Bauhaus-Universität Weimar

SOFTWARE ENGINEERING

TASK 1: BUG FIXING - GROUP H

1. **Bug fixing**

   There were a total of 19 out of 35 test cases that were failing in the system handed over to us.

   Black box test debugging

   i) Failed test case: The system accepts empty username and password.

   How it was resolved: An error message appears that says "Username and password cannot be empty." when the sign in button is clicked, leaving the username and password fields empty.

   ii) Failed test case: The system accepts empty username

   How it was resolved: An error message appears that says "Username cannot be empty." when the sign in button is clicked, leaving the username field empty.

   iii) Failed test case: The system accepts empty password

   How it was resolved: An error message appears that says "Password cannot be empty." when the sign in button is clicked, leaving the password field empty.

   iv) Failed test case: The system accepts negative numbers as variables

   How it was resolved: System throws an error message "Values cannot be negative." when any of the values are negative.

   v) Failed test case: The calculation of the carbon emission yielded incorrect results

How it was resolved: The equation was rechecked and corrected.

v) Failed test case: The system accepts decimal numbers for number of trees planted

How it was resolved: An error message that says "Number of Trees Planted must be a whole number." appears when a decimal number is entered for the number of trees.

White box test debugging

vi - ix) Failed test case: The individual calculation of the carbon emission for electricity, house fuel consumption,private transport fuel consumption and number of trees planted were not in accordance to data collected and found in Initial_Parameter_Implementation.pdf

How it was resolved: The changes to the calculations were made as per the values in Initial_Parameter_Implementation.pdf

x) Failed test case: Negative sustainability index should throw an error message

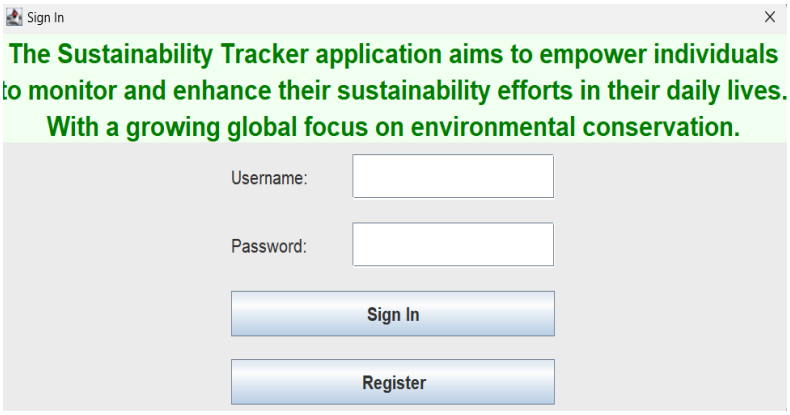
How it was resolved: A user is unable to enter negative values as input. Additionally, in the method to generate recommendations, an extra if statement has been placed, to handle negative indices, if they should occur. “Invalid index” will be printed.

xi - xix) Failed test case: Illogical recommendations due to arbitrary selection of limits

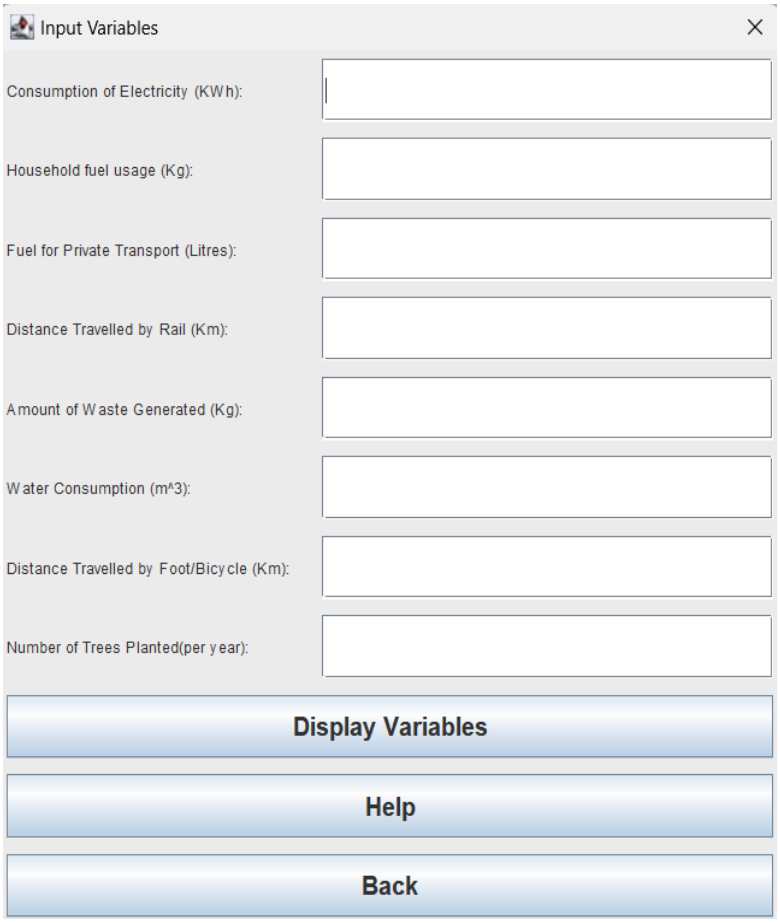
How it was resolved: Recommendations/advice is generated using the consumption of the “Green citizen” as a parameter. The data for this was made available to us by the previous group, who had conducted the testing in the document handover3.pdf

2. Software polishing

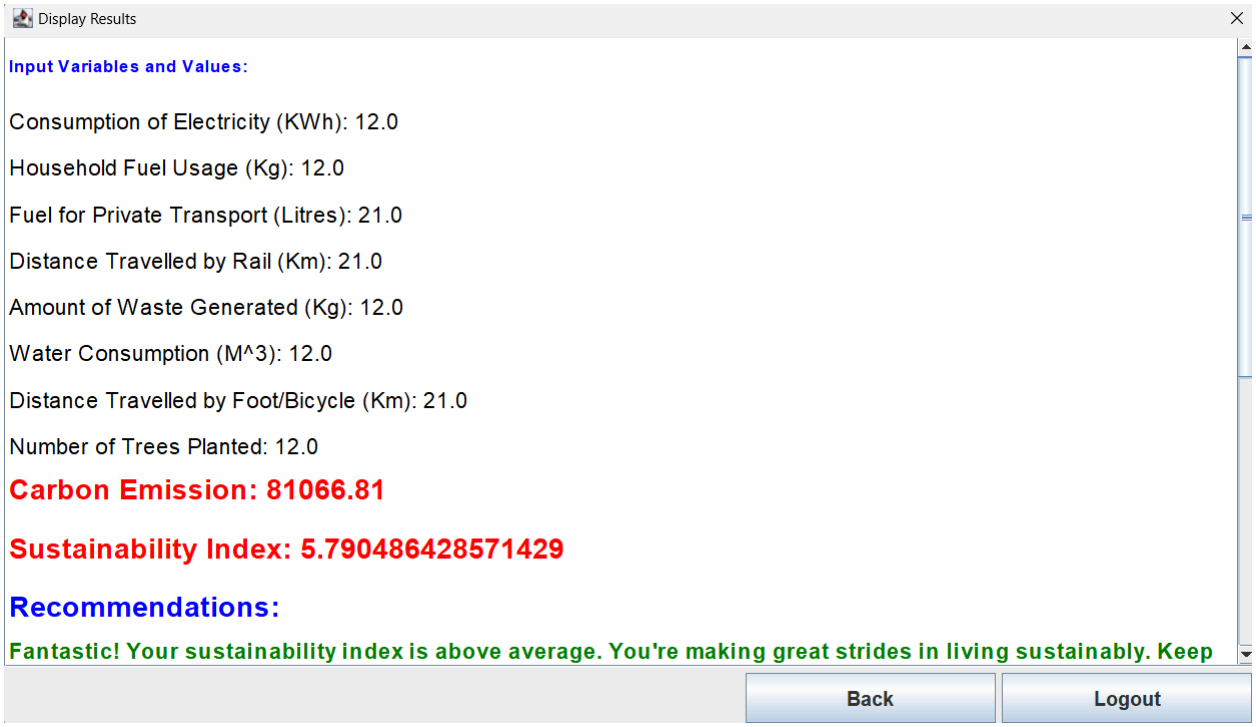
The system handed over to us had a tabbed interface, wherein a user could access the page to input variable values and view results and switch back. The interface has now been changed - Each tab has now been made into a panel that has back buttons for navigation.
This is the start sign in panel:



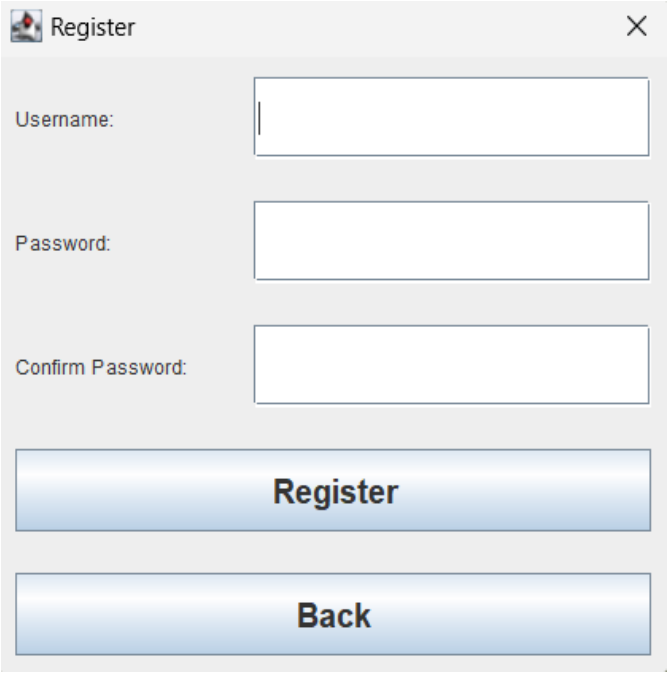
This is the input variable panel:



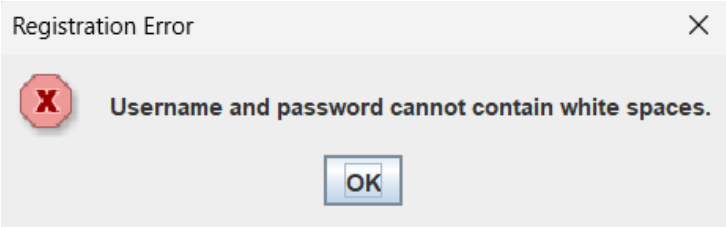
This is the display result panel:



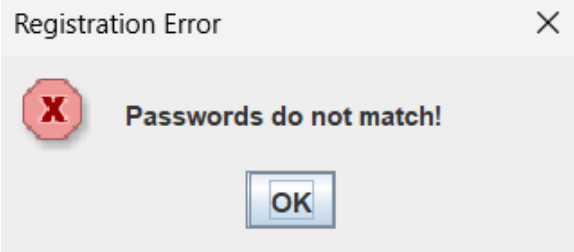
In the previous design, a user could "create account and sign in" by just clicking the sign in button - without registering or even entering a username or password. Now, the system has an option to sign in or register. This is the register panel:



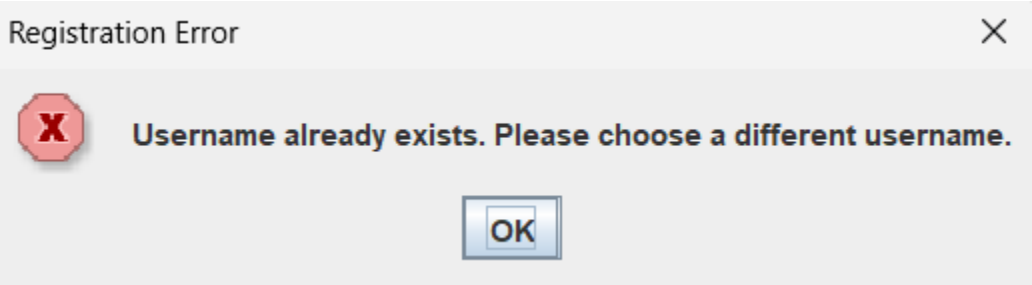
A new user can select the register option and create a username and password. After confirming the password, the user is registered. As part of the handover document we received from the previous phase(testing), there was no database to store user information. A database has now been created to save the username and password of users.
Additionally, a user now cannot sign in without registering first.
Appropriate error messages for the following events, while registering, have been created. When adding whitespaces to username/password,



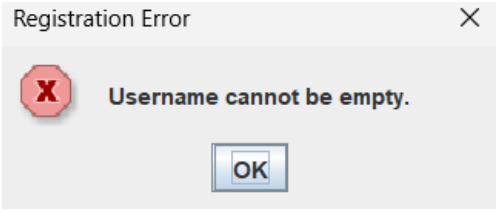
For mismatching passwords,

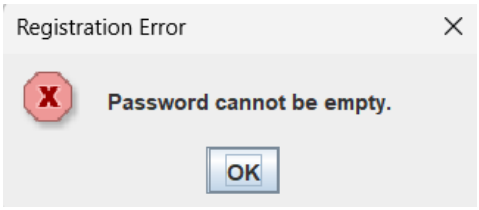


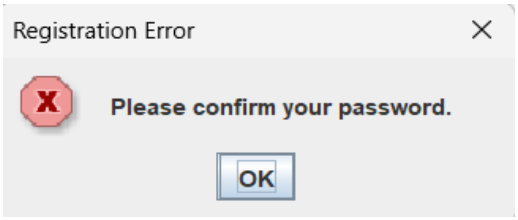
For creating a username that already exists,



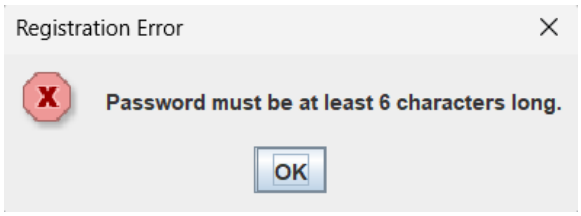
leaving a field empty,



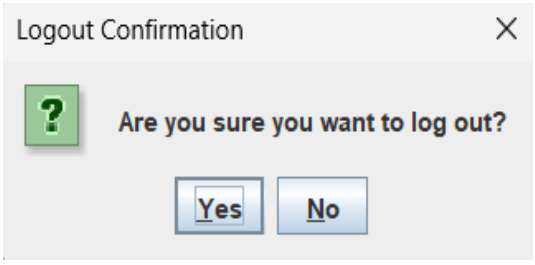




creating a password less than 6 characters,



A log out button has been provided at the end, when the user views results. This button prompts a confirmation question, to confirm whether the user wants to leave or not. If so, the application terminates.



REGRESSION TESTING

After the code was modified, the functionality of the system was checked, so that we did not lose the existing functionality of the system that was originally handed over to us.

Remaining issue:

- Closing of the panels (sign-in, register) takes place only by clicking the close button twice.

- Still unsure how to store data of user and improve their carbon footprint. Certain values, like planting trees, are supposed to be entered as a value per year. This calculation of carbon emission cannot then be effective to use on a daily basis.