

CSE212: SOFTWARE DEVELOPMENT METHODOLOGIES

YEDITEPE UNIVERSITY

SPRING 2023

ASSIGNMENT 6 – DUE DATE APRIL 10TH, 2023

Below, you can find the description of your sixth 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 polymorphism and an abstract class.

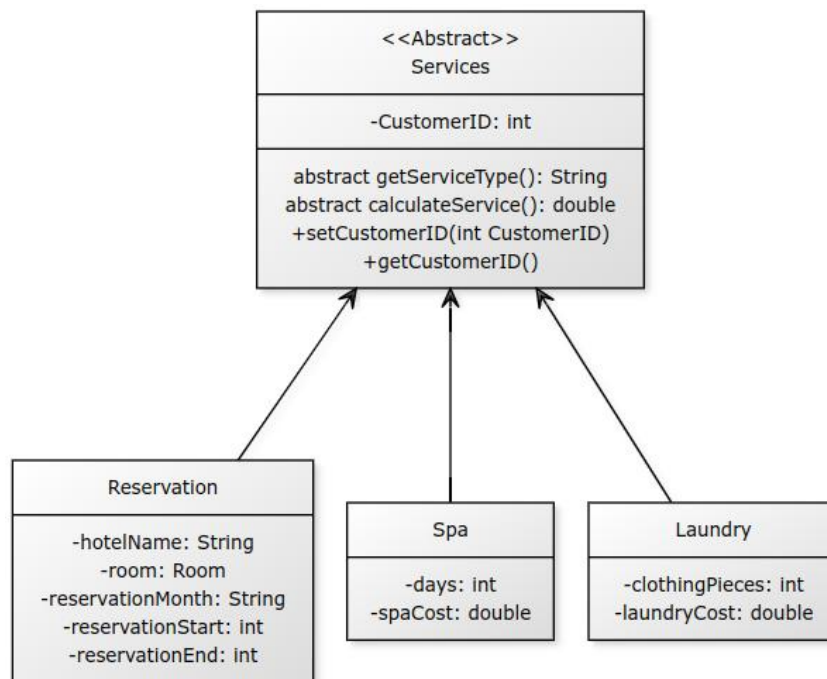


Fig.1 Services class hierarchy

Even though the menu structure of your next assignment looks very similar to the previous one, there are major changes in the requirements of the application and as a result, it will require you to re-write your existing code. In order to achieve a more realistic scenario and for more flexibility, your new system should be able to accommodate unlimited number of reservations – to be clear; there should be no fixed size arrays inside your code. You should be using the relevant data structure (*java.util.Collection*) according to your needs.

Furthermore, this assignment also introduces a new structure where the hotels do not only provide room rental service but additional services such as *laundry* and *Spa*. All services offered are merged under the umbrella of *Services* abstract class (see Fig.1). There are still six types of rooms (*Single*, *Double*, *Club*, *Family*, *FamilyView* and *Suite*) that are offered by the hotels. However, now every a customer can make unlimited number of reservations and every reservation can have unlimited number of additional services – such as *Spa* and *laundry*. All services should be tracked with a reservation ID. So a person who does not have a room reservation is not a customer and a person who is not a customer cannot get a *Spa* or *laundry* service.

When the application is started, 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. Exit

When the user selects the 1st option, the system will expect the user to input the generic information about the reservation and lastly to provide the room type. The *roomType* provided by the user is then should be compared using *equals()* method and a relevant type of subclass instance should be created. Then, the created object, which will be a subclass of *Room*, should be added to the *Reservation* object via its constructor. Then fully constructed *Reservation* objects should be added into the *Services* data structure for later use.

When the user selects the 2nd option, the information about all reservations should be printed with the help of the existing *displayInfo()* method.

When the user selects the 3rd option, the system should ask the user to input a city name and then traverse the *Services* data structure to find the reservation hotels for that specific city and list them on the screen.

When the user selects the 4th option, the system should list the possible services and ask the user to pick one. As a follow up, the system should ask the user to provide a *Reservation ID* for billing purposes of that service. Then depending to the service type; it should ask for the number of clothes to be washed or the number of days that the customer wants to use the *Spa*. The

system should charge customers *100 TL* per Spa day and *20 TL* per laundry item. After all the above information is collected then it should be added into the *Services* data structure for later use.

When the user selects the 5th option, it should calculate the total service cost per purchase per reservation and list them on the screen. As an example, a *Reservation ID* holder customer could have bought 2 days of Spa service twice. Each one should be calculated separately and listed separately.

When the user selects the 6th option, the system should calculate the grand total bill per *Reservation ID* and list them on the screen. As an example, a *Reservation ID* holder customer could have booked a room, received laundry service twice (first time for 5 items and second time for 3 items) and went to the Spa once. The system should calculate the total cost and show the overall bill.

When the user selects the 7th option, the application should exit.

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
7. 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: Single

Reservation Month: June

Reservation Start: 1

Reservation End: 11

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. 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: Sheraton Bomonti Istanbul

Room Type: Club

Reservation Month: July

Reservation Start: 2

Reservation End: 22

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. Exit

2

Reservation for a Single room in Hilton Istanbul starts on June 1 and ends on June 11. Reservation has a total cost of \$2000.

Reservation for a Club room in Sheraton Bomonti Istanbul starts on July 2 and ends on July 22. Reservation has a total cost of \$10000.

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. Exit

3

Type a city name for a reservation search: Istanbul

Hilton Istanbul

Sheraton Bomonti Istanbul

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. Exit

5

The cost for the Room booking service of reservation ID 1: 2000.00
The cost for the Room booking service of reservation ID 2: 10000.00

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. 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?

10

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. Exit

5

The cost for the Room booking service of reservation ID 1: 2000.00
The cost for the Room booking service of reservation ID 2: 10000.00
The cost for the Laundry service of reservation ID 1: 200.00

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. 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?

2

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. 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
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. Exit

5

The cost for the Room booking service of reservation ID 1: 2000.00
The cost for the Room booking service of reservation ID 2: 10000.00
The cost for the Laundry service of reservation ID 1: 200.00
The cost for the Spa service of reservation ID 1: 200.00
The cost for the Laundry service of reservation ID 1: 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
6. Display the total cost of every customer
7. Exit

6

The total cost of all services of the reservation with ID: 1 is 2460.00
The total cost of all services of the reservation with ID: 2 is 10000.00

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. Exit

7

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, April 10th, 2023.