Experiment No.7
MAD & PWA LAB

- **Aim:** To learn about Progressive Web Apps and how they are different from standard websites.

- **Theory:**

→ Progressive Web Apps –

Progressive Web Applications (PWAs) are apps built with web technologies that we probably all know and love, like HTML, CSS, and JavaScript. But they have the feel and functionality of an actual native app.

A Native App is a software application built in a specific programming language for a specific device platform, either IOS or Android. PWAs are built with the capabilities like push notifications and the ability to work offline. They are also built on and enhanced with modern APIs which makes it easy to deliver improved capabilities along with reliability and the ability to install them on any device.

→ Characteristics of PWA's –

Below is what should be considered when developing a PWA:

- **Responsiveness :** Different companies produce gadgets with different screen sizes, and as a developer it's your responsibility to ensure all the different users enjoy the product regardless the device they are using. So it's a good idea to make sure your app can be used on any screen size and it's content is available at any view-port size.

- **Installable :** Research has shown that users tend to engage more with installed apps compared to visiting the official sites. Having a PWA as your product gives the users the look, feel and engagement of a normal app.

- **Independent Connectivity :** By keeping a user engaged to your app even while they are offline, provides a more consistent experience than dropping them back to a default offline page.

- **Discoverability :** Since most PWAs are converted websites, it is fair to make them discoverable on the search engines, this will help generate extra traffic to your app. This also acts as an advantage over native apps which can't be discovered over the search engines.

- **Appearance :** The appearance of the app should feel and look like that of a normal app, so be sure to include things like an app icon, this will help make it easily recognizable also things like splash screen will add the touch and feel of an app.

→ Difference between PWA's and Native Apps –

[1] Development Cost:

PWAs are cheaper to develop compared to Native AppsWhen you're developing a native app, you'll have to learn a certain programming language and then build a version of the app for each type of device, Android and iOS. On the other hand you can choose to hire a experienced professional to do the work for you which will even turn out to be more costly.

[2] Discoverability:

Native apps cannot be indexed by the search engines, they can just be found through the App/Play store's website. You can make your app more discoverable on the App/Play store by using App Store Optimization(ASO), but that's another story. Unlike native apps, PWAs work like websites so they can be indexed by search engines. This helps them rank better in search results.

[3] Safety:

Nowadays in order to run a website, it should be encrypted with a SSL certificate, this adds an extra layer of security. Now, as we already know PWAs are site converted into app which means they are more secure because they run on HTTPS. These are security protocols that allow safe exchange of data between client and server so that is doesn't get tampered with.To secure your native apps, you need to implement various security measures, like multi-factor authentication and so on.

[4] Installation and Download:

Native apps need to be downloaded and installed from an app store. This requires some commitment from the user to do it from start to finish. Users have to pass and check multiple permissions before installing an app. On the other hand, PWAs don't require any of those steps. From the browser you can bookmark it and add the app to your home screen with just a few taps.

→ Benefits Of PWA's –

A lot of organizations both private and public are switching to PWAs not only because they are cheap to develop but also because they offer greater engagement.

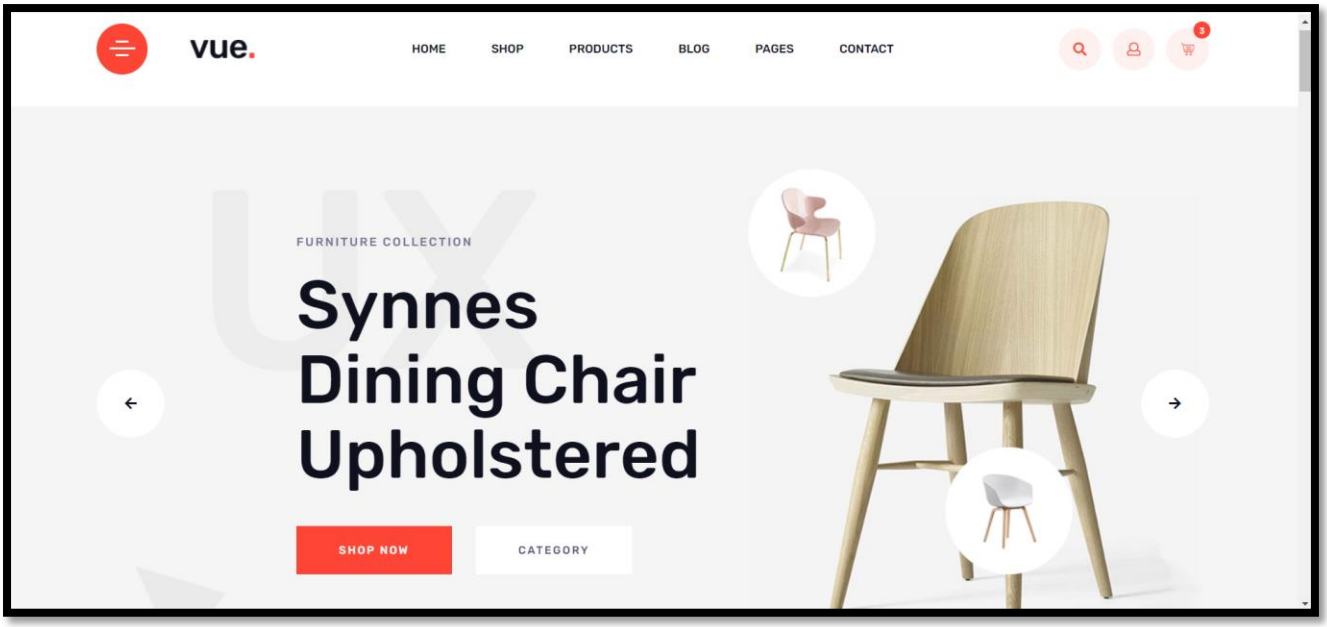
- They are responsive and work with many different screen sizes.
- They can run on multiple platforms and any device with a modern web browser.
- They function just like normal Native Apps.
- The updates are independent, you don't need to visit the play store for an update.
- They're built with common web technologies.
- They're fast and lightweight.

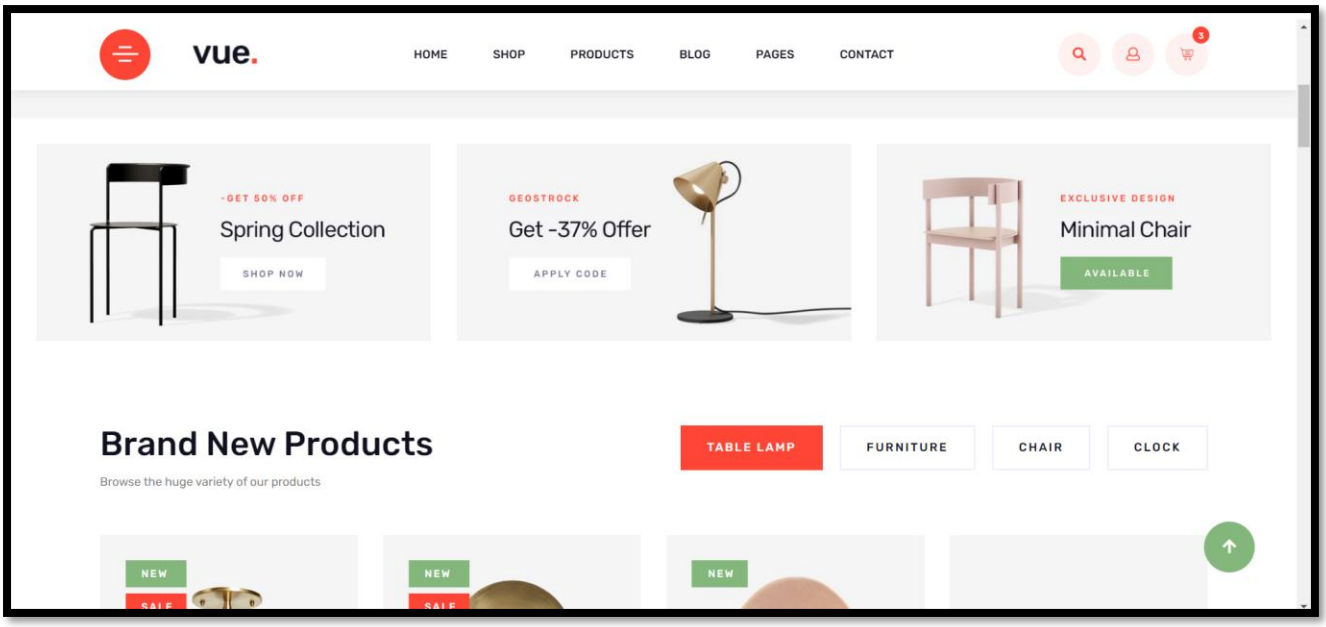
- **Implementation:**

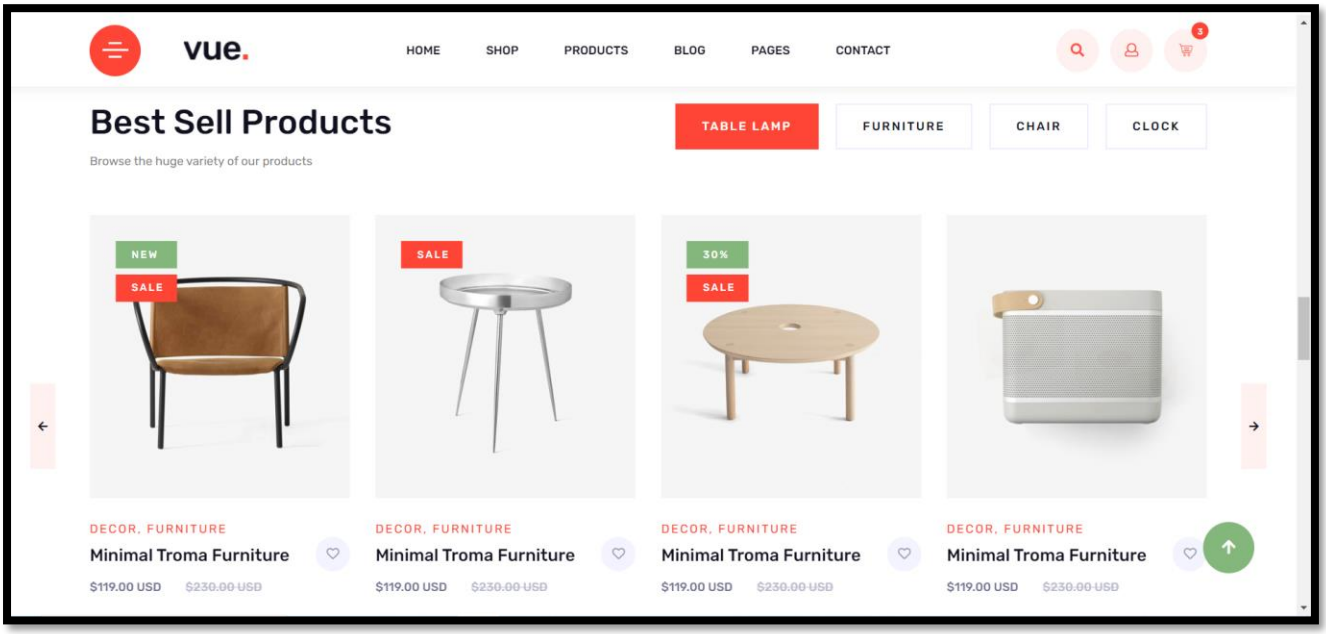
→ **manifest.json [code] –**

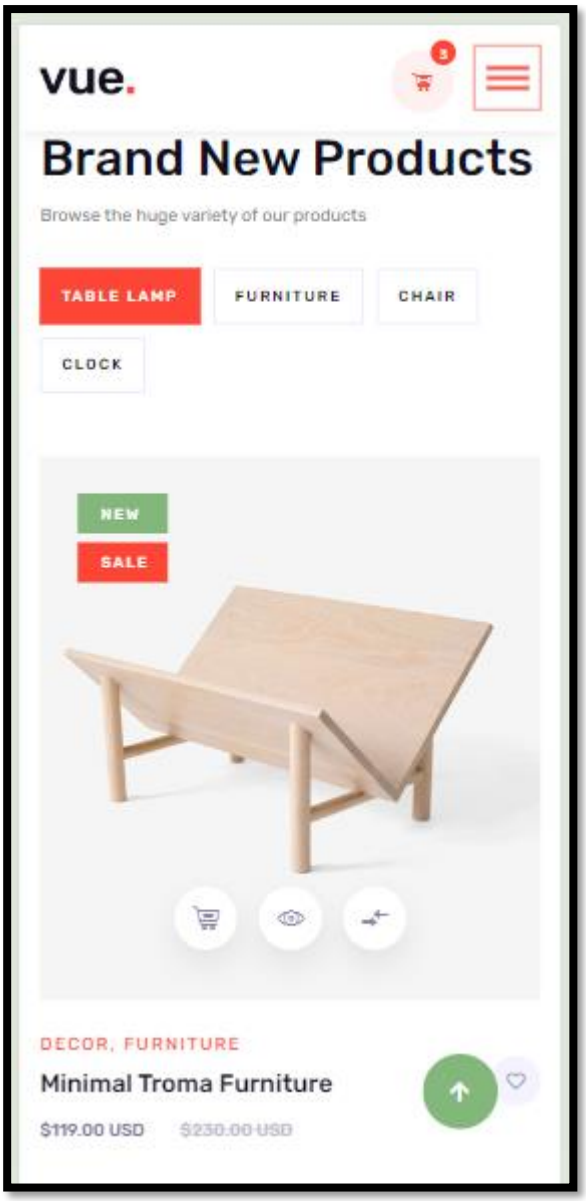
```
{
  "name": "CrazeCart",
  "short_name": "E-commerce",
  "description": "An online store for all your shopping needs",
  "start_url": "/index.html",
  "display": "standalone",
  "background_color": "#ffffff",
  "theme_color": "#007bff",
  "icons": [
   {
    "src": "img/icon/filter.png",
    "sizes": "192x192",
    "type": "image/png"
   },
   {
    "src": "img/icon/look.png",
    "sizes": "512x512",
    "type": "image/png"
   },
   {
    "src": "img/icon/subscribe.png",
    "sizes": "512x512",
    "type": "image/png"
   },
   {
    "src": "img/icon/time.png",
    "sizes": "512x512",
    "type": "image/png"
   }
  ]
```

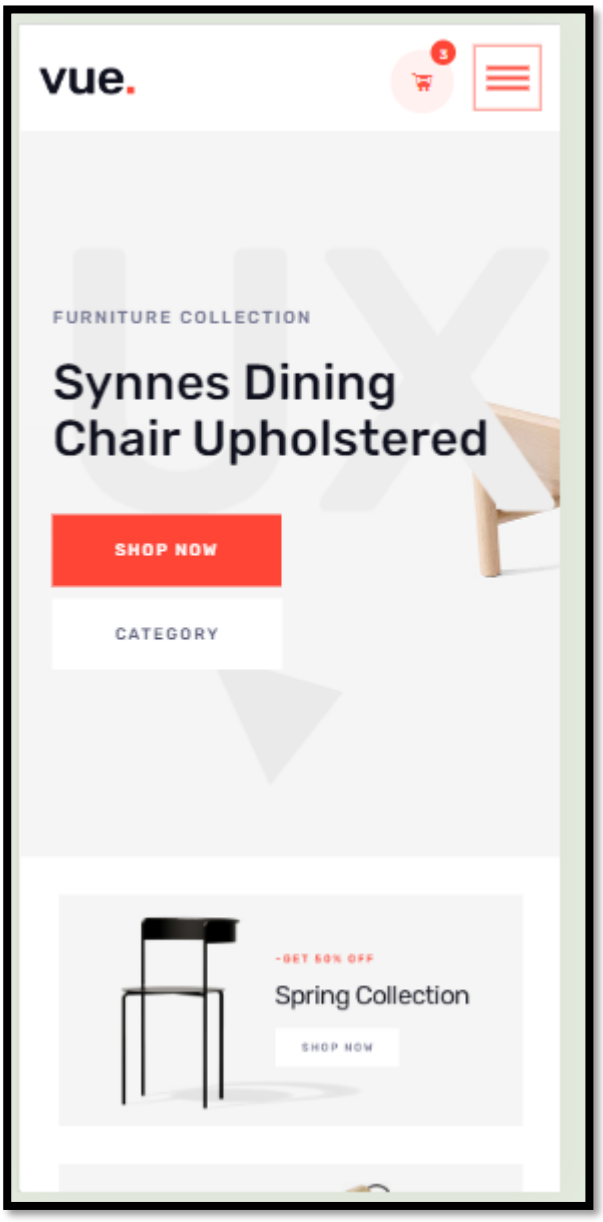
→ **Website SnapShots –**




vue.
HOME
SHOP
PRODUCTS
BLOG
PAGES
CONTACT
-GET 50% OFF
Spring Collection
SHOP NOW
GEOSTROCK
Get -37% Offer
APPLY CODE
EXCLUSIVE DESIGN
Minimal Chair
AVAILABLE
Brand New Products
Browse the huge variety of our products
TABLE LAMP
FURNITURE
CHAIR
CLOCK
NEW
SALE


vue.
HOME
SHOP
PRODUCTS
BLOG
PAGES
CONTACT
Best Sell Products
Browse the huge variety of our products
TABLE LAMP
FURNITURE
CHAIR
CLOCK
NEW
SALE
SALE
30%
SALE
DECOR, FURNITURE
Minimal Troma Furniture
$119.00 USD
$230.00 USD





- **Conclusion:**

  Thus, efficiently learnt Progressive Web Apps (PWAs) entails recognizing their unique features and how they set themselves apart from traditional websites. Unlike standard websites, PWAs utilize modern web technologies to provide users with an experience that feels more like using an app.