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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  √ 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:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

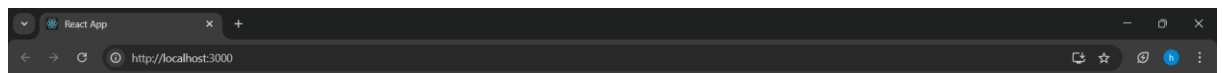
Compiled successfully!

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

