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MPL

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Assignment - 2

Q1 A progressive web app (PWA) is a type of web application that leverages modern web technologies to deliver a native app-like experience to users across different platforms and devices. PWAs are designed to combine the best features of web and mobile apps, providing users with fast, reliable and engaging experiences while also offering developers a more efficient and reliable and ~~engaging experiences~~ flexible approach to building and deploying applications.

Key characteristics of PWA

(1) Progressive enhancement : PWA are built with progressive enhancement in mind, meaning they can work for any user regardless of the browser or device they are using. The utilize features like responsive design service workers and graceful degradation to ensure that users to get a consistent experience regardless of their device or network conditions.

(2) Responsive Design :- PWA's are designed to adapt to different screen size and orientations, providing a seamless user experience across desktops, tablets and smartphones.

(3) connectivity Independence :- PWA's can work even in low or no network connecting environments by utilizing service workers to cache, content and

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enable offline access. This ensures that users can still access the app and its content even when they are offline or on a slow network.

In comparision to traditional mobile apps, PWAs offer several advantages.

(1) Cross-Platform compatibility :- Unlike native mobile apps, which require seperate development efforts are different platforms (ios, Android), PWAs are built using web technologies and can run on any platform with a modern web browser.

(2) No app store approval process :- PWAs can be deployed directly on the web without going through a lengthy app store approval process. This allows developers to push updates and new features more quickly and easily.

(3) Responsive web design is an approach to web design that aims to create web pages that respond to the user's behaviour and environment based on screen size, platform and orientation. This is achieved through the use of flexible grids and layout, image and css media queries. The goal is to provide an optimal viewing experiences across a wide range of devices, from desktop computers to smartphones and tablets without the need for seperate mobile or desktop

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version of a website

comparision & contrast :-

① Responsive web design :-
-> Responsive web design uses CSS media queries to dynamically adjust the layout and content of a website based on the characteristics of the device or viewport size
-> It offers a fluid and flexible design that can adapt to different screen sizes and orientations

② Fluid web Design
-> fluid web design, also known as liquid layout involves designing a website layout using percentages for widths rather than fixed pixel values

③ Adaptive web Design
Adaptive web design involves creating multiple fixed layout designs targeted at specific device sizes or breakpoints.

In summary, responsive web design offers a flexible and adaptive approach to creating websites that can seamlessly adjust to various screen sizes and orientations, making it well suited for PWAs

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Q3

→ The lifecycle of service workers involves several distinct phases, including registration installation and activation. Here's a breakdown.

① Registration :-
→ The first step in the lifecycle of a service worker is registration.
→ Registration occurs in the main Javascript file of a web application using the 'navigator.serviceworker.register()' method.
→ During registration, the web browser attempts to download and phase the service worker script specified in the registration call.

② Installation
- Once a service worker is successfully registered it enters the installation phase.
- During installation, the browser installs the service worker script of caches any static assets specified in the service workers installed event.

③ Activation
→ After the service worker script is successfully installed, it enters the activation phase.
→ During activation the browser activates the new service worker & removes any previous versions of the service worker.

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Qu

→ Indexed DB is a powerful clientside storage mechanism available in modern web browser. It provides a way for web applications, including those using service workers, to store large amount of structured data persistently

① Persistent storage :- Indexed DB offers persistent storage meaning the data stored in the database remains available even after the web page is closed or the browser is restarted. This makes it suitable for caching data offline, a common requirment for service workers.

② Asynchronous API :- Indexed DB operates synchronously allowing database operations to be performed without blocking the main thread

③ structured Data model :- Indexed DB was a structure data model similar to database like SQL database

Overall, Indexed DB provides a robust and efficient mechanism for storing data within service workers enabling web application to deliver enhanced offline capabilities, improved performance & better user experience.

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