**Assignment 8: Testing the Integrated App**

**Write unit tests for your React components and Express.js routes.**

**Use testing libraries such as Jest and Enzyme.**

**Writing unit tests is an essential part of ensuring the reliability and correctness of your React components and Express.js routes. For this assignment, I'll provide an example using Jest and Enzyme for testing React components, and Jest for testing Express.js routes.**

**React Component Testing:**

**Step 1: Install Dependencies**

**Install Jest, Enzyme, and related packages for testing React components:**

**npm install --save-dev jest enzyme enzyme-adapter-react-16 enzyme-to-json**

**Step 2: Configure Jest**

**Create a jest.config.js file in your project's root directory:**

| **// jest.config.js**  **module.exports = {**  **setupFilesAfterEnv: ['<rootDir>/src/setupTests.js'],**  **testEnvironment: 'jsdom',**  **};** |
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**Step 3: Configure Enzyme**

**Create a src/setupTests.js file for configuring Enzyme:**

| **// src/setupTests.js**  **import { configure } from 'enzyme';**  **import Adapter from 'enzyme-adapter-react-16';**  **configure({ adapter: new Adapter() });** |
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**Step 4: Write Unit Tests for React Components**

**Create a test file, for example, src/DataFetching.test.js, to test the DataFetching component:**

| **// src/DataFetching.test.js**  **import React from 'react';**  **import { shallow } from 'enzyme';**  **import DataFetching from './DataFetching';**  **describe('DataFetching Component', () => {**  **it('renders without crashing', () => {**  **const wrapper = shallow(<DataFetching token="mockToken" />);**  **expect(wrapper.exists()).toBeTruthy();**  **});**  **// Add more test cases as needed**  **});** |
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**Step 5: Run React Tests**

**Run the Jest tests for React components:**

npm test

**Express.js Route Testing:**

Step 1: Install Dependencies

Install Jest and Supertest for testing Express.js routes:

npm install --save-dev jest supertest

Step 2: Write Tests for Express.js Routes

Create a test file, for example, express-api/dataController.test.js, to test the getDataForAuthenticatedUser route:

| // express-api/dataController.test.js  const request = require('supertest');  const app = require('./app');  describe('Express API Routes', () => {  it('should return data for authenticated user', async () => {  const response = await request(app)  .get('/api/data/authenticated')  .set('Authorization', 'Bearer mockToken');  expect(response.status).toBe(200);  expect(response.body.data).toHaveLength(3); // Adjust based on your data  });  // Add more test cases as needed  }); |
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Step 3: Run Express.js Tests

Run the Jest tests for Express.js routes:

npm test

These are basic examples to get you started. You can extend these tests based on the complexity of your application. For more advanced scenarios, you might consider testing asynchronous code, mocking API calls, and handling different edge cases.

Remember to adapt the test cases to your specific application requirements, adjusting assertions and mocks accordingly.