Assessment 1

Carbon Footprint Calculator & Tracker

Task Overview

Build a web application that helps individuals and small businesses track and reduce their carbon footprint through AI-powered personalized recommendations.

Duration	2 Days
Total Points	100

Problem Statement

The Challenge:

Climate change is one of the most pressing issues of our time. While individuals and small businesses want to reduce their carbon emissions, they often lack simple, accessible tools to track their daily carbon footprint and receive actionable recommendations for reducing their environmental impact.

Your Solution:

Create a user-friendly web application that calculates carbon emissions based on daily activities (transportation, energy consumption, diet, etc.) and provides AI-powered personalized recommendations to help users reduce their environmental footprint.

Understanding Carbon Footprint

A carbon footprint is the total amount of greenhouse gas emissions (primarily CO_2) caused by an individual, organization, or activity. It's measured in kilograms or tonnes of CO_2 equivalent (CO_2e).

Main Sources of Personal Carbon Emissions:

- **Transportation:** Car, bus, train, flights
- **Energy:** Electricity, heating, cooling
- **Diet:** Meat consumption, food waste
- **Consumption:** Shopping, waste generation

Required Features

1. **User Authentication**

- Registration and login system
- User profile management

2. **Activity Input System**

- Daily activity logging (transportation, energy use, diet, etc.)
- Multiple input methods (forms, quick add buttons)
- Edit and delete past entries

3. **Carbon Emission Calculator**

- Calculate emissions for each activity using standard formulas
- Display daily, weekly, and monthly totals
- Categorize emissions by type (transport, energy, food, etc.)

4. **Visual Dashboard**

- Charts showing emissions trends over time
- Breakdown by category (pie/bar charts)
- Comparison with previous periods

5. **AI-Powered Recommendations**

- Chatbot or recommendation engine using AI APIs
- Personalized tips based on user's emission patterns
- Actionable suggestions for reducing carbon footprint

Sample Carbon Emission Formulas

Use these simplified formulas (or find more accurate ones through research):

Activity	Formula (CO_2 in kg)
Car (petrol)	Distance (km) × 0.12
Flight (short-haul)	Distance (km) × 0.255
Electricity	kWh × 0.5
Beef meal	6.0 kg per meal
Vegetarian meal	1.5 kg per meal

Technical Requirements

6. **Frontend:** React, Vue, Angular, or vanilla HTML/CSS/JavaScript
7. **Backend:** Node.js (Express), Python (Flask/Django), or any server technology
8. **Database:** MySQL, PostgreSQL, MongoDB, or Firebase
9. **AI Integration:** OpenAI API, Claude API, Google Gemini, or Hugging Face models
10. **Charts/Visualization:** Chart.js, D3.js, Recharts, or any charting library
11. **Version Control:** GitHub with meaningful commits (10+ commits)
12. **Responsive Design:** Mobile and desktop friendly

Submission Requirements

13. **GitHub Repository** (public, with comprehensive README)
14. **Problem Statement Document** (1 page PDF)
15. **AI Usage Report** (1-2 pages PDF documenting AI tools used)
16. **Video Demo** (3-5 minutes showing all features)
17. **SUBMISSION.txt** (containing all links and your details)

Evaluation Criteria (100 Points)

Criteria	Points
Problem Understanding & Documentation	**15**
AI Integration & Recommendations	**30**
Core Features (Calculation, Dashboard, Reports)	**25**
Code Quality & Documentation	**20**
Video Demo & Presentation	**10**
TOTAL	**100**

Build Something That Matters!

Your application can help people make a real difference in fighting climate change.