Report

Team 16 report on CSU11013 programming project.

Team Members:

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For project setup please read the ReadME file located in the project repository.

Link: <https://github.com/davidtcd/programming_project_TEAM16.git>

For the design of this project, we wanted to make it simple and efficient. We focused a lot on user input and queries and wanted the user to have as many options as possible when viewing the data. All the buttons, dropdowns and other functions are all labelled so the user knows exactly what everything does. We started off with a selection screen where the user can choose which dataset they wanted to view. Whether it be 2k all the way to the full one. Upon choosing a dataset the user is then brought to the mainscreen which is just a standard tableview of the dataset chosen. Across the top of the screen there is a navigation bar which allows the user to switch in-between “tabs” like on a search engine such as google. Each “tab” corresponds to a different screen with a different data visualization being displayed. As previously stated, the user has a ton of options to manipulate the table. Such as choosing rows, sorting the data, or viewing one column at a time. (e.g., flight dates). On top of the table-view, we decided to implement 5 more screens to display the data, these are:

* Bar Chart Screen
* Pie Chart Screen
* Tree Map Screen
* Line Graph Screen
* Search Screen

Bar Chart Screen:

On this screen, one main chart is always displayed, along with 7 buttons, a dropdown and a box containing the mean, mode and median of each chart. The first button allows the user to flip the axes of the chart, the next 2 allow the user to switch in-between charts, the next 2 buttons allow the user to switch in-between a chart’s pages (each chart has max 50 bars being displayed at once so charts with more than 50 categories have multiple pages to display the other categories). And the last 2 allow the user to change the bar colour. The dropdown allows the user to sort the data from low to high and vice versa. The user can also switch back to the original chart before sorting. In the bottom left corner, there is a page number, so the user knows what page they are on, there is also a title above each chart.

Pie Chart Screen:

On this screen, one main pie chart is always displayed; there are many buttons on the right-hand side of the screen where the user can choose what data the pie chart is supposed to display. For example, the user can choose a pie chart showing the different flight dates, cancelled vs non cancelled flights or the airline carrier codes.

Tree Map Screen:

This screen has a main tree map that is always displayed. A tree map is a big rectangle with a bunch of smaller boxes inside it corresponding to the various categories within a data column. The box's size indicates the frequency of that category (i.e., the bigger the more present). Each box has a random colour assigned to it to allow the user to distinguish between different categories. On the right-hand side of the screen there are 2 buttons and a dropdown. The buttons allow a user to scroll through all the different tree maps and the dropdown allows the user to choose a particular tree map. There is also a title above the tree map too.

Line Graph Screen:

This screen also has a main line graph that is always displayed. On the right side of the screen there are 2 buttons to scroll through all the different line graphs. There is also a title above the main line graph.

Search Screen:

Along the top of this screen there are many boxes where the user can type in a particular category for a specific column (e.g. a particular date). Upon typing the category, the program returns all rows with that category from the dataset.

To ensure equal continution for each member, each member worked on a particular screen and one person worked on reading in the data.

Reading in data:

Our data is pre-processed into a bunch of files and sorted to improve performance. We also have a dataset class that contains methods to manipulate and extract that data (e.g. get the occurrence amount of a particular category).Below is the contribution for each team member.

David Sietko:

Designed and wrote all the methods for the bar chart screen and wrote the original navigation bar class.