**2. ReactJS-HOL**

**Objectives**

**Explain React components**

A **React component** is a reusable piece of UI that can be rendered on the webpage. Think of it as a JavaScript function or class that returns a part of the user interface (HTML). Components make it easier to build and manage complex UIs by breaking them into smaller, self-contained pieces.

There are **two main types**:

* **Class components**
* **Function components**

**Identify the differences between components and JavaScript functions**

|  | **React Components** | **JavaScript Functions** |
| --- | --- | --- |
| Purpose | Used to build UI and return JSX (HTML in JS) | General-purpose logic and computation |
| Return Value | Returns JSX (which renders to HTML) | Returns data (number, string, object etc.) |
| Lifecycle Methods | Available (in class components) | Not available |
| React Features Support | Can use hooks (in function components) | No hooks (unless it's a component) |
| Integration with React | React-specific behavior like props, state | Purely logical (not UI related) |

**Identify the types of components**

There are two main types of React components:

1. Class Components
   * ES6 classes that extend React.Component
   * Can use state and lifecycle methods
   * Example:

class MyComponent extends React.Component {

render() {

return <h1>Hello!</h1>;

} }

1. Function Components

* Simple JavaScript functions
* Can use React Hooks (useState, useEffect, etc.)
* Example:

function MyComponent() {

return <h1>Hello!</h1>; }

**Explain class component**

A class component is a component defined using ES6 class syntax. It:

* Inherits from React.Component
* Requires a render() method that returns JSX
* Can use **state** and **lifecycle methods**

Example:

import React from 'react';

class Welcome extends React.Component {

render() {

return <h1>Welcome to React!</h1>;

}

}

**Explain function component**

A function component is a simpler way to write components using a JavaScript function. It:

* Returns JSX directly
* Can use **React Hooks** (like useState, useEffect) for state and side effects

Example:

function Welcome() {

return <h1>Welcome to React!</h1>;

}

**Define component constructor**

In class components, the **constructor** is a special method used to:

* Initialize local state
* Bind event handlers
* Access props via super(props)

**Define render() function**

The render() function is **required** in class components and is used to:

* Return JSX to define what the UI looks like
* React automatically calls render() whenever the component needs to display

**Creating a react app for Student Management Portal named StudentApp and creating a component named Home which will display the Message “Welcome to the Home page of Student Management Portal”. Creating another component named About and display the Message “Welcome to the About page of the Student Management Portal”. Creating a third component named Contact and display the Message “Welcome to the Contact page of the Student Management Portal”. Call all the three components.**

**Step 1:** Create the React App

npx create-react-app StudentApp

cd StudentApp

**Step 2:** In the **src** folder, create a new folder named Components.

* + - Inside src/Components, create a file named **Home.js**

import React from 'react';

class Home extends React.Component {

render() {

return (

<div>

<h2>Welcome to the Home page of Student Management Portal</h2>

</div>

);

}

}

export default Home;

* + - Inside src/Components, create another file named **About.js**

// src/Components/About.js

import React from 'react';

class About extends React.Component {

render() {

return (

<div>

<h2>Welcome to the About page of Student Management Portal</h2>

</div>

);

}

}

export default About;

* + - Inside src/Components, create **Contact.js**

import React from 'react';

class Contact extends React.Component {

render() {

return (

<div>

<h2>Welcome to the Contact page of Student Management Portal</h2>

</div>

);

}

}

export default Contact;

**Step 3: App.js**

import React from 'react';

import './App.css';

import Home from './Components/Home';

import About from './Components/About';

import Contact from './Components/Contact';

function App() {

return (

<div className="App">

<Home />

<About />

<Contact />

</div>

);

}

export default App;

**Step 4: Run the App**

Npm start

<http://localhost:3000>

