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MPL Experiment - 9

Aim: To implement Service Worker events like Fetch, Sync, and Push for an E-commerce Progressive Web App (PWA).

Theory: A Service Worker is a background script that runs independently in the browser without direct user interaction. It acts as a network proxy, allowing developers to manage caching, track network requests, and enable offline-first web applications using the Cache API.

Key Characteristics of Service Workers:

- Operate independently in the background, enabling offline capabilities.
- Function as programmable network proxies to handle network requests efficiently.
- Require HTTPS for security, preventing man-in-the-middle attacks.
- Do not maintain a global state and rely on IndexedDB for persistent data storage.
- Use Promises extensively for asynchronous operations.

Service Worker Events:

1. **Fetch Event:**
   - Used to track and manage network traffic.
   - Implements caching strategies like "Cache First" and "Network first" to optimize performance and offline access.
   - **Cache First:** Returns cached data if available;

otherwise, fetches from the network.
- Network first: Tries fetching from the network, first; if unsuccessful, it retrieves cached data.

2. Sync Event:
- Ensures tasks complete even when the internet is temporarily unavailable.
- Data is stored in IndexedDB and processed when the connection is available.

3. Push Event:
- Handles push notifications sent from a server to the user's device.
- The Notification.requestPermission(); method is used to request permission for displaying notifications.

Conclusion:
By Implementing Service Worker events like fetch, Sync, and Push in an E-commerce PWA improves offline support, reliability, and user engagement. Fetch handles caching for better performance, Sync ~~mess~~ manages tasks when offline, and Push enables real-time notifications. These features make the app faster, more interactive, and usable even without internet access.