MAD & PWA LAB
EXP- 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 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.

Pros and cons of the Progressive Web App

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.

Weaknesses refer to:
IOS support from version 11.3 onwards;
Greater use of the device battery;
Not all devices support the full range of PWA features (same speech for iOS and Android operating systems);
It is not possible to establish a strong re-engagement for iOS users (URL scheme, standard web notifications);
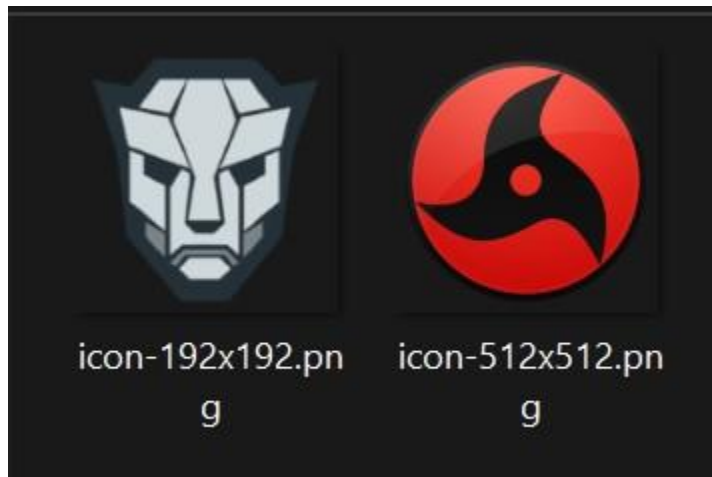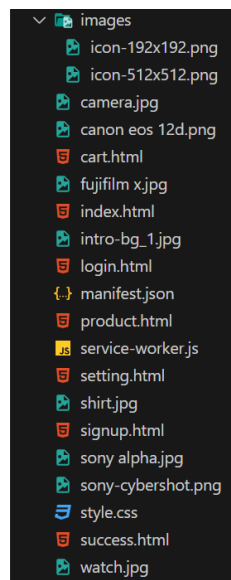Support for offline execution is however limited;
Lack of presence on the stores (there is no possibility to acquire traffic from that channel);
There is no "body" of control (like the stores) and an approval process;
Limited access to some hardware components of the devices;
Little flexibility regarding "special" content for users (eg loyalty programs, loyalty, etc.).

Folder Structure and icon size

```
images
    icon-192x192.png
    icon-512x512.png
camera.jpg
canon eos 12d.png
cart.html
fujifilm x.jpg
index.html
intro-bg_1.jpg
login.html
manifest.json
product.html
service-worker.js
setting.html
shirt.jpg
signup.html
sony alpha.jpg
sony-cybershot.png
style.css
success.html
watch.jpg
```

icon-192x192.png   icon-512x512.png

Index.html

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

<head>
    <meta name="apple-mobile-web-app-status-bar" content="#aa7700">
    <meta name="theme-color" content="black">
    <link rel="manifest" href="manifest.json">
    <script src="service-worker.js"></script>
    <title>
        Index
    </title>
    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">

    <!--jQuery library-->
    <script
src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>

    <!--Latest compiled and minified JavaScript-->
    <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js">
</script>
```

```html
        <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="style.css">
</head>


<body>


    <nav class="navbar navbar-inverse navbar-fixed-top">
        <div class="container">
            <div class="navbar-header">
                <button type="button" class="navbar-toggle"
data-toggle="collapse" data-target="#mynavbar">
                    <span class="icon-bar"></span>
                    <span class="icon-bar"></span>
                    <span class="icon-bar"></span>
                </button>
                <a class="navbar-brand" href="index.html">Lifestyle
Store</a>


            </div>
            <div class="collapse navbar-collapse" id="mynavbar">
                <ul class="nav navbar-nav navbar-right">
                    <li>
                        <a href="signup.html">
                            <span class="glyphicon glyphicon-user" />
Sign-Up </a>
                    </li>
                    <li>
                        <a href="login.html">
                            <span class="glyphicon glyphicon-log-in" />
Login </a>
                    </li>
                </ul>
            </div>


        </div>


    </nav>
    <div class="banner-image">
        <div class="container">
            <div class="banner-content" style="margin-left :25%">
```

```html
                <h1>We sell lifestyle</h1>
                <p>Flat 40% OFF on premium brands</p> <br>
                <a href="product.html" class="btn btn-danger btn-lg
active">Shop Now</a>
            </div>
        </div>
    </div>
    <footer>
        <div class="container">
            <p style="text-align:center;">Copyright © Lifestyle Store. All
Rights Reserved and Contact Us: +91 90000
                00000 </p>
        </div>
    </footer>
    <script>
        // Add event listener to execute code when page loads
        window.addEventListener('load', () => {
            // Call registerSW function when page loads
            registerSW();
        });

        // Register the Service Worker
        async function registerSW() {
            // Check if browser supports Service Worker
            if ('serviceWorker' in navigator) {
                try {
                    // Register the Service Worker named
'serviceworker.js'
                    await
navigator.serviceWorker.register('service-worker.js');
                }
                catch (e) {
                    // Log error message if registration fails
                    console.error('ServiceWorker registration failed: ',
e);
                }
            }
        }
    </script>
```

```html
</body>

</html>
```

Manifest.json

```json
{
    "name":"PWA Tutorial",
    "short_name":"PWA",
    "start_url":"index.html",
    "display":"standalone",
    "background_color":"#5900b3",
    "theme_color":"black",
    "scope": ".",
    "description":"This is a PWA tutorial.",
    "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"
    }
]
}
```

Service-worker.json

```js
// service-worker.js

const CACHE_NAME = 'my-ecommerce-app-cache-v1';
const urlsToCache = [
  '/',
```

```
  'cart.html',
  'index.html',
  'product.html',
  'shop.html',
  'style.css',
  'success.html',
  'service-worker.js',
  'manifest.json'

  // Add more files to cache as needed
];

self.addEventListener('install', function(event) {
    event.waitUntil(
      caches.open(CACHE_NAME)
        .then(function(cache) {
          console.log('Opened cache');
          return cache.addAll(urlsToCache)
            .catch(function(error) {
              console.error('Cache.addAll error:', error);
            });
        })
    );
  });

self.addEventListener('activate', function(event) {
  // Perform activation steps
  event.waitUntil(
    caches.keys().then(function(cacheNames) {
      return Promise.all(
        cacheNames.map(function(cacheName) {
          if (cacheName !== CACHE_NAME) {
            return caches.delete(cacheName);
          }
        })
      );
    })
  );
});
```

Product.html

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

    <head>
    <title>
        product
    </title>
        <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css" >

        <!--jQuery library-->
        <script
src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>

        <!--Latest compiled and minified JavaScript-->
        <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
        <meta name="viewport" content="width=device-width,
initial-scale=1">
        <link rel = "stylesheet" href = "style.css">
    </head>
        <body>
            <nav class = "navbar navbar-inverse navbar-fixed-top">
                    <div class ="container">
                        <div class ="navbar-header">
                            <button type="button" class ="navbar-toggle"
data-toggle="collapse" data-target="#mynavbar">
                                <span class="icon-bar"></span>
                                <span class="icon-bar"></span>
                                <span class="icon-bar"></span>
                            </button>
                            <a class="navbar-brand"
href="index.html">Lifestyle Store</a>

                        </div>
```

```html
                    <div class="collapse navbar-collapse"
id="mynavbar">
                        <ul class="nav navbar-nav navbar-right">
                            <li>
                                <a href="cart.html">
                                    <span class="glyphicon
glyphicon-shopping-cart">  Cart </span> </a>
                            </li>
                            <li>
                                <a href="setting.html">
                                    <span class="glyphicon
glyphicon-user">  Setting</span>  </a>
                            </li>
                            <li>
                                <a href="index.html">
                                    <span class="glyphicon
glyphicon-log-out">    Logout</span></a>
                            </li>
                        </ul>
                    </div>

                </div>

            </nav>

            <div class =" container" style="margin-top: 5%;">

            <div class ="jumbotron">

            <h1> Welcome  to our Lifestyle Store!  </h1>
            <p>We have the best cameras, watches and shirts for you.
No need to hunt
            around, we have all in one place.  </p>
            </div>

            <div class="row text-center">
            <div class="  col-md-3 col-sm-6  thumbnail " >
            <img src="canon eos 12d.png">
            <div class="caption">
            <h2>Canon EOS 12D</h2>
```

```
<p>Full Zoom Quality</p>

</div>
<div class=" btn btn-primary  btn-block btn-md"> 29000
</div>
</div>


<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="sony-cybershot.png">
<div class="caption">
<h2>Sony CyberShot</h2>
<p>48MP Camera</p>

</div>
<div class=" btn btn-primary  btn-block btn-md"> 19000
</div>
</div>


<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="sony alpha.jpg">
<div class="caption">
<h2>Sony Alpha</h2>
<p>Flagship Camera</p>

</div>
<div class=" btn btn-primary  btn-block btn-md"> 50000
</div>
</div>

<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="fujifilm x.jpg">
<div class="caption">
<h2>Fujifilm X</h2>
<p>Best off all</p>
</div>

<div class=" btn btn-primary  btn-block btn-md"> 29000
</div>
```

```html
        </div>

     </div>



     <div class="row text-center">

     <div class="  col-md-3 col-sm-6  thumbnail " >
     <img src="watch.jpg">
     <div class="caption">
     <h2>ROLEX</h2>
     <p>Best Watch</p>
     </div>
     <div class=" btn btn-primary  btn-block btn-md"> 200000
     </div>
     </div>



     <div class="  col-md-3 col-sm-6  thumbnail " >
     <img src="watch.jpg">
     <div class="caption">
     <h2>Sonata</h2>
     <p>Cheapest Watch</p>
     </div>
     <div class=" btn btn-primary  btn-block btn-md"> 2000
     </div>
     </div>



     <div class="  col-md-3 col-sm-6  thumbnail " >
     <img src="watch.jpg">
         <div class="caption">
        <h2>TIMEX by Titan</h2>
        <p>Premium watch</p>
        </div>
        <div class=" btn btn-primary  btn-block btn-md"> 20000
     </div>

     </div>
```

```
<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="watch.jpg">
<div class="caption">
<h2>JACOB&CO. WATCHES </h2>
<p>Most Expensive</p>
</div>
<div class=" btn btn-primary  btn-block btn-md"> 2000000
</div>


</div>
</div>




<div class="row text-center">

<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="shirt.jpg">
  <div class="caption">
<h2>Raymond</h2>
<p>Blue Shirt</p>
</div>
<div class=" btn btn-primary  btn-block btn-md">2000
</div>

</div>

<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="shirt.jpg">
 <div class="caption">
<h2>Levi</h2>
<p>Formals</p>
</div>
<div class=" btn btn-primary  btn-block btn-md">3000</div>
</div>

<div class="  col-md-3 col-sm-6  thumbnail " >
<img src="shirt.jpg">
  <div class="caption">
```

```html
                <h2>Denim</h2>
                <p>Blue Shirt</p>
                </div>
                <div class=" btn btn-primary  btn-block btn-md">SHIRTS
</div>
                </div>

                <div class="  col-md-3 col-sm-6  thumbnail " >
                <img src="shirt.jpg">
                  <div class="caption">
                <h2>Cambridge</h2>
                <p>Original Shirts and Formals</p>
                </div>
                <div class=" btn btn-primary  btn-block btn-md">SHIRTS
</div>
                </div>
                </div>
                </div>

                <footer style="margin-top: 5%; margin-bottom:.5%;">
                              <div class="container" >
                                  <p
style="text-align:center;">Copyright © Lifestyle Store. All Rights
Reserved and Contact Us: +91 90000 00000 </p>
                                  </div>
                      </footer>



        </body>
    </html>
```
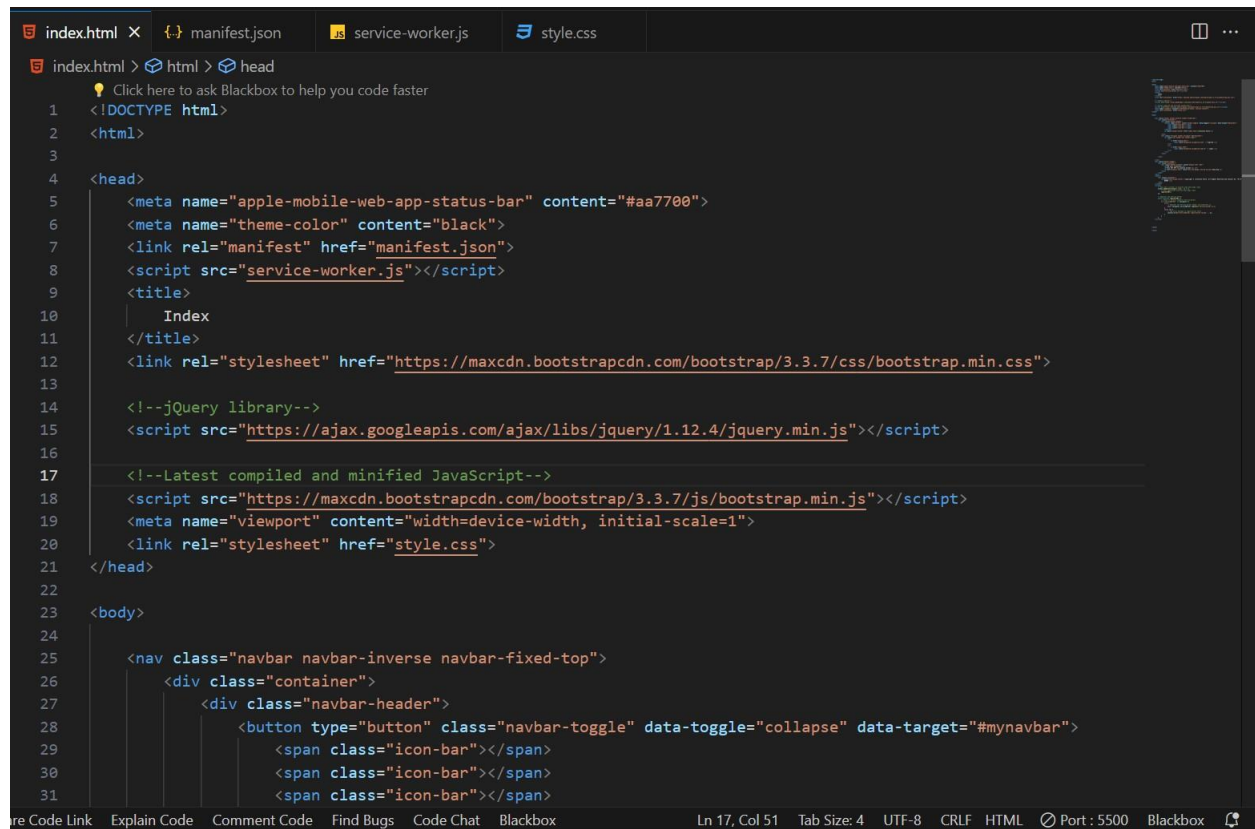
Style.css

```css
.banner-image
{padding-top: 75px;
 padding-bottom: 50px;
text-align: center;
color: #f8f8f8;
 background: url(intro-bg_1.jpg) no-repeat center center;
```

```css
background-size: cover;
}
.banner-content{
  position: relative;

 padding-top: 6%;
 padding-bottom: 6%;

 margin-top: 12%;
 margin-bottom: 12%;
 background-color: rgba(0, 0, 0, 0.7);
 width: 50%;
 text-align:center;
}
footer
{
padding: 10px 0;
background-color: #101010;
color:#9d9d9d;
bottom: 0;
width: 100%;
}
.container{
  width:90%;
 margin:auto;
 overflow:hidden;

}
```
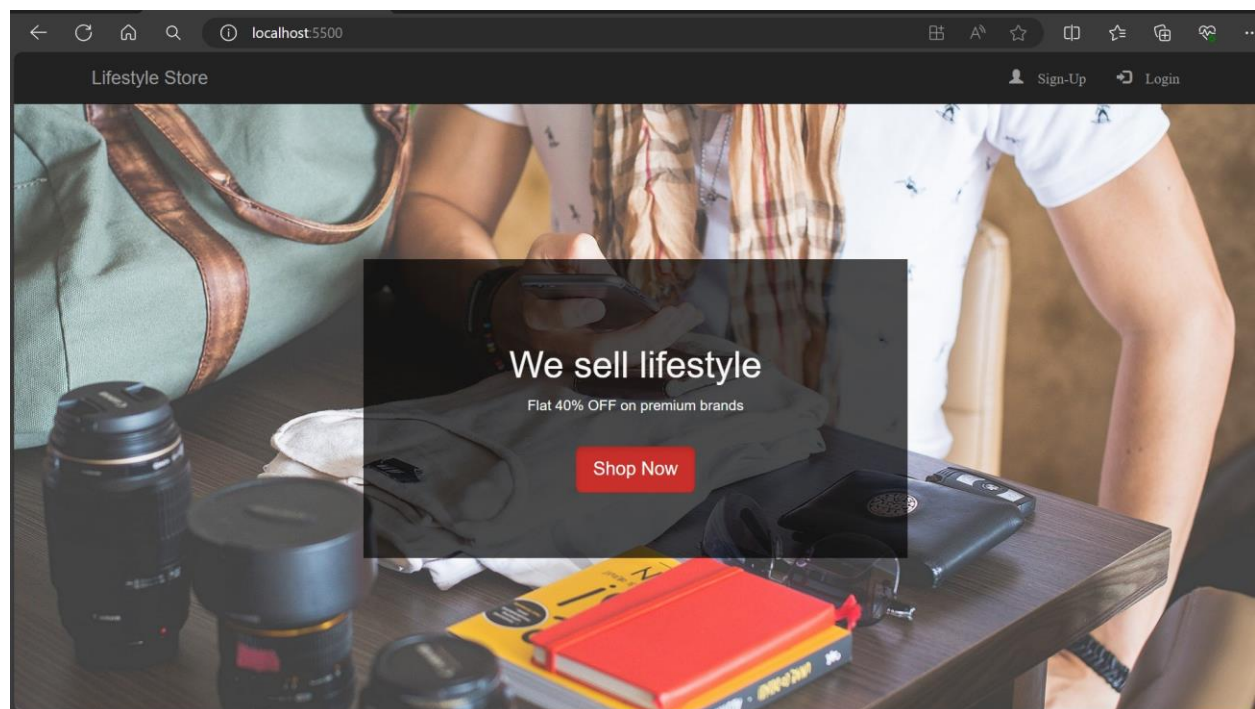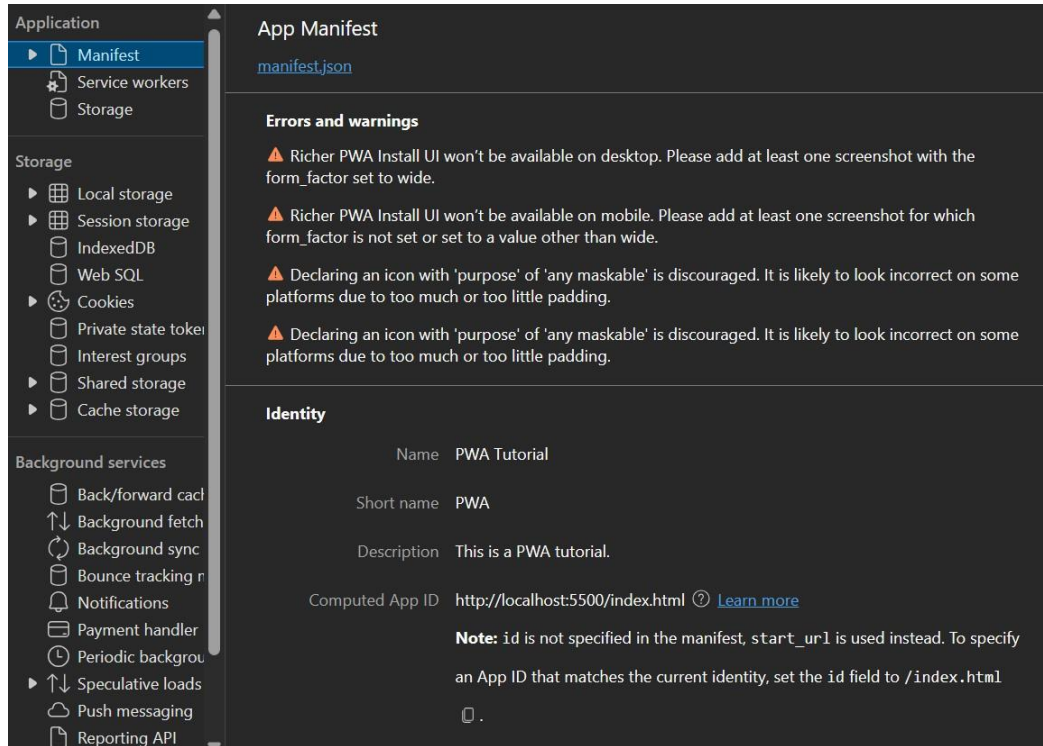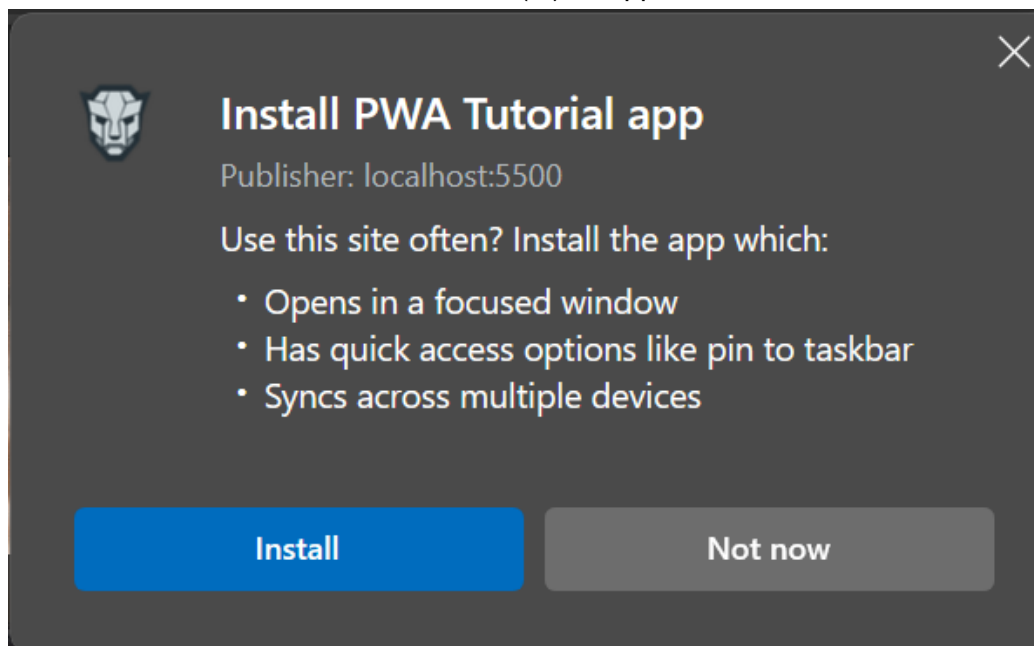
Starting the Server:

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

<head>
    <meta name="apple-mobile-web-app-status-bar" content="#aa7700">
    <meta name="theme-color" content="black">
    <link rel="manifest" href="manifest.json">
    <script src="service-worker.js"></script>
    <title>
        Index
    </title>
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">

    <!--jQuery library-->
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>

    <!--Latest compiled and minified JavaScript-->
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="style.css">
</head>

<body>

    <nav class="navbar navbar-inverse navbar-fixed-top">
        <div class="container">
            <div class="navbar-header">
                <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#mynavbar">
                    <span class="icon-bar"></span>
                    <span class="icon-bar"></span>
                    <span class="icon-bar"></span>
```
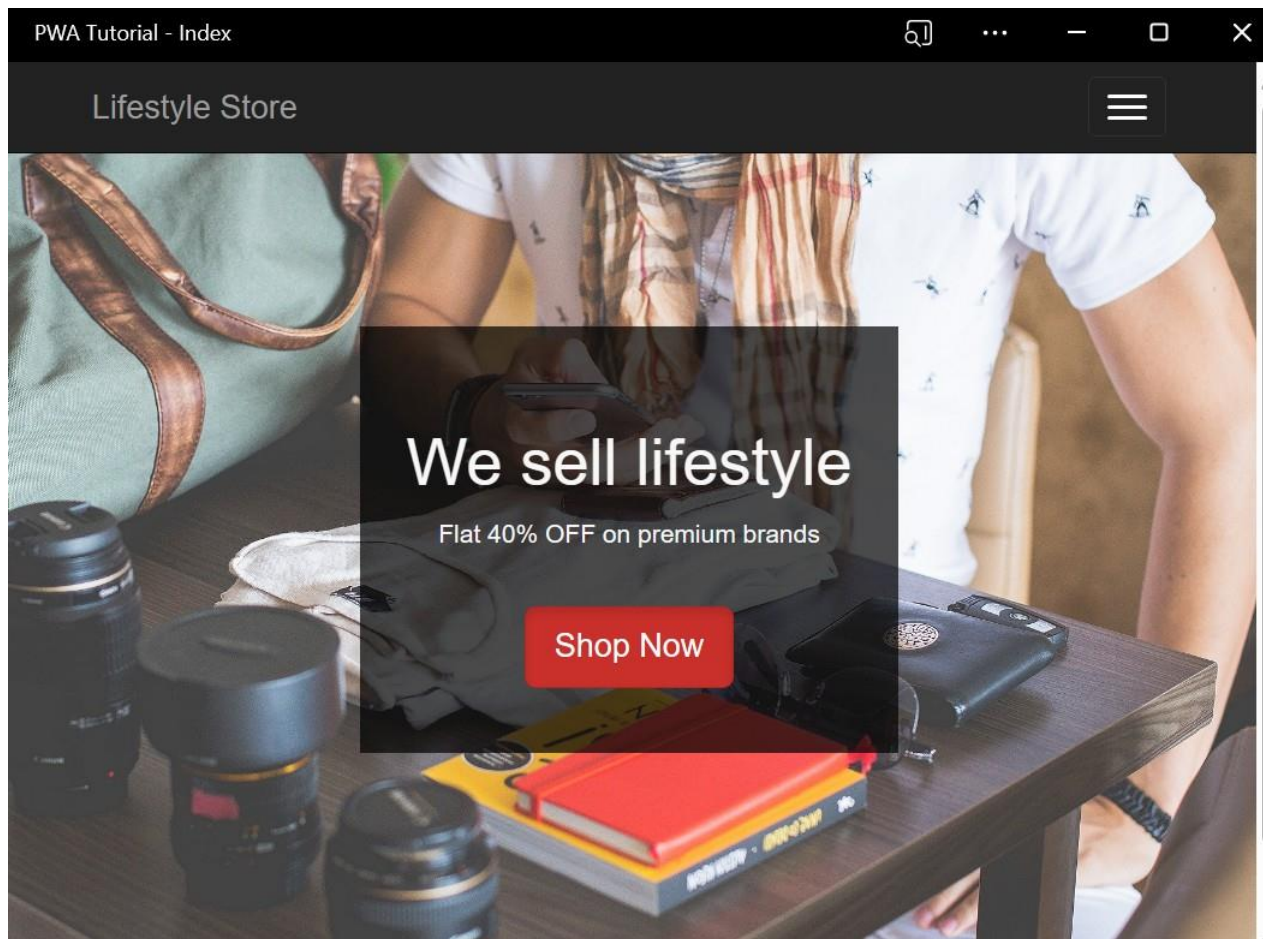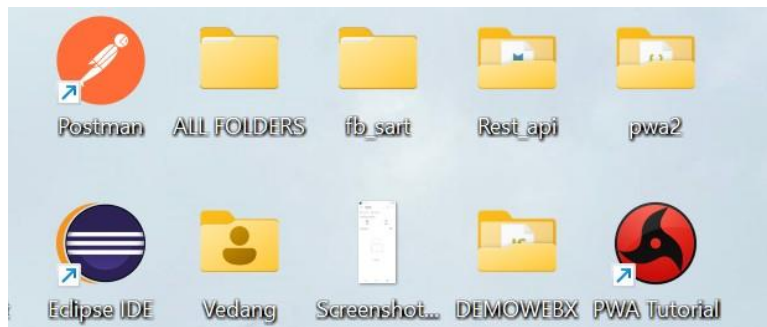

Now go to developer options -> Application->Manifest

Now to install PWA , click on Three dots(...) -> Apps -> Install PWA

Now On the Desktop

Conclusion : Hence We wrote meta data of our Ecommerce PWA in a Web app manifest file to enable "add to homescreen feature". And it is currently added Successfully on the Desktop