

# Programming Project Group 4

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## Original goal:

We aimed to create an interactive interface for our project right from the start. Our goal was to allow users to click on any element on the screen to retrieve flight data. To achieve this, we decided to include multiple widgets on the main screen instead of navigating to separate screens for basic information. This way, users can view general data for the entire country and all airlines without selecting a specific state or airport, making it easier to navigate.

To enable state selection and data filtering, we placed an interactive map at the centre of the screen. Users can click on each state directly on the map to load specific data. We used an SVG file of the US for this purpose. Functionality was a top priority for us, so we incorporated various ways of displaying different datasets. This included pie charts to show the distribution of airlines running flights, as well as pie charts for diverted and cancelled flights, which showed the total number of flights in each category and their proportion to the total flights.

To maintain the theme of reliability, we also included a bar chart showing the overall reliability of airlines. This chart calculated the average difference between expected arrival time and actual arrival time for each airline. Additionally, we included a bar chart displaying the number of flights in different distance intervals of 1000 kilometres. Lastly, users had the option to view the busiest airports based on the number of flights in and out of them.

All these charts and data covered general information until a state was selected by the user. Users could select a state by clicking on it on the map, which would then take them to a screen with the state highlighted and a list of airports in that state, along with state-specific widgets displaying data. Further, users could click on individual airports to view inbound and outbound flights from the selected airport. Alternatively, users could also use a search bar on the home screen to enter the abbreviation of a state, such as NY for New York, which would bring up the same screen as if they clicked on the state, displaying specific widgets and airport lists.

## Challenges Faced:

As a team, we encountered various challenges throughout the project development journey. We learned and grew together as we navigated through different obstacles. At the outset, we struggled to work cohesively towards a common goal due to a lack of planning and communication. This resulted in some of our early code being unused as we didn't have a clear final end goal in mind. When we decided to develop an interactive map, we faced challenges with changing the location of the map due to the SVG file having vector locations for each state. Since none of us had prior experience with SVG files, it was challenging to understand how it worked.

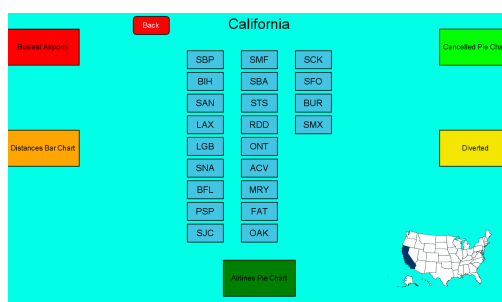
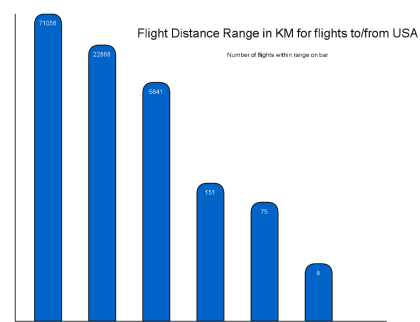
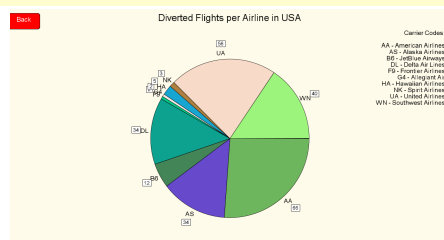
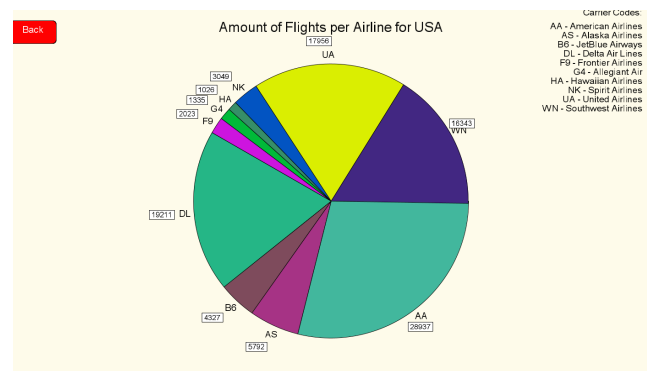
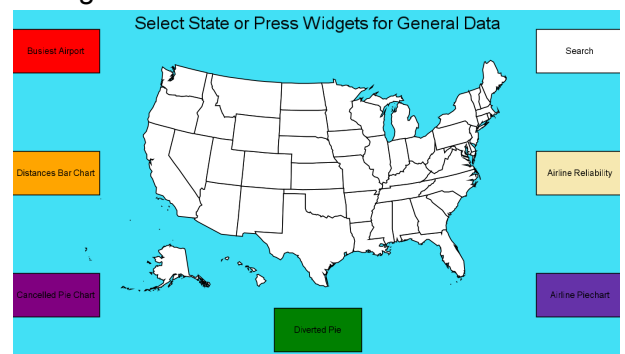
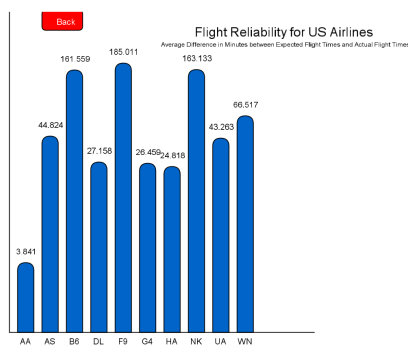
Similarly, loading in the data was a hurdle as none of us had worked with Hash Maps before. Moreover, the large size of the data file slowed down our program significantly, prompting us to switch to smaller data files for some widgets. Implementing pie charts also proved to be challenging as team members struggled with finding the angles for each sector.

One of our major challenges was team coding. We lacked experience in working in a team coding environment, resulting in issues such as hard-coding coordinates for buttons and widgets without considering differing screen sizes and poor variable naming standards. However, as a team, we learned from our mistakes and setbacks, and were able to overcome these challenges through collaboration and perseverance.

## Individual Contributions:

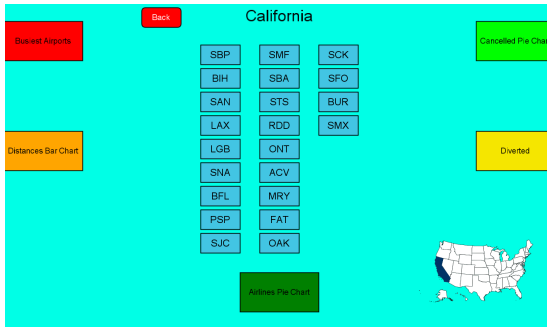
### Tudor

- Made Diverted Pie Chart, Airline Pie Chart, Cancelled Pie Chart, Airline Reliability, Distances Bar Chart and Busiest Airports Widgets
- Wrote code for loading in the main map
- Wrote code for loading in airports for a specific state
- Wrote code for loading general USA data into widgets



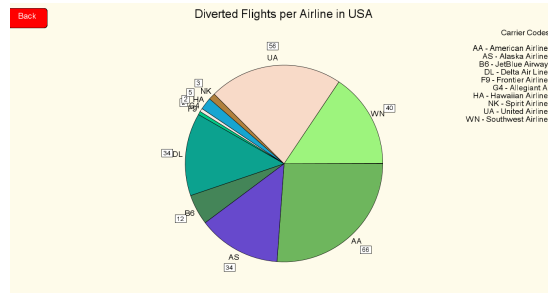
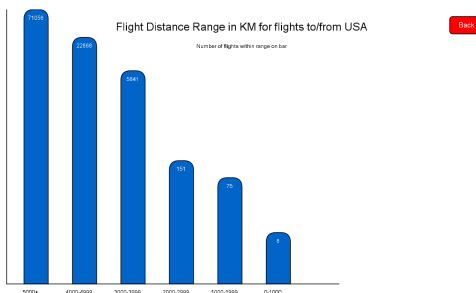
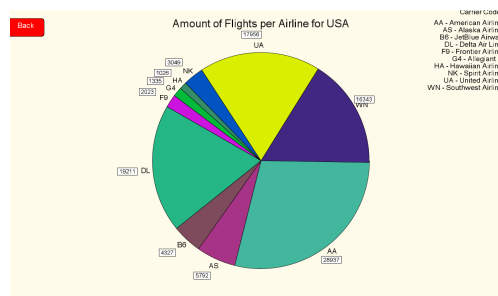
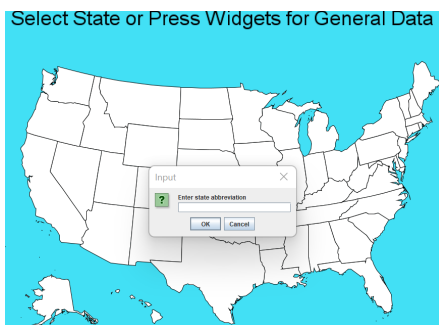
## Conn

- Wrote code for loading in airports for a specific state
- Wrote code to print out an array list of airport widgets for the selected state
- Made Arrivals and Destinations screen when an Airport is selected.



## Cillian

- Made search bar
- Wrote code to read in data from excel file
- Changed Bar Charts and Pie Charts work for state specific data



## Will

- Made the interactive interface
- Fixed everyone's code so it ran together and was optimised for our project
- Made Interactive Map, Map Screen State Screen and Loadscreen
- Made the class Mapscreen
- Made the class Statescreen
- Made launch screen for start of programme
- Worked on main to call the code
- Wrote code to distinguish between calling data for all of USA or state specific data
- Worked on general UI making buttons, to take user to different functions within the programme and to take user back to the previous screen
- Made code to get the full state name from selecting state on the main map
- Made code to visually highlight the selected state on a US map on the statescreen

