### **Question 1 [10 Points]**

Design the **Room** class with necessary instance variables and instance methods to generate the following outputs.

**Charge Calculation Rules:** Base charge is **1500 Taka** per night. Additional cost based on room type will be **1000 Taka extra per night for “Suite”** and **500 Taka more per night for “Deluxe”**. Charge will change depending on the day type. If **it is “Holiday”, charge increases 50%**, if **“Weekend”, charge increases by 25%.**

| **Driver Code** | **Output** |
| --- | --- |
| public class HotelBooking {  public static void main(String[] args) {  Room r1 = new Room();  r1.setDetails("Deluxe", 2, "Weekend");  r1.showDetails();  System.out.println("1======================");  double total1 = r1.calculateCharge();  System.out.println("Total Charge: "+total1+" tk");  System.out.println("2======================");  r1.showDetails();  System.out.println("3======================");  Room r2 = new Room();  r2.setDetails("Standard", 3, "Weekday");  double total2 = r2.calculateCharge();  System.out.println("Total Charge: "+total2+" tk");  System.out.println("4======================");  r2.showDetails();  System.out.println("5======================");  Room r3 = new Room();  r3.setDetails("Suite", 1, "Holiday");  double total3 = r3.calculateCharge();  r3.showDetails();  }  } | Room Type: Deluxe  Nights: 2  Day Type: Weekend  Charge not calculated yet.  1======================  Total Charge: 5000.0 tk  2======================  Room Type: Deluxe  Nights: 2  Day Type: Weekend  Total Charge: 5000.0 Taka  3======================  Total Charge: 4500.0 tk  4======================  Room Type: Standard  Nights: 3  Day Type: Weekday  Total Charge: 4500.0 Taka  5======================  Room Type: Suite  Nights: 1  Day Type: Holiday  Total Charge: 3750.0 Taka |

| Solution:  class Room {  public String roomType;  public int nights;  public String dayType;  public double totalCharge;  public void setBookingDetails(String roomType, int nights, String dayType) {  this.roomType = roomType;  this.nights = nights;  this.dayType = dayType;  this.totalCharge = -1;  }  public double calculateRoomCharge() {  double baseRate = 1500;  if (roomType.equalsIgnoreCase("Deluxe")) {  baseRate += 500;  } else if (roomType.equalsIgnoreCase("Suite")) {  baseRate += 1000;  }  if (dayType.equalsIgnoreCase("Weekend")) {  baseRate \*= 1.25; // 25% more  } else if (dayType.equalsIgnoreCase("Holiday")) {  baseRate \*= 1.5; // 50% more  }  totalCharge = baseRate \* nights;  return totalCharge;  }  public void printDetails() {  System.out.println("Room Type: " + roomType);  System.out.println("Nights: " + nights);  System.out.println("Day Type: " + dayType);  if (totalCharge == -1) {  System.out.println("Charge not calculated yet.");  } else {  System.out.println("Total Charge: " + totalCharge + " Taka");  }  }  } |
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### **Question 2 [5 Points]**

| | 1 | public class Quiz1 { | | --- | --- | | 2 | public int temp = 4, n = 3, sum; | | 3 | public void m1() { | | 4 | int x = 2, temp = 3; | | 5 | temp += this.temp; | | 6 | x = sum + 4 + n; | | 7 | sum = this.temp + m2(sum, temp) + this.temp; | | 8 | System.out.println(x + " " + temp + " " + sum); | | 9 | } | | 10 | public int m2(int temp, int sum) { | | 11 | int x = 0; | | 12 | this.temp = temp + n; | | 13 | x = sum + (++temp) + temp; | | 14 | sum = this.sum + x + this.temp; | | 15 | System.out.println(x + " " + temp + " " + sum); | | 16 | return this.temp++; | | 17 | } | | 18 | } | | Illustrate the output of the following statements written in the main method of a tester class. [Answers without workings on the script will be rejected]:  **Quiz1 t1 = new Quiz1();**  **t1.m1();**  **Output:**   |  |  |  | | --- | --- | --- | | **7** |  |  | |
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