Title: GreenChallenge

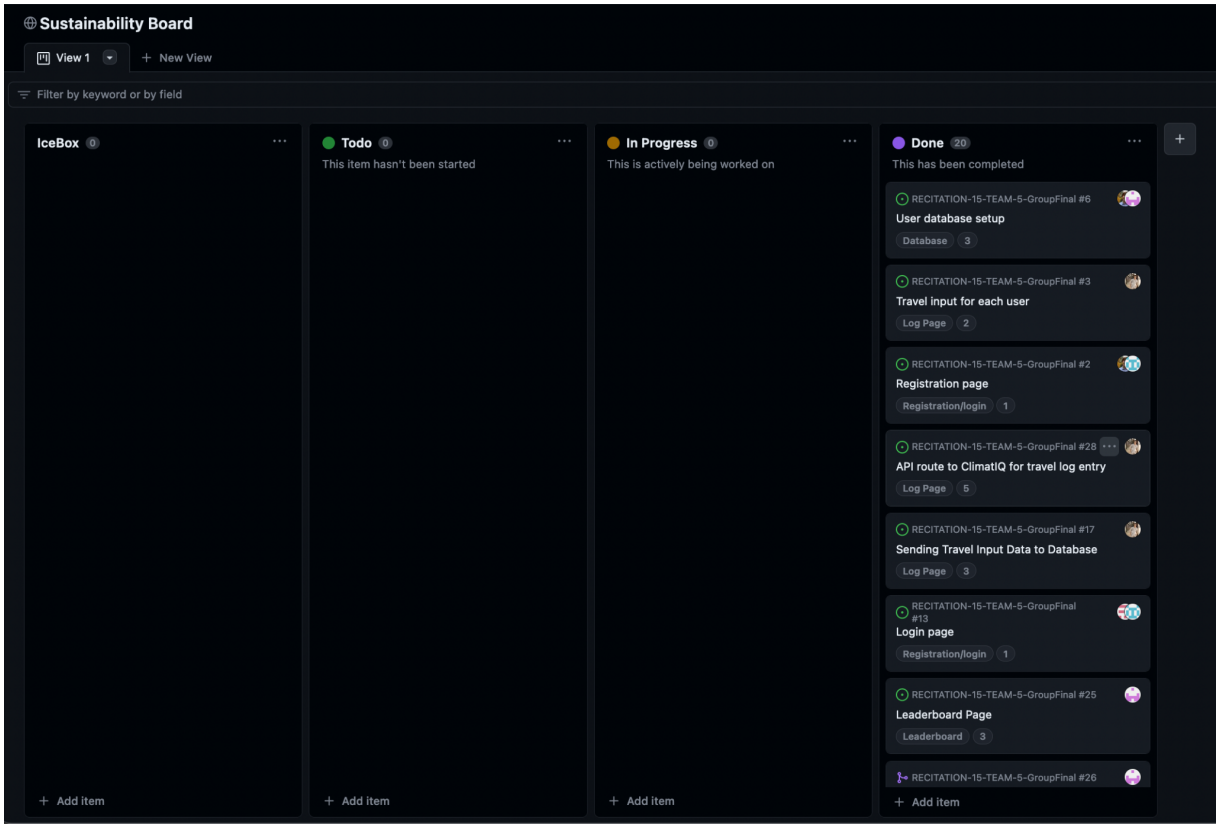
Team: Recitation 15, Team 5, Ethan Nguyen, Ian Keeler, Dayn Reoh, Ben Gardner, Joe Powers Dechar

Project Description:
GreenChallenge is a social-media-esque web application meant to entice people into reducing their carbon emissions. It's based on a carbon score system, where users start with a base level of 500 points which can increase with worse activities (such as driving) or decrease with better activities (like taking a bus), up to a maximum of 1000 or down to a minimum of 1. Users can compete against one another to try to beat carbon scores; the competition is enhanced by a leaderboard and the ability to view other user's profiles as well as customize their own.

Users can post log entries for a variety of everyday activities such as traveling, eating, and doing mundane things in the household, which allows users to see their emissions for a wide variety of decisions they make in life. However, the application does not rule how much a user should post, which allows users to be flexible about what they wish to track and avoids punishing a user for not using the application while also maintaining a mildly competitive environment to still encourage users to come back and use the application.

GreenChallenge is built off of ClimatIQ, an API that calculates carbon emissions for input, whose results are tracked alongside their impact to a user's carbon score.

Github Project Board: https://github.com/users/IanKeeler/projects/2



Video:
https://drive.google.com/file/d/1KXN42UBVtB_88ER7lauRgodrRfP7VWNv/view?usp=sharing

VCS: https://github.com/IanKeeler/RECITATION-15-TEAM-5-GroupFinal

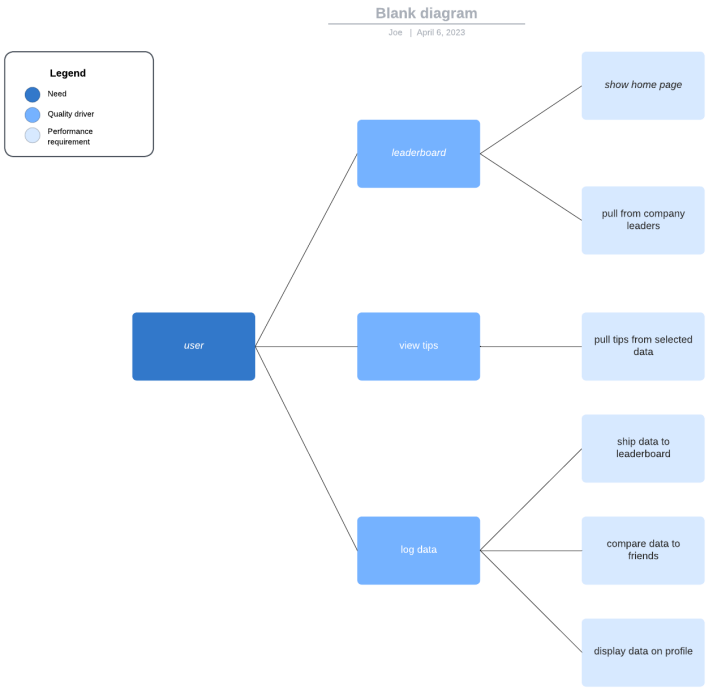
Contribution:

- Ethan: I was responsible for setting up the container. Other than that, I created the front-end UI and back-end implementations of the login, registration, search, about, and profile routines. I also helped build the UI for all other pages and standardized and built the site styling off Bootstrap, maintaining a CSS class usage guide throughout the project. On a meta level, I tried to help other people where I could with code and git issues, alongside helping organize deadlines and people. I also tested all user input routines and added input validation where necessary.
- Ian: I got the first working version of the database set up and also helped add functionality to our log page. I implemented the logout and home routes as well as added their functionality into our navigation system. There were also lots of issues that we had with our login system, so I spent a lot of time making sure that there weren't errors causing users problems with logging in. I also added lots of the user data that is displayed on our leaderboard and stats pages.
- Dayn: I did all of the API work which included working with ClimateIQ and implementing axios calls into our js file. I also implemented the functionality for our log page, where users input data for the API calls. I connected the user data and API results to our database schema using various SQL queries, and did some basic styling for the log

page. Additionally, I created our carbon score algorithm based on each user's carbon emissions, which is the main measurement for users to compete against each other in our application. I also handled various bug fixes in our log page, footer, database querying, and API calls.

- Ben: I designed the database schema including normalization and ER diagram. I wrote the SQL queries and connected them to the home/stats page API route to populate user data. I wrote the SQL queries that connect to the leaderboard page API route and implemented the leaderboard page. I wrote the SQL queries and connected them to the user profile page API route to show recent activity for users. I researched the ClimatIQ API that we used and wrote the readme for the application.
- Joe: I designed the initial layout of the home page as well as a bunch of front end and UI implementations like the footer and working with the navigation bar. I also did a lot of work with the final presentation slides as well as various project requirements like the architecture diagram and the UAT test plans.

Use Case Diagram:



Test Results:

- User 1: The user was given free reign over how to use the website with no prior instruction on what the project was about or how to use it. They started by creating an account and on logging in and being redirected to home checked the link to the about page and briefly read it. They looked around the website and were immediately enticed by the leaderboard/competitive system and wanted to rank high, which was positive. They used the site in an ideal user situation: they successfully logged in and registered

without issues (accounted for in positive test cases) and responded positively to feedback on successful input (another thing we thought about when thinking of test cases).

- User 2: During the testing with random user 2 on GreenChallenge, we observed that the user was exploring the various features of the web application. They created a profile, updated their personal information, and started tracking their carbon emissions by posting log entries for different activities. The user's reasoning for their actions was to understand how their everyday actions impact their carbon footprint and to find ways to reduce their carbon emissions. The user found the leaderboard feature and the ability to view other user's profiles motivating, which increased their engagement with the application. The user's behavior was consistent with the use case, as they were actively using the web application to track their carbon emissions and compete with other users. There were no significant deviations from the expected actions during the testing, and the user found the application intuitive and easy to use. Based on the testing observations, we did not make any changes to the application. However, we did receive feedback from the user on potential features they would like to see in the future, such as the ability to set personalized carbon reduction goals and receive tips on how to achieve them. We will consider this feedback for future updates to the application.
- User 3: on GreenChallenge, we observed that they had a hard time navigating and understanding the various features of the web application. They struggled to create a profile and update their personal information, which led to frustration and disengagement. The user's reasoning for their actions was to track their carbon emissions and reduce their carbon footprint, but they found the application difficult to use and understand. There was a deviation from the expected actions as the user was unable to use the application effectively due to the user interface issues. Based on the testing observations and feedback from User 3, we made some changes to the application. We updated the user interface to make it more intuitive and user-friendly. We also added more instructional content to guide users through the process of creating a profile and updating their personal information. Additionally, we added more resources and information about carbon emissions, their impact on the environment, and ways to reduce them. This was done to help users like User 3 understand the importance of tracking their carbon footprint and to motivate them to continue using the application. Overall, the changes we made to the application based on User 3's feedback improved the user experience and made it easier for users to navigate and understand the features of GreenChallenge.

Deployment:

http://recitation-15-team-05.eastus.cloudapp.azure.com:3000/home

This deployment can be recreated using Microsoft's azure platform.