## **WEEK 6**

**1.ReactJS-HOL**

**OBJECTIVES:**

1. **Define SPA and its Benefits:**

* **SPA (Single Page Application):** A web application that loads a single HTML page and dynamically updates content without reloading the entire page.
* **Benefits:**
  + Faster user experience.
  + Seamless navigation.
  + Reduced server load.
  + Better performance with caching.

2. **Define React and Identify Its Working:**

* **React:** A JavaScript library developed by Facebook for building user interfaces, particularly SPAs.
* **Working:**
  + Component-based architecture.
  + Uses **Virtual DOM** for efficient UI rendering.

3. **Differences between SPA and MPA:**

| **SPA** | **MPA** |
| --- | --- |
| Loads one HTML page | Loads multiple pages |
| Uses JavaScript for navigation | Uses full-page reloads |
| Faster interactions | Slower interactions |
| Example: Gmail | Example: Amazon |

4. **Pros & Cons of SPA:**

* **Pros:**
  + Faster navigation.
  + Responsive UI.
  + Better caching.
* **Cons:**
  + SEO challenges.
  + Initial load may be heavy.
  + Requires JavaScript to function.

5. **Explain about React:**

* React is a JavaScript library used to build reusable UI components.
* Maintains UI state using components.
* Works well with virtual DOM.

6. **Define Virtual DOM:**

* A lightweight copy of the actual DOM.
* React updates the virtual DOM first, then compares it with the previous state and updates only the changed parts in the real DOM (diffing).

7. **Features of React:**

* Virtual DOM
* JSX (JavaScript + XML)
* Component-based architecture
* Unidirectional data flow
* Lifecycle methods
* High performance