Project 2 User Manual

Develop a Graph ADT that includes a set of vertices and weighted edges, specifically tailored for managing flight routes. The vertices would represent different airports, and the edges would signify the direct flight paths between them, with their respective costs. This ADT could be useful for managing airline schedules and ticket pricing, optimizing flight routes to minimize costs or maximize profits, and providing real-time updates to travelers on flight delays and cancellations. Additionally, this ADT could also facilitate the analysis of air traffic patterns and help identify potential areas for expansion in the airline industry.

A)Input Requirements and Restrictions

● When prompted with "WELCOME TO GRAPH GRATIFICATION:", please only input integers between 1 to 15. Any other inputs will be considered invalid.

● When prompted with "Try Again(N/Y)?", please only input n, N, y, or Y. All other inputs will be considered invalid.

B)Output

Loading Data:

Upon execution, the program starts by presenting the user with a menu of options that allows the user to perform various operations on the graph

Main Menu:

The user can choose from the following menu options:

1. Read in a file and construct a graph.
2. Print the graph.
3. Check if a city is in the graph.
4. Check if a flight between two cities exists in the graph.
5. Check if a bidirectional flight between two cities exists in the graph.
6. Add a city to the graph.
7. Delete a city and its associated flights from the graph.
8. Add a unidirectional flight between two cities to the graph.
9. Add a bidirectional flight between two cities to the graph.
10. Find the shortest path between two cities.
11. Find the cheapest path between two cities.
12. Find the shortest round-trip path starting and ending in a city.
13. Find the cheapest round-trip path starting and ending in a city.
14. Print all the paths between two cities.
15. Quit the program.

The user can input an option number to execute the corresponding operation on the graph. If your input is invalid, you will have unlimited chances to re-enter. For example, if you input "O" or "25", the console will prompt you to try again.

After executing the operation, you will be given unlimited chances to go through the menu options as long as you don't enter anything outside of 1 to 14 . If you input "15", the program will terminate and display a farewell message. If you input "3", you will be given the chance to display the graph again. Any other inputs will be considered invalid and you will be prompted to try again.