**WEEK-6 REACT HO1- “ React “**

**🔹 Define SPA (Single Page Application) & Its Benefits**

SPA is a **web application** that loads a single HTML page and dynamically updates the content as the user interacts with the app.

**Benefits:**

* Faster user experience
* Seamless navigation
* Reduces server load
* Caching abilities

**🔹 Define React & Identify Its Working**

**React** is a JavaScript library for building **user interfaces**. It works by breaking the UI into reusable components and uses a **virtual DOM** to efficiently update the UI.

**🔹 Difference Between SPA & MPA (Multi Page Application)**

| **Feature** | **SPA** | **MPA** |
| --- | --- | --- |
| Page Reloads | No full reload (dynamic) | Full reloads on navigation |
| Speed | Faster after first load | Slower due to page reloads |
| Technologies | React, Angular, Vue | HTML, PHP, JSP, etc. |
| SEO | Harder (can be handled) | Easier for SEO (SEO-the process of improving a website or web page so that it ranks higher on search engines) |

**🔹 Pros & Cons of SPA**

**Pros:**

* Fast performance
* Smooth navigation
* Reusable components

**Cons:**

* Poor SEO by default
* May have initial load time
* Requires client-side scripting

**🔹 Define Virtual DOM**

**DOM : Document Object Mode ,**is a live tree-like structure of your entire HTML page that JavaScript can read, change, or manipulate.

**Eg-**

<html>

<body>

<h1>Hello Anshika</h1>

<p>This is a paragraph.</p>

</body>

</html>

The browser turns it into a **DOM Tree** like this:

document

└── html

└── body

├── h1 → "Hello Anshika"

└── p → "This is a paragraph."

The **virtual DOM** is a lightweight copy of the real DOM. React uses it to track changes and only updates the parts of the real DOM that need to change, improving performance.

**🔹 Features of React**

* Component-Based
* JSX (JavaScript + HTML)
* Virtual DOM
* Unidirectional Data Flow
* High performance
* Reusable components

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