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College of Informatics and Computing Sciences

Eco Track: Carbon Footprint Calculator and Reducer App

TITLE

IT 211: OBJECT - ORIENTED PROGRAMMING

Submitted By:

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IT – 2106

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I. PROJECT OVERVIEW

EcoTrack is a user-friendly application designed to help individuals and businesses measure and reduce their carbon footprint. The app estimates carbon emissions based on various activities like transportation, energy usage, diet, and shopping. It then provides actionable recommendations for reducing emissions and offers a carbon offset marketplace for users who wish to neutralize their environmental impact.

EcoTrack aligns with the principles of sustainability by promoting eco-friendly habits, educating users on the environmental impact of their choices, and helping them track progress towards a greener lifestyle. By utilizing data analysis and machine learning, EcoTrack offers precise insights and personalized reduction plans.

II. EXPLANATION OF HOW OOP PRINCIPLES WERE APPLIED

Encapsulation:

- Data (e.g., user inputs, emission values) is stored within classes and accessed through methods to ensure secure and organized management.

Inheritance:

- Specialized classes inherit common properties and methods from base classes.

Polymorphism:

- Overridden methods allow the program to handle similar operations differently based on context.

Abstraction:

- Unnecessary implementation details are hidden, providing a simplified interface.

III. DETAILS OF THE CHOSEN SDG AND ITS INTEGRATION INTO THE PROJECT

This project addresses SDG 13 by raising awareness of the environmental impacts of individual and collective activities and encouraging sustainable lifestyle changes.

Integration into the Project:

Educational Component:

- The app provides users with information about carbon emissions and their contribution to climate change.
- It includes facts, tips, and links to resources about reducing environmental impact, directly supporting the SDG's goal of increasing awareness.

Carbon Emissions Calculation:

- Users input daily activities (e.g., transportation, energy usage, waste generation).
- The app calculates the associated carbon footprint using globally recognized standards, helping users understand their role in contributing to climate change.

Actionable Recommendations:

- The app offers personalized suggestions to reduce carbon emissions, such as switching to renewable energy, carpooling, or adopting plant-based diets.
- These recommendations align with SDG 13’s focus on mitigation strategies.

Tracking Progress:

- Users can monitor their carbon footprint over time through visual reports, motivating them to adopt sustainable practices.
- The progress tracking feature supports SDG 13's goal of empowering individuals to take consistent climate action.

Community Impact:

- The app includes a gamified leaderboard to foster a community-driven approach to sustainability. By sharing their progress and encouraging others, users contribute to collective action against climate change.

Long-Term Sustainability Focus:

- Eco Track motivates behavior changes that promote long-term carbon footprint reduction, directly addressing SDG 13’s target to limit global temperature rise.

By integrating these features, Eco Track becomes a practical tool for individuals and communities to actively participate in climate action, embodying the essence of SDG 13.

IV. INSTRUCTION FOR RUNNING THE PROGRAM

Run the compiled program:

- java Main
- If your project is packaged in a .jar file:
  - Run it using: java -jar EcoTrack.jar

Using the Application

- When prompted, input personal details (e.g., name, location) to create a profile.
- Provide activity data such as:
  - Transportation type and frequency.
  - Electricity consumption (in kWh).
  - Dietary habits (e.g., vegetarian, vegan, or omnivorous diet).
- The app calculates your carbon footprint and displays results in the console or a graphical interface.
- Review recommendations for reducing emissions and track your progress.

Running in an IDE

- Open the project in your preferred IDE.
- Set the Main class as the entry point (if required).
- Click the *Run* button or execute the program using the IDE's terminal.

Optional Features

- Export Reports:
  - Save results as a .txt or .csv file if the program includes file handling functionality.
- Progress Tracking:
  - Access historical data through saved files or database queries, depending on your implementation.

Troubleshooting

- Ensure all .java files are in the same directory or properly structured in packages.
- Include necessary library .jar files in the classpath using:
  - javac -cp <library-name>.jar Main.java
  - java -cp <library-name>.jar;. Main
- Check for errors in the terminal or IDE console and resolve issues such as missing methods or libraries.