

PWA Lab

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Class: D15A

Roll no:66

Experiment No.-7

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 improving 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.

7. Lower Development Cost

Progressive web apps can be installed on the user device like a native device, but it does not demand submission on an App Store. This makes it far more cost-effective than native mobile applications while offering the same set of functionalities.

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.

Reactivable — Make it easy to reactivate the application thanks to capabilities such as web notifications.

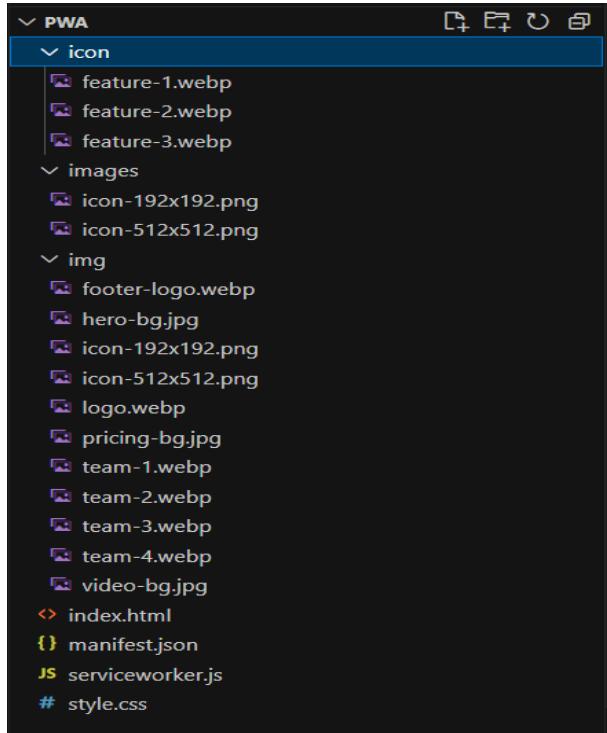
Installable — They allow the user to “save” the apps that he considers most useful with the corresponding icon on the screen of his mobile terminal (home screen) without having to face all the steps and problems related to the use of the app store.

Linkable — Easily shared via URL without complex installations.

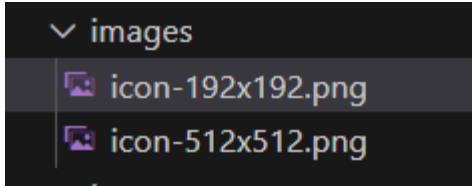
Offline — Once more it is about putting the user before everything, avoiding the usual error message in case of weak or no connection. The PWA are based on two particularities: first of all the ‘skeleton’ of the app, which recalls the page structure, even if its contents do not respond and its elements include the header, the page layout, as well as an illustration that signals that the page is loading.

CODE AND OUTPUT:

Folder Structure



Icons:



Index.html:

```
<!DOCTYPE html>
<html>
<head>

<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">

<meta http-equiv="X-UA-Compatible"
      content="ie=edge">

<title>PWA Tutorial</title>

<meta name="apple-mobile-web-app-status-bar" content="#aa7700">
<meta name="theme-color" content="black">
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta2/dist/css/bootstrap.min.css"
      rel="stylesheet"
      integrity="sha384-BmbxuPwQa2lc/FVzBcNJ7UAyJxM6wuqIj61tLrc4wSX0szH/Ev+nYRRuWlolflI"
      crossorigin="anonymous">

      <!-- Font Awesome icon -->
<link rel="stylesheet"
      href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.2/css/all.min.css"
      integrity="sha512-HK5fgLBL+xu6dm/Ii3z4xhlSUyZgTT9tuc/hSrtw6uzJOvgRr2a9jyxxT1ely+BxFAmJK
      VSTbpM/CuL7qxO8w=="
      crossorigin="anonymous" />

<link rel="stylesheet" href="style.css">
<!-- Manifest File link -->
<link rel="manifest" href="manifest.json">

</head>

<body>
    <!-- Header section -->
    <div class="container-fluid header">
```

```
<div class="row">
  <div class="col-3 bg-warning logoSection p-2">
    
  </div>
  <div class="col-9">
    <div class="row">
      <div class="col-6 menu">
        <ul>
          <li><a href="#">Home</a></li>
          <li><a href="#">Courses</a></li>
          <li><a href="#">News</a></li>
          <li><a href="#">Pages</a></li>
          <li><a href="#">Contact</a></li>
        </ul>
      </div>
      <div class="col-6 social-icon">
        <div class="row">
          <div class="col-5 icon">
            <a href=""><i class="fas fa-search"></i></a>
            <a href=""><i class="fab fa-facebook"></i></a>
            <a href=""><i class="fab fa-instagram"></i></a>
            <a href=""><i class="fab fa-twitter"></i></a>
            <a href=""><i class="fab fa-dribbble"></i></a>
          </div>
          <div class="col-4 header-btn">
            <a href="#" class="btn btn-warning">Get Started</a>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>

<section class="slider-section">
  <div class="container">
    <div class="row">
      <div class="col-12 slider-content">
        <h3>Best Options for you</h3>
        <h1>Drive safe & get licence</h1>
        <div class="slider-btn">
          <a href="#" class="btn btn-warning px-4">Contact Us</a>
          <a href="#" class="btn btn-primary px-4">See Courses</a>
        </div>
      </div>
    </div>
  </div>
</div>
```

```

        </div>
    </section>

    <!-- Feature Section started -->
    <section class="feature">
        <div class="container">
            <div class="row">
                <div class="col-lg-4 col-md-4 col-sm-12">
                    <div class="content content-center">
                        <span>Why choose us ?</span>
                        <h2>Our feature</h2>
                        <p class="paragraph">Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod
                            tempor incididunt ut labore et dolore magna aliqua viverra maecenas facilisis. </p>
                        <a href="#" class="btn btn-own">See Courses</a>
                    </div>
                </div>
                <div class="col-lg-4 col-md-4 col-sm-12">
                    <div class="single-icon">
                        
                        <h3>Unlimited car support</h3>
                    </div>
                    <div class="single-icon">
                        
                        <h3>Driving School Insures</h3>
                    </div>
                </div>
                <div class="col-lg-4 col-md-4 col-sm-12">
                    <div class="single-icon content-center">
                        
                        <h3>Any Time Any Location</h3>
                    </div>
                </div>
            </div>
        </div>
    </section>

    <!-- Welcome section started -->
    <section class="container welcome">
        <div class="row">
            <div class="col-lg-6 col-md-12 col-sm-12 welcome-img">
                
            </div>
            <div class="col-lg-6 col-md-12 col-sm-12 shadow-wrap">

```

```

<div class="content content-center">
  <span>Welcome to Online traffic school</span>
  <h2>looking for lessons?</h2>
  <p class="paragraph">Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do
eiusmod tempor
  incididunt ut labore et dolore magna aliqua. Quis ipsum vidnas accumsan lacus vel
facilisis.
</p>
  <a href="#" class="btn btn-own">Learn More</a>
</div>
</div>
</div>
</section>

```

```

<!-- Contact Form Started -->
<section class="application-form">
  <div class="container">
    <div class="content text-center">
      <span>Giving Best Options For You</span>
      <h2 class="p-3">Application Form</h2>
    </div>
    <form class="row form">
      <div class="col-lg-4 col-md-6 col-sm-12">
        <input type="text" placeholder="Your Name">
      </div>
      <div class="col-lg-4 col-md-6 col-sm-12">
        <input type="text" placeholder="Your Name">
      </div>
      <div class="col-lg-4 col-md-6 col-sm-12">
        <input type="text" placeholder="Your Name">
      </div>
      <div class="col-lg-4 col-md-6 col-sm-12">
        <input type="text" placeholder="Your Name">
      </div>
      <div class="col-lg-4 col-md-6 col-sm-12">
        <input type="text" placeholder="Your Name">
      </div>
      <div class="col-lg-4 col-md-6 col-sm-12">
        <select name="" id="course">
          <option value="">Course Type</option>
          <option value="">Safe Driving Course</option>
          <option value="">Motorhome Drivers</option>
        </select>
      </div>
      <div class="col-lg-4 col-md-6 col-sm-12">
        <select name="" id="car">
          <option value="">Car Type</option>
          <option value="">Hatchback</option>
          <option value="">Sedan</option>
        </select>
      </div>
    </form>
  </div>

```

```

        </select>
    </div>
</form>
</div>
<div class="row">
    <div class="col-12 text-center p-4">
        <input type="submit" value="Submit" class="btn btn-own ">
    </div>
</div>
</div>
</section>

```

```

<!-- Pricing section started here -->
<section class="pricing">
    <div class="container">
        <div class="content text-center">
            <span>Get Special Offer</span>
            <h2 class="p-3">Our Pricing</h2>
        </div>
        <div class="row">
            <div class="col-lg-4 col-md-6 col-sm-12">
                <div class="box">
                    <div class="box-heading">
                        <span>20% off</span>
                        <h1>$ 199</h1>
                        <h5>Personal Driving</h5>
                    </div>
                    <div class="box-list-item">
                        <p>Full course theory</p>
                        <p>Full driving course</p>
                        <p>Training in first aid</p>
                        <p>Practical sessions</p>
                        <p>Psychological support</p>
                    </div>
                    <div class="box-btn btn-own">
                        <a href="#">Get Started</a>
                    </div>
                </div>
            </div>
            <div class="col-lg-4 col-md-6 col-sm-12">
                <div class="box">
                    <div class="box-heading">
                        <span>20% off</span>
                        <h1>$ 199</h1>

```

```
        <h5>Personal Driving</h5>
    </div>
    <div class="box-list-item">
        <p>Full course theory</p>
        <p>Full driving course</p>
        <p>Training in first aid</p>
        <p>Practical sessions</p>
        <p>Psychological support</p>
    </div>
    <div class="box-btn btn-own">
        <a href="#">Get Started</a>
    </div>

    </div>
</div>
<div class="col-lg-4 col-md-6 col-sm-12">
    <div class="box">
        <div class="box-heading">
            <span>20% off</span>
            <h1>$ 199</h1>
            <h5>Personal Driving</h5>
        </div>
        <div class="box-list-item">
            <p>Full course theory</p>
            <p>Full driving course</p>
            <p>Training in first aid</p>
            <p>Practical sessions</p>
            <p>Psychological support</p>
        </div>
        <div class="box-btn btn-own">
            <a href="#">Get Started</a>
        </div>

        </div>
    </div>
</div>
</div>

</div>
</section>

<!-- Instructor section --&gt;
&lt;section class="instructor-section"&gt;
    &lt;div class="container"&gt;
        &lt;div class="row"&gt;
            &lt;div class="col-lg-10 col-md-10 col-sm-12"&gt;
                &lt;div class="content text-left"&gt;</pre>
```

```
<span>Our Great Team</span>
<h2>Our Instructors</h2>
</div>
</div>
<div class="col-lg-2 col-md-2 col-sm-12 my-4">
    <a href="#" class="btn btn-own">View All</a>
</div>
</div>
<div class="row">
    <div class="col-lg-6 col-md-6 col-sm-12 instructor-box">
        <div class="row instructor-wrap">
            <div class="col-5 instructor-img">
                
            </div>
            <div class="col-7 instructor-details">
                <h3>DAVID WARNER</h3>
                <span>Instructor</span>
                <p>Morbi accumsan ipsum velit. Nam nec tellus a odio tincidunt auctor.</p>
                <div class="instructor-social">
                    <a href=""><i class="fab fa-facebook"></i></a>
                    <a href=""><i class="fab fa-instagram"></i></a>
                    <a href=""><i class="fab fa-twitter"></i></a>
                    <a href=""><i class="fab fa-dribbble"></i></a>
                </div>
            </div>
        </div>
    </div>
    <div class="col-lg-6 col-md-6 col-sm-12 instructor-box">
        <div class="row instructor-wrap">
            <div class="col-5 instructor-img">
                
            </div>
            <div class="col-7 instructor-details">
                <h3>DAVID WARNER</h3>
                <span>Instructor</span>
                <p>Morbi accumsan ipsum velit. Nam nec tellus a odio tincidunt auctor.</p>
                <div class="instructor-social">
                    <a href=""><i class="fab fa-facebook"></i></a>
                    <a href=""><i class="fab fa-instagram"></i></a>
                    <a href=""><i class="fab fa-twitter"></i></a>
                    <a href=""><i class="fab fa-dribbble"></i></a>
                </div>
            </div>
        </div>
    </div>
    <div class="col-lg-6 col-md-6 col-sm-12 instructor-box">
```

```

<div class="row instructor-wrap">
  <div class="col-5 instructor-img">
    
  </div>
  <div class="col-7 instructor-details">
    <h3>DAVID WARNER</h3>
    <span>Instructor</span>
    <p>Morbi accumsan ipsum velit. Nam nec tellus a odio tincidunt auctor.</p>
    <div class="instructor-social">
      <a href=""><i class="fab fa-facebook"></i></a>
      <a href=""><i class="fab fa-instagram"></i></a>
      <a href=""><i class="fab fa-twitter"></i></a>
      <a href=""><i class="fab fa-dribbble"></i></a>
    </div>
  </div>
</div>
<div class="col-lg-6 col-md-6 col-sm-12 instructor-box">
  <div class="row instructor-wrap">
    <div class="col-5 instructor-img">
      
    </div>
    <div class="col-7 instructor-details">
      <h3>DAVID WARNER</h3>
      <span>Instructor</span>
      <p>Morbi accumsan ipsum velit. Nam nec tellus a odio tincidunt auctor.</p>
      <div class="instructor-social">
        <a href=""><i class="fab fa-facebook"></i></a>
        <a href=""><i class="fab fa-instagram"></i></a>
        <a href=""><i class="fab fa-twitter"></i></a>
        <a href=""><i class="fab fa-dribbble"></i></a>
      </div>
    </div>
  </div>
</div>
</div>
</section>


<footer class="footer">
  <div class="container">
    <div class="row footer-wrap">
      <div class="col-lg-3 col-md-6 col-sm-12 footer-details">
        <h3>Company</h3>
        <a href="#">About Us</a>
      </div>
    </div>
  </div>
</footer>

```

```

<a href="#">Company</a>
<a href="#">Press & Blog</a>
<a href="#">Privacy Policy</a>
<a href="#">Faq</a>
</div>
<div class="col-lg-3 col-md-6 col-sm-12 footer-details">
    <h3>Courses</h3>
    <a href="#">Winter driving</a>
    <a href="#">Program for seniors</a>
    <a href="#">Adult in car lesions</a>
    <a href="#">Defensive driving</a>
    <a href="#">Stick shit lessons</a>
</div>
<div class="col-lg-3 col-md-6 col-sm-12 footer-details">
    <h3>USEFUL LINKS</h3>
    <a href="#">Home</a>
    <a href="#">Drupal Themes</a>
    <a href="#">WordPress Themes</a>
    <a href="#">Support</a>
    <a href="#">Services</a>
</div>
<div class="col-lg-3 col-md-6 col-sm-12 footer-details">
    
    <a href="#">Address : 15 Division Street, New York, NY 12032, United States of
    America</a>
    <a href="#">Phone : +0 (123) 456789</a>
    <a href="#">Email : Kaseo@gmail.com</a>
    <a href="#">Fax : +8 (123) 456 789</a>
</div>

</div>
<div class="footer-copyright">
    <span>Copyright &copy 2021 All rights reserveed By AI Siam</span>
</div>
</div>
</footer>

<!-- Bootstrap Bundle with Popper -->
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-b5kHyXgcpbZJO/tY9Ul7kGkf1S0CWuKcCD38l8YkeH8z8QjE0GmW1gYU5S9FOOnJ0"
crossorigin="anonymous">
</script>
<script>
    window.addEventListener('load', () => {
        registerSW();
    }

```

```
});

// Register the Service Worker
async function registerSW() {
if ('serviceWorker' in navigator) {
  try {
    await navigator
      .serviceWorker
      .register('serviceworker.js');
  }
  catch (e) {
    console.log('SW registration failed');
  }
}
}

</script>

</body>

</html>
```

serviceworker.js

```
var staticCacheName = "pwa";

self.addEventListener("install", function (e) {
  e.waitUntil(
    caches.open(staticCacheName).then(function (cache) {
      return cache.addAll(["/"]);
    })
  );
});

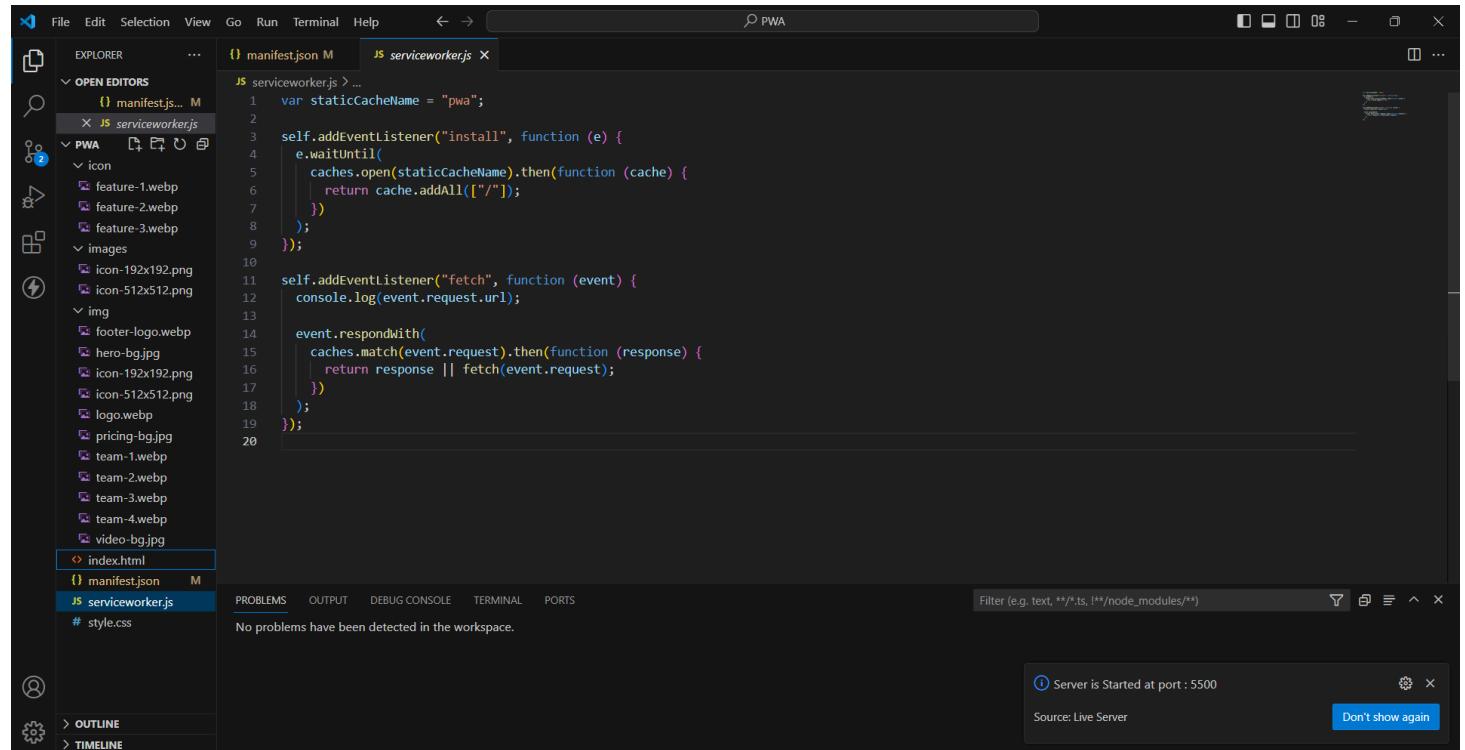
self.addEventListener("fetch", function (event) {
  console.log(event.request.url);

  event.respondWith(
    caches.match(event.request).then(function (response) {
      return response || fetch(event.request);
    })
  );
});
```

manifest.json

```
{  
  "name": "Learn2DriveHub",  
  "short_name": "PWA",  
  "start_url": "index.html",  
  "display": "standalone",  
  "background_color": "#5900b3",  
  "theme_color": "black",  
  "scope": ".",  
  "description": "This is a Driving tutorial App",  
  "icons": [  
    {  
      "src": "images/icon-192x192.png",  
      "sizes": "192x192",  
      "type": "image/png",  
      "purpose": "any maskable"  
    },  
    {  
      "src": "images/icon-512x512.png",  
      "sizes": "512x512",  
      "type": "image/png",  
      "purpose": "any maskable"  
    } ]}  
}
```

Starting the server

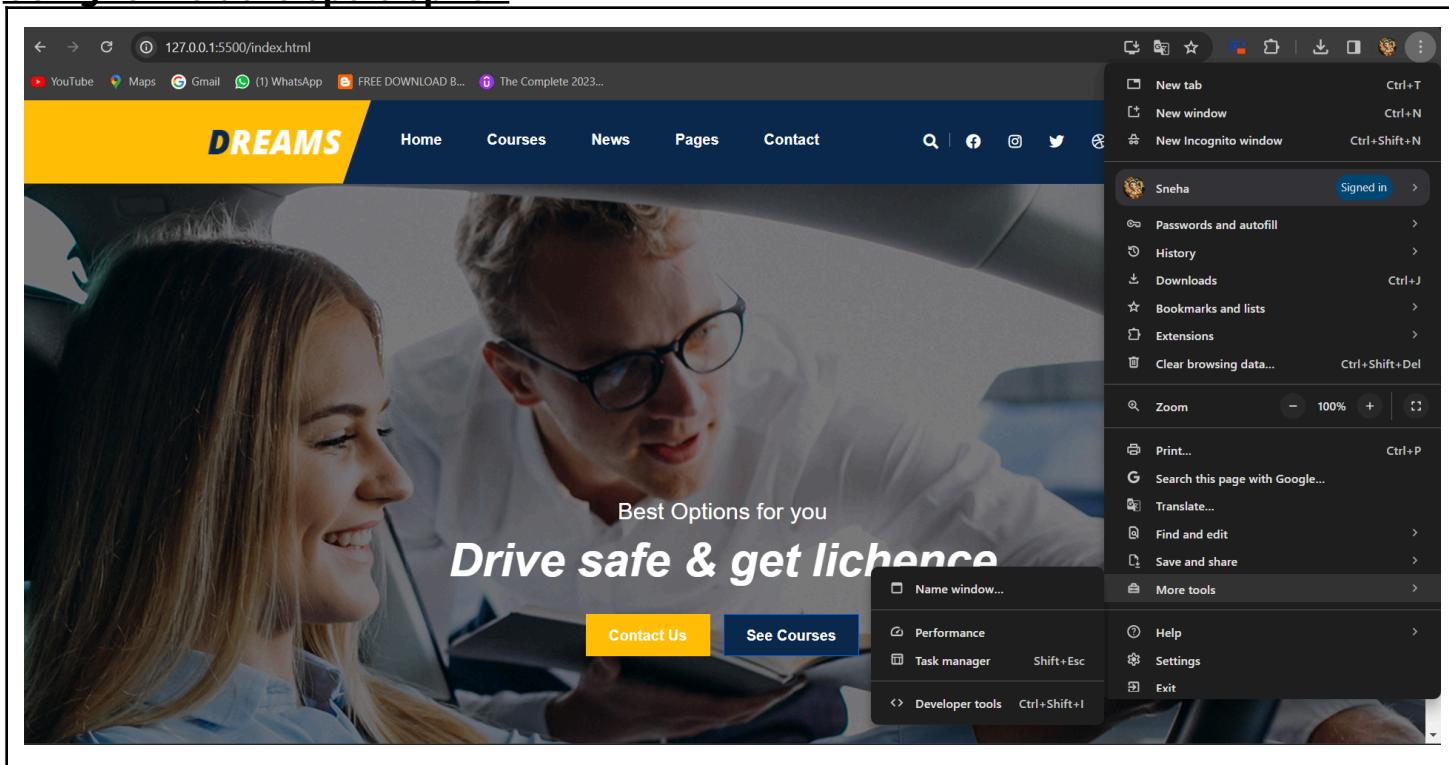


```
File Edit Selection View Go Run Terminal Help ⏪ ⏩ 🔍 PWA  
EXPLORER OPEN EDITORS PWA PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  
Filter (e.g. text, **/*.ts, !**/node_modules/**)  
No problems have been detected in the workspace.  
Server is Started at port: 5500  
Source: Live Server  
Don't show again
```

```
manifest.json M serviceworker.js  
serviceworker.js > ...  
1 var staticCacheName = "pwa";  
2  
3 self.addEventListener("install", function (e) {  
4   e.waitUntil(  
5     caches.open(staticCacheName).then(function (cache) {  
6       return cache.addAll(['/']);  
7     })  
8   );  
9 });  
10  
11 self.addEventListener("fetch", function (event) {  
12   console.log(event.request.url);  
13  
14   event.respondWith(  
15     caches.match(event.request).then(function (response) {  
16       return response || fetch(event.request);  
17     })  
18   );  
19 });  
20
```

OPEN EDITORS
manifest.json M
serviceworker.js
PWA
icon
feature-1.webp
feature-2.webp
feature-3.webp
images
icon-192x192.png
icon-512x512.png
img
footer-logo.webp
hero-bg.jpg
icon-192x192.png
icon-512x512.png
logo.webp
pricing-bg.jpg
team-1.webp
team-2.webp
team-3.webp
team-4.webp
video-bg.jpg
index.html
manifest.json M
serviceworker.js
style.css
OUTLINE
TIMELINE

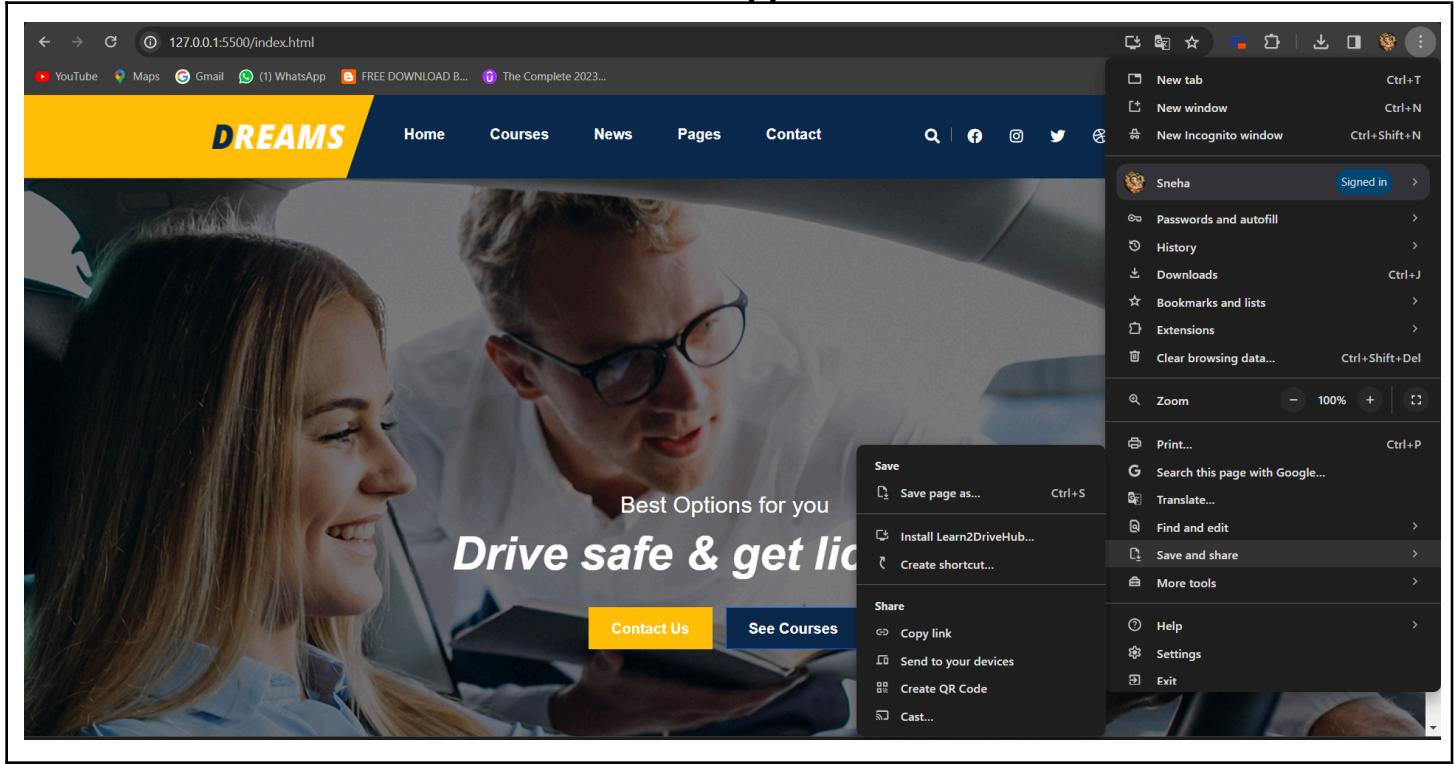
Going to the developers option



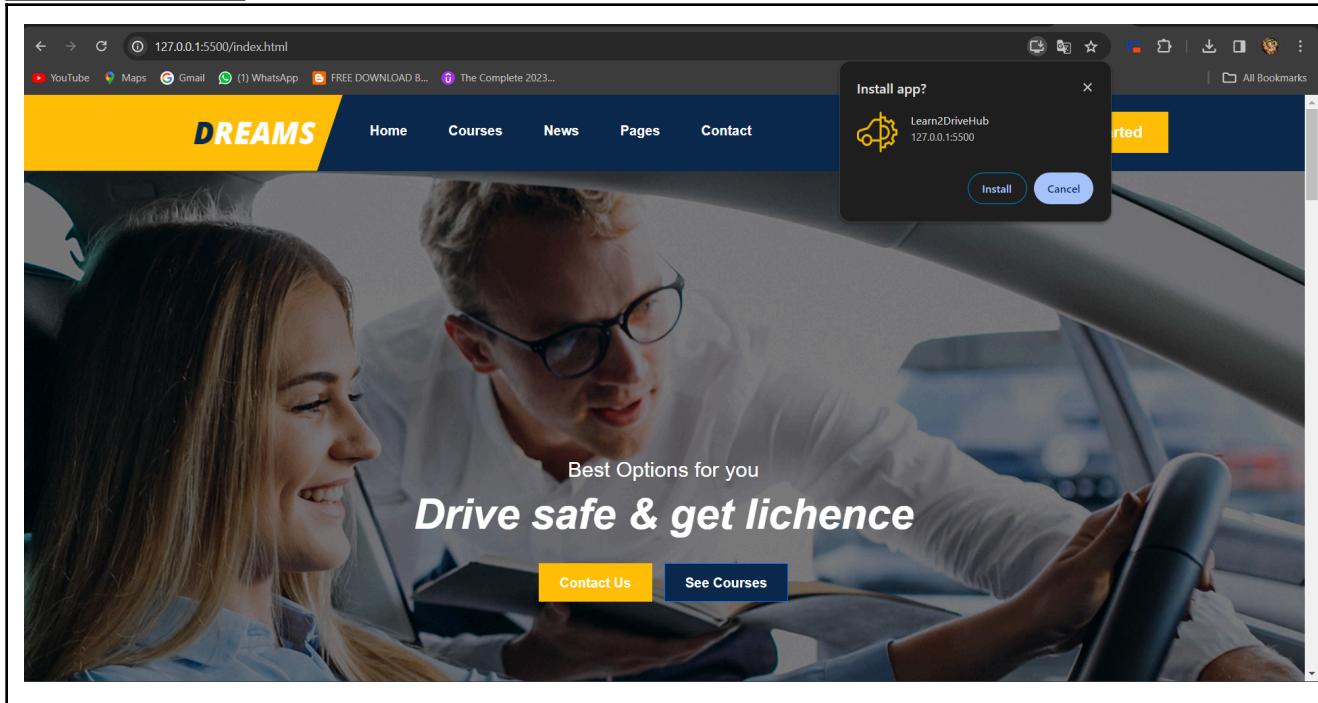
Application

A screenshot of the Chrome DevTools Application panel for the 'DREAMS' PWA. The left side shows a preview of the website with the same layout as the previous screenshot. The right side of the DevTools interface is filled with configuration options for the PWA. Under the 'Application' tab, there are sections for 'App Manifest' (manifest.json), 'Errors and warnings' (listing issues about the PWA UI not being available on desktop/mobile), 'Identity' (Name: Learn2DriveHub, Short name: PWA, Description: This is a Driving tutorial App, Computed App ID: http://127.0.0.1:5500/index.html), and 'Presentation' (Start URL: index.html, Theme color: black, Background color: #5900b3, Orientation). Other tabs in the DevTools include Elements, Console, Sources, Network, and Issues.

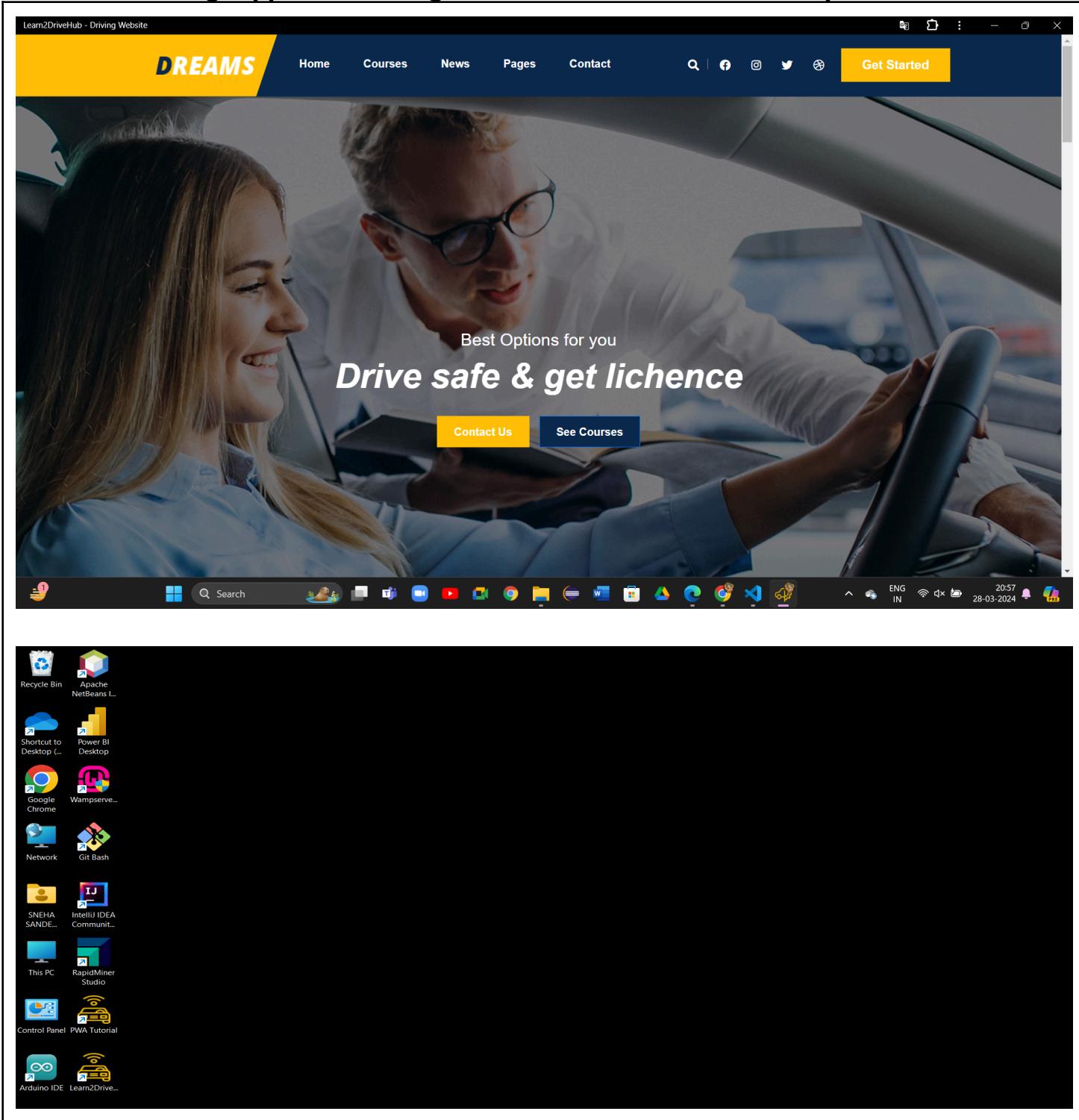
Click on 3 dots → Save and Share → install App



Click on install



This is the Driving app that is being created at taskbar and Desktop



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