



DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Experiment 1.1

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Subject Name: Full Stack - II

UID: 23BCS11023

Section/Group: Krg-3A

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1. Aim: To develop a web-based **Carbon Footprint Monitoring Dashboard** that tracks daily activities, calculates total carbon emissions, and categorizes data to help users identify high-emission behaviors and promote environmental awareness.

2. Objective:

Data Aggregation: Consolidate activity logs (e.g., travel, electricity usage, cycling) into a centralized data structure.

Real-time Calculation: Use JavaScript array methods to calculate the total carbon sum ($\sum \text{carbon}$) across all recorded logs.

Data Filtering & Insights: Identify "High Carbon" activities

Identify "Low Carbon" activities (emissions < 3kg).

Extract the "Top 2" highest-emitting activities for immediate user focus.

Visual Representation: Provide a clear UI with color-coded feedback (Red for high emission, Green for low/zero emission) to enhance readability.

3. Implementation:

The project is implemented using React.js and structured into modular components and data files

log.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: "Electricity Usage", carbon: 8 },
  { id: 5, activity: "Car Travel", carbon: 2 },
  { id: 6, activity: "Electricity Usage", carbon: 5 },
  { id: 7, activity: "Cycling", carbon: 0 },
  { id: 8, activity: "Electricity Usage", carbon: 7 },
  { id: 9, activity: "Car Travel", carbon: 3 },
  { id: 10, activity: "Electricity Usage", carbon: 9 },
  { id: 11, activity: "Cycling", carbon: 0 },
  { id: 12, activity: "Electricity Usage", carbon: 6 },
  { id: 13, activity: "Car Travel", carbon: 1 },
]

```

Dashboard.jsx

```

import { logs } from '../data/log';

const Dashboard = () => {
  const totalCarbon = logs.reduce((sum, log) => {
    return sum + log.carbon;
  }, 0);
  const getNonZero=(logs)=>{
    return logs.filter(log=>log.carbon!==0)
  }
  const getCarbonColor = (carbon)=>{
    return carbon >= 4 ? "text-red-600" : "text-green-600";
  }

  const top2Logs = logs
    .slice()
    .sort((a, b) => b.carbon - a.carbon)
    .slice(0, 2);

  return (
    <div>
      <h1>Logs</h1>

      <div>Sum: {totalCarbon}</div>

      <h2>All Logs</h2>

      <ul>
        {getNonZero(logs).map((log) => [
          <li key={log.id}>
            <span className={`font-semibold ${getCarbonColor(log.carbon)} `}>{log.activity}</span>
            <span className={`font-semibold ${getCarbonColor(log.carbon)} `}>
              {log.carbon} kg
            </span>
          </li>
        ])}
      </ul>
    </div>
  )
}

```

Component Architecture

Header.jsx:

```

import React from 'react'

const Header = ({title}) => {
  return (
    <div>
      <h1 className='p-5 bg-orange-300'>{title}</h1>
    </div>
  )
}

export default Header

```

(i) App.jsx

```

import React from 'react'
import { useState } from 'react'
import Dashboard from './pages/dashboard'
import { Logs , LowCarbon} from './pages/logs'
import Header from './components/Header'

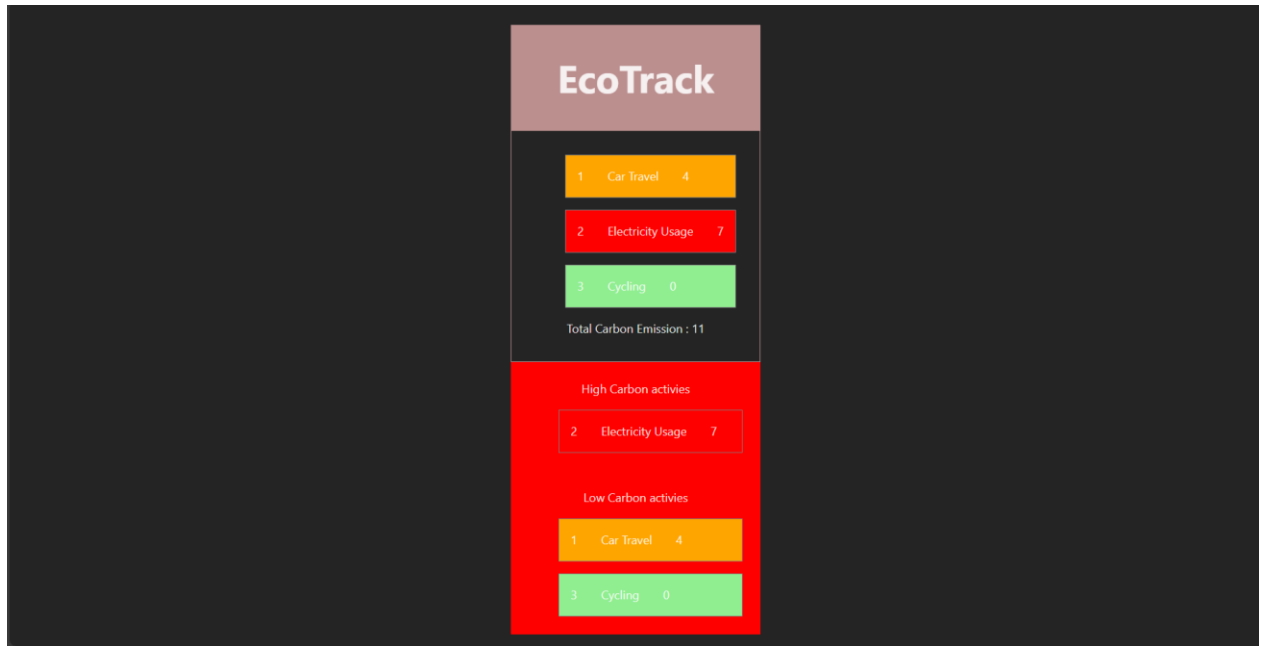
function App() {
  const [count, setCount] = useState(0)

  return (
    <div>
      <Header title="data"/>
      <Dashboard />
      <Logs />
      <LowCarbon />
    </div>
  )
}

export default App

```

4. Output



5. Learning Outcome

- **Understand the core concepts of React**, including components, JSX, props, state, and the virtual DOM.
- **Develop reusable and modular UI components** using functional components and modern React practices.
- **Manage application state effectively** using React Hooks such as `useState`, `useEffect`, and context for shared state.
- **Handle user interactions and dynamic data rendering** through event handling, conditional rendering, and list rendering.