3. ReactJS-HOL

**1. Explain React Components**

React components are the **building blocks** of a React application.  
They are reusable, independent pieces of code that return JSX (HTML-like code) to describe what should appear on the screen.

There are two main types of components:

* **Class Components**
* **Function Components**

**2. Differences Between Components and JavaScript Functions**

| **Feature** | **React Component** | **JavaScript Function** |
| --- | --- | --- |
| Purpose | Builds UI elements | Performs a task or computation |
| Returns | JSX (UI representation) | Any type of data |
| State & Lifecycle | Supported (in class/function via hooks) | Not supported |
| React-Specific Syntax | Yes (render(), useState, props, etc.) | No |

**3. Types of Components**

1. **Class Components** – Use ES6 classes, support state and lifecycle methods.
2. **Function Components** – Simpler syntax, use **hooks** (e.g., useState, useEffect) for state/lifecycle.
3. **Pure Components** – Optimized versions of components (for performance).
4. **Higher-Order Components (HOC)** – Functions that return a new component.
5. **Controlled/Uncontrolled Components** – Related to form handling.

**4. Explain Class Component**

A class component is created using **ES6 class syntax** and **extends React.Component**. It must have a render() method that returns JSX.

jsx

import React, { Component } from 'react';

class Welcome extends Component {

render() {

return <h1>Hello, {this.props.name}</h1>;

}

}

**5. Explain Function Component**

A function component is a **plain JavaScript function** that returns JSX. It’s the recommended way to write components in modern React.

jsx

function Welcome(props) {

return <h1>Hello, {props.name}</h1>;

}

Also:

jsx

import React, { useState } from 'react';

function Counter() {

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

return <button onClick={() => setCount(count + 1)}>Click {count}</button>;

}

**6. Define Component Constructor**

In class components, the constructor() method is used to **initialize state** and **bind event handlers**.

jsx

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class Welcome extends React.Component {

constructor(props) {

super(props);

this.state = { message: 'Hello' };

}

}

Note: You must call super(props) in the constructor.

**7. Define render() Function**

In class components, the render() function returns JSX and describes **what should be displayed** on the screen.

jsx

render() {

return <div>Welcome to React!</div>;

}