**1. Explain the need for Unit Testing in React**

**Unit Testing** is the process of testing individual components or functions in isolation to ensure they behave as expected.

**🔹 Why is Unit Testing important?**

* Ensures each component works correctly
* Helps catch bugs early in development
* Makes code easier to maintain and refactor
* Improves confidence during deployment

**2. Working with Jest and Enzyme in React**

**🔹 Jest**

* A popular JavaScript testing framework by Facebook
* Works out of the box with React (included with create-react-app)
* Supports mocking, assertions, and snapshot testing

**Example:**

test('adds numbers correctly', () => {

expect(2 + 2).toBe(4);

});

**🔹 Enzyme**

* A JavaScript testing utility for React developed by Airbnb
* Allows testing of React components’ output and interaction

**Setup (if needed):**

npm install --save enzyme enzyme-adapter-react-16

**Basic usage:**

import { shallow } from 'enzyme';

import MyComponent from './MyComponent';

it('renders heading', () => {

const wrapper = shallow(<MyComponent />);

expect(wrapper.find('h1').text()).toEqual('Welcome');

});

**3. List the types of Router Components**

React Router provides several components to manage navigation in a single-page app.

**🔹 Common Router Components:**

| **Component** | **Description** |
| --- | --- |
| BrowserRouter | Uses the HTML5 history API to keep the UI in sync with the URL |
| Routes | A container for all route definitions (v6+) |
| Route | Defines a path and the component to render |
| Link | Used to navigate between routes (like <a>) |
| Navigate | Programmatic navigation (like redirect) |
| Outlet | Renders nested routes |
| useParams | Hook to access dynamic route parameters |
| useNavigate | Hook to perform navigation from a function |