**Routing in React**

## THEORY EXERCISE

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

**Answer:**

**React Router** is a library that enables **routing in React apps**, especially **Single Page Applications (SPA)**. It allows you to display different components based on the **URL path**, without reloading the whole page.

In a SPA:

* React Router changes the component being rendered based on the current route (/home, /about, etc.).
* It uses the **History API** to modify the browser URL without a full-page reload.

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

| **Component** | **Purpose** |
| --- | --- |
| BrowserRouter | Wraps the app to enable routing. Uses HTML5 history API. |
| Route | Defines the path and the component to render when the URL matches. |
| Link | Creates a navigation link (like <a>) that updates the URL without reload. |
| Switch | (v5 only) Renders **only the first matching** route. In React Router v6, use Routes instead. |

**LAB EXERCISE**

**Task 1: o Set up a basic React Router with two routes: one for a Home page and one for an About page. Display the appropriate content based on the URL**

Install React Router if you haven't:

npm install react-router-dom

**Home.js**

import React from 'react';

export default function Home() {

  return <h2>🏠 Welcome to the Home Page</h2>;

}

#### About.js

import React from 'react';

export default function About() {

  return <h2>ℹ️ This is the About Page</h2>;

}

**App.js (Routing Setup)**

import React from 'react';

import { BrowserRouter as Router, Routes, Route, Link } from 'react-router-dom';

import Home from './Home';

import About from './About';

import Contact from './Contact';

function App() {

  return (

    <Router>

      <div>

        {/\* Navigation Bar \*/}

        <nav style={{ marginBottom: "20px" }}>

          <Link to="/" style={{ marginRight: "10px" }}>Home</Link>

          <Link to="/about" style={{ marginRight: "10px" }}>About</Link>

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

        </nav>

        {/\* Routing Logic \*/}

        <Routes>

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

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

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

        </Routes>

      </div>

    </Router>

  );

}

export default App;

**Task 2 : Create a navigation bar using React Router’s Link component that allows users to switch between the Home, About, and Contact pages.**

In App.js above:

* The <nav> contains <Link> components to navigate between pages.
* React Router updates the URL **without reloading** the page.
* The page content updates based on the route.

**Outpus**

* Visiting / shows **Home**
* Visiting /about shows **About**
* Visiting /contact shows **Contact**
* Clicking the nav links switches views without refreshing