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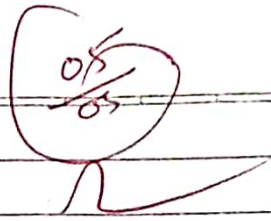
D15B 28



Assignment 2

1. Define Progressive Web App (PWA) and explain the significance in modern web development. Discuss key characteristics that differentiate PWAs from traditional mobile Apps.

- A progressive web app is a type of web application that utilizes modern web application to deliver an app like experience to users PWA's are designed to work seamlessly across different devices & platforms, offering features such as functionality push notifications and access to device hardware like cameras and geolocation.

Characteristics :

1) Cross - Platform Compatibility
PWAs are built using web technologies (HTML, CSS, JavaScript) and are accessible through web browsers, making them compatible with various platforms like desktops, smartphones without the need for separate versions for each platform.

2) Responsive design:
PWAs are responsive and adapt to different

screen sizes and orientations, providing a consistent user experience across devices.

3) Offline Functionality:
PWAs are work offline connectivity by utilizing services workers, catching strategies and local storage to access content even when they are offline.

4) Fast Loading:
PWAs are designed to load quickly, even on slow networks through techniques.

5) App-like Experience:
PWAs provide an app-like experience with features such as home screen installation, push notifications, smooth navigation transitions.

6) Improved Discoverability:
PWAs can be discovered through web search engines, shared URLs and indexed by search engines.

7) Automic Updates:
PWAs are automatically updated in the background ensuring users always have access to the latest version without requiring manual updates from an app store.

Q.2 Define responsive web design and explain its importance in the context of Progressive web apps. Compare and contrast responsive, fluid & adaptive web design approaches.

- Responsive web apps design is an approach to web development that aims to create web pages that respond or adapt to the user's.
- Instead of fluidly adjusting to different screen sizes, adaptive designs detect the user's device characteristics and serve a predefined layout optimized for that specific device.
- Adaptive design may involve creating separate layouts or templates for different devices.

Hence, while all the three approaches aim to provide a better user experience across different devices for building PWAs, ensuring consistent usability across a wide range of devices and screen sizes.

Q.3 Describe the lifecycle of Service Worker, including registration, installation & activation phases.

- The Lifecycle of service workers

consists three main phases as follows:

1) Registration:

- The first step is using a service worker is to register it in the main JavaScript file of your web application.
- Registration typically occurs in the 'navigator.serviceWorker.register()' method. During registration, you specify the path to service worker file.

Once registered, the browser starts downloading the service worker file in the background.

2) Installation:

- After the service Worker file is downloaded, the browser installs it.
- During this phase, the file is parsed and its 'install' event is triggered.
- It's essential note that the new service worker doesn't take control immediately. It remains in waiting state.

3) Activation:

- Once the installation is complete, the service worker enters the activation phase.
- The 'activate' event is triggered.
- By default, the new service worker doesn't take control of the pages immediately.
- Once activated and controlling all relevant pages, it is fully functional and performing

other tasks as programmed.
After activation, it continues to run until it's explicitly unregistered or replaced by a new version through the registration process again.

Q.4 Explain the use of Indexed DB in the Service Worker for data storage in short.

Indexed DB is a powerful client-side storage mechanism available in web browsers that allows web applications, including those utilizing service workers, to store structured data persistently. Utilization is as follows:

1) Initialization:
Within the service worker's installation phase, developers can open or create Indexed DB databases by creating object stores which are essentially containers for data.

2) Database structure:
Developers define the structure of the Indexed DB database by creating object stores which are essentially containers for data.

3) Data storage:
Service workers can store data in Indexed DB by adding, updating, deleting, using Indexed DB's APIs

4) Asynchronous operation:
Means developers must use promises or callbacks to handle data retrieval and manipulation.

5) Offline capabilities:
Service Workers can cache data retrieved from the network and store it in IndexedDB