**React Hands on 1:**

Q1. Define SPA and its benefits.

Ans: A Single Page Application (SPA) is a web app that loads a single HTML page and dynamically updates content without refreshing the entire page. Benefits:   
SPAs provide a smoother, faster user experience like a desktop app.  
They reduce server load and bandwidth usage by fetching only necessary data. Popular frameworks for SPAs include React, Angular, and Vue.js.

Q2. Define React and identify its working  
Ans: React is a JavaScript library for building user interfaces, developed by Facebook.  
It works by creating reusable components that manage their own state. React uses a virtualDOM to efficiently update and render only the parts of the UI that change. This makes web applications faster, more interactive, and easier to maintain.

Q3. Identify the differences between SPA and MPA  
Ans: Differences between SPA and MPA:

1. SPA (Single Page Application) loads a single HTML page and updates content dynamically; MPA (Multi Page Application) loads a new page from the server for each request.
2. SPA provides faster navigation and smoother UX after the initial load; MPA may have slower page transitions due to full page reloads.
3. SPA relies heavily on JavaScript frameworks (React, Angular); MPA uses server-side rendering with technologies like PHP, JSP, or traditional HTML templates.
4. MPA is generally better for SEO and large websites (e.g., e-commerce) as each page has a unique URL; SPAs need extra effort for SEO with server-side rendering or pre-rendering.

Q4. Explain Pros & Cons of Single-Page Application

Ans: Pros of Single-Page Application (SPA):

1. Fast and smooth user experience with no full page reloads.
2. Reusable components and easy state management make development efficient.
3. Reduced server load since only data (not entire pages) is exchanged.

Cons of Single-Page Application (SPA):

1. Initial load time can be longer due to heavy JavaScript bundles.
2. SEO is more challenging compared to traditional multi-page sites.
3. Browser history and back/forward navigation need extra handling in code.

Q5. Explain about React

Ans: React is an open-source JavaScript library developed by Facebook for building fast, interactive user interfaces, mainly for single-page applications (SPAs).  
It uses a component-based architecture, where the UI is divided into reusable pieces called components.  
React employs a virtual DOM, which efficiently updates and renders only the parts of the page that change, improving performance.  
It’s widely used because it simplifies building complex UIs, supports unidirectional data flow, and has a large ecosystem and community.

Q6. Define virtual DOM

Ans: The Virtual DOM is a lightweight, in-memory representation of the actual DOM in a web page. React uses the virtual DOM to keep a copy of the real DOM and track changes efficiently.  
When the app’s state changes, React updates the virtual DOM first, then compares it with the real DOM.

Q7. Explain Features of React

Features of React:

1. Component-Based**:** UI is built using reusable, independent components for easier development and maintenance.
2. Virtual DOM**:** React uses a virtual DOM to update only changed parts, boosting performance.
3. One-Way Data Binding**:** Data flows in a single direction, making data management predictable and debugging easier.
4. JSX: React uses JSX, a syntax extension that lets you write HTML-like code inside JavaScript, making code more readable and expressive.

**HandsOn Exercise:**

import logo from './logo.svg';

import './App.css';

function App(){

  return <h1>Welcome to the first session of React</h1>

}

export default App;

**Output:**

