Anket Kadam
D15B/26

EXP 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:

Service Worker:
A service worker is a script that operates in the background of a browser independently, resembling a proxy on the user's side. It can intercept network requests, manage push notifications, and facilitate the development of "offline-first" web applications using the Cache API.

Network Proxy:

- Service workers intercept all outgoing HTTP requests made by your application and can choose how to handle them.
- They can serve content from a local cache if available, enhancing performance and user experience.

Offline Capabilities:

- Service workers enable offline functionality by caching essential application resources like HTML, CSS, JavaScript, and images.
- When offline, the service worker can retrieve requested content from the cache, providing a seamless experience.

HTTPS Requirement:

- Service workers require HTTPS connections due to security concerns, ensuring secure communication between the service worker, application, and server.

What can we do with Service Workers?

- Dominate Network Traffic: Manage all network traffic and manipulate responses.
- Cache: Store request/response pairs to access offline content.
- Manage Push Notifications: Handle push notifications and display messages to users.
- Continue Processes: Start processes with Background Sync even when the internet connection is broken.

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Service Worker Cycle:

Registration
Installation
Activation

Steps for Coding and Registering a Service Worker:

Create the Service Worker File (sw.js):

- Create a file named `sw.js` in your project directory.

sw.js

```
sw.js > ...
1   const cacheName = "Ecommerce";
2   const staticAssets = [
3     "./",
4     "./index.html",
5     "./about.html",
6     "./drip.html",
7     "./electronics.html",
8     "./furniture.html",
9     "./general.html",
10    "./index.html",
11    "./laptops.html",
12    "./phones.html",
13    "./sneakers.html",
14    "./manifest.json",
15    "./style.css",
16  ];
17
18  // Cache static assets on install
19  self.addEventListener("install", async () => {
20    const cache = await caches.open(cacheName);
21    await cache.addAll(staticAssets);
22    return self.skipWaiting();
23  });
24
25  // Activate service worker and claim clients
26  self.addEventListener("activate", () => {
27    self.clients.claim();
28  });
29
30  // Serve assets from cache first, then from network
31  self.addEventListener("fetch", async (event) => {
32    const request = event.request;
```

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sw.js > ...

```
48  async function networkAndCache(request) {
58    }
59  }
60
61  // Handle push notifications
62  self.addEventListener("push", function (event) {
63    if (event && event.data) {
64      const data = event.data.json();
65      if (data.method === "pushMessage") {
66        console.log("Push notification sent");
67        event.waitUntil(
68          self.registration.showNotification(" ", {
69            body: data.message,
70            icon: "path/to/icon.png",
71          })
72        );
73      }
74    }
75  });
76
77  // Handle background sync
78  self.addEventListener("sync", (event) => {
79    if (event && event.tag === "event1") {
80      console.log("Sync successful!");
81      event.waitUntil(
82        self.registration.showNotification(" ", {
83          body: "Message sent successfully!",
84          icon: "path/to/icon.png",
85        })
86      );
87    }
88  });
```

Register the Service Worker:

- In your main JavaScript file (e.g., `main.js` or `app.js`), add the following code:

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```
<script>
window.addEventListener('load',()=>{
    registerSW();
});



//popup to prompt install
let deferredPrompt;

window.addEventListener('beforeinstallprompt', (e) => {
    deferredPrompt = e;
});

//logic for install buttonInstall
const installApp = document.getElementById('installApp');

installApp.addEventListener('click', async () => {
    if (deferredPrompt !== null) {
        deferredPrompt.prompt();
        const { outcome } = await deferredPrompt.userChoice;
        if (outcome === 'accepted') {
            deferredPrompt = null;
        }
    }
});
//logic for install buttonInstall
```

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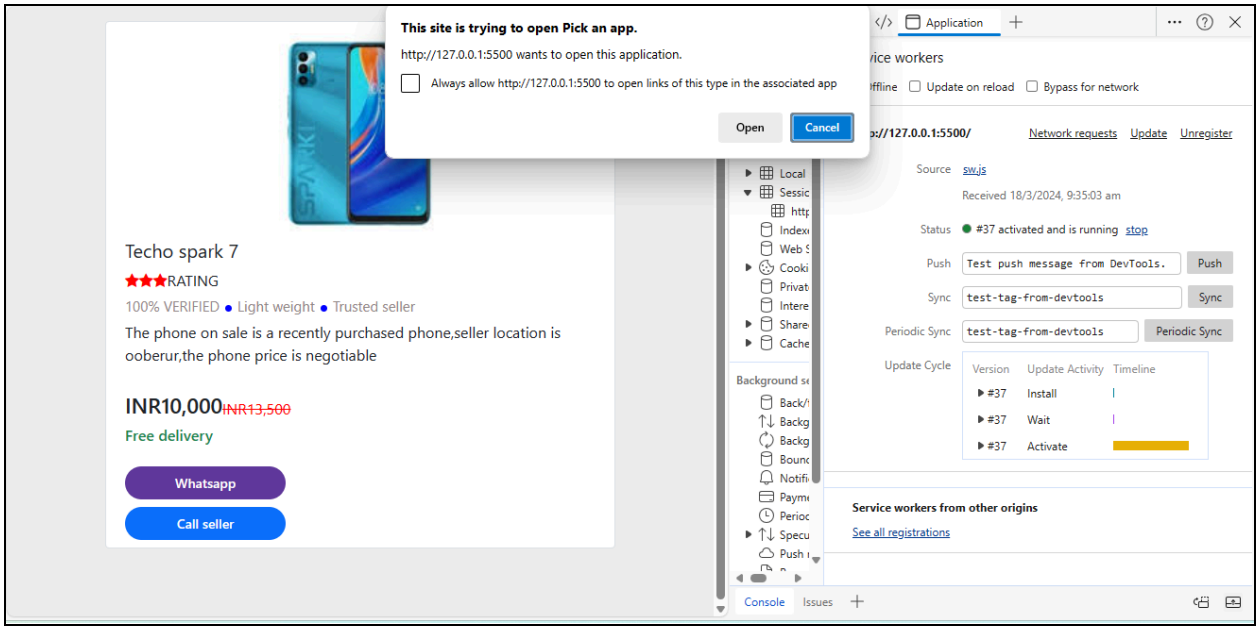

Conclusion:

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