Course Outcome 5 : Create single-page applications using React by employing components, hooks, props, and routing principles, following the MVC design pattern.

Experiment 09 : Creating a Single Page website using the concepts in React like Hooks, Router, Props and States.

Problem Statement :

To develop a Single Page Website using React that demonstrates the use of Hooks, Router, Props, and States. The website should contain multiple sections such as Home, About, and Contact, navigated through routing without reloading the page.

Solution :

1. Single Page Application (SPA)

A **Single Page Application** is a web application that loads a single HTML page and dynamically updates content as the user interacts, without reloading the page. React is widely used to create SPAs due to its component-based architecture and efficient re-rendering through the virtual DOM.

2. React Concepts Used

- **Hooks:**
  Hooks such as useState and useEffect are used to manage state and side effects in functional components.
- **Router:**
  react-router-dom enables navigation between different views (Home, About, Contact) without refreshing the page.
- **Props:**
  Props are used to pass data from a parent component to child components, ensuring reusability and modularity.
- **State:**
  State stores dynamic values that can change over time. For example, a message or counter can be maintained and updated using useState.

Procedure

- Set up a React project using Create React App.
- Install react-router-dom for routing.
- Create three pages: **Home.js**, **About.js**, and **Contact.js**.
- Use BrowserRouter, Routes, and Route to configure navigation.
- Implement state management using useState in the Home component.
- Pass data using props from the parent App.js to child components.
- Run the project and navigate between pages using React Router.

Conclusion

This experiment demonstrates the creation of a Single Page Application using React. It highlights important React concepts, Hooks for state management. Router for navigation without page reloads. Props for passing data between components. State for handling dynamic values. The project validates how these concepts work together to build interactive, efficient, and modular web applications.