✈ Green**Flights**

User Manual

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Installing the application

To install the application and run the jar file, firstly ensure that Java SE Development Kit 11 is installed on the machine, and that the machine is running a Linux operating system. Next, extract the following JAR file from the given zip file:

```
seng202_2020_team4_3.jar
```

Finally, run the following command in a terminal window in the folder that the JAR file is stored in:

```
sudo java -jar seng202_2020_team4_3.jar
```

(Note: sudo may not be required, depending on the permissions of the user account and the installation directory).

Alternatively (and, if possible), open "seng202_2020_team4_3.jar" with Java Platform SE Binary.

Note: When running the application for the first time, a "databases" folder will be created in the directory of the JAR file.

Using the application

Home

The first page shown to the user once launching the application is the home page. Here, the user can click buttons to view a tutorial, show how the calculations are done or to exit the application. Additionally, and most importantly, there are clickable tabs at the top of the application for various screen of numerous functions.

Airlines, Airports, Routes and Flight Paths

This set of pages, accessible by the tabs at the top of the application, are tabs primarily filled with tables for uploading and inserting data into. All of these tabs have a search bar for filtering results and filters for different columns and categories of information, for example, filters for countries, cities and number of stops. Additionally, these tabs all feature a data set selector, which allows the user to swap between and upload to various data sets in the application. The red cross button allows the user to delete a selected tab. Also, the green plus button allows the user to manually enter a new record, alongside the name of the data set they'd like the data to be added to. The upload data button allows the user to upload data into a new specified data set from either a DAT, CSV or TXT file to the application in a specified OpenFlights (https://openflights.org/data.html) or Flight Planner (https://flightplandatabase.com/planner#) format, depending on the given tab. Data in the table is able to be sorted in either ascending or descending alphabetical order by any tab by clicking on any given column heading. Finally, each row of data is able to be double-clicked in order to bring up an interface to allow the user to view the full details of the selected airline, airport, route or flight path. Additionally, this interface allows the user to modify the data in the selected row.

Airports and Routes

A feature specific to the airport and route tabs is the ability to select a checkbox on certain rows of data under the "Select" column in the table. Selected airports and routes can be visualised in the map tab, however, airports and routes can also be visualised on the map tab through filters instead. Additionally, selected routes can be loaded into the emissions tab for calculated their total per-person emissions.

Map

The map tab allows routes and airports to be visualised via the Google Maps API. The first method is using filters to visualise routes and airports within their respective tables of data in the application. At the top-right, either route or airport filters can be selected to be viewed via radio buttons, and if required, the filters can be updated with the latest information from the data tables by pressing the circular refresh button. The filters can be selected using a similar interface as shown on the data table tabs, with the routes having the ability to filter by airline, airport and plane type, and the airports having the ability to filter by country. Pressing the "Apply Filters" button will allow the filtered routes or airports to be visualised on the maps interface. The second method for visualising route and airport information is using the selected routes from the airport and route tabs of the application. To visualise these, select either "Show Selected Routes" or "Show Selected Airports", depending on what the user would like to see, and which filter they have selected at the top-right of the tab. Finally, the map can be cleared at any time by pressing the "Clear Map" button at the bottom-right of the tab.

Emissions

Selected routes from the routes tab can be loaded into the emissions tab for calculating per-person carbon emissions by pressing the "Load Selected Routes" button. Routes in this table can be searched for using the search bar, sorted by alphabetically by selecting columns, and rows of routes can be deleted by selected the desired rows and pressing the red cross button. Once routes are loaded in, emissions are calculated on the right of the tab in terms of CO_2. By selecting the "Environmental Donation" and "Trees Equivalent" buttons at the bottom-right of the tab, values are able to be calculated in ways to offset emissions and suggested websites to donate to in order to offset these emissions are given.