Experiment 1

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1.Aim:

To design and implement the foundational frontend architecture of the EcoTrack 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:

logs.js:

```
export const logs = [
  { id: 1, activity: "Car Travel", carbon: 4 },
  { id: 2, activity: "Electricity Usage", carbon: 6 },
  { id: 3, activity: "Cycling", carbon: 0 },
  { id: 4, activity: "Bus Travel", carbon: 2 },
  { id: 5, activity: "Train Travel", carbon: 1 },
  { id: 6, activity: "Flight (Domestic)", carbon: 15 },
  { id: 7, activity: "Cooking (LPG)", carbon: 3 },
  { id: 8, activity: "Air Conditioner Usage", carbon: 5 }
];
```

Dashboard.jsx:

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

const Dashboard = () => {
  const calculateTotalCarbon = logs.reduce((total, log) => total + log.carbon, 0);

  const highCarbonActivities = logs.filter(
log => log.carbon > 4
  );
return (
   <div>
     <h2>Dashboard</h2>
     <p>Total Carbon Footprint: {calculateTotalCarbon} Kg</p>

     <ul>
       {logs.map((log) => (
         <li key={log.id}>
           {log.activity}: {log.carbon} Kg
         </li>
       ))}
     </ul>
     <h3>High Carbon Activities (&gt; 4 Kg)</h3>
     <ul>
       {highCarbonActivities.map(log => (
         <li key={log.id}>
           {log.activity}: {log.carbon} Kg
         </li>
       ))}
     </ul>
   </div>
  );
};
export default Dashboard;
```

Logs.jsx

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

const Logs = () => {
   const highImpactLogs = logs.filter((log) => log.carbon > 4);
```

```
const lowImpactLogs = logs.filter((log) => log.carbon <= 4);
   return (
      <div>
         <h2>High Carbon Activities ({'>'} 4Kg)</h2>
         <ul>
            {highImpactLogs.map((log) => (
               <li style={{color:"rgb(224, 31, 31)"}} key={log.id}>
                  {log.activity} = {log.carbon} kg CO₂
               </li>
            ))}
         </ul>
         <h2>Low Carbon Activities (≤ 4Kg)</h2>
         <ul>
            {lowImpactLogs.map((log) => (
               <li style={{color:"#3a803cff"}} key={log.id}>
                  {log.activity} = {log.carbon} kg CO₂
               </li>
            ))}
         </ul>
      </div>
   );
};

export default Logs;
```

4.Output:

EcoTrack - Experiment 1

Dashboard

Total Carbon Footprint: 36 kg CO2

- Car Travel = 4 kg CO2
- Electricity Usage = 6 kg CO2
- Cycling = 0 kg CO2
- Bus Travel = 2 kg CO2
- Train Travel = 1 kg CO2
- Flight (Domestic) = 15 kg CO2
- Cooking (LPG) = 3 kg CO2
- Air Conditioner Usage = 5 kg CO2

High Carbon Activities (> 4Kg)

- Electricity Usage = 6 kg CO_2
- Flight (Domestic) = 15 kg CO_2
- Air Conditioner Usage = 5 kg CO_2

Low Carbon Activities (≤ 4Kg)

- Car Travel = 4 kg CO_2
- Cycling = 0 kg CO_2
- Bus Travel = 2 kg CO_2
- Train Travel = 1 kg CO_2
- Cooking (LPG) = 3 kg CO_2

5.Learning Outcome:

- Set up a modern React application using Vite and understand the advantages of fast build tools and optimized project scaffolding.

- Design applications using component-based architecture, enabling better code reusability, readability, and separation of concerns.

- Apply ES6 JavaScript features such as map(), filter(), and reduce() to process data and dynamically render UI components.

- Organize project structure effectively by separating data, components, and pages for scalable frontend development.

- Analyze and visualize data in a React application, demonstrating how state independent data modules can drive UI logic and presentation.