HOMEWORK WEEK2

“Skywalker/Greenforce/Green Side/R2-D2 counts CO2” project

by Alline, Cherie, Dinara, Kasia and Simona

Task:

This week’s homework will be purely Project based. You need to work as a group and the homework will be submitted by one of the members of your group. List the other members of your group in the document, so that your instructor can mark every student.

1. Your group needs to decide what kind of project you are going to work on and lock in your decision.
2. You need to submit a free style paper that describes your project on a high level. Please cover the following questions:

1. What are you building?

We are building a solution that raises travellers’ awareness on the environmental impact of their trip and potentially nudges their behaviour towards greener transportation choices.

2. What does it do or what kind of problem does it solve?

Today, travel industry emission accounts for 11% of the global emissions. It’s estimated that emissions from travel and tourism will increase by 169% by 2050, contributing to 40% of the world’s carbon emissions if no action is taken (European Travel Commission Report, 2019). The release of CO2 from transport has a direct impact on global warming, and we often do not realise and cannot visualise what impact our small daily habits have on the environment.

According to the latest research (Booking.com Sustainability report, 2020) people are actually willing to shift their behaviour towards more sustainable travel options. Just over 80% of travellers surveyed stated they are willing to travel sustainably. However, it’s not easy as 72% stated they are not aware of their impact and do not know where to start.

Our group developed a possible solution to this problem, whose main function is to make the user aware of this issue by informing them of the CO2 emissions that come from their journeys. Our solution provides information related to the different

modes of transport and the CO2 footprint. The project aims to raise people's awareness and educate them about their environmental impact .

Our solution is very simple, but brings a lot of value to the traveller and the environment. It calculates the CO2 emissions based on transportation mode providing the traveller with the metrics. It provides valuable insights on the trip's impact compared to the impact the traveller makes without leaving the home destination. The emissions for the trip are compared to how much a traveller would have spent staying in the same home destination, which is calculated based on yearly CO2 emissions per capita per year in the home country. Based on the difference between the average daily emissions and the emission on the day of the trip the user is classified into categories based on behavioural choices and provided with feedback and advice on how to reduce the emission.

Classification :

- Carbon Negative or Carbon Neutral Impact - The difference is =0, or negative
- Minimal Impact - The difference is less than 25%
- Significant Impact - From 25-50%
- Severe Impact - The difference is more than 50%

Our solution is currently calculating the impact of the different means of transportation as this is the main contribution of the pollution to the travel industry, however it has the potential to be expanded to the trip as a whole, including accommodation and daily activities on the destination.

How is our solution different?

Facts and figures are great, but raising awareness does not necessarily change the behaviour. The approach we have chosen is to provide a fun environment with some familiar context that will prompt checking alternative options and sharing with friends to raise awareness. Wouldn't it be cool for the travellers to be able to actually enjoy and have fun at the same time minimising negative impact on the environment?

3. What are the key features of your system?

User focused features:

- Calculate the CO2 emission for a trip based on the transport mode.
- Show how the travel impact differs compared to the regular daily emissions adding the differentiating level and fun element.
- Get advice on offsetting based on the impact level .

Tech features:

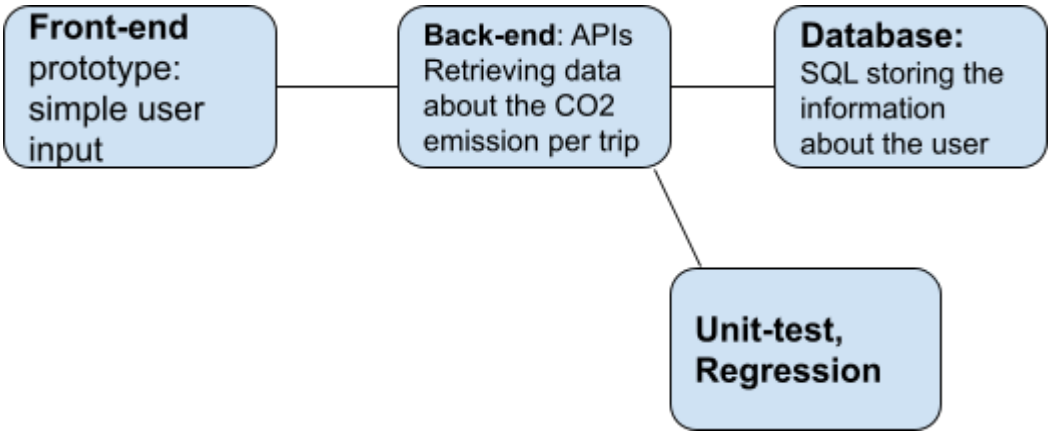
- Front end connects to the Python back end.
- Use of different REST APIs that interact with each other:
    - klimaat API
    - positionstack API

- climatiq API
- tequila API

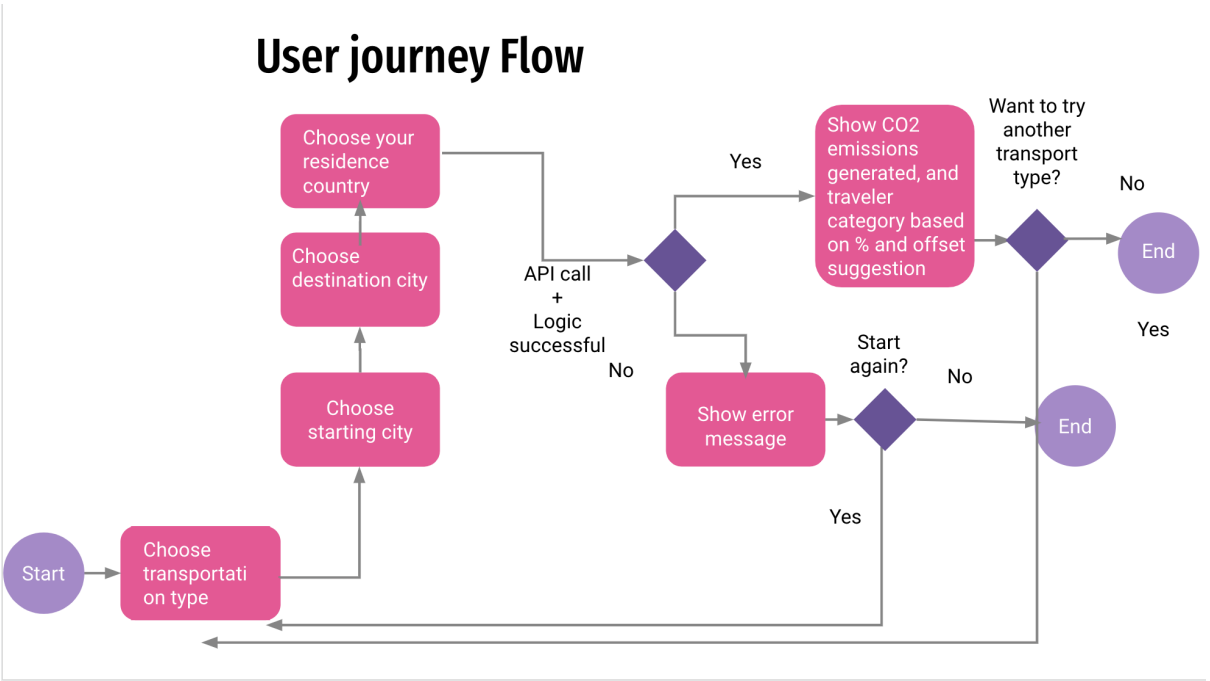
MySQL database and "MySQL connector" to interact with the DB using python
Backend: Python

4. **Provide a sample architecture diagram of your system (you can use PPT with squares and circles to demonstrate a simplified flow of your system):**

Our architecture diagram:



Our User journey:



5. **Describe the team approach to the project work: how are you planning to distribute the workload, how are you managing your code, how are you planning to test your system.**

- We discussed a number of ideas, and chose the one we liked, and shared our strong sides and tech stack and preferences in code writing.
- We have subdivided the main tasks and subdivided the team into smaller groups (the APIs, DBs, FrontEnd).
- We are moving in short sprints, and keeping it open for team members to move around the tasks on each sprint.
- We use Github to share our progress and codes, by creating branches for different parts of the solution.
- We are constantly updating each other on the progress and sharing insights.
- We plan to write unit and regression tests and finalise troubleshooting (with hypothetical complicated situations).