

# PROGRAMMING PROJECT REPORT

*GROUP 7*



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1ST YEAR PROGRAMMING PROJECT MODULE

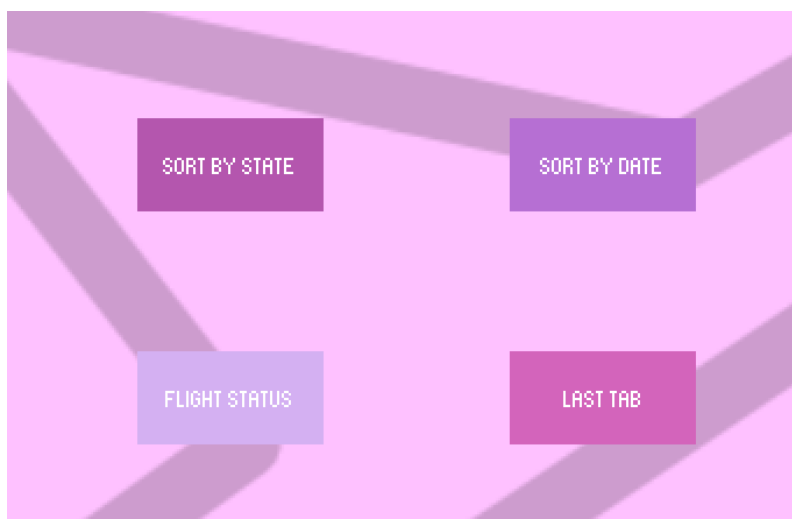
## Group organization:

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:

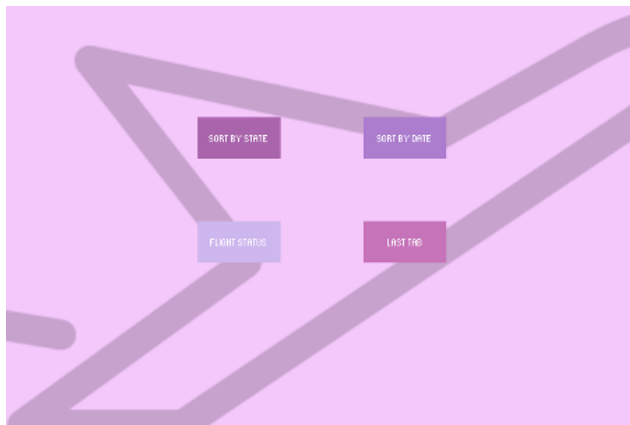


## Problems encountered :

- 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:

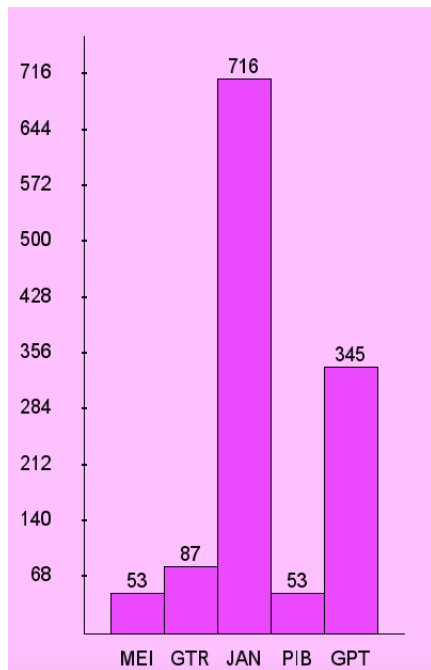
Our project consists of a main home tab which takes us further into 4 tabs consisting of information about flights that was provided to us.



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

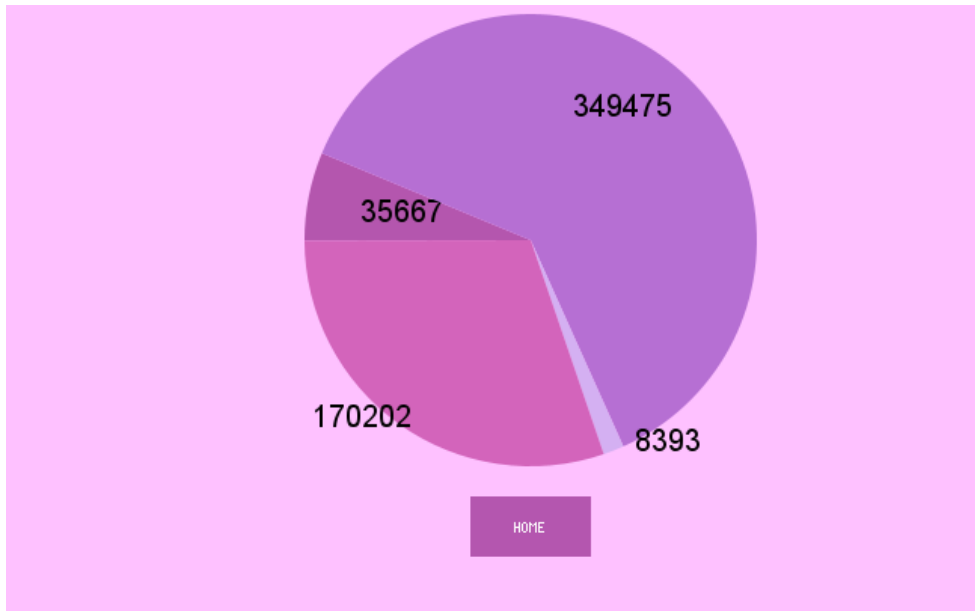
**Enter your start date and end date in the format mm/dd/yyyy - mm/dd/yyyy**

Your date range has 16685 flights in it. To search again, just enter a new date range.

Jan 1	JFK New York, NY to LAX Los Angeles, CA	dep: 0657	arr: 1012	distance : 2475.00
Jan 1	LAX Los Angeles, CA to JFK New York, NY	dep: 0857	arr: 1703	distance : 2475.00
Jan 1	STL St. Louis, MO to ORD Chicago, IL	dep:	arr:	distance : 258.00
Jan 1	ORD Chicago, IL to FLL Fort Lauderdale, FL	dep: 0937	arr: 1349	distance : 1182.00
Jan 1	CLT Charlotte, NC to STL St. Louis, MO	dep: 2300	arr: 0004	distance : 575.00
Jan 1	ATL Atlanta, GA to DFW Dallas/Fort Worth, TX	dep: 1624	arr: 1801	distance : 731.00
Jan 1	DFW Dallas/Fort Worth, TX to ATL Atlanta, GA	dep: 1225	arr: 1522	distance : 731.00
Jan 1	CLT Charlotte, NC to CVG Cincinnati, OH	dep: 2224	arr: 2340	distance : 335.00
Jan 1	STT Charlotte Amalie, VI to PHL Philadelphia, PA	dep: 1534	arr: 2006	distance : 1605.00
Jan 1	PHL Philadelphia, PA to MCO Orlando, FL	dep: 1801	arr: 2038	distance : 861.00
0 Jan 1	AUS Austin, TX to LAS Las Vegas, NV	dep: 2207	arr: 2302	distance : 1090.00
1 Jan 1	LAS Las Vegas, NV to AUS Austin, TX	dep: 0651	arr: 1118	distance : 1090.00
2 Jan 1	SJC San Jose, CA to DFW Dallas/Fort Worth, TX	dep: 0605	arr: 1131	distance : 1438.00
3 Jan 1	HNL Honolulu, HI to DFW Dallas/Fort Worth, TX	dep: 2126	arr: 0833	distance : 3784.00
4 Jan 1	DTW Detroit, MI to MIA Miami, FL	dep: 0606	arr: 0922	distance : 1145.00
5 Jan 1	LGA New York, NY to IAH Houston, TX	dep: 1908	arr: 2217	distance : 1416.00
6 Jan 1	MIA Miami, FL to DTW Detroit, MI	dep: 2125	arr: 0013	distance : 1145.00
7 Jan 1	TUS Tucson, AZ to DFW Dallas/Fort Worth, TX	dep: 0726	arr: 1045	distance : 813.00
8 Jan 1	PHL Philadelphia, PA to DFW Dallas/Fort Worth, TX	dep: 1912	arr: 2217	distance : 1303.00
9 Jan 1	JFK New York, NY to MIA Miami, FL	dep: 0856	arr: 1152	distance : 1089.00

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.

