SdPd/java Lab Exam 1

Sliabh Liag Manor in County Donegal specialises in providing holiday packages to tour groups, of 3 or more people, offering accommodation, food and a variety of activities along the Wild Atlantic Way. The costs of the services are outlined in the following table:

Deposit	€200.00
Accommodation Categories:	**Cost per night:**
Single room	€ 85.00
Double room	€175.00
Food – priced per person:	**Cost:**
Breakfast – Zero (Breakfast is included)	€0.00
Lunch - L	€15.00
Dinner – D	€25.00
Both (Lunch & Dinner) – B	€32.00
Activities on offer – priced per person:	**Cost:**
Visit to Sliabh Liag	1 Activity = €100.00
Surfing	2 Activities = €175.00
Horse riding	3 Activities = €225.00
Costal boat trip	4 Activities = €275.00
Fishing	5 Activities = €325.00
Cycling tour	6 Activities = €375.00
No Activities – 0	€0.00
Discount on accommodation – per group:	**Discount Rate:**
Groups of 6 or more and less than 10 staying for more than 4 nights	2.00% per night
Groups of 10 or more staying for more than 4 nights	4.00% per night
Groups of 15 or more staying for more than 4 nights	5.00% per night
Discount on food – per group:	
Discount of 5% applied for groups of 10 or more who opt for both lunch and dinner	5.00%
Food discounts should be capped at €180.00	
Max food discount	€180.00
Discount on activities – per group:	
Discount of 2% applied for groups of 10 or more who undertake 4 activities or more.	2.00%
Promotional Code/Voucher – per group:	**Promotional Discount Max & Min Value:**
Deducted from the total cost	€120.00
	€0.00
VAT/Tax Rate	
Vat (charged on the stay cost less the discounts)	9.00 %

Sample Line Input & Explanation:

	No (int)	Ni (int)	Do (int)	Si (int)	Fo (char)	Ac (int)	Pr (double)
Example	15	14	3	9	L	3	120.00

No – number of tourists in the group (integer)
Ni – nights, how many nights of accommodation are required by the group (integer)
Do – number of double rooms required (integer)
Si – number of single rooms required (integer)
Fo – food category applicable L (lunch), D (dinner), B (both lunch and dinner) or 0 (char)
Ac – the number of activities the group wishes to partake (integer)
Pr – promotional voucher amount (double)

Develop a Java program to enable a Sliabh Liag Manor employee to input data for a number of tour groups. Allow the program to calculate each tour groups accommodation and additional charges associated with the services on offer.

1. **Download** the lab exam 1 **zip** file and extract the folder, **Saved** on the u-drive (**not** on your USB or desktop)
   — Rename the **LastNameFirstName2016LabEx1** folder & java file as per your own name
   — E.g. **AgnewGerry2016LabEx1** folder and **AgnewGerry2016LabEx1**.java program file
   — To be **verified** by your lab supervisor
   — Remember to rename the starter **class name** as per your java program file name

2. Add your **Program Id, Name** & **Program Description** as comments at the top of the program

3. **10%** of the Lab Exam marks are for the Algorithm sheet (enter your name at the top of the first page) which must be submitted at the end of the lab exam

4. **Warning:** marks will be deducted for **bad programming practices** such as:
   — Lacking meaningful variable names, white-space, indentation, etc.
   — Ensure redundant code is deleted prior to program submission
   — Ensure that non-working code is commented out prior to program submission, otherwise severe penalties will be incurred

5. **Constants:**
   Declare the 10+ necessary constants as appropriate with meaningful names, data types and values

6. **Variables:**
   Declare any necessary variables as appropriate with meaningful names and types

7. **Initialise:**
   Initialise any necessary variables such as counters and totals (not all the variables)

8. **Preliminary Input**: – see screenshot 1 on page 5

Ask the user how many tour groups he/she will be inputting details for.
Allow the user to enter the number of tour groups for whom he/she wishes to enter details, via the keyboard, which can vary from week to week

9. **Multi Item Line Input:** (inside the **for** loop) – see screenshot 1 on page 5
   – Allow the user to enter tour group details, via the keyboard, on the same input line
   – Refer to the Sample Line Input and Explanation on page 2

10. **Calculations:** – see the table on page 1
    Calculate the cost for each tour group based on the accommodation cost plus the food cost plus the activities cost less the accommodation, food and activities discounts (where applicable), less the promotional code (where applicable), less the deposit plus the VAT.
    — Calculate the cost of accommodation, the number of single rooms multiplied by the single room rate plus the number of double rooms multiplied by the double room rate. Multiply this by the number of nights to get the accommodation cost.
    — Calculate the food cost, where applicable, based on the category selected multiplied by the number of tour group members and multiplied by the number of nights
    — Calculate the activities cost, where applicable, based on the number selected multiplied by the number of tour group members
    — Add the accommodation, food and activities costs to get the stay cost
    — Calculate the discount amount based on the discounts for accommodation, food, activities and promotional code (where applicable)
    — Calculate the net cost based on the combined cost of accommodation, food and activities (stay cost) less discount amount less the deposit already paid
    — Calculate the Value-Added Tax (VAT) using the VAT rate
    — Calculate the total cost based on the full cost plus VAT
    — Calculate the average cost per person for each member of the tour group
    — Calculate the totals for tour members, accommodation, food, activities, voucher amounts, discounts, cost, net cost, vat, total costs and cost per person, for all groups
    — Calculate the tour group with the fewest number of members and determine the corresponding expenditure for this group
    — Calculate the tour group with the most number of members and determine the corresponding expenditure for this group

11. **Selection: –** food (using an **if/else if/else**):
    Determine the food category (L, D, B or none) and assign the appropriate cost relevant to the category

12. **Selection: –** activities (**if/else if/else**):
    Determine the activity category (1,2,3,4,5,6 or none) and assign the appropriate cost

13. **Selection: –** accommodation discount (**if/else if/else)** with logical operators to designate (or not) the appropriate discount for accommodation

14. **Selection: –** food discount (**if/else if/else)** with logical operators to designate (or not) the appropriate discount for food

15. **Selection: –** activities discount (**if/else if/else)** with logical operators to designate (or not) the appropriate discount for activities

16. **Line Output: –** see screenshot 1 on page 5
    — Output the sequential tour group number, accommodation cost, food cost, activity cost, stay cost, discount amount, vat cost, total cost and per person cost.
    — Develop unformatted line output initially with a println ( ) statement and then formatted with a printf ( ) statement for each tour group's details
    — Both unformatted and formatted versions are required
    — Comment out the unformatted version when you get the formatted one working

17. **Header Output: –** see screenshot 1 on page 5
    – Display the program headers including your name aligned as specified
    – Using a big println ( ) rather than a printf ( ) statement

18. **Footer Output/Totals:** – see screenshot 1 on page 5
    – Display program footers aligned as specified using both println ( ) and printf () statements
    – Initialise, accumulate and output formatted cost totals as specified

19. **Largest and Smallest:** – see screenshot 1 on page 5
    – Determine and output details of both the largest & smallest tour group numbers and their corresponding expenditure

20. **Case Insensitive Character Processing:**
    – Enhance the program to accept and handle both upper and lower case character input

21. **Save – The End:**
    When finished Save and Exit TextPad
    — Zip (R/click: Send ➜ Compressed Zip) your **LastNameFirstName2016LabEx1** folder
    — Upload your **LastNameFirstName2016LabEx1** zip file to the LearnOnline link provided
    — To be **verified** by your supervisor **before** you **submit** the zip file
    — Submit your Named Algorithm sheet before you exit the lab
    — Sign the **attendance sheet** before you exit the lab

22. Send a copy of your **LastNameFirstName2016LabEx1** to your U-drive as a backup.

Number of tour groups?: 5

FirstName LastName	Tour No	Acc Cost	Food Cost	Act Cost	Stay Cost	Disc Amt	VAT Cost	Total Cost	Per- Person
No/Ni/Do/Si/Fo/Ac/Pr 10 7 3 5 B 5 50.00	1	6650.00	2240.00	3250.00	12140.00	310.00	1060.20	12840.20	1284.02
No/Ni/Do/Si/Fo/Ac/Pr 15 14 6 9 L 3 120.00	2	25410.00	3150.00	3375.00	31935.00	685.20	2801.68	33931.48	2262.10
No/Ni/Do/Si/Fo/Ac/Pr 8 6 4 0 0 0	3	4200.00	0.00	0.00	4200.00	261.00	354.51	4293.51	536.69
No/Ni/Do/Si/Fo/Ac/Pr 23 9 5 13 D 6 120.00	4	17820.00	5175.00	8625.00	31620.00	640.90	2777.32	33636.42	1462.45
No/Ni/Do/Si/Fo/Ac/Pr 12 10 0 12 B 2 60.00	5	10200.00	3840.00	2100.00	16140.00	568.50	1396.03	16907.54	1408.96
	68	64280.00	14405.00	17350.00	96035.00	2465.60	8389.75	101609.15	6954.22

Tour group 4 has the highest number of members at 23 with expenditure of: 33636.42

Tour group 3 has the lowest number of members at 8 with expenditure of: 4293.51

Press any key to continue . . .