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2.React – JS HOL – StudentApp

1. Explain React Components

A React component is a reusable, independent piece of UI (User Interface).

- It can be compared to a JavaScript function that returns a JSX element (HTML-like syntax).

- Components can be combined together to build complex UIs.

2. Differences Between Components and JavaScript Functions

React Components	JavaScript Functions
Returns JSX (UI).	Returns values/data (number, string).
Follow React lifecycle.	No lifecycle.
Written with Capital Letters (e.g., Home).	Written with lowercase names (e.g., add).
Used as <Component /> in JSX.	Called as add() in code.
Can manage state and props.	No built-in state or props.

3. Types of Components

React provides two main types of components:

1. Class Components – Older style, uses render() method, can manage state and lifecycle.

2. Function Components – Modern style, uses functions and React Hooks like useState and useEffect.

4. Class Component

- A class component is a JavaScript class that extends React.Component.
- It must have a render() method which returns JSX.

5. Function Component

- A function that returns JSX.
- Easier to write and understand.
- Can use Hooks for state and lifecycle.

6. Component Constructor

- In class components, constructor() is used to:
  - Initialize state.
  - Bind event handlers.
- constructor is called before the component is mounted.

7. render() Function

- A special method inside class components.
- Mandatory for class components.
- Returns the JSX (HTML-like structure) to display on the screen.

Output:
About,js:

```
src > Components > JS About.js > ...
1    function About() {
2      return <h1>Welcome to the About page of Student Management Portal</h1>;
3    }
4    export default About;
5
```

Contact.js:

```
src > Components > JS Contact.js > ...
  1     function Contact() {
  2       return <h1>Welcome to the Contact page of Student Management Portal</h1>;
  3     }
  4     export default Contact;
  5
```

Home.js:

```
src > Components > JS Home.js > ...
  1  v function Home() {
  2       return <h1>Welcome to the Home page of Student Management Portal</h1>;
  3     }
  4     export default Home;
  5
```

App.js:

```
src > JS App.js > ...
  1     import Home from './Components/Home';
  2     import About from './Components/About';
  3     import Contact from './Components/Contact';
  4
  5     function App() {
  6       return (
  7         <main style={{ color: '#000', padding: '2rem', fontFamily: 'system-ui' }}>
  8           <Home />
  9           <About />
 10           <Contact />
 11         </main>
 12       );
 13     }
 14
 15     export default App;
 16
```
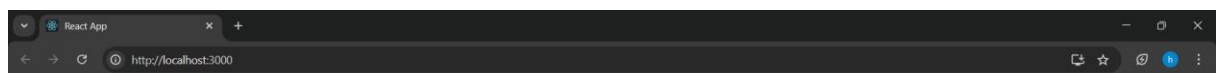
Console:

Compiled successfully!

You can now view **studentapp** in the browser.

  Local: http://localhost:**3000**
  On Your Network: http://10.142.14.106:**3000**

Note that the development build is not optimized.
To create a production build, use npm run build.

webpack compiled **successfully**

Welcome to the Home page of Student Management Portal

Welcome to the About page of Student Management Portal

Welcome to the Contact page of Student Management Portal