

PWA Assignment

Q1 Define progressive web app (PWA) and explain its significance in modern web development. Discuss the key characteristics that differentiate PWA from traditional mobile apps.

Ans PWA is a type of web app that utilizes and modern web capabilities to deliver an app like experience to users. It combines the best features of the web app and mobile app to offer offline functionality, push notifications and installation on devices.

Key characteristics of PWA:

- 1) Response: PWAs are designed to work seamlessly across various devices and screen sizes adapting to user's device.
- 2) Connectivity: They can work offline as with a poor internet connection leveraging service worker to cache resources and provide functionality.
- 3) App like experience: PWAs mimic the look and feel of native mobile apps offering smooth animations.
- 4) Discoverable: PWAs can be found through search engines and don't require installation from an store.
- 5) Secure: PWAs are served over HTTPS to ensure data privacy and security.

Q2 Define responsive web design and explain its importance in the context of progressive web app. Compare responsive, fluid and adaptive web design approach.

Ans

Responsive web design is an approach to designing website that ensure they adapt and respond appropriately to various screen sizes orientation and devices

In the context of PWA, responsive web design is crucial because it ensures that the app's interface remains user friendly and functional across different devices

Comparison:

- 1) Responsive web design: User flexible grids & layout CSS media queries and fluid images to adapt the website design to different screen sizes and orientations.
- 2) Fluid web design: Similar to responsive design, fluid web design also utilizes flexible layout and percentage for sizing elements, but it may not necessarily incorporate media queries to adjust the design based on specific breakpoints.
- 3) Responsive web design can be more efficient in terms of performance since it serves the same HTML and CSS to all devices.
Adaptive web design may involve different HTML & CSS files based on device which can result in increased server load and slower page load times.

Q3

Describe the lifecycle of service worker, including registration and activation process. (2)

Ans 1)

Registration: Service workers are registered by the web app through javascript code in the main page. This registration typically occurs in the background and involves specifying the path to the service worker script.

2)

Installation: Once registered, the browser downloads and installs the service worker script. During installation, the service worker can cache static assets and other resources needed for offline functionality.

3)

Activation: After installation, the service worker enters the activation phase. During activation, the service worker can clean up old caches, initialize necessary data and start intercepting network requests. Once activated, the service worker can control various aspects of the web app such as handling fetch events and managing cache storage.

Q 4 Explain the use of IndexedDB in the service worker for data storage.

Ans. IndexedDB is a Client-side storage mechanism that allows service workers to store structured data locally within the browser. It enables web apps, including those utilizing service workers to store and retrieve data effectively providing offline functionality and enhancing performance by reducing the need for constant network requests. IndexedDB is particularly useful in Service workers for tasks such as caching dynamic content, managing user preferences and supporting offline capabilities.