EXPERIMENT NO. 7

Aim: To write metadata of your E-commerce Progressive Web App (PWA) in a Web App Manifest file to enable the “Add to Home Screen” feature.

Theory :

A **Progressive Web App (PWA)** is a web application that combines the best features of both websites and mobile apps. PWAs are designed to be fast, reliable, and engaging, offering features such as offline access, push notifications, and the ability to be installed on a user's device.

One of the key features of a PWA is the **"Add to Home Screen" (A2HS) functionality**, which allows users to install the web app on their mobile or desktop devices, just like a native app. To enable this feature, a **Web App Manifest** file is required.

PWAs leverage modern web technologies to deliver an app-like experience, eliminating the need for users to download applications from app stores. They provide seamless performance across different devices and platforms, ensuring accessibility and responsiveness. By utilizing service workers for caching, PWAs can function even in low or no-network conditions, making them an excellent choice for enhancing user engagement and retention.

WEB APP MANIFEST

The **Web App Manifest** is a JSON file (manifest.json) that provides important metadata about the PWA, such as its name, icons, colors, and display settings. This file is essential for enabling the **"Add to Home Screen"** feature and ensuring the PWA appears like a native app when installed.

Importance of the Web App Manifest:

1. **Enables App Installation** – Allows users to install the PWA on their home screen or desktop.
2. **Defines App Appearance** – Controls how the app is displayed (standalone, fullscreen, or minimal UI).
3. **Enhances User Experience** – Provides a consistent theme, splash screen, and branding.
4. **Supports Cross-Platform Compatibility** – Works on multiple devices and browsers.

Key Components of a Web App Manifest File (manifest.json)

1. **name and short_name**
   - Defines the full name and a shorter version of the app name used in installation prompts.
2. **start_url**
   - Specifies the URL to open when the app is launched.
3. **display**
   - Defines how the PWA will appear (e.g., standalone, fullscreen, minimal UI, or browser mode).
4. **background_color and theme_color**
   - Controls the splash screen and browser theme when the app is launched.
5. **icons**
   - Provides different icon sizes for various devices.

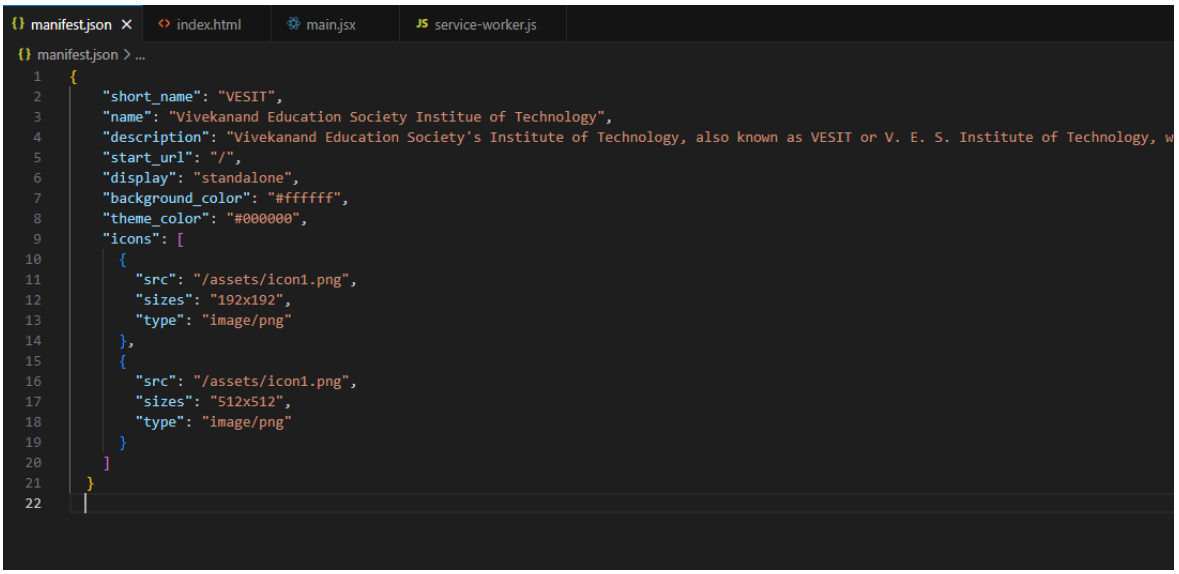
Advantages of Adding a PWA to Home Screen

1. **Fast Access** – Users can launch the app directly from their home screen.
2. **Offline Support** – PWAs can work offline using Service Workers.
3. **Push Notifications** – Engage users with real-time notifications.
4. **Better Performance** – Cached assets make loading faster.
5. **No App Store Required** – Users can install the app without visiting an app store.

Steps to "Add to HomeScreen" feature

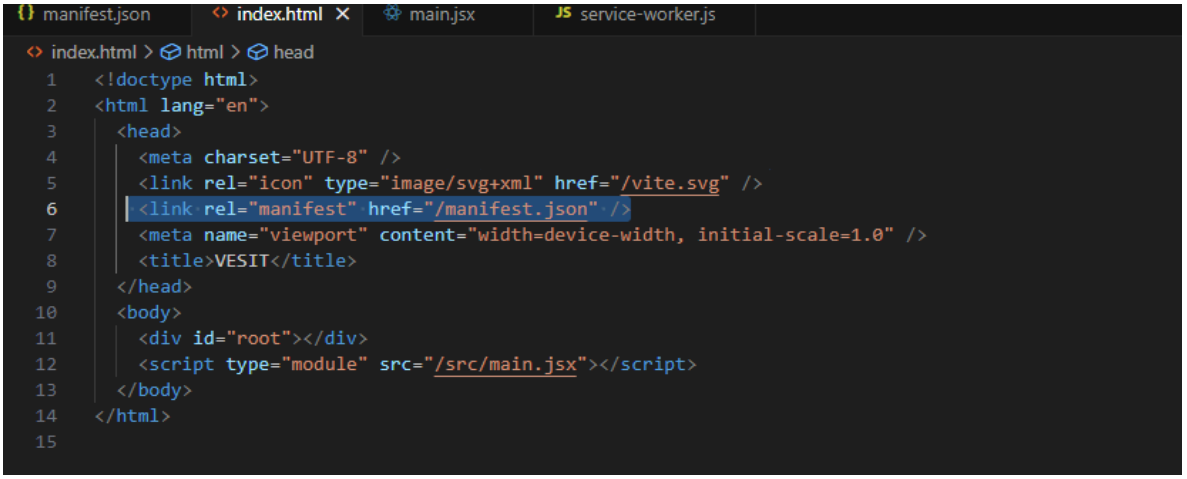
1) Create a Web App Manifest File

Create a manifest.json file in your project's root directory.
Add metadata required for PWA installation



2) Link the Manifest in index.html

Open index.html and add this line inside the <head> tag



3) Register a Service Worker

Create a new file service-worker.js and add the following code to enable caching

var staticCacheName = "pwa-v1"; // Versioned cache name

self.addEventListener("install", function (e) {

```
  e.waitUntil(
    caches.open(staticCacheName).then(function (cache) {
      return cache.addAll([
        "/",
        "/index.html",
        "/style.css",
        "/script.js",
        "/logo.png",
        "/icon1.png",
        "/offline.html"  // Offline fallback page
      ]);
    })
  );
});

self.addEventListener("activate", function (event) {
    var cacheWhitelist = ["staticCacheName"];

    event.waitUntil(
      caches.keys().then(function (cacheNames) {
        return Promise.all(
          cacheNames.map(function (cacheName) {
            if (cacheWhitelist.indexOf(cacheName) === -1) {
              return caches.delete(cacheName);
            }
          })
        );
      })
    );
  });


self.addEventListener("fetch", function (event) {
  event.respondWith(
    caches.match(event.request).then(function (response) {
      if (response) {
        return response;  // Serve from cache
      }

      return fetch(event.request).catch(function () {
        return caches.match("/offline.html");  // Serve offline fallback
```

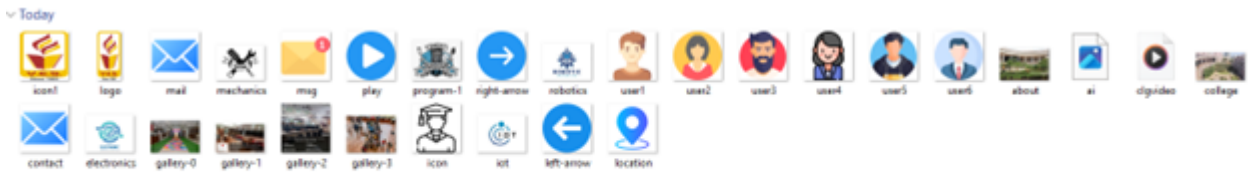
```
    });
   })
  );
});

self.addEventListener('message', (event) => {
   if (event.data.action === 'skipWaiting') {
    self.skipWaiting();
   }
  });
```

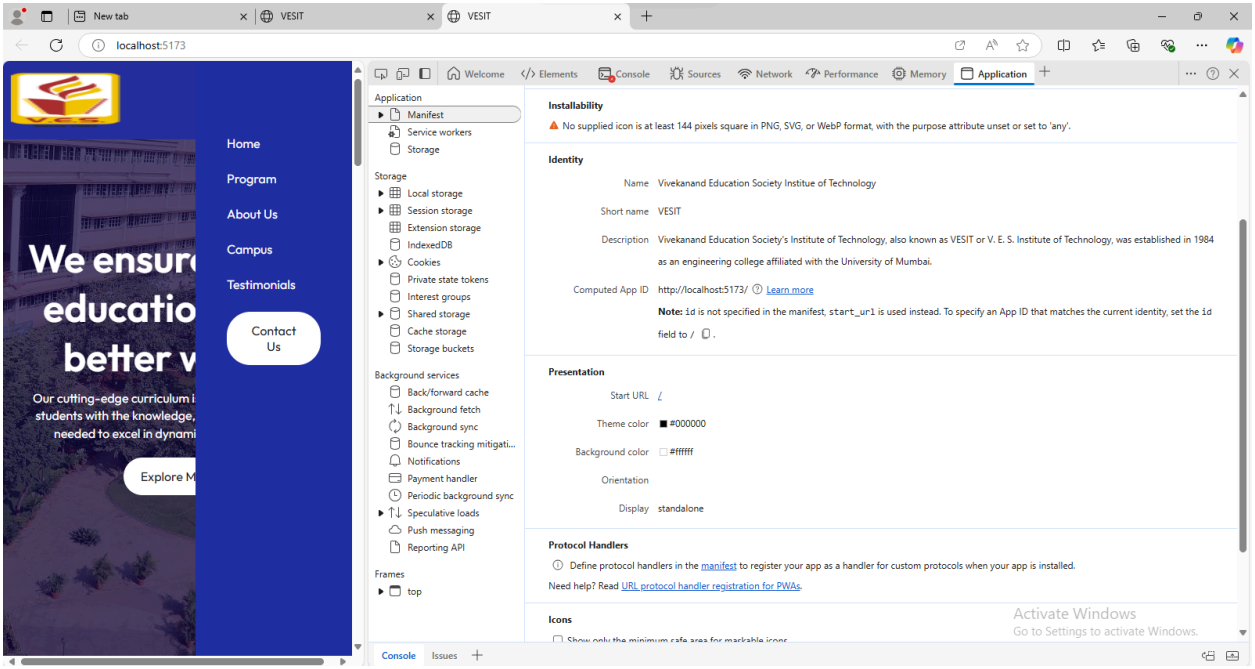
4) <u>Register this service worker in index.html</u>

```
// src/index.js (or src/main.jsx)
if ('serviceWorker' in navigator) {
 window.addEventListener('load', () => {
  navigator.serviceWorker
   .register('/service-worker.js')
   .then((registration) => {
    console.log('Service Worker registered with scope:', registration.scope);
   })
   .catch((error) => {
    console.log('Service Worker registration failed:', error);
   });
 });
}
```

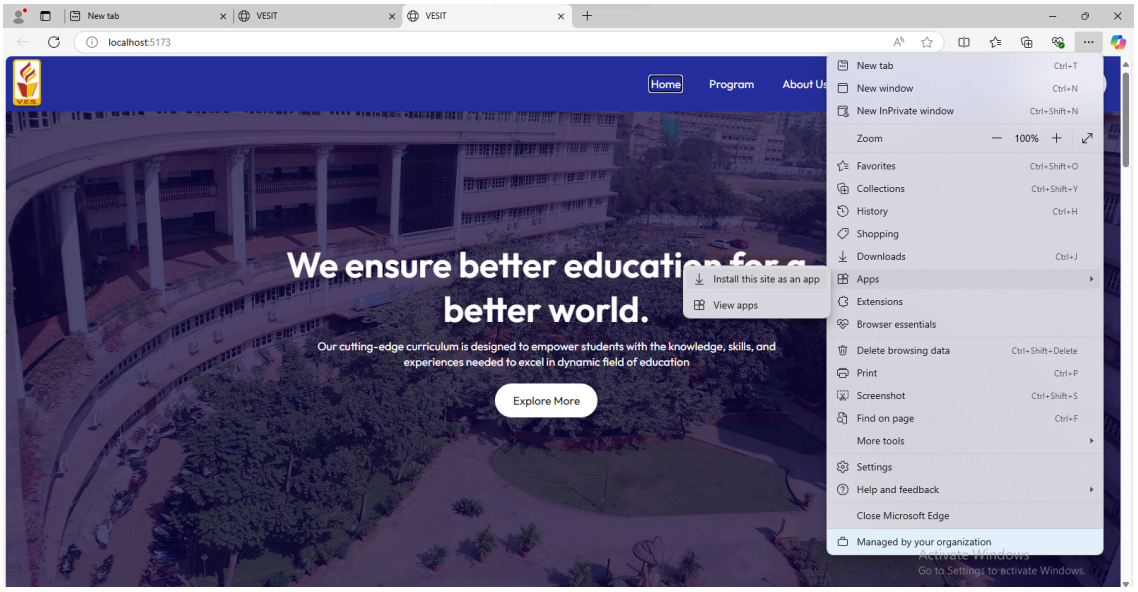
5) <u>Test the PWA Installation</u>



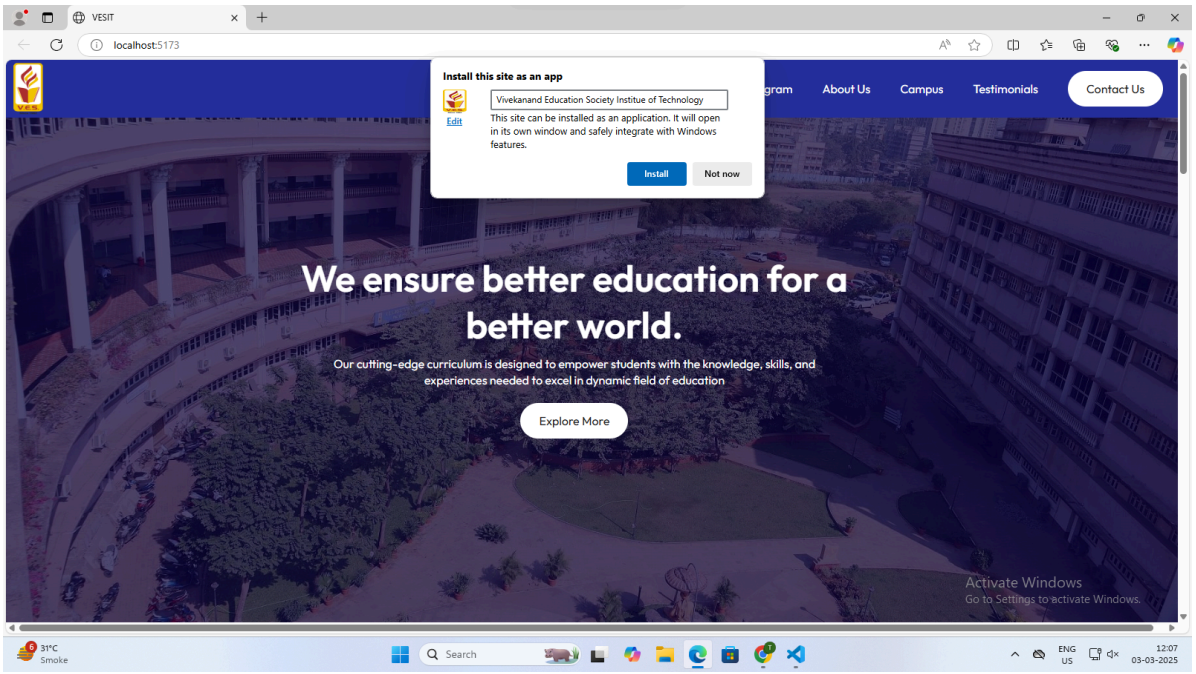
5.1) Open Google Chrome and go to Developer Tools > Application > Manifest to verify your manifest file.


New tab
VESIT
VESIT
localhost:5173
Home
Program
About Us
Campus
Testimonials
Contact Us
We ensur
educatio
better v
Our cutting-edge curriculum i
students with the knowledge,
needed to excel in dynami
Explore M
Welcome
Elements
Console
Sources
Network
Performance
Memory
Application
Application
Manifest
Service workers
Storage
Storage
Local storage
Session storage
Extension storage
IndexedDB
Cookies
Private state tokens
Interest groups
Shared storage
Cache storage
Storage buckets
Background services
Back/forward cache
Background fetch
Background sync
Bounce tracking mitigati...
Notifications
Payment handler
Periodic background sync
Speculative loads
Push messaging
Reporting API
Frames
top
Installability
No supplied icon is at least 144 pixels square in PNG, SVG, or WebP format, with the purpose attribute unset or set to 'any'.
Identity
Name Vivekanand Education Society Institue of Technology
Short name VESIT
Description Vivekanand Education Society's Institute of Technology, also known as VESIT or V. E. S. Institute of Technology, was established in 1984 as an engineering college affiliated with the University of Mumbai.
Computed App ID http://localhost:5173/ Learn more
Note: id is not specified in the manifest, start_url is used instead. To specify an App ID that matches the current identity, set the id field to /.
Presentation
Start URL /
Theme color #000000
Background color #ffffff
Orientation
Display standalone
Protocol Handlers
Define protocol handlers in the manifest to register your app as a handler for custom protocols when your app is installed.
Need help? Read URL protocol handler registration for PWAs.
Icons
Activate Windows
Go to Settings to activate Windows.
Console
Issues

5.2) Installing the PWA Using Microsoft Edge's "Add to Home Screen" Feature



5.3) App icon along with name of the app will appear



5.4) PWA Successfully Installed

Users can choose to **pin the app to the taskbar, Start menu, or create a desktop shortcut** for easy access.