Routing in React (React Router)

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

Ans : React Router is a popular routing library for React that allows developers to create navigation between different views or components in a Single Page Application (SPA).

- In an SPA, there's usually only one HTML file (index.html), and React dynamically updates the view without refreshing the entire page.

- Normally, changing a URL would request a new HTML file from the server, but React Router intercepts those requests and instead renders the correct component based on the URL path.

How it works in SPA:

1. React Router listens to URL changes in the browser (using the History API).

2. Instead of refreshing the page, it loads the corresponding React component mapped to that route.

3. This gives the illusion of navigating between pages, but everything is handled on the client side, keeping the app fast and seamless.

Question 2: Difference between BrowserRouter, Route, Link, and Switch.

Ans : Here's a breakdown of the main components:

1. BrowserRouter

- A wrapper component that enables routing in your app.

- Uses the browser's History API (pushState, popState) to keep the UI in sync with the URL.

- Typically wraps the entire application.

import { BrowserRouter } from "react-router-dom";

function App() {

  return (

    <BrowserRouter>

     <MyRoutes />

    </BrowserRouter>

  );

}

▯ Defines a **mapping between a URL path and a component**.

▯ When the URL matches the path, the component inside the Route is rendered.

import { Route } from "react-router-dom";

<Route path="/about" element={<About />} />

<Route path="/contact" element={<Contact />} />

. Link

- A replacement for the normal <a> tag in React Router.

- Prevents full page reloads.

- Updates the URL and tells React Router to render the correct component.

import { Link } from "react-router-dom";

<Link to="/about">About Us</Link>

<Link to="/contact">Contact</Link>

Switch (React Router v5) / Routes (React Router v6)

- In **v5**, Switch renders the **first matching route** among its children.

- In **v6**, Switch is replaced by **Routes**, which works similarly but with a slightly different API.

v5 Example (using Switch):

import { Switch, Route } from "react-router-dom";

<Switch>

 <Route path="/about" component={About} />

 <Route path="/contact" component={Contact} />

 <Route path="/" component={Home} />

</Switch>