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PWA Practical 7

Aim:

To transform a Vite-based React application into a Progressive Web App (PWA) by installing a**Theory:**

A **Progressive Web App (PWA)** is a modern web application that provides an app-like experience, including offline support, installability, and better performance. With the help of service workers and a manifest file, PWAs can function seamlessly even in poor network conditions and can be installed on desktops or mobile devices.

To make a **Vite React App** a PWA:

1. **Install the Vite PWA Plugin (`vite-plugin-pwa`)**:

    ○ This plugin integrates PWA features like service workers and caching into your Vite app.

    ○ It simplifies offline capabilities and auto-updating.

2. **Configure `vite.config.js`**:

    ○ Import and use the PWA plugin inside the `plugins` array.

    ○ Customize features like caching strategies, registration behavior, and update logic.

3. **Create `manifest.json`**:

    ○ Placed in the `public/` directory, it includes app metadata (name, icons, colors, display mode).

    ○ Required for installability and visual integration on devices.

These components work together to make your app installable, cache assets, and provide a smoother offline-first experience.

nd configuring the Vite PWA plugin and setting up the web app manifest.

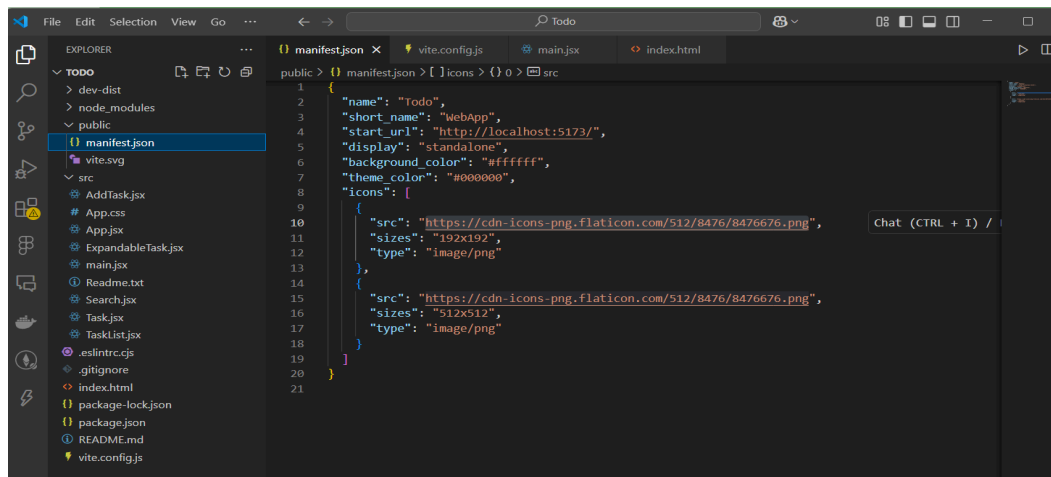**Steps to Make Your Vite React App a PWA**

1 Install Vite PWA Plugin

1. Open your terminal inside the project folder.
2. Run the command to install the PWA plugin.
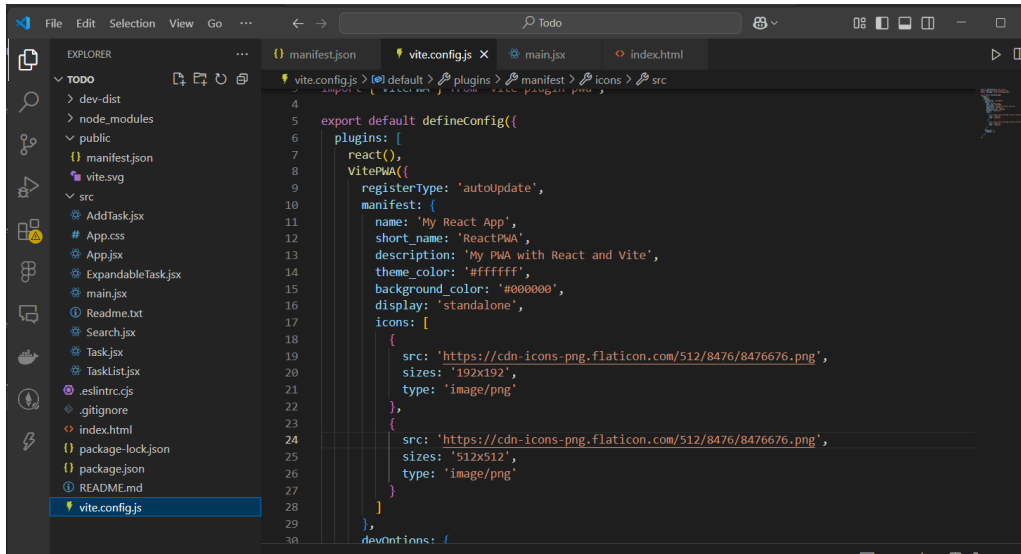3. This plugin helps to add service workers and caching automatically.

2 Configure Vite for PWA

1. Open the `vite.config.js` file in your project.
2. Import and add the PWA plugin inside the `plugins` section.
3. Set up options like auto-updates, caching, and offline support.
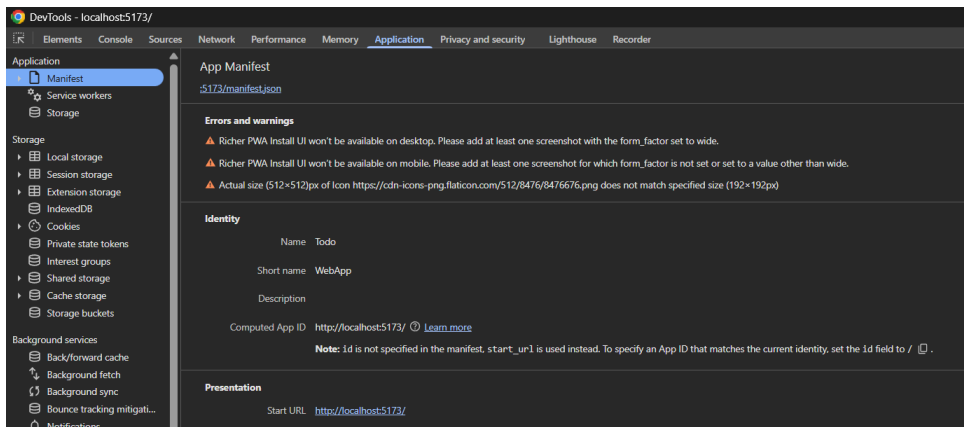4. Save the file and restart the Vite server.

3 Add `manifest.json` File

1. Go to the `public` folder in your project.
2. Create a new file named `manifest.json`.
3. Add details like the app name, icons, theme color, and display mode.
4. This file helps browsers recognize your app as installable**.**

EXPLORER

TODO
- dev-dist
- node_modules
- public
  - {} manifest.json
  - vite.svg
- src
  - AddTask.jsx
  - App.css
  - App.jsx
  - ExpandableTask.jsx
  - main.jsx
  - Readme.txt
  - Search.jsx
  - Task.jsx
  - TaskList.jsx
- .eslintrc.cjs
- .gitignore
- <> index.html
- {} package-lock.json
- {} package.json
- README.md
- vite.config.js

{} manifest.json   ⚑ vite.config.js ✕   main.jsx   <> index.html

vite.config.js > [∅] default > plugins > manifest > icons > src

```
4
5    export default defineConfig({
6      plugins: [
7        react(),
8        VitePWA({
9          registerType: 'autoUpdate',
10         manifest: {
11           name: 'My React App',
12           short_name: 'ReactPWA',
13           description: 'My PWA with React and Vite',
14           theme_color: '#ffffff',
15           background_color: '#000000',
16           display: 'standalone',
17           icons: [
18             {
19               src: 'https://cdn-icons-png.flaticon.com/512/8476/8476676.png',
20               sizes: '192x192',
21               type: 'image/png'
22             },
23             {
24               src: 'https://cdn-icons-png.flaticon.com/512/8476/8476676.png',
25               sizes: '512x512',
26               type: 'image/png'
27             }
28           ]
29         },
30         devOptions: {
```

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

App Manifest

:5173/manifest.json

Errors and warnings

⚠ Richer PWA Install UI won't be available on desktop. Please add at least one screenshot with the form_factor set to wide.

⚠ Richer PWA Install UI won't be available on mobile. Please add at least one screenshot for which form_factor is not set or set to a value other than wide.

⚠ Actual size (512×512)px of Icon https://cdn-icons-png.flaticon.com/512/8476/8476676.png does not match specified size (192×192px)
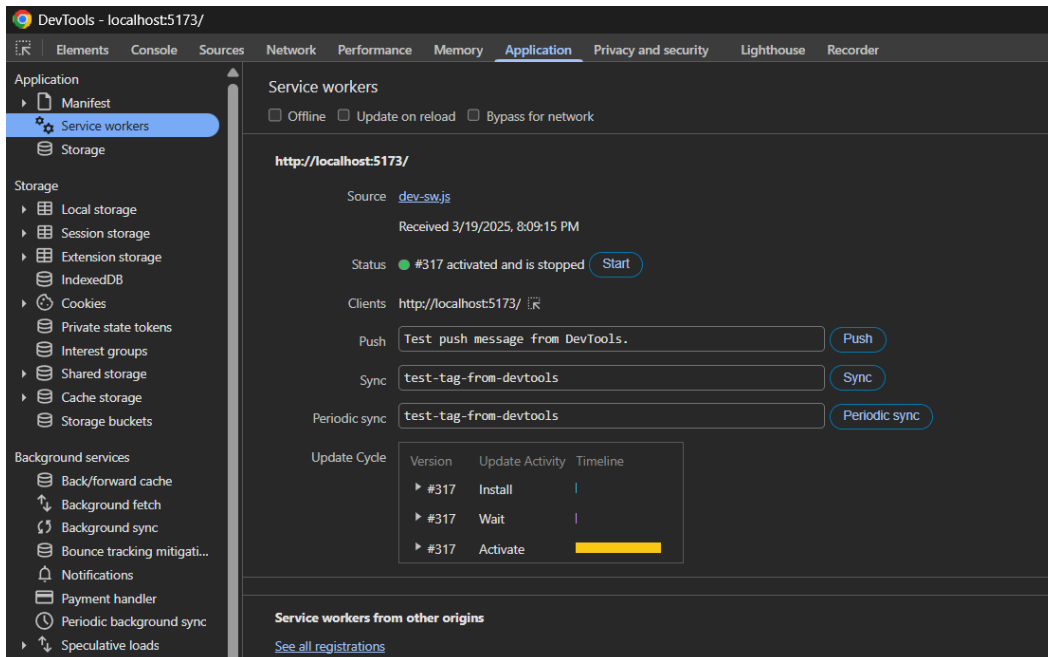
Identity

Name Todo

Short name WebApp

Description

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 http://localhost:5173/

Application
- Manifest
- Service workers
- Storage

Storage
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- Shared storage
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Background services
- Back/forward cache
- Background fetch
- Background sync
- Bounce tracking mitigati...
- Notifications
- Payment handler
- Periodic background sync
- Speculative loads

Service workers

☐ Offline ☐ Update on reload ☐ Bypass for network

http://localhost:5173/

Source dev-sw.js

Received 3/19/2025, 8:09:15 PM

Status 🟢 #317 activated and is stopped [Start]

Clients http://localhost:5173/

Push Test push message from DevTools. [Push]

Sync test-tag-from-devtools [Sync]

Periodic sync test-tag-from-devtools [Periodic sync]

Update Cycle

Version	Update Activity	Timeline
▸ #317	Install	
▸ #317	Wait	
▸ #317	Activate	

Service workers from other origins

See all registrations
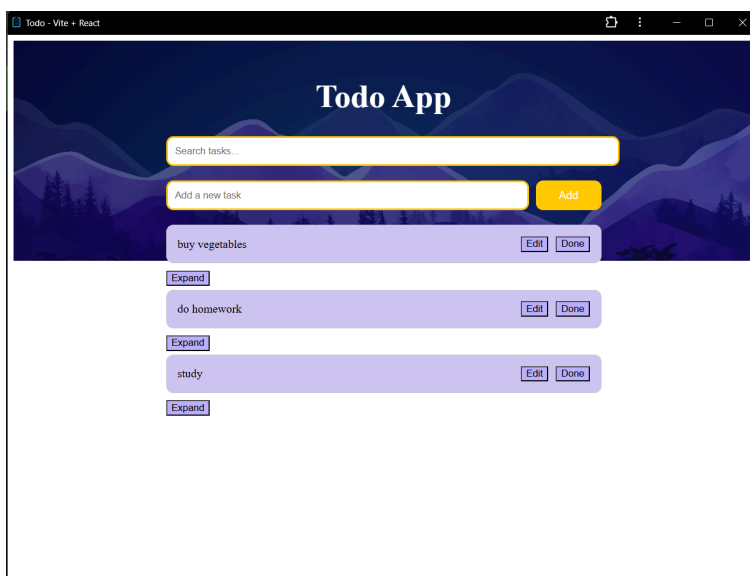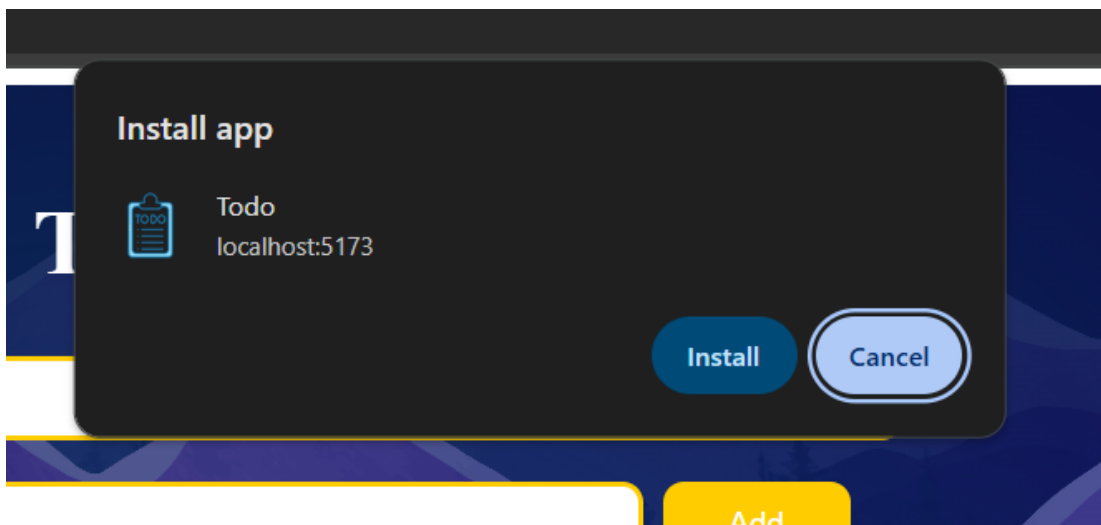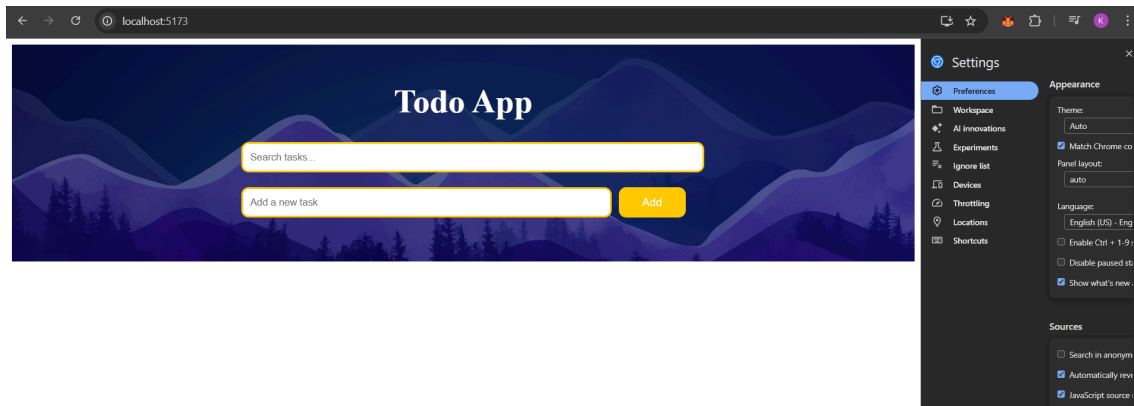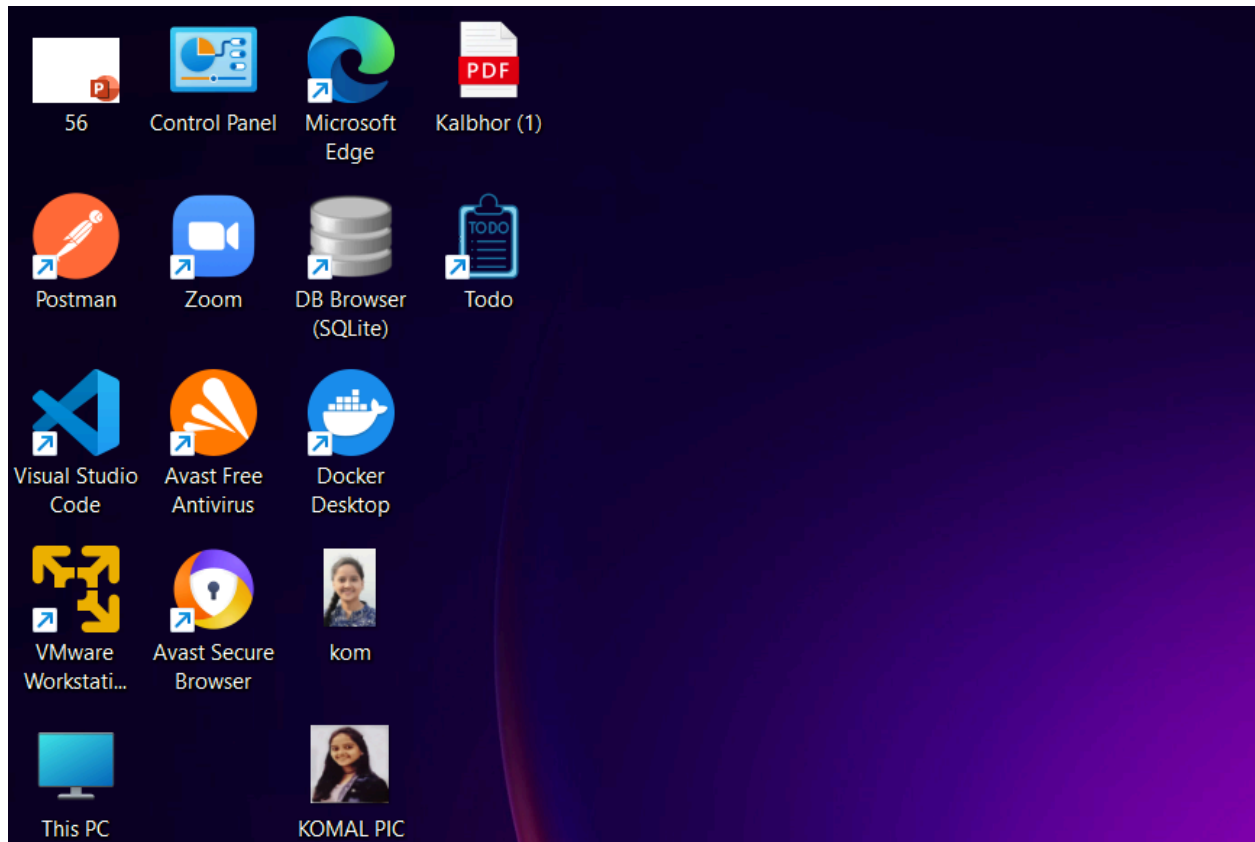
Conclusion:

By installing and configuring the Vite PWA plugin and creating a proper `manifest.json` file, we successfully converted our Vite React application into a Progressive Web App. The app can now be installed on user devices, load faster, and work offline, greatly enhancing the overall user experience and reliability of the application