

## Module-11) React -Advance React- Styling , Routing

### 11. Routing in React (React Router)

#### THEORY EXERCISE

**1: What is React Router? How does it handle routing in single-page applications?**

**Ans:** React Router is a standard routing library for React applications. It enables navigation between views or components in a React app without requiring a full page reload, making it ideal for single-page applications (SPAs).

➤ **Key Concepts:**

- **Virtual Routing:** React Router maps different URL paths to different React components without reloading the page.
- **History API:** It leverages the browser's History API (pushState, replaceState) to update the URL and browser history.
- **Route Matching:** It matches the current URL with a set of defined <Route> components and renders the matched component(s).
- **Dynamic Routing:** Unlike static routing (predefined links), it allows for nested and dynamic routes.

**2: Explain the difference between BrowserRouter, Route, Link, and Switch components in React Router.**

**Ans:** the key components in React Router (especially version 5, where Switch was commonly used), and their roles in client-side routing:

➤ **BrowserRouter**

- **Purpose:** Provides the routing context for the entire app.
- **Uses the HTML5 History API** to keep the UI in sync with the URL.
- **Should wrap your entire routing structure.**

➤ **Route**

- **Purpose:** Declares what component should be rendered for a specific URL path.
- **path:** URL path to match
- **component or element:** The component to render

➤ **Link**

- **Purpose:** Navigates to a different route without reloading the page.
- Helps avoid rendering multiple routes that match the same path.
- Replaced by `<Routes>` in React Router v6.

➤ **Switch (*React Router v5 only*)**

- **Purpose:** Renders the first child `<Route>` that matches the current URL.
- Helps avoid rendering multiple routes that match the same path.
- Replaced by `<Routes>` in React Router v6.