FACULTY OF COMPUTING

20232024/1

SECJ2013 – DATA STRUCTURES & ALGORITHMS

SECTION 02

GROUP ASSIGNMENT 1 : SEARCHING AND SORTING

AIRLINE RESERVATION SYSTEM

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1. Objective

- To display initial customer booking list
- Able to sort customer booking list based on name, date of departure, destination and airlines
- Able to search for information in the list based on the term provided
- Can display sorted list based on user input
- Can display related information based on user search term
- To apply data structure operations of sorting and searching in the system

2. Synopsis

The system's goal is to manage a list of flight reservation specifics. This system is made to arrange and look for data in the database according to what the user wants. To keep customer data, we construct a class in the programme named "Cust." Upon system startup, the user will get an immediate notice asking for feedback and providing a choice for them to make. On the booking list, users may do searching and sorting operations.

3. Class Design

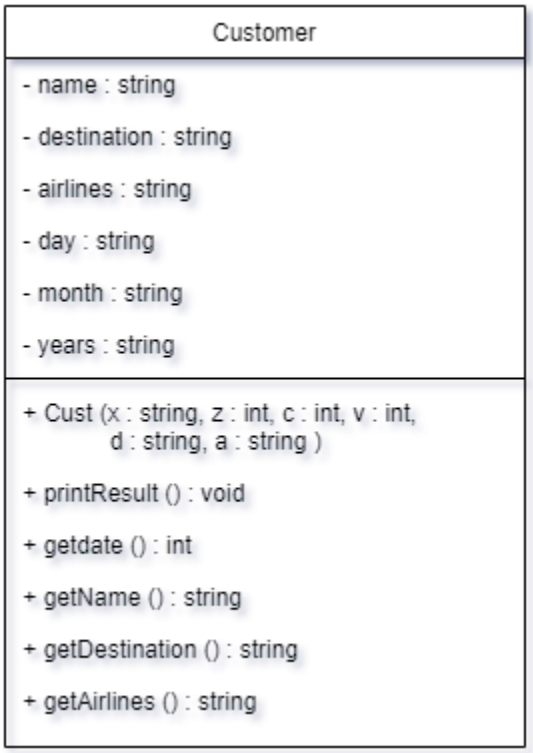

Figure 1: class diagram

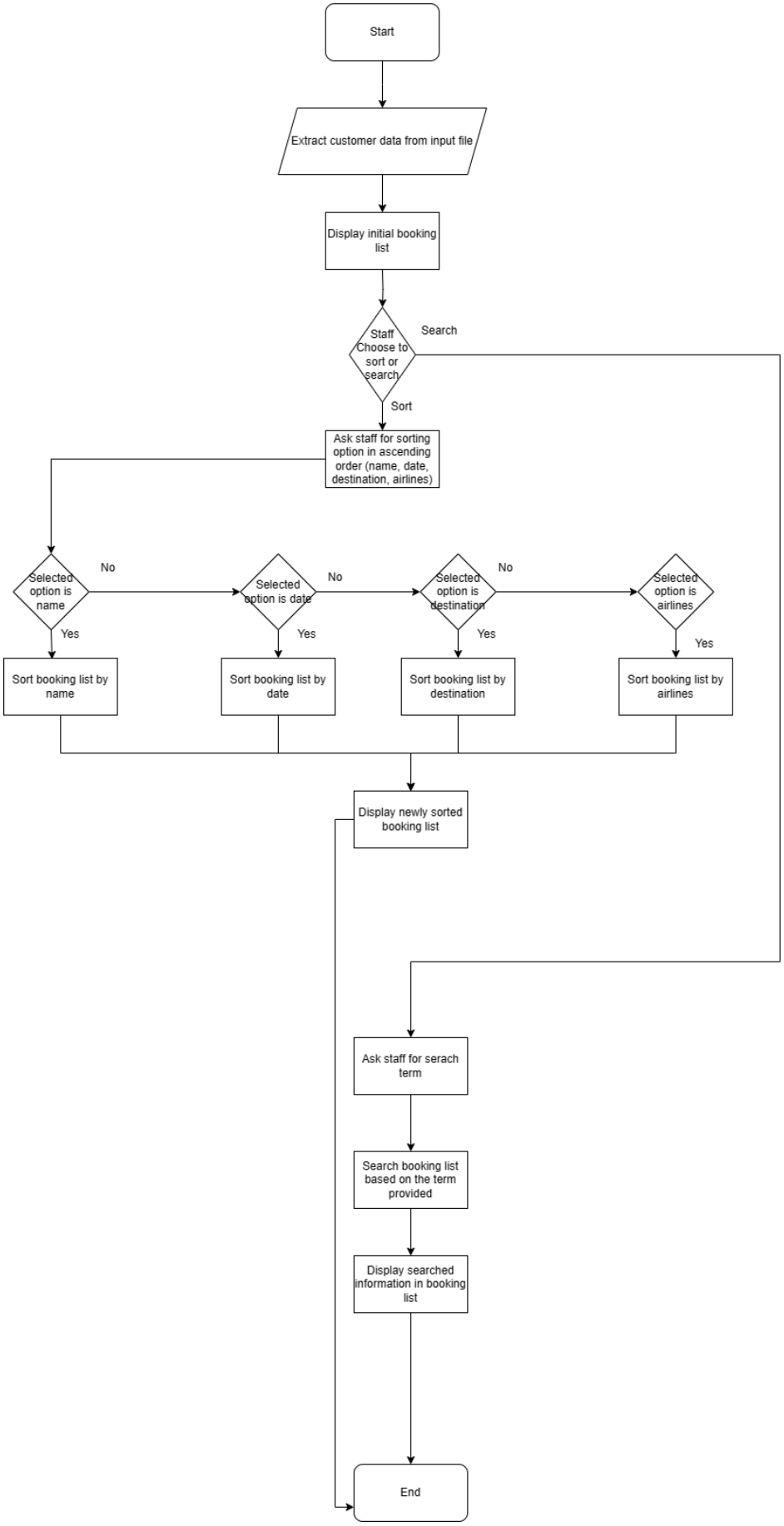
Start
Extract customer data from input file
Display initial booking list
Staff Choose to sort or search
Search
Sort
Ask staff for sorting option in ascending order (name, date, destination, airlines)
Selected option is name
No
Yes
Sort booking list by name
Selected option is date
No
Yes
Sort booking list by date
Selected option is destination
No
Yes
Sort booking list by destination
Selected option is airlines
Yes
Sort booking list by airlines
Display newly sorted booking list
Ask staff for serach term
Search booking list based on the term provided
Display searched information in booking list
End

Figure 2: flowchart of the program

4. Implementation of sorting

The application sorts the array of Cust objects according to name, date of booking, destination, and airline criteria, respectively, using independent functions (sortname, sortdate, sortDestination, and sortAirlines). The Bubble Sort algorithm is used in the programme. Through each iteration of the array, the sorting functions compare neighbouring elements and, if needed, swap them.users can view sorted lists of client reservations by using these sorting routines when they choose choices 2, 3, 4, or 5 from the menu in the main() function.

5. Implementation of searching

For the searching function in the system, we implemented a sequential search method for the user to search for specific information such as to find customers with the name 'Iman'. Users are able to input their choice to find details based on their need and the system will display the output correctly based on the input(6, 7,...9) entered by the user and if the information does not exist the system will display an error message. We implemented 4 functions to use for searching purposes which are searchByName(), searchByDestination(), searchByDate(), and searchByAirline().