

Experiment 8

Aim : To code and register a service worker, and complete the install and activation process for a new service worker for the E-commerce PWA.

Theory:

A Service Worker is a powerful feature in web development that enables progressive web applications (PWAs) to function offline, improve performance, and provide a more app-like experience to users. Here are some key points and theories about Service Workers:

1. **Background Processing:** Service Workers run in the background, separate from the main browser thread. This allows them to perform tasks like network requests, caching, and push notifications without interfering with the user interface.
2. **Offline Functionality:** One of the primary benefits of Service Workers is their ability to cache assets and data, enabling web applications to work offline or in unreliable network conditions. They can intercept network requests and respond with cached content when the network is unavailable.
3. **Caching Strategies:** Service Workers support various caching strategies, such as Cache First, Network First, and Stale-While-Revalidate. These strategies allow developers to control how resources are cached and served based on specific requirements, such as freshness of data and performance considerations.
4. **Push Notifications:** Service Workers enable web applications to send push notifications to users, even when the application is not actively running in the browser. This feature enhances user engagement by providing real-time updates and alerts.
5. **Background Sync:** Service Workers can schedule background syncs, allowing web applications to synchronize data with the server when the network connection is restored. This ensures that user data remains up-to-date and consistent across devices.
6. **Security:** Service Workers operate within the security context of the origin (website domain), adhering to the same-origin policy. They cannot access cross-origin resources unless explicitly allowed, enhancing security and privacy for users.

Service Workers play a crucial role in modern web development by enabling advanced features and capabilities that bridge the gap between web applications and native apps, enhancing reliability, performance, and user engagement.

1. Create the Service Worker File (serviceworker.js):

```
const CACHE_NAME = 'ecommerce-store-cache-v1';
const urlsToCache = [
  '/',
  '/index.html',
  '/manifest.json',
  '/icon.png',
  '/icon512.png',
  '/assets/shirt.jpg',
  '/assets/pant.jpg',
];

self.addEventListener('install', event => {
  event.waitUntil(
    caches.open(CACHE_NAME)
      .then(cache => {
        console.log('Cache opened');
        return cache.addAll(urlsToCache);
      })
  );
});

self.addEventListener('fetch', event => {
  event.respondWith(
    caches.match(event.request)
      .then(response => {
        if (response) {
          return response;
        }
        return fetch(event.request);
      })
  );
});
```

2. Register the Service Worker: In your main JavaScript file (e.g., main.js or app.js), add the following code:

```
if ('serviceWorker' in navigator) {  
  window.addEventListener('load', () => {  
    navigator.serviceWorker.register('/scripts/serviceworker.js')  
      .then(registration => {  
        console.log('Service Worker registered with scope:', registration.scope);  
      })  
      .catch(error => {  
        console.error('Service Worker registration failed:', error);  
      });  
  });  
}
```

ServiceWorker

☐ Open DevTools window and pause JavaScript execution on Service Worker startup for debugging.

Registrations in: C:\Users\Student.VESIT505-08\AppData\Local\Microsoft\Edge\User Data\Default (20)

Scope: <https://3830h97lj9-496ff2e9c6d22116-0-colab.googleusercontent.com/>

Storage key:

 Ancestor chain bit: SameSite

Registration ID: 12

Navigation preload enabled: false

Navigation preload header length: 4

Active worker:

 Installation Status: ACTIVATED

 Running Status: STOPPED

 Fetch handler existence: EXISTS

 Fetch handler type: NOT_SKIPPABLE

 Script: https://3830h97lj9-496ff2e9c6d22116-0-colab.googleusercontent.com/service_worker_binary.js?vrz=colab_20240116-060154_RC00_598785795

 Version ID: 58

 Renderer process ID: 0

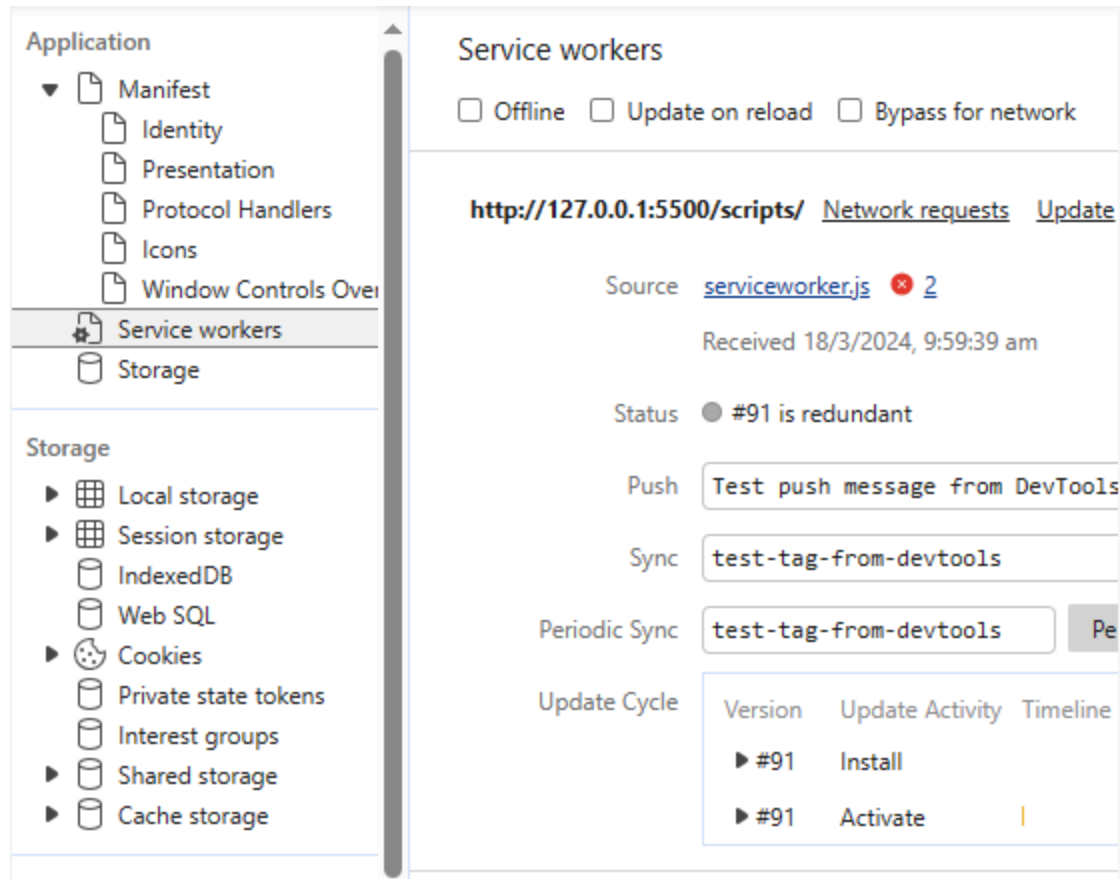
 Renderer thread ID: -1

 DevTools agent route ID: -2

Log:

Unregister

Start



Conclusion : I have understood and successfully registered a service worker, and completed the install and activation process for a new service worker for the E-commerce PWA.