EECS 2011 Section P Winter 2022

Assignment 3 Report

Table of Contents

[Introduction 2](#_Toc101029754)

[Main Body 2](#_Toc101029755)

[ Main Class 2](#_Toc101029756)

[ BookRoom Function 2](#_Toc101029757)

[ Deallocate Function 3](#_Toc101029758)

[ Delete Function 3](#_Toc101029759)

[Difficulties encountered 3](#_Toc101029760)

[Conclusion: 3](#_Toc101029761)

# Introduction

This project is Hotel Management System in which there are rooms, employees, customers(guests) and other entities of the hotel management system. There are rooms of single and double beds of luxury and deluxe categories with their respective bills. The customer can then checkout and see the bill prepared by the program. Before booking a room, the customer can also see the features of different categories of the room and availability of different rooms.

# Main Body

The project is developed keeping in mind the concepts of Object Oriented Programming. I utilizes the encapsulation, abstraction, inheritance, composition of classes, enums and other features of Object Oriented Programming. The class structure is displayed in UML diagram.

Keeping in mind the concept of encapsulation, all the attributes were private and getters/setters of all attributes were created clearly. All classes have constructors and overloaded-constructors.

Following are the details of the function we have implemented.

## Main Class

* + Main class consists of main function. It gives the admin an option to login to the system using the pin. It then gives the menu through which the features of different categories of rooms can be viewed. A room can be booked. A room can be checked out.

## BookRoom Function

* + Bookroom function books a room for the user. It takes an argument on which it is decided that which category of room is selected by the user. Then on the basis of selection by user, the program asks guest’s information like name, contact, gender. For single bed rooms, it takes information of one guest and for double bed rooms, it takes information of two users. At the end it displays that the room is booked.

## Deallocate Function

* + Deallocate function is used to checkout by the guest. When it is executed, it asks user to enter his/her room number. The program then checks the details of that room number and displays the name of the person who booked that room. The program then calculates his/her bill, confirms the guest to checkout and displays his/her bill.

## Delete Function

* + It takes the value of the patient-id from the user search for the value in the HashMap if an entry exists it will delete the relevant data from the HashMap, if the entry is not available then it will output the user that patient- id does not exist in the HashMap. The time complexity of the O(n).

# Difficulties encountered

* It was decided to use a database for the program but database could not be used by us in Java at this level. Then it was a second challenge to store the guests’ details in the program at run time. This was done by using the arrays of objects. The arrays of Room object were created to store the data of rooms and then Guest object was passed to the constructor of Room class to store it in the array of Room.
* Another problem was faced when creating the deallocate function to checkout the guest. It was difficult to fetch the data of guest from the stored objects in the Room type array and then calculating the bill. But this problem was solved at the end.

# Details of all Classes:

## Action

Action class can add or remove an employee with time stamps.

## ActionType

ActionType is enum which consists of action types when admin logs in like reserve a room, cancel a booking, check in or checkout etc.

## Booking

Booking class implements Serializable and stores the details of booking like start time, end time, room, action type etc.

## BookingStatus.

BookingStatus is an enum which contains the booking status of the guest like active or inactive.

## DoubleRoom

Double room is a class that extends signleroom class and implements searlizable.

It generates the double room whenever guest demands a double room using this class's constructor.

## Employee

Employee class extends person and have attributes of name, contact, gender and a login pin

## FrontEnd

This class contains all the front end coding for this project

## Holder

Holder class creates the arrays of objects of categories of rooms

## Guest

Guest class extends person and contains the attributes of name, contact, gender and a booking id

## Hotel

This is the most important class of the program. Whenever a menu is selected from main class, the relevent function is called from this class

It consists of various functions like CustDetails, checkAvailibility, bookRoom or checkOut etc.

## Main

Main class of the program

It consists of a main function and in the main function the switch case statement is used which is used to implement the menu.

## NotAvailable

When the requested room is not available, then NotAvailable class is used to throw exception

## Person

Person class contains the attributes of name, contact, and gender. It is further extended by guest and employee to add booking id and login pin

## Room

Room class consists of attributes of room like room no., floor, area, rate, type etc.

## RoomType

RoomType is an enum which gives RoomType

## SingleRoom

Sigleroom extends room which is further extended by double room

# Conclusion:

* In this program, we have used several switch-case statements because the program is menu based and whenever a menu is selected by the user a switch case statement is applied on that choice.
* The program gave the idea to solve a real life problem using the concepts of Object Oriented Programming and implementing the has-a relation using inheritance and composition of classes. Enums were also used in this project.