

CSE212: SOFTWARE DEVELOPMENT METHODOLOGIES

YEDITEPE UNIVERSITY

SPRING 2023

ASSIGNMENT 8 – DUE DATE MAY 1ST, 2023

Below, you can find the description of your eighth assignment, which also includes its output in the *Application Walkthrough* section.

In this assignment, you are expected to improve your existing Hotel Reservation System by incorporating *Comparator* and *Comparable* interfaces.

It is imperative to create a class named *CostComparator*, which implements the *Comparator* interface and employs the *getCost()* method of *Services* to sort the overall cost per service in a descending order.

In addition, the reservations should be sorted in ascending order by using their *hotelName* attribute. To accomplish this, you need to define the *Reservation* object as *Comparable* by implementing the *Comparable* interface.

When the application starts, it should prompt the user with the following menu:

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

On top of the existing options implemented as part of the previous assignment, this one introduces 2 more menu items, whose functionality is described below.

When the user selects the 10th option, the system is expected to arrange the services based on their total cost using the *CostComparator* class. In this class, the *Comparator* interface must be implemented with the type of objects that may be compared by this comparator, which is the *Services* class. Thereafter, the *compare(Services o1, Services o2)* method must be overridden to compare the overall cost of the two *Services* instances. The sorting process will require

the system to traverse through the *calculableList*, which additionally to other calculatable objects, it also contains all the services. After identifying the *Services* type instances, these objects must be added to a temporary arraylist. The *Services* objects in this arraylist must be sorted in descending order according to the result returned by the *getCost()* method. To display the information about the sorted version of these services, a method named *displayServiceInfo()* must be implemented in *Services* class. This method should provide details such as *customerID*, *getServiceType()* and *calculateService()*.

When the user selects the 11th option, the system is expected to arrange the reservation hotel names in an alphabetical order and display their service information – utilizing *displayServiceInfo()* method. Initially, you must declare that you are going to implement the *Comparable* interface in the *Reservation* class and then override the *compareTo(Reservation o)* method as you need. The sorting process requires iterating over the *calculableList* and identifying instances of the *Reservation*, which must be subsequently added to a temporary arraylist. The *Reservation* objects in this arraylist must then be sorted in alphabetically ascending order based on the *hotelName* attribute. The resulting sorted list must then be printed on the screen by calling the *displayServiceInfo()* method.

Application Walkthrough

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
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9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

1

ROOM INFOS:

Room Type: Single, Daily Cost: 100, Room Size: 15, Has Bath: false
Room Type: Double, Daily Cost: 180, Room Size: 30, Has Bath: false
Room Type: Club, Daily Cost: 250, Room Size: 45, Has Bath: true
Room Type: Family, Daily Cost: 400, Room Size: 50, Has Bath: false
Room Type: Family With View, Daily Cost: 450, Room Size: 50, Has Bath: true
Room Type: Suite, Daily Cost: 650, Room Size: 80, Has Bath: true

Hotel Name: Hilton Istanbul
Room Type: Family
Reservation Month: April
Reservation Start: 2
Reservation End: 12

Reservation ID: 1 is created!

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

1

ROOM INFOS:

Room Type: Single, Daily Cost: 100, Room Size: 15, Has Bath: false
Room Type: Double, Daily Cost: 180, Room Size: 30, Has Bath: false
Room Type: Club, Daily Cost: 250, Room Size: 45, Has Bath: true
Room Type: Family, Daily Cost: 400, Room Size: 50, Has Bath: false
Room Type: Family With View, Daily Cost: 450, Room Size: 50, Has Bath: true
Room Type: Suite, Daily Cost: 650, Room Size: 80, Has Bath: true

Hotel Name: Ramada Bursa

Room Type: Double

Reservation Month: May

Reservation Start: 13

Reservation End: 17

Reservation ID: 2 is created!

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

1

ROOM INFOS:

Room Type: Single, Daily Cost: 100, Room Size: 15, Has Bath: false
Room Type: Double, Daily Cost: 180, Room Size: 30, Has Bath: false
Room Type: Club, Daily Cost: 250, Room Size: 45, Has Bath: true
Room Type: Family, Daily Cost: 400, Room Size: 50, Has Bath: false
Room Type: Family With View, Daily Cost: 450, Room Size: 50, Has Bath: true
Room Type: Suite, Daily Cost: 650, Room Size: 80, Has Bath: true

Hotel Name: Hilton Bomonti
Room Type: Suite
Reservation Month: May
Reservation Start: 2
Reservation End: 19

Reservation ID: 3 is created!

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

4

Please select one of the extra services from below:

1. Laundry Service
2. Spa Service

1

Type the reservation ID to credit this service:

1

How many pieces of clothing?

3

1. Create new Reservation with Room Type
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8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

4

Please select one of the extra services from below:

1. Laundry Service
2. Spa Service

2

Type the reservation ID to credit this service:

1

How many days?

3

1. Create new Reservation with Room Type

2. Display all Reservations
3. List the reservations for a specific city
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5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

4

Please select one of the extra services from below:

1. Laundry Service
2. Spa Service

1

Type the reservation ID to credit this service:

2

How many pieces of clothing?

5

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

7

Name:

Bill

Surname:

Gates

ID:

123

Monthly Payment:

250

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names

12. Exit

7

Name:

Steve

Surname:

Jobs

ID:

234

Monthly Payment:

280

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

8

Type:

Water

Amount

210

Month:

April

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

8

Type:

Electricity

Amount

380

Month:

April

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city

4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

8

Type:

Water

Amount

330

Month:

May

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

9

Enter Month:

April

For reservation ID: 1, Service type: Room booking, Service Cost: 4000.00

For reservation ID: 1, Service type: Laundry, Service Cost: 60.00

For reservation ID: 1, Service type: Spa, Service Cost: 300.00

Total monthly income: 4360.00

Total monthly bills due: 590.00

Total monthly employee cost: 530.00

End of month balance: 3240.00

1. Create new Reservation with Room Type
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5. Calculate total cost for each service
6. Display the total cost of every customer
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8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit

9

Enter Month:

May

For reservation ID: 2, Service type: Room booking, Service Cost: 720.00
For reservation ID: 2, Service type: Room booking, Service Cost: 11050.00
For reservation ID: 2, Service type: Laundry, Service Cost: 100.00
For reservation ID: 3, Service type: Room booking, Service Cost: 720.00
For reservation ID: 3, Service type: Room booking, Service Cost: 11050.00
For reservation ID: 3, Service type: Laundry, Service Cost: 100.00
Total monthly income: 23740.00
Total monthly bills due: 330.00
Total monthly employee cost: 530.00
End of month balance: 22880.00

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
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12. Exit

10

Customer ID: 3, Service Type: Room booking, Cost: 11050.00
Customer ID: 1, Service Type: Room booking, Cost: 4000.00
Customer ID: 2, Service Type: Room booking, Cost: 720.00
Customer ID: 1, Service Type: Spa, Cost: 300.00
Customer ID: 2, Service Type: Laundry, Cost: 100.00
Customer ID: 1, Service Type: Laundry, Cost: 60.00

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city
4. Add extra services to a reservation
5. Calculate total cost for each service
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9. Get monthly balance
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11. List all Reservations sorted based on hotel names
12. Exit

11

Hotel Name: Hilton Bomonti, Customer ID: 3, Service Type: Room booking, Cost: 11050.00
Hotel Name: Hilton Istanbul, Customer ID: 1, Service Type: Room booking, Cost: 4000.00
Hotel Name: Ramada Bursa, Customer ID: 2, Service Type: Room booking, Cost: 720.00

1. Create new Reservation with Room Type
2. Display all Reservations
3. List the reservations for a specific city

4. Add extra services to a reservation
5. Calculate total cost for each service
6. Display the total cost of every customer
7. Add an employee
8. Add a bill
9. Get monthly balance
10. List all Services sorted based on cost
11. List all Reservations sorted based on hotel names
12. Exit
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Exiting, Goodbye!

Submit your assignments in a zip file, which has your student number as name, through the YULEARN (<https://yulearn.yeditepe.edu.tr>) latest by the end of Monday, May 1st, 2023.