Assignment 1 Report

by Eddy Koh Wei Hen

FACULTY OF COMPUTING

UTM Johor Bahru

FACULTY OF COMPUTING

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SEMESTER 1

SECJ2013-04 DATA STRUCTURE AND ALGORITHM

ASSIGNMENT 1 - DATA STRUCTURE OPERATION

LECTURER: DR. LIZAWATI BINTI MI YUSUF

NO	NAME	MATRIC NO
1	NUR HAFIZAH BINTI JAFRI	A22EC5022
2	EDDY KOH WEI HEN	A22EC0154
3	NURSYUHADA BINTI BADREN	A22EC0253

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1. Objectives

Our objectives for this assignment are:

a. To manage hotel booking system

b. To help the hotel administrator check the customer's reservation details by sort the customers' information

c. To search specific customers' details

d. To simplify the booking details

2. Synopsis of the project

Our assignment 1 is the Hotel Booking System, which is designed to streamline the process of hotel bookings, providing customers with an efficient platform for booking accommodations. The assignment is for the hotel administrator to manage the room and the booking details of customers. Using sorting and searching algorithms for effective data management, the Hotel Booking System provides an effective solution for admins and customers.
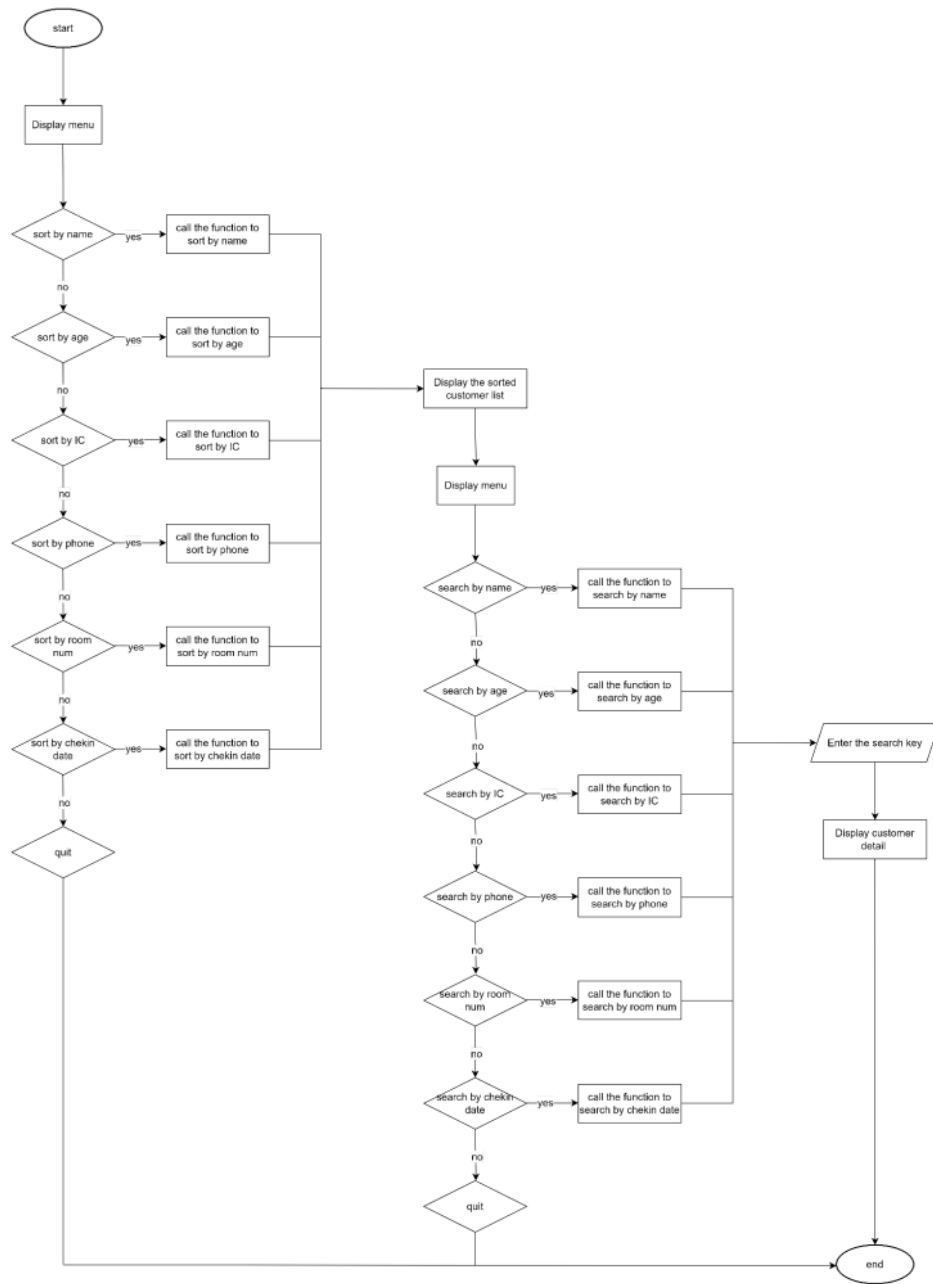
3. Design

3.1 Class Diagram

Customer
- name: string
- age: int
- IC: string
- phoneNum: string
- roomNum: int
- checkInDate: string
+ setName(n: string): void
+ setAge(a: int): void
+ setIC(ic: string): void
+ setPhone(p: string): void
+ setNum(r: int): void
+ setDate(d: string): void
+ getName(): string
+ getAge(): int
+ getIC(): string
+ getPhone(): string
+ getNum(): int
+ getDate(): string

3.2 Flowchart

4. Design Description

4.1 Main function

1. Read customer information from an input file
2. Show menu for sorting by using menuSort() function and choose the choice for sorting criteria

    2.1 Option 1: pass the customers data to SortingName() function to sort customer data based on name and pass the sorted data to display() function for display the sorting result

    2.2 Option 2: pass the customers data to SortingAge() function to sort customer data based on age and pass the sorted data to display() function for display the sorting result

    2.3 Option 3: pass the customers data to SortingIC() function to sort customer data based on IC number and pass the sorted data to display() function for display the sorting result

    2.4 Option 4: pass the customers data to SortingPhone() function to sort customer data based on phone number and pass the sorted data to display() function for display the sorting result

    2.5 Option 5: pass the customers data to SortingNum() function to sort customer data based on room number and pass the sorted data to display() function for display the sorting result

    2.6 Option 6: pass the customers data to SortingDate() function to sort customer data based on check in date and pass the sorted data to display() function for display the sorting result

    2.7 Option 7: Quit the system

    2.8 Others: Ask user to choose valid option
3. Show menu for searching by using menuSearch() function and choose the choice for searching criteria

3.1 Option 1: pass the sorted customers data to Search() function to search customer data based on name and display the searched result in the function

3.2 Option 2: pass the sorted customers data to Search2() function to search customer data based on age and display the searched result in the function

3.3 Option 3: pass the sorted customers data to Search() function to search customer data based on IC number and display the searched result in the function

3.4 Option 4: pass the sorted customers data to Search() function to search customer data based on phone number and display the searched result in the function

3.5 Option 5: pass the sorted customers data to Search2() function to search customer data based on room number and display the searched result in the function

3.6 Option 6: pass the sorted customers data to Search() function to search customer data based on check in date and display the searched result in the function

3.7 Option 7: Quit the system

3.8 Others: Ask user to choose valid option

4. End

4.2 Sorting functions

1. Get the option from menuSort() function

2. Based on the option, sort customers data by corresponding function with customer array and number of customer:

2.1 The sorting function uses a bubble sort technique to rearrange the customer array based on the chosen criteria

2.2 Option 1

SortingName() function - sort data based on name in ascending order

2.3 Option 2

   SortingAge() function - sort data based on age in ascending order

2.4 Option 3

   SortingIC() function - sort data based on IC number in ascending order

2.5 Option 4

   SortingPhone() function - sort data based on phone number in ascending

                              order

2.6 Option 5

   SortingNum() function - sort data based on room number in ascending order

2.7 Option 6

   SortingDate() function - sort data based on check in date in ascending order

4.3 Searching functions

1. Get the option from menuSearch() function

2. Based on the option, search customers data by corresponding function with search
    key, customer array and number of customer:

    2.1 The searching function uses a basic sequential search technique to search
        customers data based on the chosen criteria

    2.2 Option 1

       Search() function - search data by getting key from user input based on name

    2.3 Option 2

       Search2() function - search data by getting key from user input based on age

    2.4 Option 3

       Search() function - search data by getting key from user input based on IC
                              number

    2.5 Option 4

       Search() function - search data by getting key from user input based on phone
                              number

2.6 Option 5

Search2() function - search data by getting key from user input based on

room number

2.7 Option 6

Search() function - search data by getting key from user input based on check

in date

3. Both of the search functions would iterate through the customer array and

compare the search key with the corresponding attribute in each object

4. If a match is found, display the complete information.

5. If no match is found, display the "Not found" message.

4.4 Display function

1. Get the sorted data and display the results by using display() function with

parameter of customers data, number of customer and option chosen

4.5 Menu functions

1. MenuSort() function: display the menu for sorting and the options provided

1.1 Option 1: Sort by name

1.2 Option 2: Sort by age

1.3 Option 3: Sort by IC number

1.4 Option 4: Sort by phone number

1.5 Option 5: Sort by room number

1.6 Option 6: Sort by check in date

1.7 Option 7: Quit

2. MenuSearch() function: display the menu for searching and the options provided

2.1 Option 1: Search name

2.2 Option 2: Search age

2.3 Option 3: Search IC number

Assignment 1 Report

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