



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Report File FULL STACK

Student Name: Sukhjinder Singh

UID: 23BAI70078

Branch: BE-AIT-CSE

Section/Group: 23AIT-KRG-G2

Semester: 5th

Subject Code: 23CSP-339

Subject Name: Full Stack

Aim:

To verify the correctness and reliability of the EcoTrack React application by writing automated tests using Jest and React Testing Library, and by analyzing application behavior using debugging tools.

Objectives:

After completing this experiment, the student will be able to:

1. Understand the purpose of automated testing in frontend applications
2. Write unit tests for JavaScript utility functions using Jest
3. Use different Jest matchers to validate expected outputs and behaviors
4. Test React components using React Testing Library
5. Verify UI rendering by querying elements from the DOM
6. Implement asynchronous testing using `findBy` and `waitFor` methods
7. Apply mocking to simulate API or external data responses in tests
8. Perform snapshot testing to detect unintended UI changes
9. Debug failing tests and application logic using browser Developer Tools and breakpoints
10. Analyze application behavior and errors systematically rather than manual checking

Hardware Requirements:

- Processor: Intel i5/Ryzen 5 or higher
- RAM: 8GB minimum
- Display: 1920x1080 resolution

Software Requirements:

- Node.js v18+
- React.js v18+
- VS Code with ES7+ extensions

Code Implementation:

App.js

```
import logo from './logo.svg';
import './App.css';

function App() {
  return (
    <div className="App">
      <header className="App-header">
        <img src={logo} className="App-logo" alt="logo" />
        <p>
          Edit <code>src/App.js</code> and save to reload.
        </p>
        <a
          className="App-link"
          href="https://reactjs.org"
          target="_blank"
          rel="noopener noreferrer"
        >
          Learn React
        </a>
      </header>
    </div>
  );
}

export default App;
```

App.test.js

```
import { render, screen } from '@testing-library/react';
import App from './App';

test('renders learn react link', () => {
  render(<App />);
  const linkElement = screen.getByText(/learn react/i);
  expect(linkElement).toBeInTheDocument();
});
```

Test.test.js

```
import {add} from './math'

test("add Numbers", () =>{
  expect(add(2,3)).toBe(5)
});

test("add Numbers", () =>{
  expect(add(0,3)).toBe(5)
});
```

Expected Output:

- Learnt how to test the fundamental structure of codebase.
- Learnt about React Testing Library.
- Learnt about the real-life application of Jest Library.
- Learnt about the automatic testing mechanics.