## **1. Explain React Components**

### **Definition:**

A React component is a reusable, self-contained block of code that defines how a user interface (UI) element should appear and behave. Components are the building blocks of a React application.

### **Characteristics:**

* They can be reused across the app.
* Each component can manage its own state and lifecycle.
* Components can be nested inside other components.

## **2. Identify the Differences Between Components and JavaScript Functions**

| **Aspect** | **React Components** | **JavaScript Functions** |
| --- | --- | --- |
| Purpose | Used to render UI in React | General-purpose reusable logic |
| Return Value | Returns JSX (UI elements) | Returns any value (number, string, etc.) |
| Integration | Works within React’s lifecycle and rendering | Used in any JavaScript code |
| Reusability in UI | Designed to be reusable UI elements | Not directly used for UI rendering |
| Lifecycle Methods | Can use lifecycle methods or hooks | No concept of lifecycle |

## **3. Identify the Types of Components**

There are two main types of components in React:

1. **Class Components**
2. **Function Components**

## **4. Explain Class Component**

### **Definition:**

A class component is a React component defined using JavaScript's class syntax and extends from React.Component.

### **Features:**

* Has access to lifecycle methods (e.g., componentDidMount, componentDidUpdate).
* Uses a constructor to initialize state.
* Must have a render() method that returns JSX.

### **Example:**

import React, { Component } from 'react';

class MyComponent extends Component {

render() {

return <h1>Hello from Class Component</h1>;

}

}

## **5. Explain Function Component**

### **Definition:**

A function component is a React component defined as a JavaScript function that returns JSX. It is the simpler and modern way to define components.

### **Features:**

* No need to extend from any class.
* Can use React Hooks (like useState, useEffect) for state and lifecycle.
* Easier to read and test.

### **Example:**

import React from 'react';

function MyComponent() {

return <h1>Hello from Function Component</h1>;

}

## **6. Define Component Constructor**

### **Definition:**

The constructor is a special method in a class component used to initialize the component’s state and bind methods.

### **Usage:**

* Called when the component is created.
* Must call super(props) to access this.props.

### **Example:**

constructor(props) {

super(props);

this.state = {

count: 0

};

}

## **7. Define render() Function**

### **Definition:**

The render() function is a required method in class components. It defines what the UI will look like by returning JSX.

### **Characteristics:**

* Called during the initial mount and on state or prop updates.
* Should be a pure function (returns the same output for the same input).

### **Example:**

render() {

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

}