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Lab Exercise 6

Title: React
Objectives:
Design a College Page Home Page or your personal profile page using ReactJS.
(Inclusions: Components, Props, Route, Key,Events)

Theory

1. What is React?

React is an open-source JavaScript library used for building user interfaces, particularly single-page applications where data can change dynamically without reloading the entire page. It allows developers to create reusable UI components and efficiently manage updates with a concept known as the virtual DOM.

2. What is JSX?

JSX (JavaScript XML) is a syntax extension for JavaScript, used in React to describe the UI structure. It looks similar to HTML but allows you to write HTML elements within JavaScript code. JSX makes it easier to write React components and organize UI logic, and it gets transformed into standard JavaScript behind the scenes.

const element = <h1>Hello, world!</h1>;

3. What's the difference between Real DOM and Virtual DOM?

- **Real DOM** is the actual DOM that browsers use to render the webpage. It's slow to update because any change to the DOM will cause the browser to re-render the entire UI.
- **Virtual DOM** is a lightweight in-memory representation of the real DOM that React uses. React creates a virtual DOM, performs updates there, and then efficiently updates only the parts of the real DOM that have changed, improving performance.

4. What are the components in React?

Components are the building blocks of a React application. They are reusable, independent pieces of UI, written as JavaScript functions or classes. There are two types:

- **Functional components**: Functions that return JSX to render UI.
- **Class components**: ES6 classes that extend `React.Component` and use `render()` to return JSX.

Example:

```
function Welcome() {
  return <h1>Hello, World!</h1>;
}
```

5. What is `useState()` in React?

`useState()` is a Hook in React that allows you to add state to functional components. It returns an array with two values: the current state and a function to update the state.

Example:

```
const [count, setCount] = useState(0);

// To update state
setCount(count + 1);
```

6. What is an event in React? How do you create an event in React?

An event in React is a system that handles user inputs like clicks, key presses, or form submissions. React events are named in camelCase (e.g., `onClick`, `onSubmit`), and you pass a function as the event handler.

Example:

```
function handleClick() {
  alert('Button clicked!');
}

<button onClick={handleClick}>Click me</button>
```

7. How do you pass props between components?

Props (short for "properties") are used to pass data from one component to another, typically from a parent component to a child component. You pass props by adding them as attributes in the JSX and accessing them in the child component via the `props` object.

Example:

```
function ParentComponent() {

  return <ChildComponent message="Hello from parent!" />;
}

function ChildComponent(props) {
  return <h1>{props.message}</h1>;
}
```

Code and Screenshot:
GitHub Repo for link:
https://github.com/Rohan-Lalchandani08/weather-app
Screenshot of the Webpage: