Section Handout 8

Based on a handout by Brandon Burr, Mehran Sahami, and Patrick Young

Your task for this section is to write a program that reads in a file containing flight destinations from various cities, and then allow the user to plan a round-trip flight route. Here's what a sample run of the program might look like:

```
FlightPlanner
File   Edit

Welcome to Flight Planner!
Here's a list of all the cities in our database:
 San Jose
 San Francisco
 Anchorage
 New York
 Honolulu
 Denver
Let's plan a round-trip route!
Enter the starting city: New York
From New York you can fly directly to:
 Anchorage
 San Jose
 San Francisco
 Honolulu
Where do you want to go from New York? Anchorage
From Anchorage you can fly directly to:
 New York
 San Jose
Where do you want to go from Anchorage? San Jose
From San Jose you can fly directly to:
 San Francisco
 Anchorage
Where do you want to go from San Jose? San Francisco
From San Francisco you can fly directly to:
 New York
 Honolulu
 Denver
Where do you want to go from San Francisco? Cleveland
You can't get to that city by a direct flight.
From San Francisco you can fly directly to:
 New York
 Honolulu
 Denver
Where do you want to go from San Francisco? New York
The route you've chosen is:
New York -> Anchorage -> San Jose -> San Francisco -> New York
```

The flight data come from a file named `flights.txt`, which consists of several lines of text, each of which lists a single flight. Each flight is represented as the source city, followed by a space, then an arrow written as `->`, another space, and then the name of the destination city. For readability, the file may contain blank lines, which your program should just skip over. For example, the data file used to produce this sample run appears below.

```
San Jose -> San Francisco
San Jose -> Anchorage

New York -> Anchorage
New York -> San Jose
New York -> San Francisco
New York -> Honolulu

Anchorage -> New York
Anchorage -> San Jose

Honolulu -> New York
Honolulu -> San Francisco

Denver -> San Jose

San Francisco -> New York
San Francisco -> Honolulu
San Francisco -> Denver
```

Your program should:

1. Read in the flight information from the file `flights.txt` and store it in an appropriate data structure.

2. Display the complete list of cities.

3. Allow the user to select a city from which to start.

4. In a loop, print out all the destinations that the user may reach directly from the current city, and prompt the user to select the next city.

5. Once the user has selected a round-trip route (i.e., once the user has selected a flight that returns them to the starting city), exit from the loop and print out the route that was chosen.

A critical issue in building this program is designing appropriate data structures to keep track of the information you'll need in order to produce flight plans. You'll need to both have a way of keeping track of information on available flights that you read in from the `flights.txt` file, as well as a means for keeping track of the flight routes that the user is choosing in constructing their flight plan. Consider how both `ArrayList`s and `HashMap`s might be useful to keep track of the information you care about.