REACT

1. What is SPA?

A **Single Page Application (SPA)** is a web app that loads a single HTML page and dynamically updates the content as the user interacts with the app. This means the page doesn't refresh every time, offering a smooth user experience.

Benefits of SPA:

- Faster navigation and performance
- Reduces server load
- Seamless user interactions
- Better use of caching

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2. What is React and How Does It Work?

React is a popular JavaScript library developed by Facebook for building dynamic and interactive user interfaces, especially for SPAs.

How React works:

- It breaks the UI into reusable **components**
- Uses a **Virtual DOM** to efficiently update the view
- Leverages **JSX**, a syntax that combines HTML with JavaScript

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3. SPA vs MPA – What's the Difference?

Feature	SPA (Single Page)	MPA (Multi Page)
Page Load	Loads once, updates dynamically	Reloads for every interaction
Routing	Handled on the client-side	Handled on the server
Speed	Faster after initial load	Slightly slower due to full reloads
Best Use	Interactive apps	Traditional websites like blogs

✅ Pros and Cons of SPA

Pros:

- Super fast user experience
- Smooth page transitions
- Reduced server load
- Easier to develop dynamic features

Cons:

- Initial load might be heavy
- SEO can be tricky
- Requires more JavaScript knowledge
- Complex state management in large apps

What is Virtual DOM?

The **Virtual DOM** is a lightweight copy of the actual DOM. React uses it to track what parts of the UI need to change and updates only those parts. This makes React highly efficient and fast compared to manually updating the DOM.

Key Features of React

- **Component-based**: Break UI into independent parts
- **Virtual DOM**: Enhances speed and performance
- **JSX**: HTML-like syntax inside JavaScript
- **Reusable Components**: Write once, use anywhere
- **Unidirectional Data Flow**: Easy to debug and maintain
- **React Hooks**: Manage state and lifecycle in functional components