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MPL - 2

Q1 Define Progressive web app & explain its signficiance in modern web app.

→ A PWA is a web app that contains the both web & mobile apps to deliver a seamless PWA work offline, load quickly & provide an app like experience in mo.

Platform independence
Improved performance
offline functionality.
No app store dependence
Engaging User Experience

- Key Characharacteristics

i) Installation: Installed from browser, traditional mobile apps are download from mobile apps
ii) Platform dependencies
iii) offline support
iv) Updates
v) Performance.

- PWA are faster due to caching & lightweigh assests.

Q2) Define responsive web design & explain its importance in context of PWA. Compare & contrast responsive, fluid & adaptive web design

→ Its an approach that ensures web pages adapt to different screen signs & orientations using flexib

→ Ensures a consistent user experience across different devices.

→ Eliminates need for multiple codebases for diff devices

- Comparison

Feature	responsive	fluid	Adaptive
Dedination	Uses CSS media queries to adjust layout dynamically	Uses % for elements to scale	Uses predefined layout for different screen size
Flexibility	Highly	Completely	Fixed at specific
performance	Efficient	Smooth	may cause layout
Use case	Website & PWA for all screen	App requires seamless scaling	website with predefined layout

Q3) Describe the lifecych of service workers including installation & activation phases.

→ life cycle phases.

i Registration

```
if ('service worker' in navigator){
      navigator. serviceWorker register ('ISW.js')
   this (() ⇒ console.log ('Service worker registered')
  }
```

Installation

→ Occurs when the service worker is first download.

```
Eg: self. add Event listner ('install', event ⇒ {
         event. wait Until (
               caches open ('v') then cache ⇒ {
      return cache & all
         });
```

iii) Activation

Runs after installation & ensures old cache cleared if necessary.

```
Eg: Self. add Eventlistner ('activate', event ⇒ {
          event wait until (
          event cache keys () then (keys ⇒ {
      return Promise all [keys. filter (key ⇒ key(= 'v')]
         });
      }
```

iv) Fetching & updates

→ The service workers intercepts networks request

```
Eg: self. add event listner ('fetch' event => {
      event respond with (
         catch match (event. request)
      });
   });
```

Q4) Explain the use of indexed DB in the service worker for data storage?

→ Indexed DB is a low-level NoSQL database in the browser that allows web apps to store & retrive.

Use of Indexed DB in service workers

i) Offline storage :- Saves user data when offline & sync it when.

ii) Persistant Data :- Unlike local storage - Indexed DB is asynchrous

3) Background Sync - Service workers can use index to store data & sync it later.