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EXPERIMENT No. 9

Implementing Service Worker Events (Fetch, Sync, Push) for E-Commerce PWA

Progressive Web Apps (PWAs) are web applications that offer app-like experiences through modern web capabilities. One of the key components of a PWA is the service worker, which enables features like offline access, background sync, and push notifications. In this document, we will explore how to implement service worker events such as `fetch`, `sync`, and `push` in the context of an e-commerce application. Below is a sample implementation.

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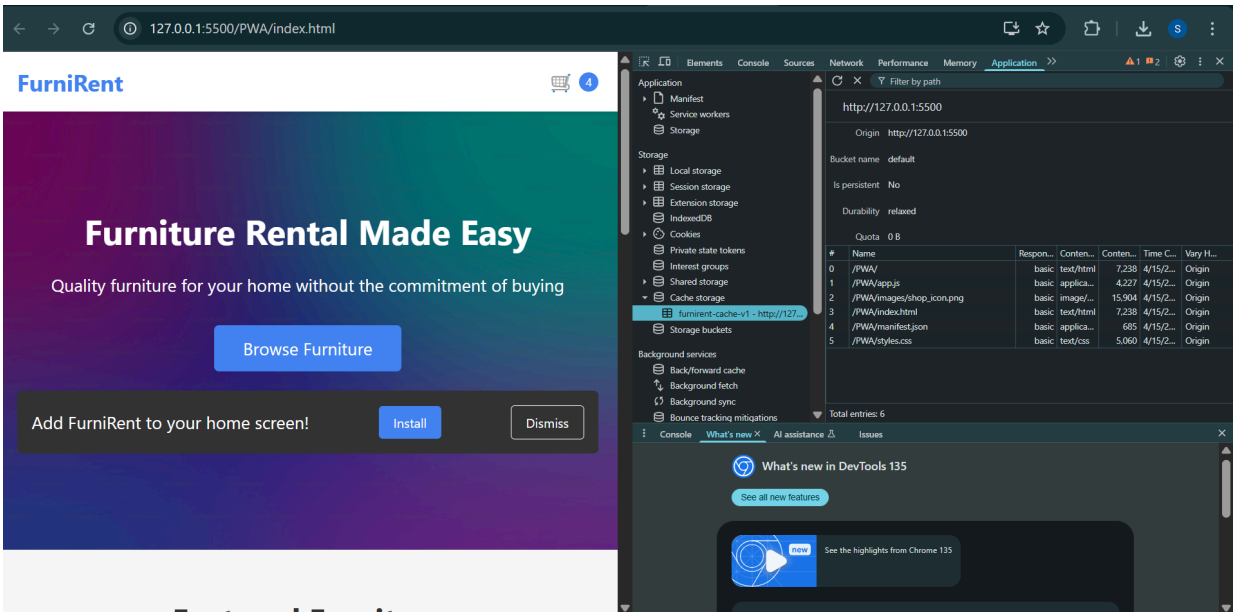
1. Caching Static Assets Using Install Event

The `install` event is triggered when the service worker is installed. During this phase, essential files are cached to enable offline access.

```
const CACHE_NAME = "campquest-v1";
const ASSETS_TO_CACHE = [
  "/",
  "/index.html",
  "/src/main.jsx",
  "/CampQuest.svg",
  "/manifest.json",
];

self.addEventListener("install", (event) => {
  event.waitUntil(
  caches.open(CACHE_NAME).then((cache) => {
      return cache.addAll(ASSETS_TO_CACHE);
    })
  );
});
```



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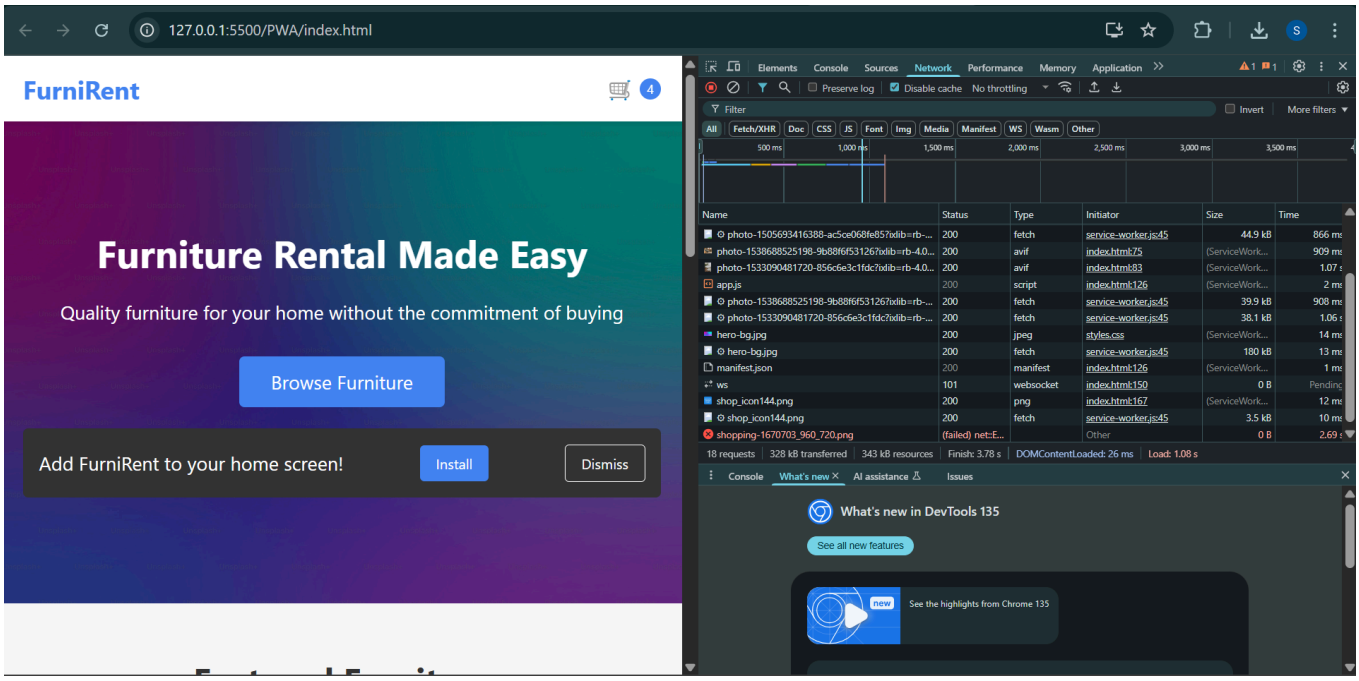
2. Handling Fetch Requests

The `fetch` event intercepts network requests. We use this event to implement a cache-first or network-first strategy depending on the URL path.

```
self.addEventListener("fetch", (event) => {
  const url = new URL(event.request.url);
  if (url.pathname.startsWith("/campgrounds")) {
    event.respondWith(
      fetch(event.request)
        .then((response) => {
          const responseClone = response.clone();
          caches.open(CACHE_NAME).then((cache) => {
          cache.put(event.request, responseClone);
          });
          return response;
        })
        .catch(() => {
          return caches.match(event.request);
        })
    );
```

```
  } else {
    event.respondWith(
      caches.match(event.request).then((response) => {
        return response || fetch(event.request);
      })
    );
  }
});
```



3. Background Sync (Conceptual Example)

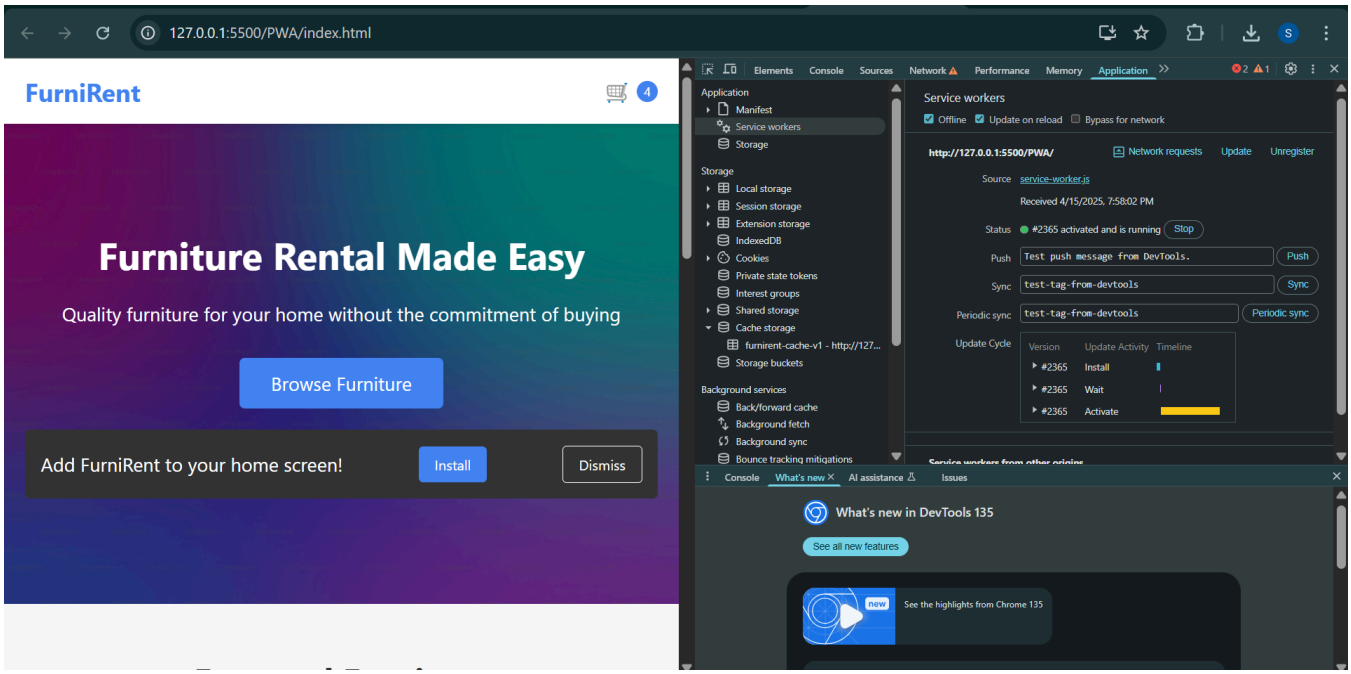
The `sync` event is used to defer actions until the user has stable connectivity. For an e-commerce app, you could use this to sync cart data or orders.

```
self.addEventListener("sync", (event) => {
  if (event.tag === "sync-cart") {
  event.waitUntil(
      // Logic to sync cart data with server
    );
  }
});
```

4. Push Notifications (Conceptual Example)

The `push` event is triggered when a push message is received. This could be used to notify users of new deals or order status updates.

```
self.addEventListener("push", (event) => {
  const data = event.data.json();
  const options = {
    body: data.body,
    icon: "/icon.png",
  };
  event.waitUntil(
    self.registration.showNotification(data.title, options)
  );
});
```



Conclusion

Service workers are powerful tools in building resilient and engaging e-commerce PWAs. By handling `install`, `fetch`, `sync`, and `push` events effectively, you can create a seamless experience for users, even in offline or low-connectivity scenarios.