



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment 1

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- **Aim:**

The aim of this experiment is to design and develop a React-based dashboard application to display and analyse carbon footprint data for different user activities using modern JavaScript array methods.

- **Objectives:**

The main objectives of this experiment are as follows:

1. To understand the basic structure of a React application created using Vite.
2. To implement reusable React components for building a dashboard interface.
3. To use JavaScript array methods such as map(), filter(), and reduce() for data processing.
4. To display total carbon footprint and categorized activity data dynamically.
5. To improve understanding of frontend data rendering using React JSX.

- **Implementation:**

The following general steps were followed to implement the EcoTrack dashboard application:

1. A new React project was created using Vite for faster development and optimized build setup.
2. A reusable Header component was created to display the application title “EcoTrack”.
3. A data file named logs.js was created to store activity data in the form of a JavaScript object/JSON structure, including activity ID, activity name, and carbon usage in kilograms.
4. A pages folder was created to organize different page-level components.
5. A dashboard.jsx file was created to display overall carbon footprint details.



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6. The reduce() method was used in dashboard.jsx to calculate the total carbon footprint from all activity logs.
7. The map() method was used to dynamically display all carbon activity logs on the dashboard.
8. A logs.jsx file was created to display high carbon usage activities.
9. The filter() method was used to select activities with carbon usage greater than or equal to 4 kg.
10. The filtered results were displayed using the map() method under the “High Carbon Activities” section.
11. All components were connected properly to render the complete dashboard interface.

- **Output:**

The screenshot shows a web browser window titled "ecotrack" with the URL "localhost:5173". The page has a green header bar with the text "EcoTrack - Environmental Impact Tracker". Below the header, there is a section titled "Carbon Footprint Dashboard" which displays "Total Carbon Footprint: 10 kg" and a list of activities: "Car Travel - 4 kg CO2", "Electricity Usage - 6 kg CO2", and "Cycling - 0 kg CO2". At the bottom of the page, there is a section titled "Daily Logs (High Impact)" with a list of activities: "Car Travel : 4 kg CO2" and "Electricity Usage : 6 kg CO2".



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- **Results:**

The EcoTrack dashboard was successfully implemented using React and Vite. The total carbon footprint was calculated correctly using the reduce() method. Activity logs and high carbon activities were displayed dynamically using map() and filter(). The results verified proper data processing and rendering in the React application.

- **Learning Outcomes:**

After completing this experiment, I have learnt to:

1. Use React with Vite to create a structured frontend application.
2. Apply the map() function to dynamically render lists of data in React.
3. Use the filter() function to display conditional data based on specific criteria.
4. Implement the reduce() function to calculate aggregate values from an array.
5. Organize React projects using components, pages, and data files effectively.
6. Build a real-world style dashboard interface for data visualization.