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| | MPL Assignment - 2 |

Q1 Define PWA? and explain its significance

A) A Progressive web App is type of web application that works like a mobile app but runs in a browser. It can be installed on a device works offline and provides a fast and smooth user experience

① Significance of PWA in modern web dev
- Cross platform compatibility
- offline support
- fast support
- No App store required
- Lown development cost

| Features | PWA | Traditional mobile App |
|---|---|---|
| Installation | Direct from Browser | Download from App Store |
| Internet Required | works offline with caching | usually requires internet |
| Performance | fast with service workers | fast but needs installation |
| Updates | Automatic no app store Approval | manual updates needed |

Q2 Define Responsiveness web design and explain its importance in the context of progressive web App.

A) Responsive web design is technique that makes web page Adjust automatically to diffnt screen sizes and devices. It ensures a good USN Depending on mobiles.

⟹ Impotance of Responsiveness
◉ Better USer Experience PWA work normaly or any devices
◉ Faster load time — optimized design improves speed.
◉ Cost Effective — No need to build multiple versions for diffnt screens.

④ Comparison of web design approaches

| Approaches | How it works | Pros | Cos |
|---|---|---|---|
| 1) Respo-siveness | Used flexible grids and media queries to Adjust logout | works on all devices | can be complex to design |
| 2) Fluid | Uses parent based widths myriad of fixed pixels | works with on diffnt screen sizes Easy to implmt | less control over logout on large screens |

Q③ Describe the lifecycle of service workers including to Registration installation and Activation phase

① Registration phase
The browser Registers the service worker using J.S

Code Ex-
```
if ('service worker' in navigator) {
    navigator.service worker.register ('sw.js')
```

Ⅱ) Installation phase
The service worker downloads necessary files and stores them in cache.

Code Ex-
```
self.add Eventlistener ('install', wt => {
    event.waituntil (
        caches.open (app.cache).then (
            cache => {
                return cache.add All ([ '/ ('index.htm',
                                        stgls.css));
            })
    };
```

Ⅲ) Activation phase
→ The old service worker is Replaced with the new one

→ unused cache files from the previous version are deleted final step fetch and sync.

**Q4)** Explain the use of Indexed DB in the system service working of data storage

✓ Use of Indexed DB in service worked for data storage Indexed DB is a browser database what stores large amount of data of JSON objects.

Why using Indexed DB in service workers?

1) offline support - stores data when offline and sync data later

2) Efficient storage, saves structured data like user setting lost items form inputs

3) Fast access - Retrieves data quickly without needing a Network Request.

4) persistent data - Data Remains saved even after the browser is closed.

How service workers use indexed DB?

Let db:

```
let req uist, indexed DB.open ('my database');
req uist on success = function (event) {

    db = event . target . result;

};
```

Reading Data in service worker
Let transaction = db.transaction ('users', pre)

Let store = transaction . object store ('users');

```
Let gnt USN = staD.gnt ();

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               (gn USN dntor));
          }?
```