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Assignment 2

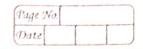
- 2. Define Progressive Web APP (PWA) and explain its significance in modern web development. Discuss the key characteristics that differentiate PHAs from traditional mobile apps
- A Progressive hieb App (PWA) is a type of useb application that utilizes modern web capabilities to add provide users with an experience similar to that of native mobile applications. PWAs are designed to be fox, ireliable, and engaging, and they can work s'earn lessly across various devices and platforms one of the key features of PWAs is their obility for be installed on a user's device like a native app, allowing for affirme access and push notifications.

 PWAS are built using standard web technologies such as HTML, css and Java Scuipt but incorposate additional features like service workers

Significance in Modern Meb Development.

- Enhanced User Experience! PHAS offer a more seamless and engaging user experience compared to traditional websites.
 - Cross-platform Compatibility! PMAs can run on any device with a compatible browser, eliminating the need for separate development efforts for different platforms.

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Offline Functionality: with the help of source workers, PWAS con function offline or in low connectivity environments

- Improved Performance! PMAs are optimized for performance, resulting in faster loading times and smoother interactions

Key characteristics differentiating PMA's from

- PWAs are built using web technologies (HTMI)

 CSS. Javascript) and reun in a web browser

 whereas traditional mobile apps are typically

 development using platform specific languages.

 and distributed through app stores.
 - Steeler directly from browser.
 - PWAS are responsive and can adapt to various screen sizes and orientations, similar to modern websites unhereas treaditional mabile apps may require separate reasions. for different screen sizes or orientation.
- 2. Define responsive web design and explain its importance in the context of Progressive web apps. compare and contrast responsive,

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	provide an optin	not viewing exp	evience acress
	Importance in the	Context of Pro	gressive web
	Responsive mes because it ensu content and pres	res that the ap	p's interpace and
4 9 4	of whether the	evices and scree	n sizes, regardles
	Responsive	Fluid Laborator	Adaptive
	with break points	Resportional	Predefined layouts.
Cii)	Breakpoints is	MIA MILA	Redefined points
<u> </u>	CSS modia quevies	zoule Wobri - otto	starting (dives
Ciin	Flexibility is high	Moderate and	Moderat
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3. Designi the lifecycle of Service Workers, including registration, installation and activation phase

- Schwice Workers are a key component of PWAs

Leesponsible for enabling features like offere

functionality, background sync and push

notifications. The lipecycle of a Schwice worker

involves three main phase.

Registration! During the registration phax, a Service Worker script is registered with the browser by the cueb application. This typically occurs in the main Javascript: file of the web app and involves calling the inavigator. Service Morker. Legister ()' method, specifying the path to the Service Worker.

(ii) Installation! Once registered, the Service Worker.

Script is downloaded and installed by the I

browser. During installation, the Service Morker

can cache static assets and other resources

required for offline functionality using (ache API.

enters the activation phase, during which it becomes active and can control. pages as resource, specified by its scope. The activation phase occurs when there are no active instances of the old Service worker (if any) allowing the new Service, prosker to take control.

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- 4. Explain the use of Indexed DB in the Service worker for data storage.
- Indexed DB is a low-level API for storing long
 amount of structured data. I such as JSUN
 Objects I'm the browser, allowing web applications
 to store data locally for offline use or improved
 performance.

Usage in Service Worker.

- Asynchronous API: Indexed DB operations are asynchronous allowing Scrife workers to perform data storage and reference tasks without blocking the main thread.

- large storage capacity! Indexed DB provides a significant amount of storage space compared to other browser storage options like web storage (local storage and Session Storage)

- Indexed Quevies: Indexed DB supports indexed
queves, enabling efficient retrieval of data based
on specified indexes, which can enhance performance
when dealing with large datasels

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