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DISB / 54

05/05

ASSIGNMENT-2

Q.1

→ A progressive web app is a type of web application that utilizes modern webapplications to deliver a applike experience to users.
PWA's are designed to be responsive, fast & engaging & provide a seamless user experience across multiple devices.

• Significance in modern web development:
1. cross platform compatibility: PWA's can run on any device with a web browser, regardless of operating system.

2. Offline functionality: One of the key features PWA is their ability to work offline or with limited connectivity.

3. Free installation: Unlike traditional apps PWA do not require installation from a app store users simply access the the pwa through browser & add it d. to home screen.

• key characteristics differentiating PWA's from traditional Mobile app:
1. Development approach: PWA's are typically build using web technologies like HTML & css & JS while traditional apps are build platform specific.

2. Distribution: PWAS distributed via the web & can be easily shared via URL, where as traditional apps are distributed through app stores & require approval from the respective platform stores.

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3. Installation: PWA's are accessed through web browsers & can be added to home screen while traditional apps are downloaded & installed from app store. Overall PWA offer a compelling alternative, to traditional mobile apps, providing a modern, cost effective & accessible Solution for delivering app like experience on web.

Q.2.
⟶ The life cycle of service workers involves several phases.
below is detailed explaination of each phase.
a] Registration:
• The first step using a service worker is register it within the web application
• Typically done by including a registration script in main js file of application.
b] Installation:
• Once service worker is registered the browser begins the installation process.
• During installation browser downloads Service worker file /specified during registration.
c] activation:
• After Service worker is successfully installed it goes through the activation phase.
• During activation, the new version of service, worker becomes active & takes control of certain events & request within scope of registration.

Q3.

→ •Responsive web design is an approach to web design that aims to create web pages that automatically adjust & adopt their layout & content to fit various screen sizes & devices. ensuring a consistant user experience accross desktops, tabs & Smartphones.

•Importance in context of PWA :

a) Accessibility :

Responsive design makes PWA accessible to a wider range of audiance, as user can access the app from any device without encountering layout issue.

b) Consistancy : By maintaining a consistant design & layout accross devices, responsive web design helps reinforcement the branding & user experence.

c) Cross device compatibility : Since PWA aim to provide a Seamless user experience accross different plaforms for Responsive web Pay important role that PWA looks & functions well.

Responsive web design	Fluid web design	Adaptive web design.
1. User Flexible girds & layouts that adjust based on Screen size.	1. Utilize fluide web gird & layout that smootny expands or contracts	1. creates a multiple versions of site Optimized for specific devie..
2. Relies on css media queries to adapt styling based on screen size	2. Use media queries but emphasizes fluidity of elements	2. Users server side detection layouts and versions
3. One code base that adapts to various device	3. Emphasizes percentag based layout & fluid usage	3. Requires separat version of the site for different
4. Easier maintainance withsingle code base	4. require adjustments to ensure fluildity across devices	4. Allows for precise contnll over user experience.

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Q. 4.

→ Indexed DB is low level API for client-side storage of significant amount of structural data, including files & blocks

It is useful for web applications that need to be stored large amount of data locally such as in PWA's.

• Here's how IndexedDB can be used in service worker for data storage.

a) caching assets : One of primary use casses of indexed DB in a service worker is caching assets such as HTML CSS.
This allows application to function offline.

b) Dynamic data storage: IndexedDB can also be used to store dynamic data generated by web application

c) Background synchronization. Service worker can periodically sync data with server in background even when application is not being used.

d) Performance Optimization: By storing frequently accessed data indexedDB service workers can improve performance of application.