Experiment 1

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1. **AIM:** To design and implement the foundational frontend architecture of the Eco-Track application using modern React practices, Vite tooling, and ES6+ JavaScript features.

2. **Objective:**

- To set up a React project using Vite with proper project structure
- To understand component-based architecture in React
- To apply ES6 array methods (map, filter, reduce) for data-driven UI rendering
- To separate concerns using components, pages, and data modules
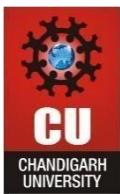
3. **Implementation/Code:**

   i.   **Header.jsx:**

```
const Header = ({ title }) => (
    <header  style={{padding: "0.5 rem", backgroundColor: "green", color: "white", textAlign:
"center"}}>
  <h1>{title}</h1>
  </header>
);

export default Header;
```

   ii.   **logs.js:**

```
export const logs = [
  { id: 1, activity: "Car Travel", carbon: 8 },
  { id: 2, activity: "Electricity Usage", carbon: 6 },
  { id: 3, activity: "Cycling", carbon: 2 },
```

```
];
```

iii. dashboard.jsx:

```jsx
import {logs} from "../data/logs";

const Dashboard = () => {
  const totalCarbon = logs.reduce((sum, log) => sum + log.carbon, 0);
  return (
    <div>
      <h2>Dahboard</h2>
      <p>Total Carbon Footprint: {totalCarbon} kg CO<sub>2</sub></p>

      <ul>
        {logs.map((log) => (
          <li key={log.id}>
            {log.activity} = {log.carbon} kg CO<sub>2</sub>
          </li>
        ))}
      </ul>
    </div>
  );
};
```
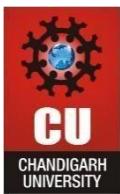
iv. logs.jsx:

```jsx
import {logs} from "../data/logs";

const Logs = () => {
  const highImpactLogs = logs.filter(log => log.carbon >= 4);
  return (
    <>
      <h2>High Carbon Activities (&gt; 4Kg)</h2>

      <ul>
        {highImpactLogs.map(log => (
          <li key={log.id}>
            {log.activity}: {log.carbon} CO<sub>2</sub>
          </li>
        ))}
      </ul>
    </>
```

```
  );
};
```

v.   App.jsx:

```jsx
import Header from "./components/Header"
import Dashboard from "./pages/dashboard"
import Logs from "./pages/logs"

const App = () => {
  return (
    <>
      <Header title="Eco Track - Experiment 1" />
      <main style={{padding: "1rem"}}>
        <Dashboard />
        <Logs />
      </main>
    </>
  );
};

export default App;
```

vi.   Main.jsx:

```jsx
import { StrictMode } from 'react'
import { createRoot } from 'react-dom/client'
import App from './App.jsx'

createRoot(document.getElementById('root')).render(
  <StrictMode>
    <App />
  </StrictMode>,
)
```

4. Output:

Eco Track - Experiment 1

Dahboard

Total Carbon Footprint: 16 kg CO_2

- Car Travel = 8 kg CO_2
- Electricity Usage = 6 kg CO_2
- Cycling = 2 kg CO_2

High Carbon Activities (> 4Kg)

- Car Travel: 8 CO_2
- Electricity Usage: 6 CO_2

5. Learning Outcome:

- Independently scaffold a modern React application using Vite, ensuring optimized build performance and modular project structure.
- Apply component-based architecture to design reusable, maintainable UI elements aligned with best practices in frontend development.
- Utilize ES6+ array methods such as map, filter, and reduce to dynamically render and manipulate data-driven interfaces.
- Implement separation of concerns by organizing logic across components, pages, and data modules, promoting clarity and scalability in codebase design.