

Experiment - 9

AIM:

To implement Service Worker events like fetch, sync, and push for PWA.

Theory:

How Service Workers Improve PWAs

Service Workers boost the power of Progressive Web Apps (PWAs) by adding smart features like offline support, background syncing, and push notifications. These features work through special service worker events: fetch, sync, and push.

1. Fetch Event

This event happens whenever the app asks for something from the internet (like a webpage or image).

The service worker can catch these requests and either serve saved (cached) files or fetch new ones online.

This helps the app load faster and even work offline when there's no internet.

2. Sync Event

This event kicks in when the device gets back online after being offline.

It lets the service worker try again to send things that failed earlier (like a form you submitted or items added to a cart).

It helps keep data correct and up-to-date, even with bad internet.

3. Push Event

This event happens when the server sends a message to the service worker.

It allows the app to show notifications, like new offers or order updates, even if the app isn't open in the browser.

It helps keep users informed in real time.

4. Why This Matters for PWAs

- **Fetch** keeps key pages and files ready to use, even offline.
- **Sync** ensures that your order or cart stays accurate even after lost connections.
- **Push** keeps users updated with **real-time alerts**, like special deals or important info.

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

Source

Status

Clients

Push Push

Sync Sync

Periodic sync 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 PWA. It ensures better performance, user engagement, and seamless experience across network conditions.