**ReactJS-HOL Exercise 1**

**1. What is SPA (Single Page Application) and What Are Its Benefits?**

SPA is a web application that loads a single HTML page and dynamically updates content without reloading the whole page.

* Benefits:
* Faster experience: Once loaded, navigating is quick because only parts of the page update.
* Smooth transitions: Feels more like an app than a website.
* Less server load: Only needed data is fetched, not whole new pages.

**2. What is React and How Does It Work?**

React is a JavaScript library used to build user interfaces — mostly for SPAs.

* How it works:
* Breaks the UI into components (like building blocks).
* Uses a virtual DOM to track changes and updates only the parts that changed.
* Helps developers build fast, interactive UIs with reusable code.

**3. SPA vs MPA (Multi Page Application)**

| Feature | SPA | MPA |
| --- | --- | --- |
| Page Reloads | No, only updates part of page | Yes, each link loads a new page |
| Speed | Faster after initial load | Slower, full reload every time |
| UX (User feel) | App-like, smoother | Website-like, with page flickers |
| Development | Needs more JavaScript logic | Easier to set up with server rendering |

**4. Pros & Cons of SPA**

* Pros:
* Fast navigation after first load.
* Better user experience.
* Works well with mobile apps and APIs.
* Cons:
* Can be bad for SEO (search engines may not index properly).
* Initial load time can be longer.
* Needs more JavaScript and can be harder to secure.

**5. Explain React (again, in simple words)**

React is like LEGO for websites.

* You build small pieces (components), like buttons, menus, or cards.
* Then you join them to make full pages.
* React makes updating those pieces super-efficient using virtual DOM.

**6. What is Virtual DOM?**

The Virtual DOM is like a copy of your webpage inside your browser's memory.

* React uses this to figure out what changed.
* It compares the old and new virtual DOM (called "diffing") and updates only the changed parts on the real page — not the whole page.
* This makes things fast and smooth.

**7. Features of React**

* ✅ Component-Based: Build UI using small reusable pieces.
* ⚡ Fast Rendering: Uses Virtual DOM to update only what's needed.
* 🔄 One-Way Data Flow: Data flows in one direction, making things easier to debug.
* 🧱 JSX Syntax: Allows writing HTML-like code inside JavaScript.
* 🧰 Strong Community & Tools: Backed by Facebook and widely used.
* 🌐 Used in SPAs: Ideal for creating fast, modern web apps.

**HANDSON:**

Prerequisites

The following is required to complete this hands-on lab:

* Node.js
* NPM
* Visual Studio Code

A screenshot of a computer

AI-generated content may be incorrect.

**OUTPUT:**

**A close-up of a computer screen

AI-generated content may be incorrect.**