web app manifest file to enable “add to homescreen feature”.

Theory:-

Regular Web Application

A regular web application is a website designed to be accessible on various devices, ensuring that content adjusts dynamically to different screen sizes. Built using web technologies such as HTML, CSS, JavaScript, and Ruby, these applications function through a browser. While they can leverage some native device features, their functionality is dependent on browser compatibility. For instance, a feature may work on Google Chrome but not on Safari or Mozilla Firefox due to browser limitations.

Progressive Web Application (PWA)

A Progressive Web Application (PWA) is an advanced version of a regular web app, integrating additional features to enhance the user experience. PWAs combine the best elements of desktop and mobile applications, delivering a seamless experience across platforms.

Key Differences Between PWAs and Regular Web Apps

1. Native-Like Experience

While both PWAs and regular web apps utilize standard web technologies like HTML, CSS, and JavaScript, PWAs offer a user experience similar to native mobile applications. PWAs can access device-specific features such as push notifications without relying on a particular browser, creating a smoother, more integrated experience.

2. Ease of Access

Unlike traditional mobile apps that require time-consuming downloads and storage space, PWAs can be installed directly via a URL. Users can add a PWA to their home screen with a simple link, eliminating installation complexities and ensuring easy access while keeping brand presence strong.

3. Enhanced Performance

PWAs utilize caching mechanisms to pre-load content, such as text, stylesheets, and images, allowing for faster loading times. This significantly improves user engagement and retention by reducing waiting periods, ultimately benefiting businesses by increasing interaction rates.

4. Improved User Engagement

PWAs efficiently leverage push notifications and native device features to keep users engaged. Unlike regular web apps, their functionality is not restricted by browser dependencies, enabling businesses to notify users about updates, offers, and promotions without disruptions.

5. Real-Time Updates

A major advantage of PWAs is their ability to update automatically without requiring users to download new versions from an app store. Developers can push updates directly from the server, ensuring that users always access the latest features and improvements instantly.

6. Search Engine Optimization (SEO) Benefits

Since PWAs function within web browsers, they can be indexed by search engines, improving their visibility in search results. This gives them a strategic advantage over native apps, which are limited to app store searches.

7. Cost-Effective Development Unlike native mobile apps, PWAs do not require approval or submission to app stores, reducing development and maintenance costs.

Advantages and Limitations of PWAs

Advantages:

- **Progressive:** Compatible with all browsers and devices, following the principle of progressive enhancement.
- **Responsive:** Adapts to different screen sizes, including desktops, tablets, and smartphones.
- **App-Like Feel:** Mimics the experience of native applications in navigation and interaction.
- **Always Updated:** Service workers ensure real-time updates without requiring user intervention.
- **Secure:** Delivered over HTTPS, ensuring secure data transfer and protection against cyber threats.
- **SEO-Friendly:** Can be indexed by search engines, enhancing discoverability.
- **Re-Engagement:** Enables push notifications to encourage continued user interaction.
- **Installable:** Allows users to add the app to their home screen without app store downloads.
- **Offline Functionality:** Can function in low or no connectivity conditions using cached content.

Limitations:

- **Higher Battery Consumption:** PWAs tend to consume more battery due to constant background processes.
- **Limited Hardware Access:** Some device features, such as advanced sensors and Bluetooth, may not be fully accessible.
- **Offline Mode Constraints:** Some offline capabilities remain limited, depending on browser support.
- **No App Store Presence:** PWAs cannot generate traffic from app store searches.
- **Lack of Centralized Control:** Unlike native apps, PWAs do not undergo an official approval process, potentially affecting credibility.

CODE:

Index.html

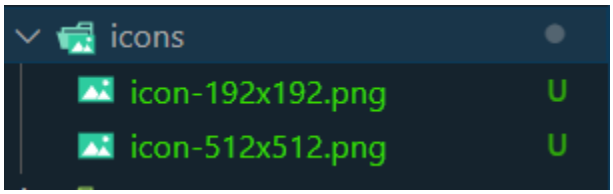
```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>

    <!-- Favicon -->
    <link rel="icon" type="image/svg+xml" href="/vite.svg" />

    <!-- Fonts -->
    <link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@500&display=sw
ap" rel="stylesheet">
    <link
href="https://fonts.googleapis.com/css2?family=Satisfy&display=swap"
rel="stylesheet">

    <!-- FontAwesome Icons -->
    <script src="https://kit.fontawesome.com/25b9223bba.js"
crossorigin="anonymous"></script>

    <!-- PWA Manifest -->
    <link rel="manifest" href="/manifest.json">

    <!-- Theme Color (for PWA UI) -->
    <meta name="theme-color" content="#ffffff">

    <title>React Recipe App</title>
  </head>
  <body>
    <div id="root"></div>

    <!-- Main Script -->
    <script type="module" src="/src/main.jsx"></script>
```

```
    <!-- Register Service Worker for PWA -->
    <script>
      if ('serviceWorker' in navigator) {
        window.addEventListener('load', () => {
          navigator.serviceWorker.register('/sw.js').then(registration =>
{
            console.log('Service Worker registered:', registration);
          }).catch(error => {
            console.log('Service Worker registration failed:', error);
          });
        });
      }
    </script>
  </body>
</html>
```

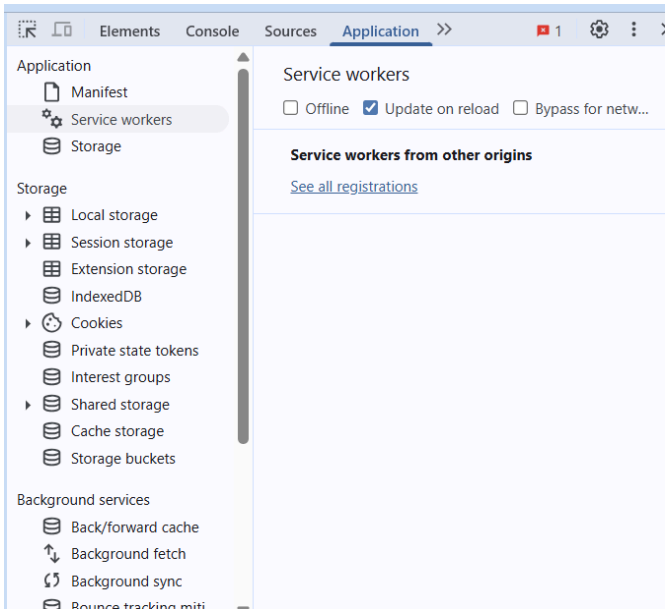
Manifest.json

```
{
    "name": "React Recipe App",
    "short_name": "RecipeApp",
    "description": "A Progressive Web App for recipes!",
    "theme_color": "#ffffff",
    "background_color": "#ffffff",
    "display": "standalone",
    "start_url": "/",
    "icons": [
      {
        "src": "/icons/icon-192x192.png",
        "sizes": "192x192",
        "type": "image/png"
      },
      {
        "src": "/icons/icon-512x512.png",
        "sizes": "512x512",
        "type": "image/png"
      }
    ]
  }
```

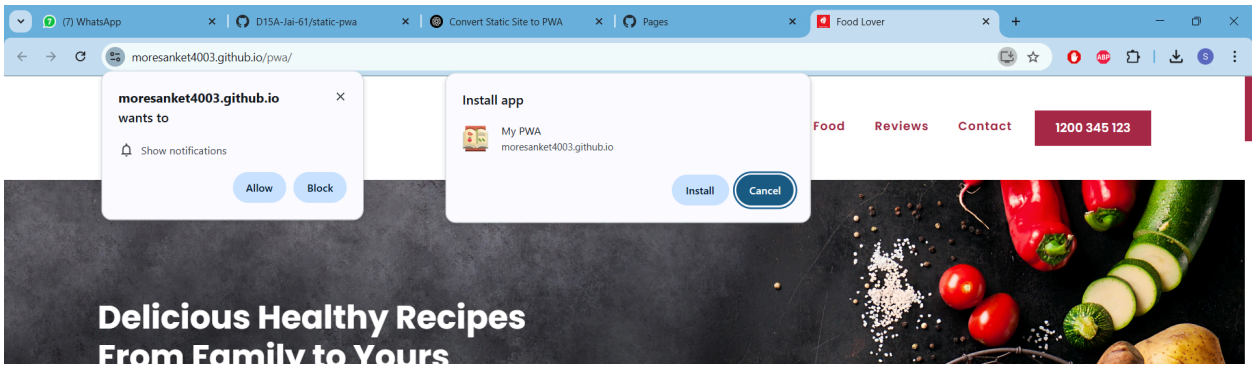
Icons

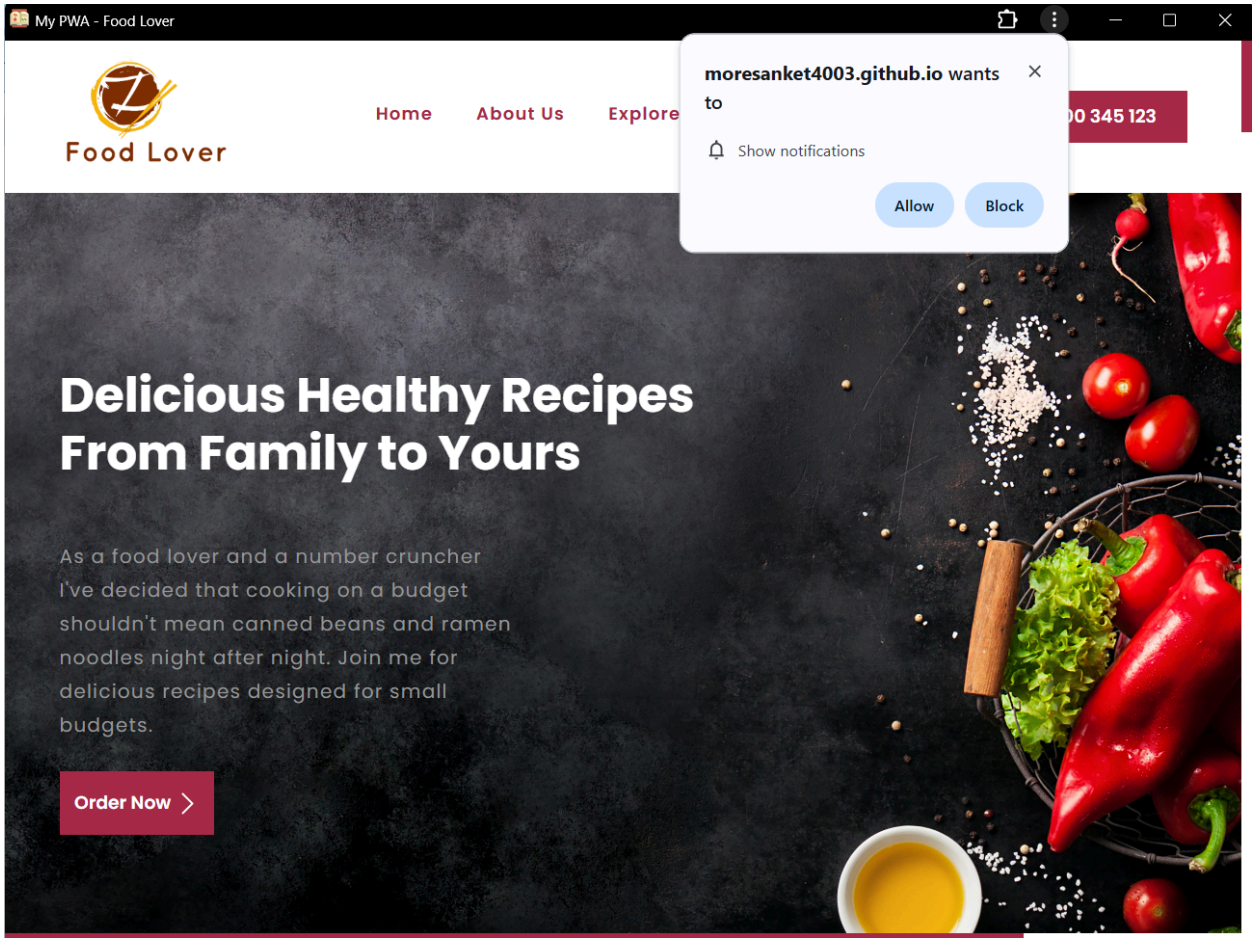


Google Dev



Output:-




My PWA - Food Lover
moresanket4003.github.io wants to
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Block
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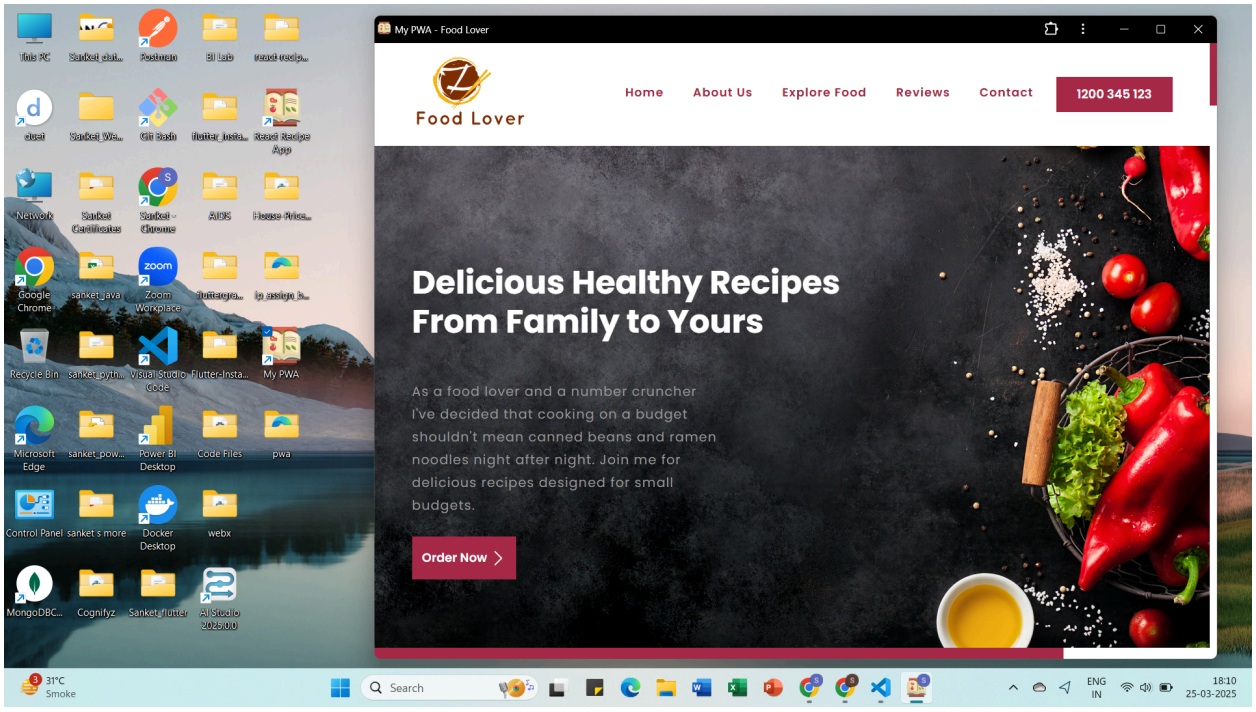
Delicious Healthy Recipes From Family to Yours
As a food lover and a number cruncher I've decided that cooking on a budget shouldn't mean canned beans and ramen noodles night after night. Join me for delicious recipes designed for small budgets.
Order Now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