**Name: Yajat Bhasin** **Roll No:5** **Div: D15B**

# EXPERIMENT 8
# MAD PWA LAB

**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 Service Worker is a script that works on browser background without user interaction independently. Also, It resembles a proxy that works on the user side. With this script, We can track network traffic of the page, manage push notifications and develop “offline first” web applications with Cache API.

1. Network Proxy:
● Service workers act as an intermediary between Wer web page and the network
. They intercept all outgoing HTTP requests made by Wer application.They can choose how to handle these requests:
● Serve content from a local cache if available.

2. Offline Capabilities:
● Service workers enable offline functionality by allowing caching of essential application resources (HTML, CSS, JavaScript, images).

● When a user is offline, the service worker can retrieve the requested content from the cache, providing a seamless experience even without an internet connection.

3. HTTPS Requirement:
● Due to security concerns, service workers can only function on HTTPS connections.

●This ensures secure communication between the service worker, Wer application, and the server.

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What can we do with Service Workers?

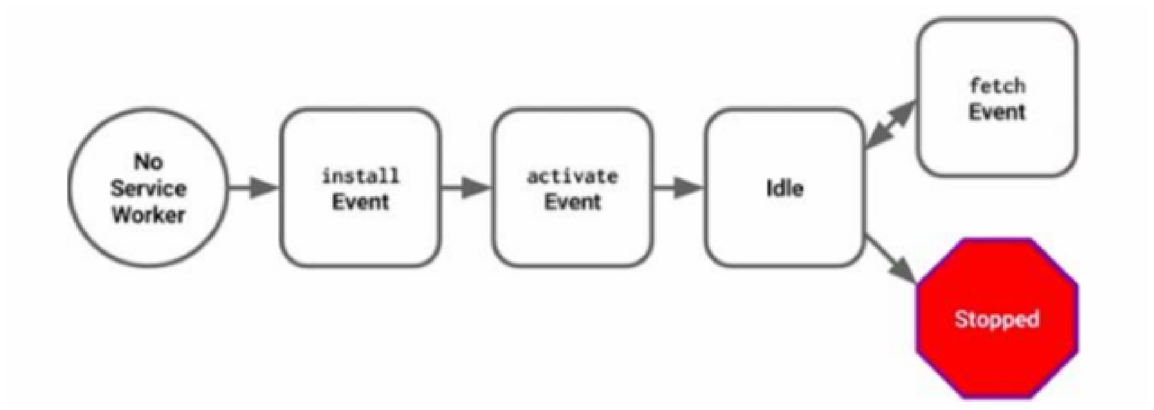
● We can dominate Network Traffic We can manage all network traffic of the page and do any manipulations. For example, when the page requests a CSS file, We can send plain text as a response or when the page requests an HTML file, We can send a png file as a response. We can also send a true response too.

● We canCache We can cache any request/response pair with Service Worker and Cache API and We can access these offline content anytime.

● We can manage Push Notifications We can manage push notifications with Service Worker and show any information message to the user.

● We can Continue Although Internet connection is broken, We can start any process with Background Sync of Service Worker

**Service Worker Cycle**



**Implementation :**

**sw.js:**

```
const cacheName = "Ecommerce";
const staticAssets = [
  "./",
  "./index.html",
  "./about.html",
  "./drip.html",
  "./electronics.html",
  "./furniture.html",
  "./general.html",
  "./index.html",
  "./laptops.html",
  "./phones.html",
  "./sneakers.html",
  "./manifest.json",
  "./style.css",
];
self.addEventListener("install", async () => {
  const cache = await caches.open(cacheName);
  await cache.addAll(staticAssets);
  return self.skipWaiting();
});
self.addEventListener("activate", () => {
  self.clients.claim();
});
self.addEventListener("fetch", async (event) => {
  const request = event.request;
  const url = new URL(request.url);

  if (url.origin === location.origin) {
    event.respondWith(cacheFirst(request));
  } else {
    event.respondWith(networkAndCache(request));
  }
});

async function cacheFirst(request) {
  const cache = await caches.open(cacheName);
  const cached = await cache.match(request);
  return cached || fetch(request);
}

async function networkAndCache(request) {
  const cache = await caches.open(cacheName);
  try {
    const response = await fetch(request);
    await cache.put(request, response.clone());
    console.log("Fetch Successful");
    return response;
  } catch (error) {
    const cached = await cache.match(request);
    return cached;
  }
}

// Handle push notifications
self.addEventListener("push", function (event) {
  if (event && event.data) {
    const data = event.data.json();
    if (data.method === "pushMessage") {
      console.log("Push notification sent");
      event.waitUntil(
        self.registration.showNotification(" ", {
          body: data.message,
          icon: "path/to/icon.png",
        })
      );
    }
  }
});
self.addEventListener("sync", (event) => {
  if (event && event.tag === "event1") {
    console.log("Sync successful!");
    event.waitUntil(
      self.registration.showNotification(" ", {
        body: "Message sent successfully!",
        icon: "path/to/icon.png",
      })
    );
  }
});
```

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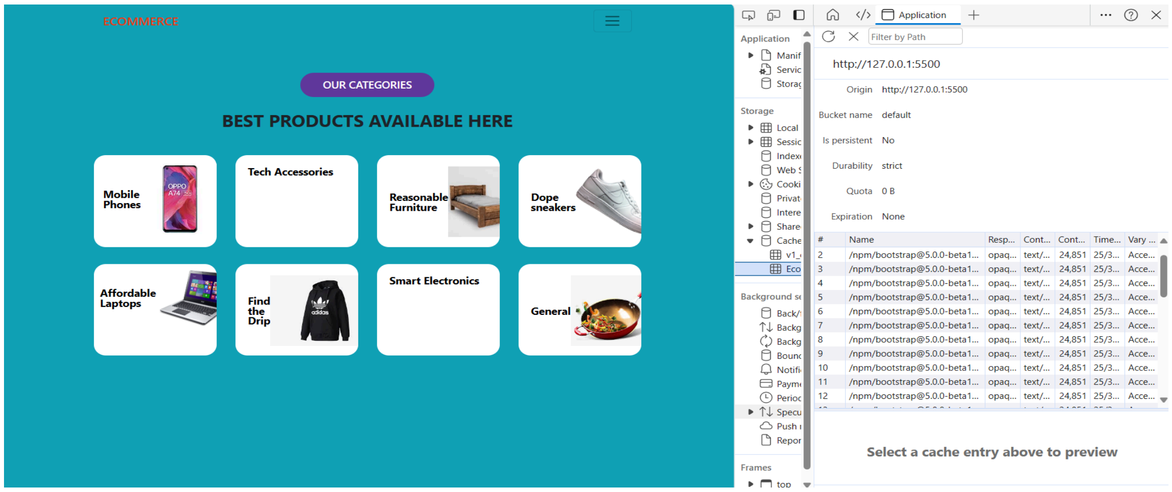
## Output :

Cache files -



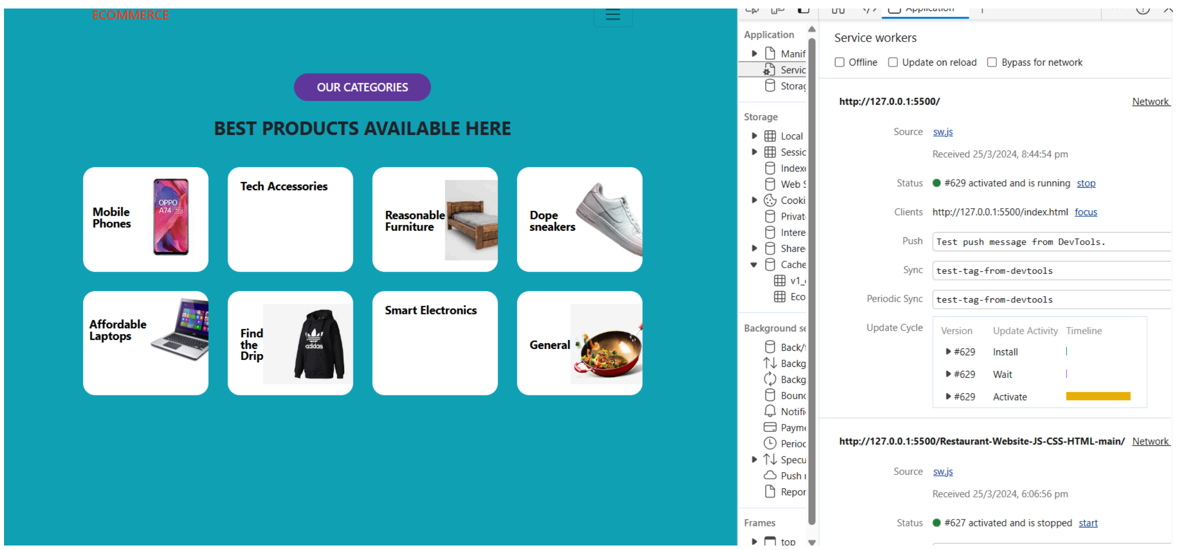
http://127.0.0.1:5500

| | |
|---|---|
| Origin | http://127.0.0.1:5500 |
| Bucket name | default |
| Is persistent | No |
| Durability | strict |
| Quota | 0 B |
| Expiration | None |

| # | Name | Resp... | Cont... | Cont... | Time... | Vary ... |
|---|---|---|---|---|---|---|
| 2 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 3 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 4 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 5 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 6 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 7 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 8 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 9 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 10 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 11 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |
| 12 | /npm/bootstrap@5.0.0-beta1... | opaq... | text/... | 24,851 | 25/3... | Acce... |

Select a cache entry above to preview

Service Worker



Service workers

☐ Offline ☐ Update on reload ☐ Bypass for network

**http://127.0.0.1:5500/** Network

| | |
|---|---|
| Source | sw.js |
| | Received 25/3/2024, 8:44:54 pm |
| Status | ● #629 activated and is running stop |
| Clients | http://127.0.0.1:5500/index.html focus |
| Push | Test push message from DevTools. |
| Sync | test-tag-from-devtools |
| Periodic Sync | test-tag-from-devtools |
| Update Cycle | |

| Version | Update Activity | Timeline |
|---|---|---|
| #629 | Install | |
| #629 | Wait | |
| #629 | Activate | |

**http://127.0.0.1:5500/Restaurant-Website-JS-CSS-HTML-main/** Network

| | |
|---|---|
| Source | sw.js |
| | Received 25/3/2024, 6:06:56 pm |
| Status | ● #627 activated and is stopped start |

Conclusion:We understood and successfully registered a service worker and completed the install and activation process for a new service worker for the E-commerce PWA.