**REACT HandsOnLAB - 1**

1. **Define SPA and its benefits**

**Sol:** A Single Page Application (SPA) is a web application that loads a single HTML page and dynamically updates content as the user interacts with the app, rather than loading entirely new pages from the server. SPAs use JavaScript frameworks like React, Angular, or Vue.js to manipulate the DOM and manage routing on the client side.

**Benefits:** Reduced Server Load,Offline operable,Enhanced User Experience,Faster navigation

1. **Define React and identify its working**

**Sol:** React is an open-source JavaScript library developed by Facebook.

**Working:**

Component-based architecture,

Uses Virtual DOM to efficiently update UI,

JSX syntax.

1. **Identify the differences between SPA and MPA**

**Sol:**

|  |  |  |
| --- | --- | --- |
| **Feature** | **SPA** | **MPA** |
| Page Reloads | No (dynamically updated) | Yes (full reload for every page) |
| Speed | Faster after first load | Slower due to reloads |
| Backend | Mostly REST APIs | Server-rendered pages |
| SEO Friendly | Needs extra config (e.g., SSR) | Naturally SEO friendly |

1. **Explain Pros & Cons of Single-Page Application**

**Sol: Pros:**

Smooth and fast user experience

Easy to debug with developer tools

Efficient network usage

**Cons:**

Poor SEO unless handled

Larger initial load

Might need client-side routing setup

1. **Explain about React**

**Sol:** React is a powerful JavaScript library that has revolutionized how developers build modern web applications. Created by Facebook in 2013, it has become one of the most popular frontend technologies due to its component-based approach and efficient rendering system.

1. **Define virtual DOM**

**Sol:** Virtual DOM is a programming concept where a virtual representation of the real DOM (Document Object Model) is kept in memory and synchronized with the actual DOM through a process called reconciliation. It's a key innovation in React that significantly improves application performance and developer experience.

1. **Explain Features of React**

**Sol:**

* Component-Based Architecture
* JSX (JavaScript XML)
* Virtual DOM
* React Hooks
* State Management
* Event Handling
* Context API
* Server-Side Rendering
* Cross-Platform Development

**In this hands-on lab, you will learn how to:**

* **Set up a react environment**
* **Use create-react-app**









