**ReactJS Lab 1 – Assignment Answers**

**1. Define SPA and its benefits**  
A **Single Page Application (SPA)** is a web application that loads a single HTML page and dynamically updates the content as the user interacts with the app without reloading the entire page.

* **Benefits:**
  + Faster performance because only data changes are fetched.
  + Smooth user experience without page reloads.
  + Efficient use of bandwidth.
  + Easier to build highly interactive apps.

**2. Define React and identify its working**  
**React** is a JavaScript library for building user interfaces. It works using a component-based architecture where each part of the UI is a reusable component. React uses a **virtual DOM** to efficiently update and render only the parts of the UI that change.

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

| **Feature** | **SPA (Single Page Application)** | **MPA (Multi Page Application)** |
| --- | --- | --- |
| Page Load | Loads a single HTML page | Loads a new page every time |
| Performance | Faster, dynamic updates | Slower, full reload |
| Development | More client-side logic | More server-side logic |
| User Experience | Smooth, app-like | Traditional, reloads |

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

* **Pros:**
  + Fast and responsive.
  + Better user experience.
  + Reusable components.
* **Cons:**
  + Initial load may be slower.
  + SEO challenges.
  + Complex client-side routing.

**5. Explain about React**  
React is a declarative, efficient, and flexible JavaScript library for building UI. It uses **JSX**, supports reusable **components**, and updates the view efficiently with the **virtual DOM**.

**6. Define virtual DOM**  
The **Virtual DOM** is a lightweight copy of the real DOM. React updates the virtual DOM first, compares it with the previous version (diffing), and then updates only the changed parts in the real DOM, making updates efficient.

**7. Explain Features of React**

* JSX syntax for writing HTML in JS.
* Component-based architecture.
* Virtual DOM for faster rendering.
* One-way data binding for predictable flow.
* Declarative UI design.