## Experiment 7:-

Implementation of Add to Home Screen Feature in Progressive Web Apps (PWA)

## Theory:-

What is a Progressive Web App (PWA)?
A Progressive Web App (PWA) is a type of web application that provides a native app-like experience while running in a browser. It can work offline, load fast, and be installed on a user's device just like a mobile app.
Key Features of a PWA:

1. Responsive Design – Works on different screen sizes (mobile, tablet, desktop).
2. Service Worker – A background script that enables offline functionality and caching.
3. Web App Manifest – A JSON file that defines app metadata like name, icon, and theme color.
4. Secure (HTTPS) – Ensures a secure connection for improved user trust.
5. Add to Home Screen (A2HS) – Allows users to install the app on their home screen.

Add to Home Screen (A2HS) Functionality:
The A2HS feature enables users to install a PWA on their home screen without using an app store. This enhances accessibility and user engagement. It requires:

- A valid web app manifest (manifest.json)
- A service worker (serviceworker.js)
- HTTPS hosting

**Index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1">
   <meta http-equiv="X-UA-Compatible" content="ie=edge">
   <!-- PWA Meta Tags -->
   <meta name="apple-mobile-web-app-status-bar" content="#aa7700">
   <meta name="theme-color" content="black">
   <!-- Link to the manifest file -->
   <link rel="manifest" href="manifest.json">
   <title>PWA Tutorial</title>
</head>
<body>
   <h1 style="color: pink;">Health Care</h1>
   <p>This is a simple tutorial for creating a PWA application.</p>
   <script>
      // Register the Service Worker
      window.addEventListener('load', () => {
         registerSW();
      });
      async function registerSW() {
         if ('serviceWorker' in navigator) {
            try {
               await navigator.serviceWorker.register('serviceworker.js');
               console.log('Service Worker Registered');
            } catch (e) {
               console.log('Service Worker registration failed:', e);
            }
         }
      }
   </script>
</body>
</html>
```

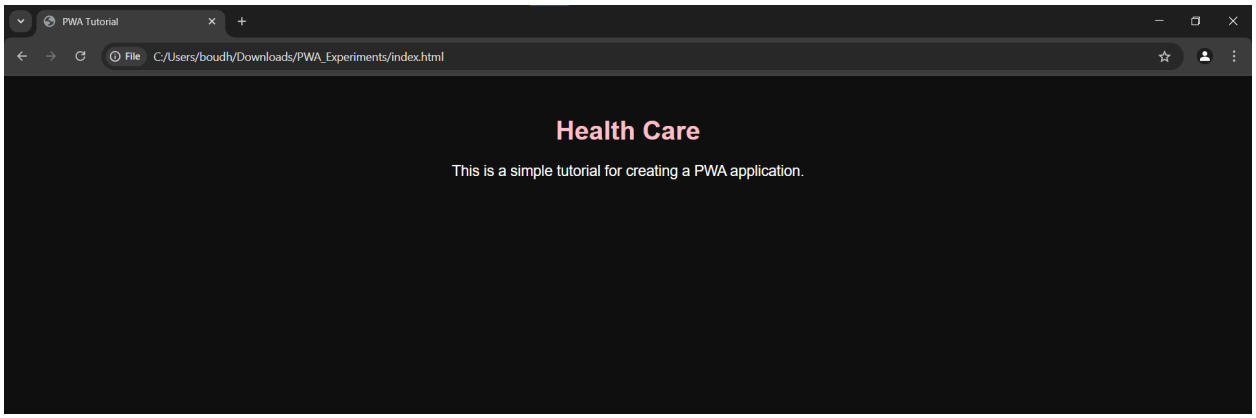
**manifest.json**

```
{
   "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": "images/icon-192x192.png",
         "sizes": "192x192",
         "type": "image/png"
      },
      {
         "src": "images/icon-512x512.png",
         "sizes": "512x512",
         "type": "image/png"
      }
   ]
}
```

**Serviceworker.js**

```
var staticCacheName = "pwa-cache";
self.addEventListener("install", function (event) {
   event.waitUntil(
      caches.open(staticCacheName).then(function (cache) {
         return cache.addAll(["/"]);
      })
   );
});
self.addEventListener("fetch", function (event) {
   console.log("Fetching:", event.request.url);
   event.respondWith(
      caches.match(event.request).then(function (response) {
         return response || fetch(event.request);
      })
   );
});
```

**Output:-**




**Conclusion:-**

In this experiment, we successfully developed a Progressive Web App (PWA) that includes the Add to Home Screen (A2HS) feature. The application can be installed on a user's device, providing an enhanced user experience similar to a native app. This demonstrates how PWAs can bridge the gap between web and mobile applications while remaining lightweight and accessible.