

PWA Lab
PRACTICAL 7

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Aim: To write meta data of your Ecommerce PWA in a Web app manifest file to enable “add to homescreen feature”.

Theory:

Regular Web App

A regular web app is a website that is designed to be accessible on all mobile devices such that the content gets fit as per the device screen. It is designed using a web technology stack (HTML, CSS, JavaScript, Ruby, etc.) and operates via a browser. They offer various native-device features and functionalities. However, it entirely depends on the browser the user is using. In other words, it might be possible that you can access a native-device feature on Chrome but not on Safari or Mozilla Firefox because the browsers are incompatible with that feature.

Progressive Web App

Progressive Web App (PWA) is a regular web app, but some extras enable it to deliver an excellent user experience. It is a perfect blend of desktop and mobile application experience to give both platforms to the end-users.

Difference between PWAs vs. Regular Web Apps:

A Progressive Web is different and better than a Regular Web app with features like:

1. Native Experience

Though a PWA runs on web technologies (HTML, CSS, JavaScript) like a Regular web app, it gives user experience like a native mobile application. It can use most native device features, including push notifications, without relying on the browser or any other entity. It offers a seamless and integrated user experience that it is quite tough for one to differentiate between a PWA and a Native application by considering its look and feel.

2. Ease of Access

Unlike other mobile apps, PWAs do not demand longer download time and make memory space available for installing the applications. The PWAs can be shared and installed by a link, which cuts down the number of steps to install and use. These applications can easily keep an app icon on the user's home screen, making the app easily accessible to the users and helps the brands remain in the users' minds, and improve the chances of interaction.

3. Faster Services

PWAs can cache the data and serve the user with text stylesheets, images, and other web content even before the page loads completely. This lowers the waiting time for the end-users and helps the brands improve the user engagement and retention rate, which

eventually adds value to their business.

4. Engaging Approach

As already shared, the PWAs can employ push notifications and other native device features more efficiently. Their interaction does not depend on the browser user uses. This eventually improves the chances of notifying the user regarding your services, offers, and other options related to your brand and keeping them hooked to your brand. In simpler words, PWAs let you maintain the user engagement and retention rate.

5. Updated Real-Time Data Access

Another plus point of PWAs is that these apps get updated on their own. They do not demand the end-users to go to the App Store or other such platforms to download the update and wait until installed.

In this app type, the web app developers can push the live update from the server, which reaches the apps residing on the user's devices automatically. Therefore, it is easier for the mobile app developer to provide the best of the updated functionalities and services to the end-users without forcing them to update their app.

6. Discoverable

PWAs reside in web browsers. This implies higher chances of optimizing them as per the Search Engine Optimization (SEO) criteria and improving the Google rankings like that in websites and other web apps.

The main features are:

- Progressive — They work for every user, regardless of the browser chosen because they are built at the base with progressive improvement principles.
- Responsive — They adapt to the various screen sizes: desktop, mobile, tablet, or dimensions that can later become available.
- App-like — They behave with the user as if they were native apps, in terms of interaction and navigation.
- Updated — Information is always up-to-date thanks to the data update process offered by service workers.
- Secure — Exposed over HTTPS protocol to prevent the connection from displaying information or altering the contents.
- Searchable — They are identified as “applications” and are indexed by search engines.
- Installable — They allow the user to “save” the apps that he considers most useful with the corresponding icon on the screen of his mobile terminal (home screen) without having to face all the steps and problems related to the use of the app store.
- Linkable — Easily shared via URL without complex installations.
- Offline — Once more it is about putting the user before everything, avoiding the usual error message in case of weak or no connection. The PWA are based on two particularities: first of all the ‘skeleton’ of the app, which recalls the page structure, even if its contents do not respond and its elements include the header, the page layout, as well as an illustration that signals that the page is loading.

Implementation:-

Step 01:- Create the manifest.json file & added the app details

```
{  
  "name": "Tourly",  
  "short_name": "Traveling",  
  "start_url": "./index.html",  
  "display": "standalone",  
  "background_color": "#ffffff",  
  "theme_color": "#3367D6",  
  "description": "Travel for all Destinations with our Tourly app.",  
  "icons": [  
    {  
      "src": "readme-images/desktop.png",  
      "sizes": "1296x736",  
      "type": "image/png"  
    },  
    {  
      "src": "readme-images/project-logo.png",  
      "sizes": "217x76",  
      "type": "image/png"  
    }  
  ]  
}
```

Step 02:- Created the serviceworker.js file and added the installing & fetching urls logic

```
// Service worker code  
  
const CACHE_NAME = 'ecommerce-pwa-cache-v1';  
const urlsToCache = [  
  '/',  
  '/index.html',  
  'assets/css/style.css',  
  '../assets/js/script.js',  
  // Add more URLs of assets to cache as needed  
];  
// Install service worker  
self.addEventListener('install', event => {  
  // Perform install steps  
  event.waitUntil(  
    caches.open(CACHE_NAME)  
    .then(cache => {  
      console.log('Opened cache');  
      return cache.addAll(urlsToCache);  
    })  
  );  
});  
// Fetch assets from cache or network  
self.addEventListener('fetch', event => {  
  event.respondWith(  
    caches.match(event.request)  
    .then(response => {  
      // Cache hit - return response  
    })  
  );  
});
```

```

if(response) {
    return response;
}
// Clone the request
const fetchRequest = event.request.clone();

return fetch(fetchRequest).then(
    response => {
        // Check if we received a valid response
        if (!response || response.status !== 200 || response.type !== 'basic') {
            return response;
        }
        // Clone the response
        const responseToCache = response.clone();

        caches.open(CACHE_NAME)
            .then(cache => {
                cache.put(event.request, responseToCache);
            });
        return response;
   });});});});

```

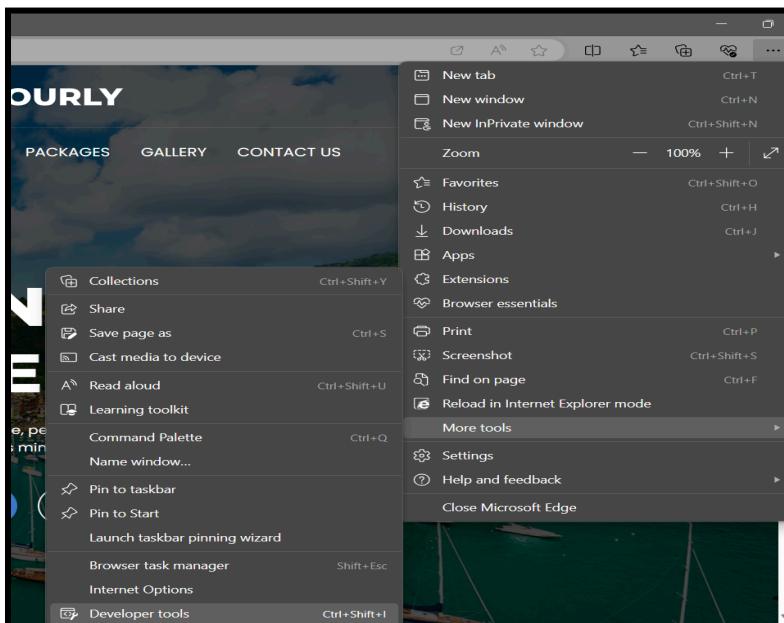
Step 03:- link the manifest & write serviceworker script for detecting,registration,loading & error handling of serviceworker.

```

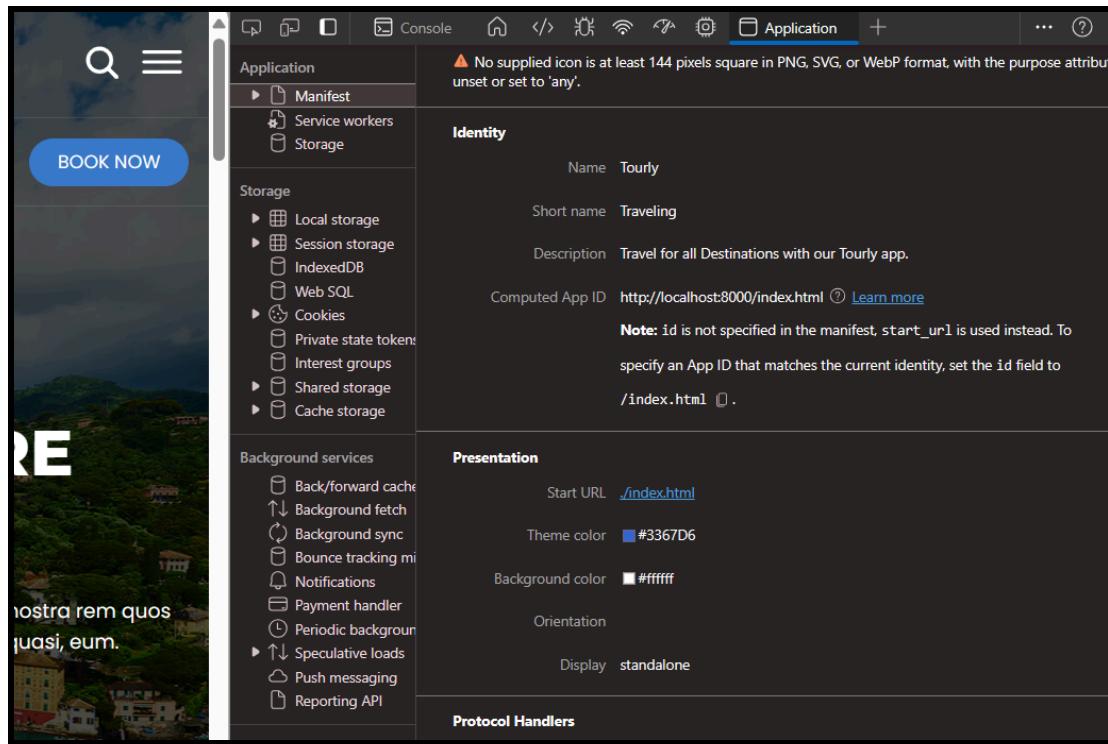
<link rel="manifest" href="/manifest.json">
<script>
if ('serviceWorker' in navigator) {
    window.addEventListener('load', () => {
        navigator.serviceWorker.register('/serviceworker.js')
            .then(registration => {
                console.log('Service Worker registered with scope:', registration.scope);
            })
            .catch(error => {
                console.error('Service Worker registration failed:', error);
            });
    });
}</script>

```

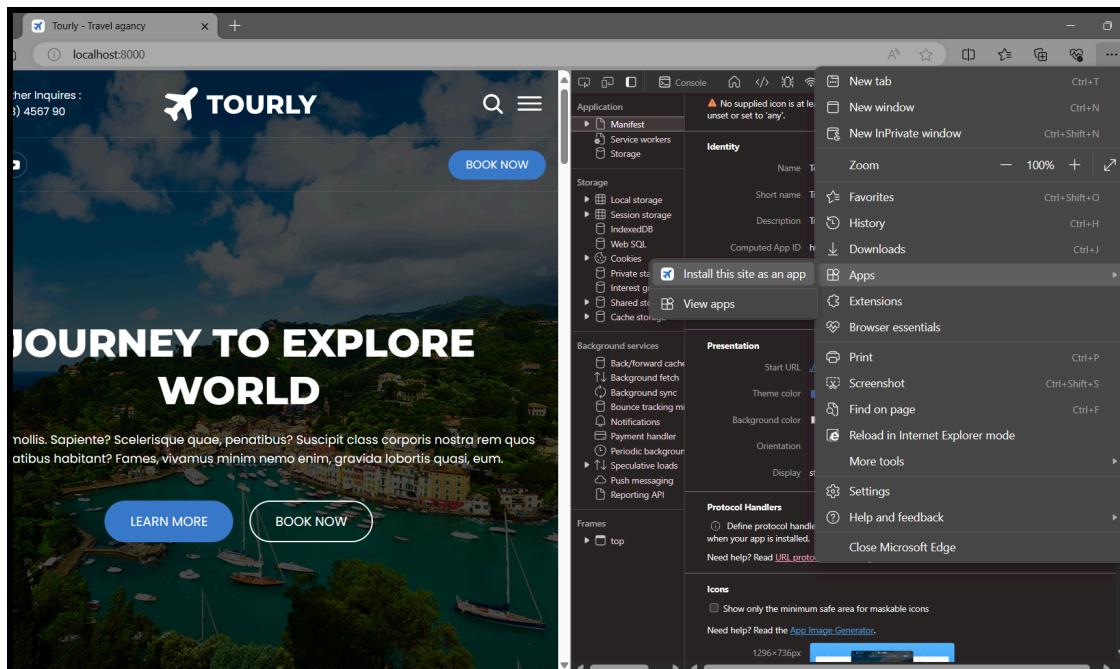
On Chrome/Edge:- host the index.html on http server:-

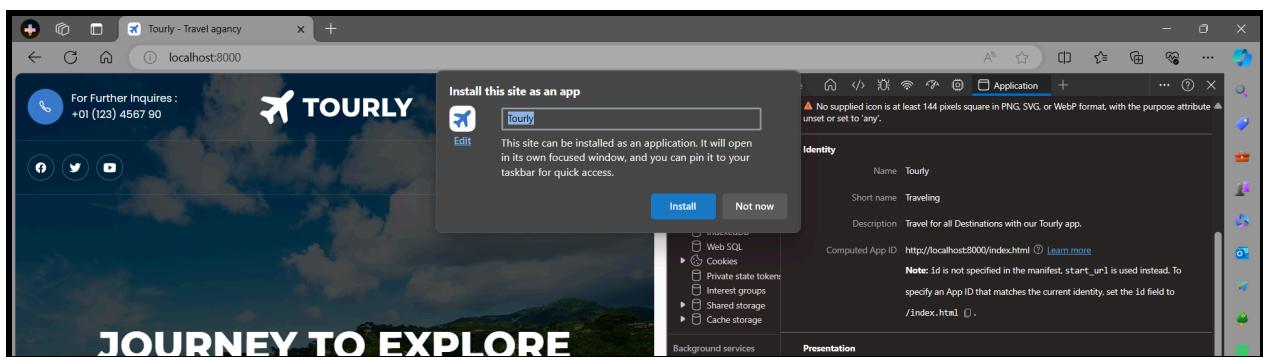


Go to Application section where you can see the manifest.json file if link correctly

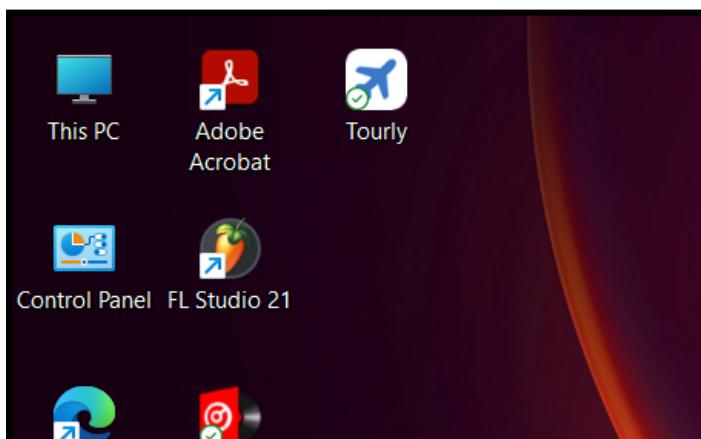
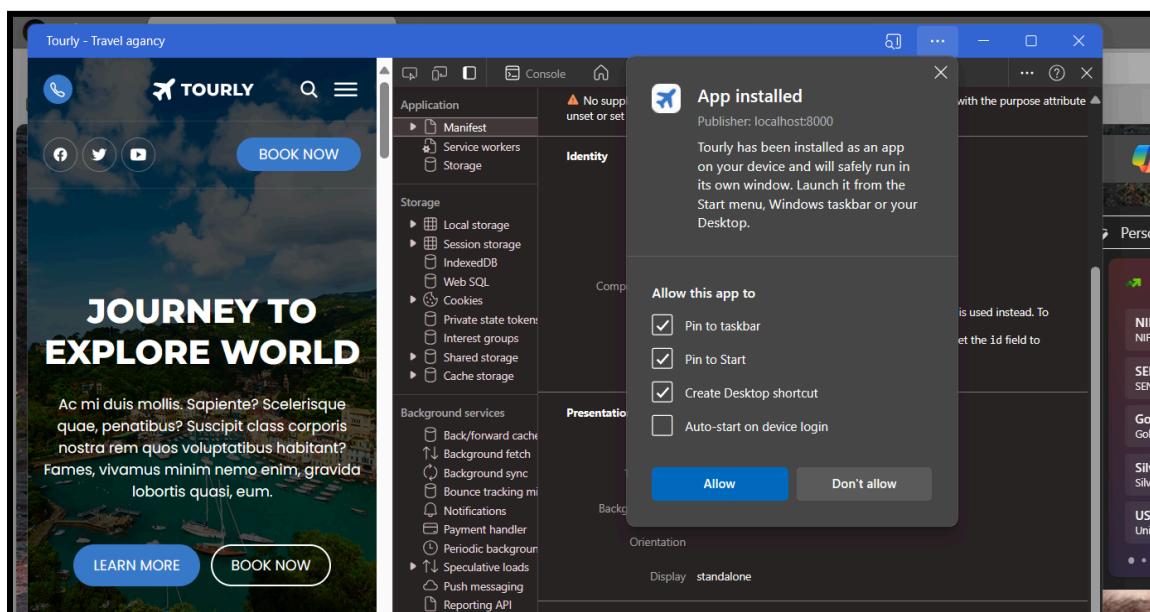


Then Click on three dots→ Apps → Install this site as an app→ install





Then click on allow & your website can be used as an app.



Conclusion:

- Thus “add to homescreen feature was successfully implemented”
- We created a shortcut icon to open our websites app locally
- We also added an image to the app icon