**1. Understanding the Need for Isolation in Testing**

**Isolation in testing** ensures that each unit (function/component) is tested independently without relying on external systems (like APIs, databases, or other components).

**🔹 Why isolate tests?**

* To detect the root cause of failure quickly
* To avoid flaky tests due to external changes
* To ensure predictable, repeatable test outcomes
* To speed up test execution (no real network/database calls)

**2. Understanding the Concept of Mocking**

**Mocking** is the process of replacing real functions, modules, or APIs with simulated versions during testing.

**🔹 Purpose of mocking:**

* Simulate API responses or behaviors
* Avoid slow or unstable dependencies (e.g., live servers)
* Focus only on the logic of the component being tested

**3. Using Jest for Unit Testing and Mocking**

**Jest** is a powerful testing framework commonly used with React.

**🔹 Unit Testing with Jest:**

function add(a, b) {

return a + b;

}

test('adds 2 + 3 to equal 5', () => {

expect(add(2, 3)).toBe(5);

});

**🔹 Mocking Functions:**

const mockFn = jest.fn();

mockFn.mockReturnValue('test');

expect(mockFn()).toBe('test');

**🔹 Mocking Modules:**

jest.mock('./apiService');

import { fetchData } from './apiService';

fetchData.mockResolvedValue({ data: 'Mocked Data' });