



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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EXPERIMENT- 1

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Semester: 6th

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Date of Performance: 21/01/26

Branch: BE CSE AIML

Subject Name: FULLSTACK-II

Section/Group: 23AIT_KRG-G1

Subject Code: 23CSH-382

AIM:

To implement Single Page Application (SPA) navigation in the EcoTrack application using React Router, secure application routes using context-based authentication, and extend nested dashboard routing through follow-up enhancements.

OBJECTIVES:

After completing this experiment and its follow-up tasks, the student will be able to:

1. Configure client-side routing in a React application using React Router
2. Implement SPA navigation without full page reloads
3. Design and apply protected routes using route-guard patterns
4. Manage shared authentication state using React Context API
5. Implement nested routing to build dashboard-style layouts
6. Extend existing nested routes by adding new dashboard sections
7. Implement logout functionality by updating shared context state
8. Analyze route access behavior and explain redirection logic
9. Understand the role of Context API in shared state management and its comparison with Redux at an introductory level



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IMPLEMENTATION/CODE:

Logs.js

```
1 | export const logs = [
2 |   { id: 1, activity: "Car Travel", carbon: 4 },
3 |   { id: 2, activity: "Electricity Usage", carbon: 6 },
4 |   { id: 3, activity: "Cycling", carbon: 0 },
5 | ];
```

Logs.jsx

```
0 | import { useEffect } from "react";
1 | import { useNavigate } from "react-router-dom";
2 | import { useAuth } from "../context/auth";
3 |
4 | export default function Logout() {
5 |   const navigate = useNavigate();
6 |   const { setIsAuthenticated } = useAuth();
7 |
8 |   useEffect(() => {
9 |     setIsAuthenticated(false);
10|     navigate("/login");
11|   }, []);
12|
13|   return <h2>Logging out...</h2>;
14| }
```

Login.jsx

```
0 | import { useNavigate } from "react-router-dom";
1 | import { useAuth } from "../context/auth";
2 |
3 | export default function Login() {
4 |   const navigate = useNavigate();
5 |   const { isAuthenticated, setIsAuthenticated } = useAuth();
6 |
7 |   function handleLogin() {
8 |     setIsAuthenticated(true);
9 |     navigate("/");
10|   }
11|
12|   if (isAuthenticated) {
13|     return (
14|       <>
15|         <h1>You are already logged in</h1>
16|         <button onClick={() => navigate("/")}>Go to Dashboard</button>
17|       </>
18|     );
19|   }
20|
21|   return (
22|     <>
23|       <h1>Login</h1>
24|       <button onClick={handleLogin}>Login Now</button>
25|     </>
26|   );
27| }
```



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Logout.jsx

```
0 | import { useEffect } from "react";
1 | import { useNavigate } from "react-router-dom";
2 | import { useAuth } from "../context/auth";
3 |
4 | export default function Logout() {
5 |   const navigate = useNavigate();
6 |   const { setIsAuthenticated } = useAuth();
7 |
8 |   useEffect(() => {
9 |     setIsAuthenticated(false);
10|     navigate("/login");
11|   }, []);
12|
13|   return <h2>Logging out...</h2>;
14| }
```

App.jsx

```
0 | import Header from './components/Header';
1 | import { BrowserRouter, Routes, Route } from 'react-router-dom';
2 | import Logs from './pages/Logs';
3 | import Login from './pages/Login';
4 | import Logout from './pages/Logout';
5 | import Dashboard_layout from './pages/Dashboard_layout';
6 | import DashboardAnalytics from './pages/DashboardAnalytics';
7 | import DashboardSummary from './pages/DashboardSummary';
8 | import AuthProtectedRoutes from './Routes/AuthProtectedRoutes';
9 |
10| export default function App() {
11|   return (
12|     <BrowserRouter>
13|       <Header />
14|
15|       <Routes>
16|         <Route path="/login" element={<Login />} />
17|
18|         <Route
19|           path="/logout"
20|           element={
21|             <AuthProtectedRoutes>
22|               <Logout />
23|             </AuthProtectedRoutes>
24|           }
25|         />
26|
27|         <Route
28|           path="/"
29|           element={
30|             <AuthProtectedRoutes>
31|               <Dashboard_layout />
32|             </AuthProtectedRoutes>
33|           }
34|         >
35|           <Route index element={<DashboardSummary />} />
36|           <Route path="summary" element={<DashboardSummary />} />
37|           <Route path="analytics" element={<DashboardAnalytics />} />
38|         </Route>
```



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```
39|           <Route
40|             path="/logs"
41|             elements={
42|               <AuthProtectedRoutes>
43|                 <Logs />
44|               </AuthProtectedRoutes>
45|             }
46|           }
47|         />
48|       </Routes>
49|     </BrowserRouter>
50|   );
51| }
52| }
```

AuthProtectedRoute.jsx

```
0 | import { Navigate } from "react-router-dom";
1 | import { useAuth } from "../context/auth";
2 |
3 | export default function AuthProtectedRoutes({ children }) {
4 |   const { isAuthenticated } = useAuth();
5 |
6 |   if (!isAuthenticated) {
7 |     return <Navigate to="/login" replace />;
8 |   }
9 |
10|   return children;
11| }
```

OUTPUT:

1) Login

The screenshot shows a light blue header bar with the text "ECO TRACK" in dark blue. Below it is a white login form. At the top left of the form is the word "Login". At the bottom right is a blue "Login" button with white text.

Login

[Login Now](#)

2) DASHBOARD SUMMARY

The screenshot shows a light blue header bar with the text "ECO TRACK" in dark blue. Below it is a white dashboard summary section. At the top left is the word "Dashboard Summary". At the top right are three blue links: "Summary", "Analytics", and "Logs". At the bottom right is a blue "Logout" button with white text.

DASHBOARD LAYOUT

Dashboard Summary



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3) DASHBOARD ANALYTICS

The screenshot shows a light blue header bar with the title "ECO TRACK". Below it is a navigation bar with links: "Summary", "Analytics", "Logs", and "Logout". The main content area displays two yellow rectangular boxes. The top box is titled "HIGH CARBON EMISSION" and contains the text "Car Travel 4" and "Electricity Usage 6". The bottom box is titled "LOW CARBON EMISSION" and contains the text "Cycling 0".

DASHBOARD LAYOUT

Dashboard Analytics

4) LOGS

The screenshot shows a light blue header bar with the title "ECO TRACK". Below it is a navigation bar with links: "Summary", "Analytics", "Logs", and "Logout". The main content area displays two yellow rectangular boxes. The top box is titled "HIGH CARBON EMISSION" and contains the text "Car Travel 4" and "Electricity Usage 6". The bottom box is titled "LOW CARBON EMISSION" and contains the text "Cycling 0".

LEARNING OUTCOMES:

1. Understood React authentication flow using login, logout, and protected routes.
2. Implemented Context API to manage global authentication state.
3. Applied route protection using React Router's guarded routes.
4. Handled programmatic navigation with useNavigate() for secure redirects.
5. Debugged common React errors including blank screens and ES module export issues.