Experiment - 9

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DOP:	DOS:
Sign:	Grade:

AIM:

To implement Service Worker events like fetch, sync, and push for E-commerce PWA.
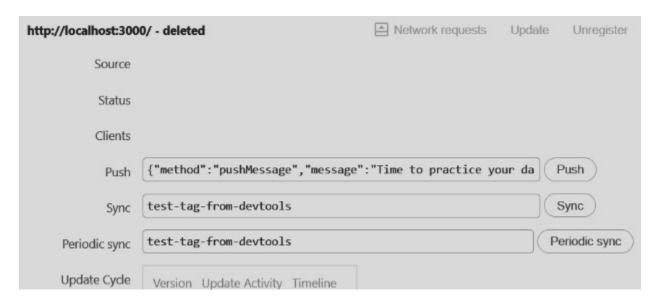
Theory:

Service Workers enhance Progressive Web Apps (PWAs) by enabling advanced features like offline access, background synchronization, and push notifications. These capabilities rely on specific service worker events: **fetch**, **sync**, and **push**. **1. Fetch Event** This event is triggered when the app makes a network request. The service worker can intercept these requests and respond with cached data or fetch from the network. This allows the app to work offline or load faster using stored resources. **2. Sync Event** The background sync event is triggered when the device regains connectivity. It allows the service worker to retry previously failed network operations like form submissions or cart updates, ensuring data consistency in poor network conditions. **3. Push Event**

This event is triggered when the server sends a push notification to the service worker. It allows the app to receive real-time updates or alerts even when it is not actively open in the browser.

4. Benefits for E-commerce PWAs

- **Fetch** ensures essential product pages and assets are available offline.

- **Sync** helps maintain accurate orders and cart data.

- **Push** keeps users engaged with alerts on offers, orders, or stock updates.

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http://localhost:3000/ - deleted ⊟ Network requests   Update   Unregister

Source

Status

Clients

Push   `{"method":"pushMessage","message":"Time to practice your da`   (Push)

Sync   `test-tag-from-devtools`   (Sync)

Periodic sync   `test-tag-from-devtools`   (Periodic sync)

Update Cycle   Version Update Activity Timeline

```
// Background sync registration (simulate saving vocab progress)
if ('serviceWorker' in navigator && 'SyncManager' in window) {
    navigator.serviceWorker.ready.then(registration => {
      return registration.sync.register('sync-vocab-progress');
    }).then(() => {
      console.log("Background Sync Registered ✔");
    }).catch(console.error);
  }

  // Ask for push notification permission
  Notification.requestPermission().then(permission => {
    if (permission === "granted") {
      console.log("🔔 Notification permission granted.");
    }
  });
```

Conclusion: Implementing fetch, sync, and push events in a service worker greatly improves the functionality and reliability of an E-commerce PWA. It ensures better performance, user engagement, and seamless experience across network conditions.