Assignment #4, CS111

Fall 2007, Due 11/16/2007

Linked Lists

You are to write a program to keep track of information about cruises for the cruise ship line: Crazy Cruises. You will implement a doubly linked list to keep track of cruise ships: the information for each cruise ship will contain the following:
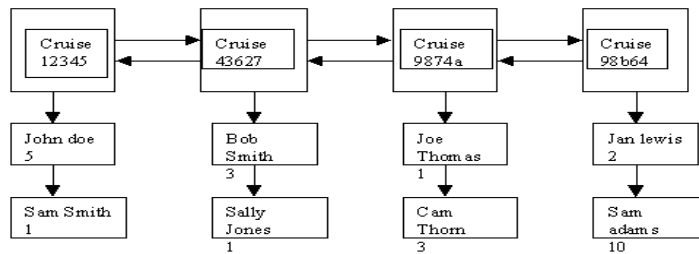
Cruises ADT:

- o   Cruise_id: unique integer
- o   Ship name: String
- o   Date of Departure: String
- o   Port of Departure: String
- o   Maximum passengers: Integer #, indicating maximum capacity.
- o   # of passengers booked: Integer #, initially zero, indicating the number of passengers booked for a cruise.
- o   Passenger list: ONE WAY linked list, containing one "element" for each passenger booked on the cruise. For ease you can use and modify sLinkedList.java to implement the basic one way list.

Passengers ADT:

- o   Last Name: String
- o   First Name: String
- o   #tickets: integer number of passengers in the party.

This program implements a doubly linked list which contains a one-way linked list.

Your main program should prompt the user for the name of an input file containing the data about cruises. Your program will open this file and build the initial doubly linked list of cruises. Each line in the file contains:

Cruise ID, Ship name, date of departure, port of departure, and maximum # of passengers.

As each line is read from the input file, should create an instance of your Cruise ADT, and insert it into the doubly linked list in ascending order by Cruise ID. Once the file empty, your program then should provide the following interactive commands in the form of a menu:

Add: **Adds information about a new cruise. Cruises are stored in ascending order by cruise #. Your program should prompt the user for the information pertinent to a new cruise.**

Cancel: **Given a cruise #, this cancels a cruise, prints the number of passengers affected, prints the passenger list of the canceled cruise, and deletes the cruise object.**

Print all Cruises: Prints the information for all cruises in ascending order. Includes all basic cruise information <u>excluding</u> the passenger list.

Print in all in Reverse: Prints the information for all cruises in reverse order. Includes all basic cruise information <u>excluding</u> the passenger list.

Print a Cruise: This receives a cruise #, and prints all information for a cruise INCLUDING the passenger list.

Add Passenger: Given the cruise number, passenger name, and # of passengers in the party, this adds a new passenger to the specified cruise. The number of available tickets is decremented by the number in the party. The number of tickets requested is greater than the number available, an error message should be printed, and the passenger should not be added.

Delete Passenger: Given the cruise number and the name of a passenger, this function locates the passenger, deletes him/her from the passenger list, and increments the number of available seats on the cruise by the number of passengers in the party.

<u>Your program should prompt the user for all information needed by your operations.</u>

You will receive more hints as the dead line approaches.