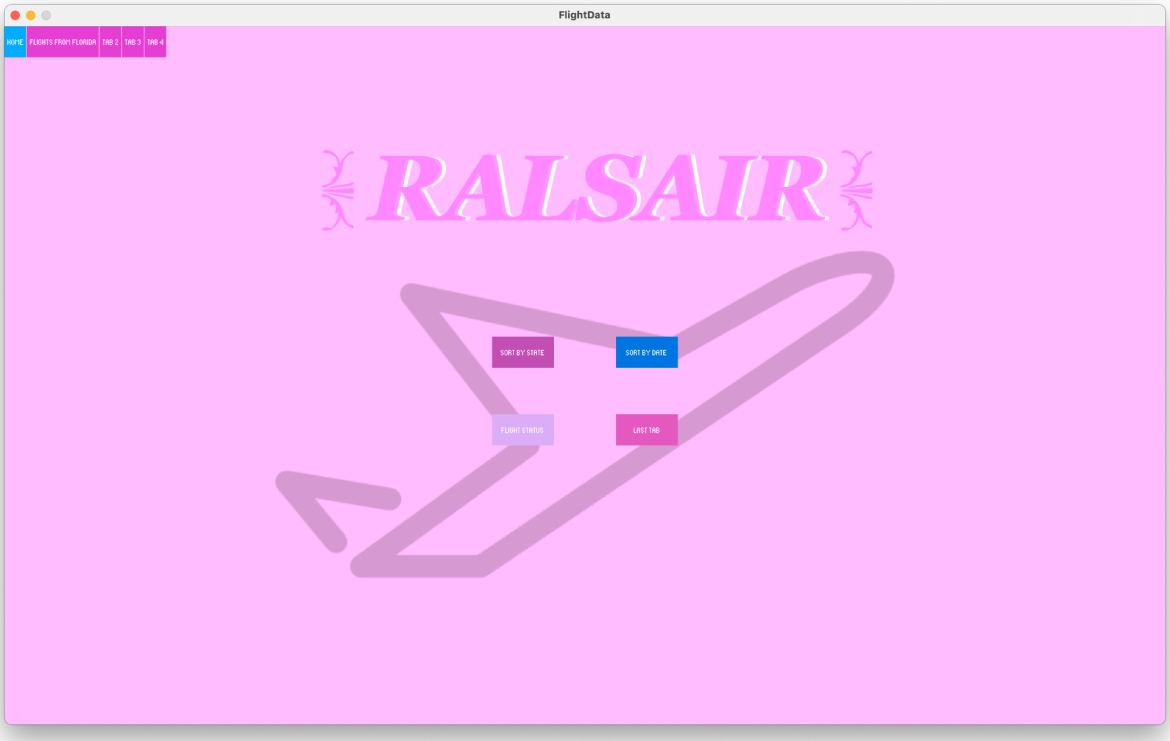
PROGRAMMING PROJECT REPORT

GROUP 7



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1ST YEAR PROGRAMMING PROJECT MODULE

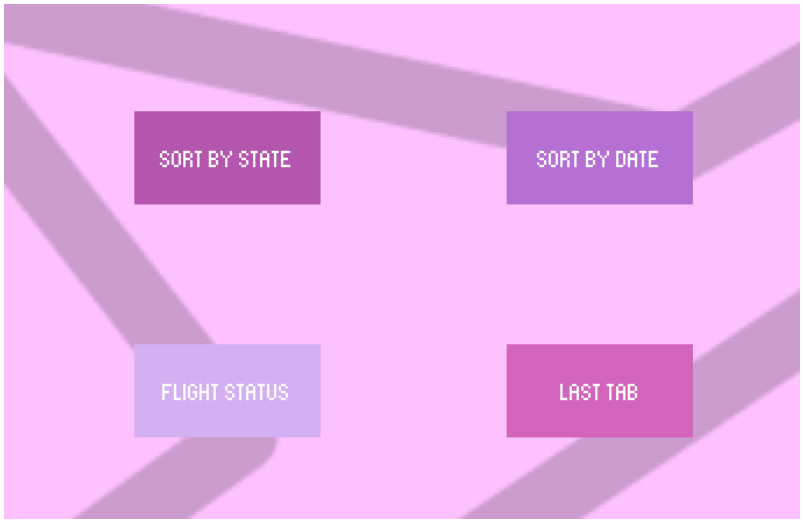
Group organization:

Every Wednesday at 2 pm, we held meetings to review our progress and plan our next steps. During these meetings, we discussed what we had accomplished so far and identified areas that needed further attention. After the meeting, we divided the tasks among ourselves to ensure that everyone had something to work on.

We maintained a group chat where we could communicate with each other about any challenges we encountered and offer assistance if needed. We found that this approach was particularly helpful when someone got stuck on a task. To optimize our productivity, we leveraged each person's strengths and expertise by asking for volunteers to take on specific tasks. This helped us to complete our work more efficiently and effectively.

Features implemented :

- **Buttons, tabs, image of flags with widgets, bar chart, pie chart, search bar, scroll**
- **SCREEN BUTTONS:**

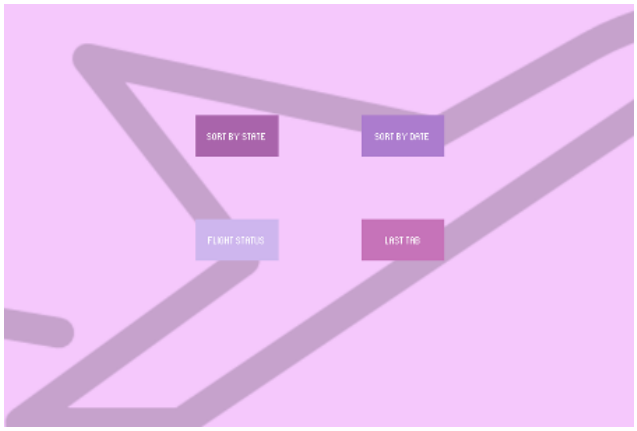


Problems encountered :

- During the development of our project, we encountered several challenges that required us to implement creative solutions. One of the difficulties we faced was the overlapping of flight details when implementing the "Sort by Date" feature. Our initial attempt to address this issue by incrementing the Y value resulted in unintended animation effects. However, we were able to resolve this problem by using two variables - y1 and y2 - to calculate the Y position of each row of data.
- Another challenge we faced was understanding how to properly implement the ControlP5 library, which differed from traditional Processing methods. Despite the limited information available, we were able to successfully integrate the library into our project.
- We also experienced some difficulties with the bar chart component. Initially, our calculations for bar height resulted in some bars appearing to levitate, and clicking on the bar chart tab caused misalignment of other tabs. However, we were able to address these issues by adjusting our calculations and resetting the alignment using the textAlign() function.
- In summary, our project presented several challenges that required innovative solutions. Despite these obstacles, we were able to successfully complete the project and deliver a functional and visually appealing final product.

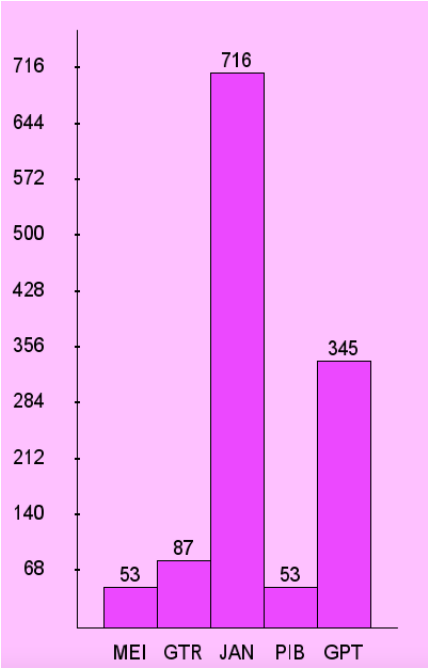
Outline of design:

Our project consists of a main home tab which takes us further into 4 tabs consisting of information about flights that was provided to us.

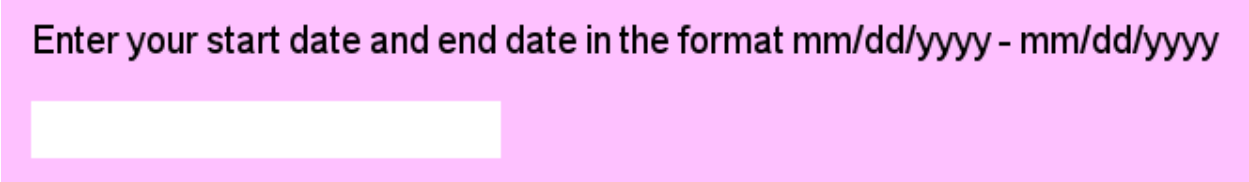


1. When the user clicks on the “Sort By State” button, a screen showing the flags of all 50 states is displayed, and the user is prompted to select a state by clicking on its respective flag.
- This was done by loading an image of states and creating 50 buttons. The dimensions of the buttons were defined right on the borders of the images, such that the flag images effectively acted as buttons themselves

- Clicking on any of the flags displays a graph showing the number of flights from each airport of the selected state. Above each bar is the textual representation of the value it represents, i.e., the number of flights from that airport.

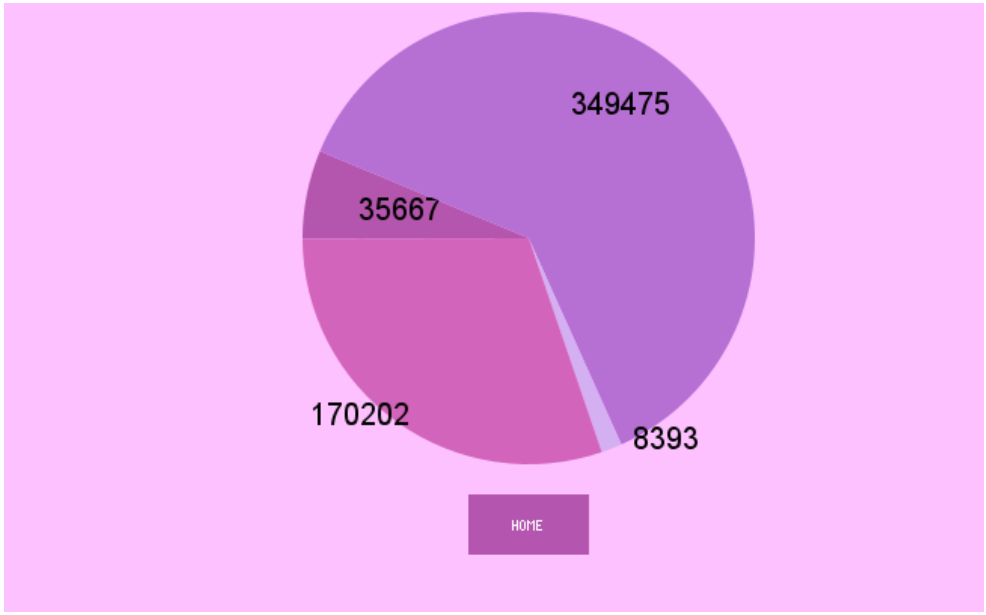


2. Second tab pressed (sort by date) will display a search tab in which you enter dates and flights which will take place in these dates will appear. You can press button back which will take you to home screen



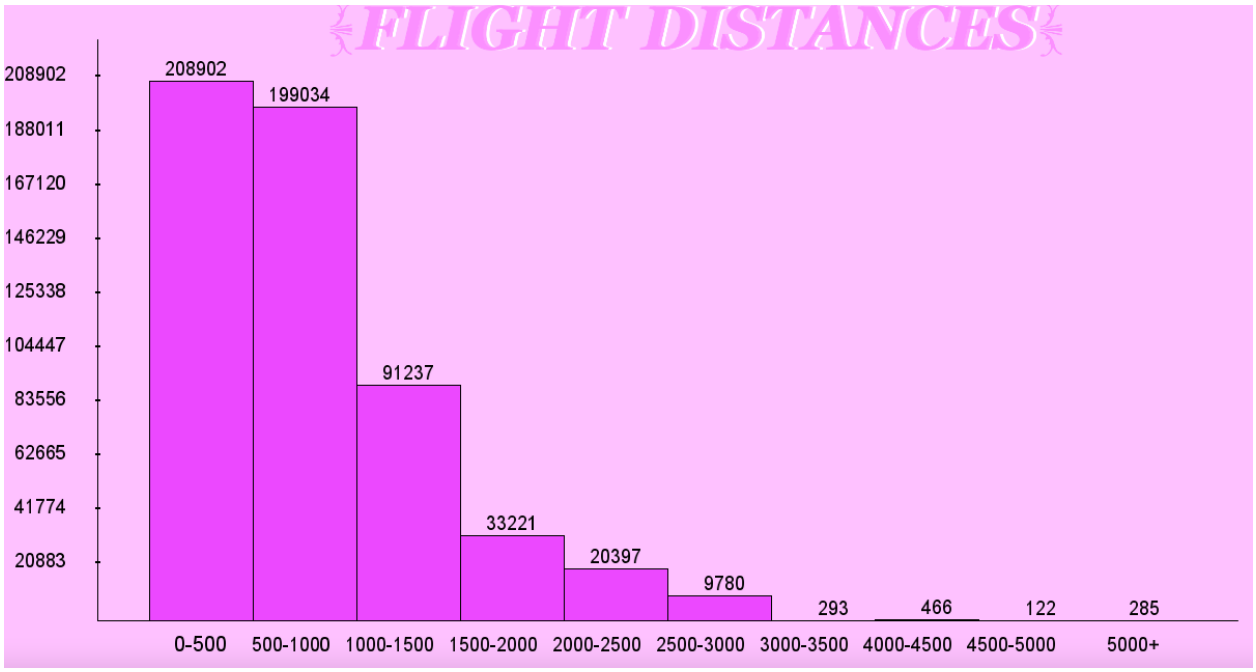
The details of all the flights within the specified range are displayed. As there are thousands of flights, they all cannot be displayed at once, so the user has the ability to use the “down” and “up” arrows on the keyboard to scroll through the data.

3. 3rd widget pressed (flight status) will take you to another screen in which you will see a pie chart which shows the proportion of flights that are cancelled, delayed, early, or on time. The amount of flights that correspond to the information can be seen on the chart itself. Clicking on the home button takes the user back to the home screen.



There are tabs present on the top left that help the user better navigate through the application. Upon clicking the buttons on the home screen (which takes the user to the respective screens), the corresponding tab gets highlighted to show which tab is currently active. Clicking on the home tab on the top left takes the user back to the home screen.

4. The 4th and last tab makes use of a histogram to show flight data sorted by distance. The X axis of the histogram contains various distance ranges and the Y axis shows the number of flights corresponding to those distance ranges.


FLIGHT DISTANCES
208902
188011
167120
146229
125338
104447
83556
62665
41774
20883
208902
199034
91237
33221
20397
9780
293
466
122
285
0-500
500-1000
1000-1500
1500-2000
2000-2500
2500-3000
3000-3500
4000-4500
4500-5000
5000+