**Source code**

public class Room {

private int numOfBed;

private String guestName;

private boolean statusRoom;

private double roomTariff;

public Room (){

numOfBed = 2;

guestName = "Nobody";

statusRoom = false;

roomTariff = 100.00;

}

public void setNumOfBed (int numOfBedIn)

{

if (numOfBed >=1 && numOfBed<=4)

numOfBed = numOfBedIn;

}

public void setRoomTariff (double roomTariffIn)

{

if(roomTariff <0)

roomTariff = -roomTariffIn;

else

roomTariff = roomTariffIn;

}

public void book (String guestNameIn)

{

statusRoom = true;

guestName = guestNameIn;

}

public void unbook(){

statusRoom = false;

guestName = "Nobody";

}

public int getNumOfBed() {

return numOfBed;

}

public String getGuestName() {

return guestName;

}

public double getRoomTariff() {

return roomTariff;

}

public boolean isBooked(){

return statusRoom;

}

public String toString(){

if (!guestName.equals("Nobody"))

return "Room with "+numOfBed+" beds, tariff "+roomTariff +", and guest"

+ " name "+guestName+".";

else

return "Room with "+numOfBed+" beds, tariff "+ roomTariff+", and is"

+" vacant.";

}

}

public class Hotel {

static final int DEFAULT\_SIZE = 50;

private Room[] rooms;

private int count;

public Hotel(int numOfRoom) {

if (numOfRoom <20 || numOfRoom > 100)

rooms = new Room[DEFAULT\_SIZE];

else

rooms = new Room[numOfRoom];

task1();

task2();

task3();

}

private void task1(){

count = 0;

for(int i = 0; i< rooms.length; i++)

rooms[i] = new Room();

}

private void task2(){

rooms[0].setRoomTariff(15000.00);

for (int i =0; i < rooms.length ; i++){

if (i%2 == 0 && i != 0)

rooms[i].setRoomTariff(150.00);

}

}

private void task3(){

for (int i =0; i < rooms.length ; i++)

if( i== rooms.length -5 || i== rooms.length -4|| i== rooms.length -3|| i== rooms.length -2 ||i== rooms.length -1)

rooms[i].setNumOfBed(1);

for (int i =0; i < rooms.length ; i++)

if( i==1 || i==2 || i==3 || i==4 || i==5)

rooms[i].setNumOfBed(4);

}

public Room getRoom(int roomNo) {

if (roomNo > rooms.length || roomNo < 0)

return null;

else

return rooms[roomNo];

}

public int numOfBookedRooms(){

count = 0;

for (int i = 0; i < rooms.length; i++)

if(rooms[i].isBooked() ==true){

count ++;}

return count;

}

public int numOfVacantRooms(){

count = 0;

for (int i = 0; i < rooms.length; i++)

if(rooms[i].isBooked() ==false)

count ++;

return count;

}

public double totalTariff(){

double sum = 0.00;

for (int i = 0; i<rooms.length; i++)

if(rooms[i].isBooked() == true)

sum = sum + rooms[i].getRoomTariff();

return sum;

}

//B1402009 ,To calculate the bill with GST included

public double GST(double sum){

double total =0.00;

total = sum\*106/100;

return total;

}

public String getAvailableRooms(int guestNum){

String roomNo = "";

for (int i = 0; i<rooms.length; i++)

if(rooms[i].getNumOfBed() >= guestNum )

if(rooms[i].isBooked() == false)

roomNo = roomNo + i +" ";

return roomNo;

}

public int findGuestRoomNumber(String guestName){

for (int i = 0; i<rooms.length; i++)

if(rooms[i].getGuestName().equalsIgnoreCase(guestName))

return i;

return -1;

}

}

import java.util.Scanner;

public class HotelMain {

static Scanner kbd;

static Hotel hotel;

public static void displayMenu(){

System.out.println("What would you like to do?");

System.out.println("Press 1 to check any room available for the guests");

System.out.println("Press 2 to book a room.");

System.out.println("Press 3 to unbook a room.");

System.out.println("Press 4 to find guest's room number.");

System.out.println("Press 5 to print a report.");

System.out.println("Press 6 to find the total bill with 6% GST included.");

System.out.println("Press 7 to quit.");

}

public static void report(){

System.out.println("The number of booked rooms is "+hotel.numOfBookedRooms()+" .");

System.out.println("The number of empty rooms is "+hotel.numOfVacantRooms()+ " .");

System.out.println("The total tariff of all booked rooms is $"+hotel.totalTariff()+" .\n");

}

public static void main(String[] args) {

kbd = new Scanner(System.in);

System.out.println("Please enter the size of the hotel: ");

int size = kbd.nextInt();

hotel = new Hotel(size);

int choice;

do {

displayMenu();

choice = kbd.nextInt();

switch (choice){

case 1 ://B1402009 ,find room avaialble

System.out.println("Enter number of guests: ");

int guestNo = kbd.nextInt();

System.out.println(hotel.getAvailableRooms(guestNo)+"\n");

break;

case 2 ://B1402009 ,book a room

System.out.print("Enter a room number: ");

int roomNo = kbd.nextInt();

Room fRoom = hotel.getRoom(roomNo);

if (fRoom.isBooked() )

System.out.println("The room is not available.\n");

else

{

System.out.println("Enter guest name: ");

kbd.nextLine().trim();

String guestName = kbd.nextLine();

fRoom.book(guestName);

System.out.println("");

}

break;

case 3 ://B1402009 ,unbook a room

System.out.print("Enter a room number: ");

roomNo = kbd.nextInt();

fRoom = hotel.getRoom(roomNo);

if (fRoom.isBooked()){

fRoom.unbook();

System.out.println("");

}

else

System.out.println("The room is not occupied.");

break;

case 4 ://B1402009 ,search room of the guest

System.out.println("Enter guest name: ");

kbd.nextLine().trim();

String searchGuestName = kbd.nextLine();

int guestRoom = hotel.findGuestRoomNumber(searchGuestName);

if (guestRoom != -1)

System.out.println("The guest is in room number " + guestRoom+".\n");

else

System.out.println("The guest is not found.\n");

break;

case 5 ://B1402009 ,print report

report();

break;

case 6 ://B1402009 ,find the total bill with 6% GST

double sum = hotel.totalTariff();

System.out.println("The total bill with 6% GST is "+hotel.GST(sum));

break;

case 7 ://B1402009 ,quit the program

System.out.println("The hotel is closed, please come again tomorrow!");

break;

}}

while(choice != 7);

}

}

**Output**

**1)**

Please enter the size of the hotel:

50

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

7

The hotel is closed, please come again tomorrow!

Please enter the size of the hotel:

20

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

1

Enter number of guests:

1

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

2

Enter a room number: 3

Enter guest name:

Potter

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

4

Enter guest name:

potter

The guest is in room number 3.

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

5

The number of booked rooms is 1 .

The number of empty rooms is 19 .

The total tariff of all booked rooms is $100.0 .

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

6

The total bill with 6% GST is 106.0

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

3

Enter a room number: 3

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

1

Enter number of guests:

1

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

What would you like to do?

Press 1 to check any room available for the guests

Press 2 to book a room.

Press 3 to unbook a room.

Press 4 to find guest's room number.

Press 5 to print a report.

Press 6 to find the total bill with 6% GST included.

Press 7 to quit.

7

The hotel is closed, please come again tomorrow!