SOFTWARE ENGINEERING

Project Handover 2

Sustainability Tracker

Group O

Group Members:

Alen John Varghese

Pooja Prakash

Shafana Nizam

Task:

- Re-design the user interface to enhance usability and aesthetic appeal, thereby achieving professional standard.
- Implement a novel feature, adding in a completely new functionality previously unaddressed.

Application Overview

After the second handover session, we group O received the project titled as “Sustainability tracker”. The Sustainability Tracker project is designed to empower individuals to monitor and improve their sustainability efforts in everyday life. Allow users to calculate daily sustainability scores by implementing a "sustainability index" based on their recorded activities.

Received Project status

During the handover session, we received the project with three unlinked user interfaces. The login functionality was present, but it did not redirect to the next page after login. Upon entering the variables, the application calculates the carbon emission and sustainability index. Reference snapshots are provided below.

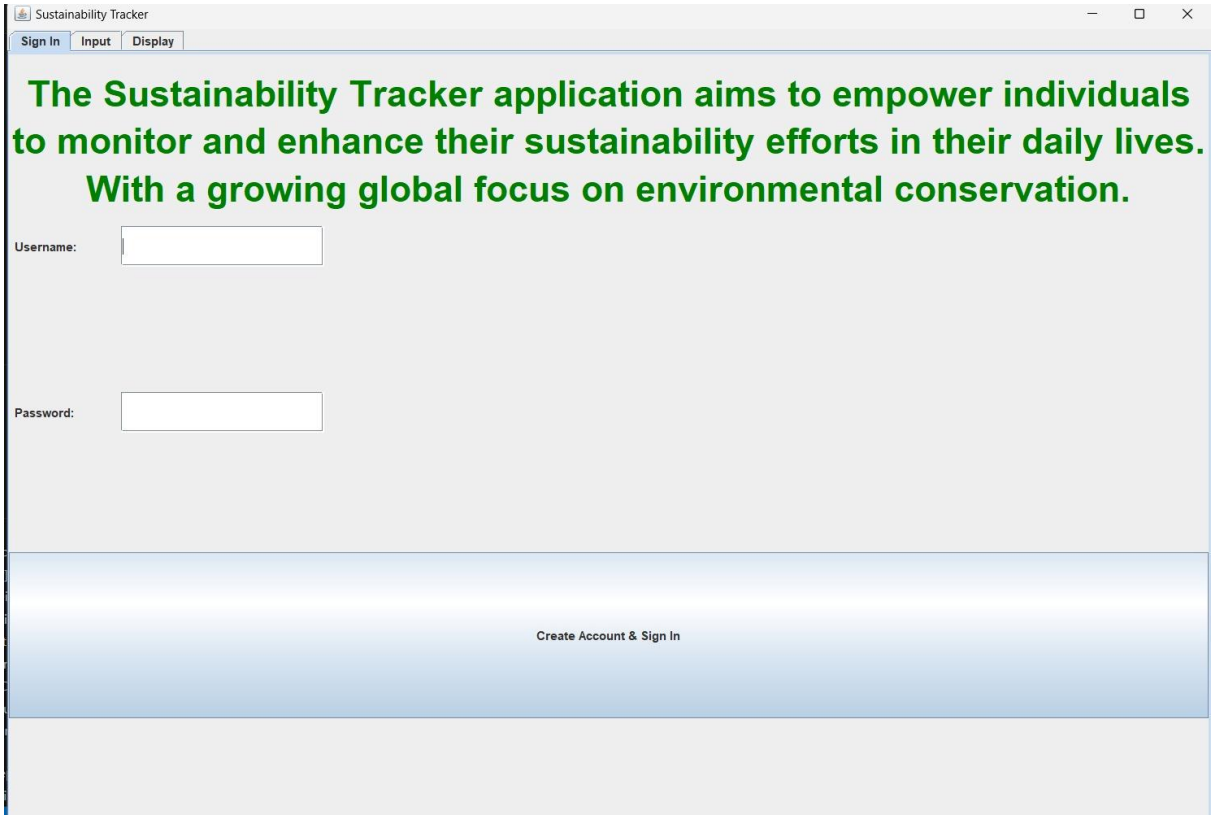

Fig-1 Initial login page

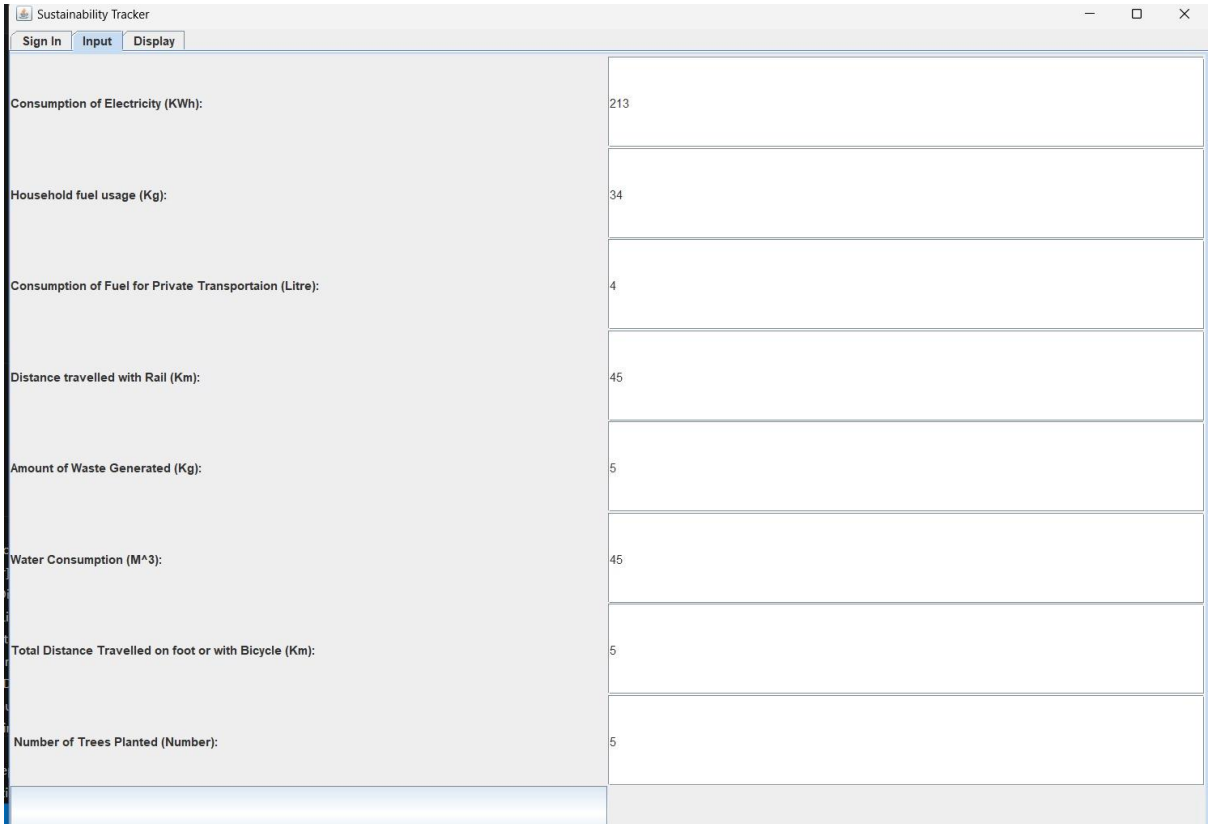

Fig-2 Initial Input page

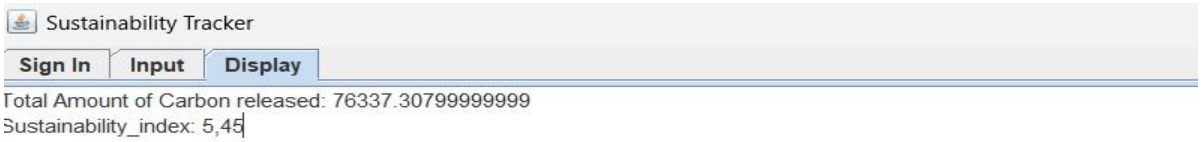

Fig-3 Initial Display page

Our Implementations

- ✓ Graphic User Interface: Elegantly redefined the user interface, providing an authentication page, input form and output screen.
- ✓ New attributes have been incorporated, including cursor tooltips, help button and personalised recommendations based on output analysis.

Interface Design

The navigation workflow facilitates seamless transitions between pages, ensuring an intuitive progression from one interface to the next.

a) Login Page: A sleek interface with options for sign in/create account. Provide ample space for users to input their username and password. This page further provides a confirmation notification followed by an information input page.

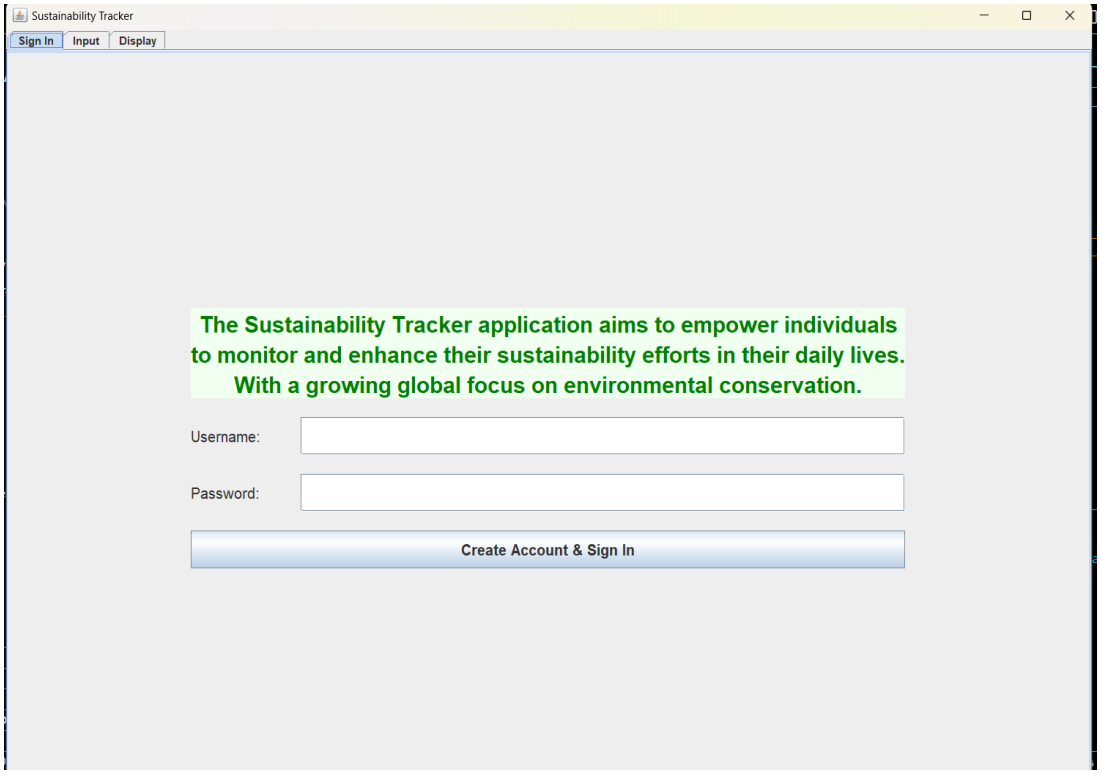

Fig 4- Redefined login page

b) Input form: A streamlined panel for users to input various consumption values such as electricity usage, fuel consumption, waste generated, transportation metrics, trees planted etc. Its intuitive layout simplifies the process of recording essential data, promoting efficient and accurate data entry. Besides, the help button provides further assistance. This allows user to quickly grasp how to interact with the interface without feeling confused or overwhelmed.

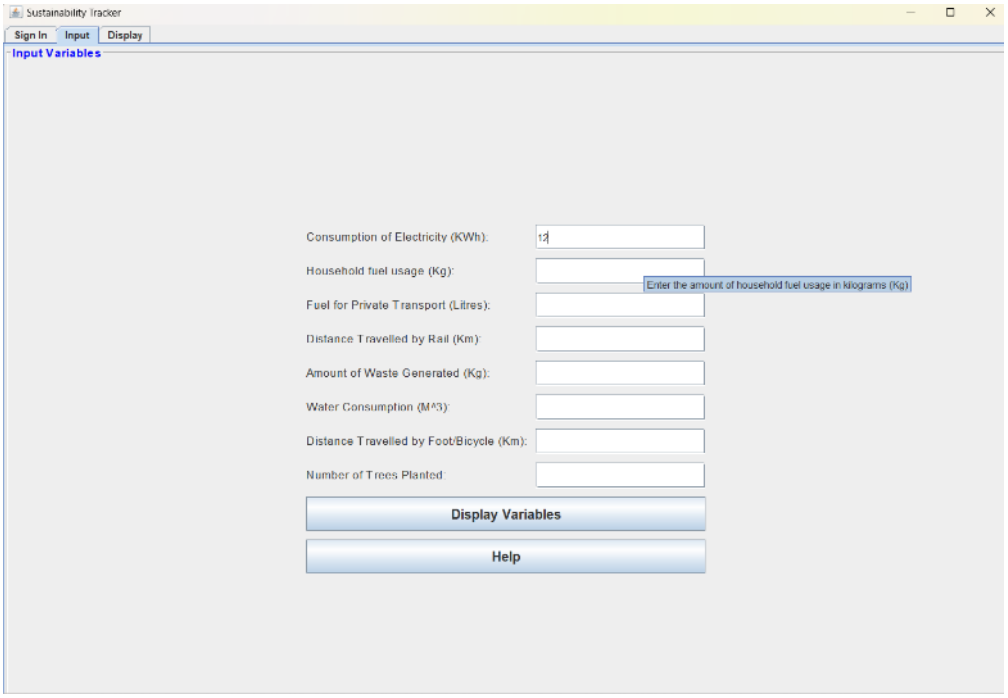

Fig-5 Improved Input page

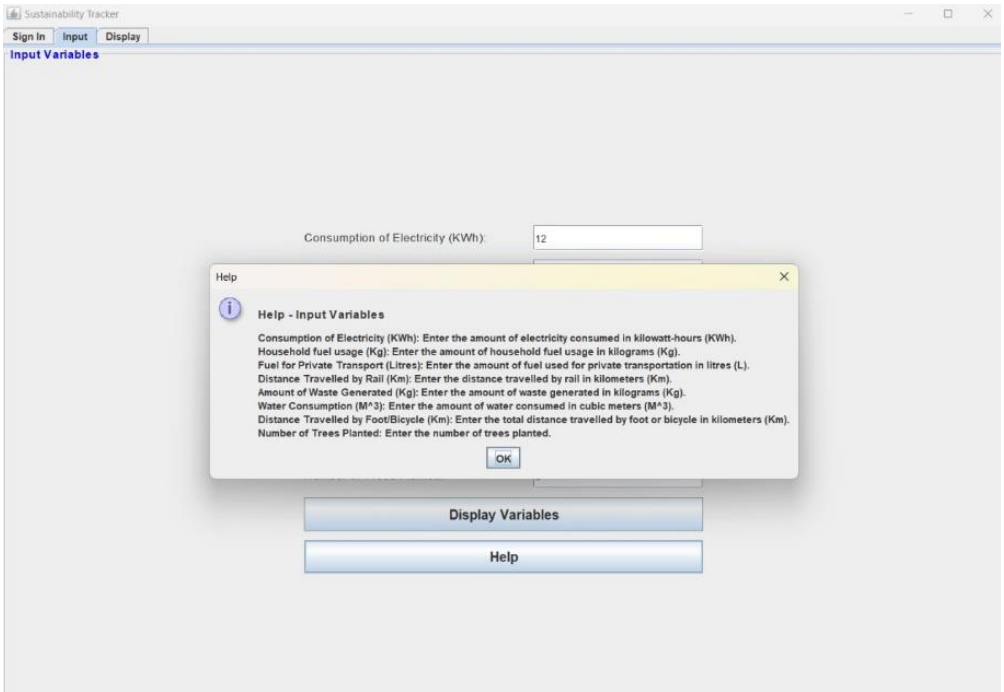

Fig-6 Improved input page

c) The output screen provides users with a comprehensive view of their carbon emission rate and sustainability index, coupled with an evaluation of their performance. This information is presented in a clear and concise manner, allowing users to understand their environmental impact and sustainability efforts at a glance. Additionally, personalized recommendations are offered to empower users to make informed decisions and further improve their sustainability practices.

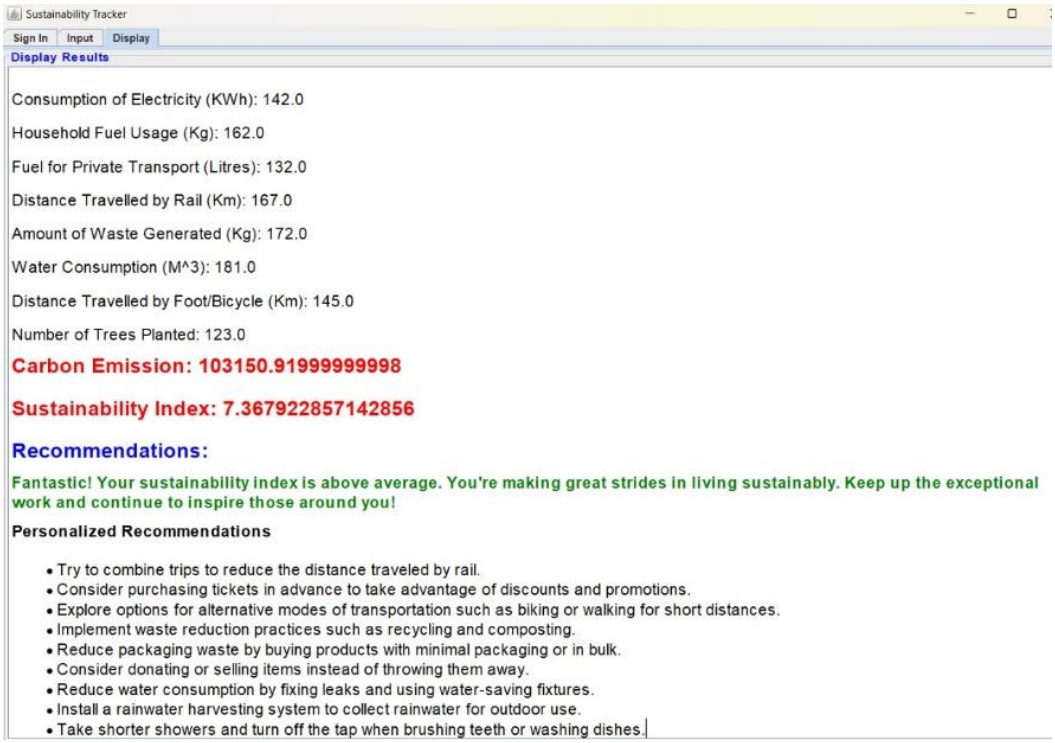

Fig-7 Improved Output display with personalized recommendation

Implemented additional feature: Personalized Recommendation

The personalized recommendations are generated based on the values entered by the user for various sustainability-related variables. These recommendations aim to suggest specific actions that the user can take to improve their sustainability efforts.

1. Method `generatePersonalizedRecommendations()`:
This method takes in the values of different variables related to sustainability, such as electricity consumption, household fuel usage, transportation methods, waste generation, water consumption, distance travelled by foot or bicycle, and the number of trees planted.

2. Customized Recommendations:
- For each variable, there are predefined thresholds or conditions.
- If the user's input exceeds or falls below these thresholds, specific recommendations are provided.
- These recommendations are appended to a StringBuilder object to form a list of personalized suggestions.

3. Example Recommendations:
- If the user's electricity consumption is high, recommendations may include using energy-efficient appliances, turning off lights when not in use, or considering renewable energy sources like solar panels.
- If the user generates a significant amount of waste, recommendations may suggest implementing recycling and composting practices, reducing packaging waste, or donating items instead of throwing them away.

- Recommendations are tailored to each variable and aim to address specific areas where the user can make improvements in their sustainability practices.

4. Displaying Recommendations:
    - The personalized recommendations are then included in the final HTML output that is displayed to the user.
    - When the user clicks the "Display Variables" button, the display Panel updates to show the total carbon emission, sustainability index, and these personalized recommendations along with the user's input values.

Future Development

One possible further improvement involves implementing a robust data storage system to maintain past input data and results, enabling the functionality of comparative analysis and evaluation. With this feature, users can compare their current performance with past benchmarks, facilitating deeper insights and informed decision-making process.