

CSE212: SOFTWARE DEVELOPMENT METHODOLOGIES

YEDITEPE UNIVERSITY

SPRING 2023

ASSIGNMENT 7 – DUE DATE APRIL 24TH, 2023

Below, you can find the description of your seventh 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 an interface.

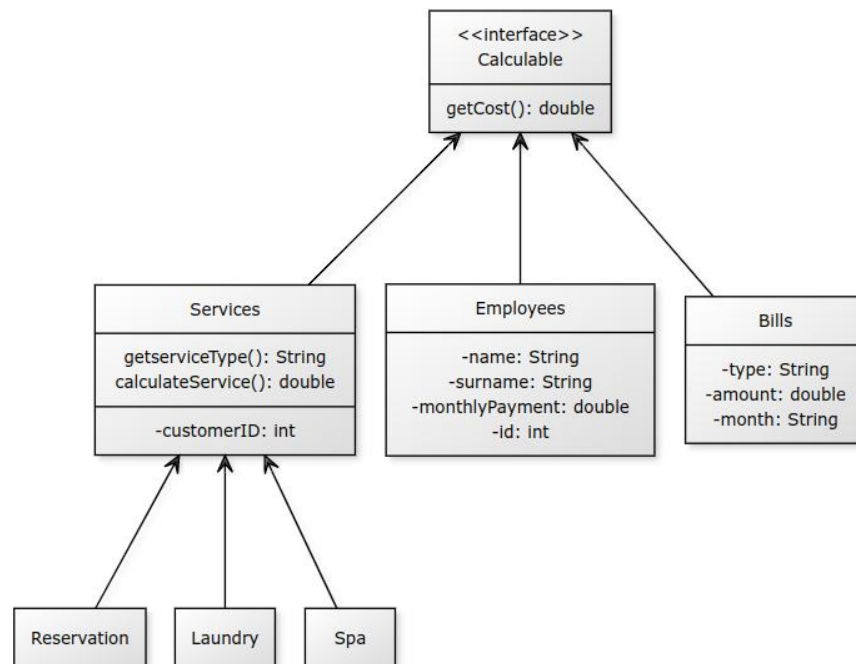


Fig.1 *Calculable* interface hierarchy

This assignment introduces a new structure for calculating the finances of the hotel. As you are already keeping track of the income using the *Services*, you now need to keep track of the expenses too. This would be achieved by the use of two new classes, namely *Bills* and *Employees*. These classes need to be polymorphically connected to the *Calculable* interface, which is another new Java structure you need to implement (see Fig.1). Furthermore, you need to

utilize a new list for the *Calculable* interface and keep the relevant information for calculating the revenue of the hotel in this list.

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. Exit

On top of the existing options implemented as part of the previous assignment, this one introduces 3 more menu items, whose functionality is described below.

When the user selects the 7th option, the system should ask the user for the employee's name and surname variables, as well as the ID of the employee and their monthly payments and create a new Employee with the respective information. As the employee will receive their wage every month, you do not need to specify the month they have been hired.

When the user selects the 8th option, the system should inquire the user about the *type* of the *Bill* that is going to be paid (water, electricity etc...), as well as the amount of the bill. On the contrary to Employees, the bills should be handled on a monthly basis - i.e. every month's utility bill should be added to the system separately.

When the user selects the 9th option, the system should ask the user for a month to calculate the general balance of the hotel for that particular month. For this calculation, you need to separate incomes and expenses. In this case, incomes of the hotel are *Reservations* and *Extra Services*, while the expenditures include *Bills* and *Employees*. You need to iterate through the *Calculable* list, display the monthly income, bills due, employee payments and show the total balance of the hotel by subtracting the expenditures from the overall revenue. If the hotel is making a profit, the end of month balance must be positive, whereas if the hotel is losing money, the end of month balance should be negative.

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. Add an employee
8. Add a bill
9. Get monthly balance
10. 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. 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. 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. 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
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. 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
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10. 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. 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. 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. 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. 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. 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

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9

Enter Month:

May

For reservation ID: 2, Service type: Room booking, Service Cost: 720.00

For reservation ID: 2, Service type: Laundry, Service Cost: 100.00

Total monthly income: 820.00

Total monthly bills due: 330.00

Total monthly employee cost: 530.00

End of month balance: -40.00

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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, April 24th, 2023.