



UNIVERSITI TEKNOLOGI MALAYSIA

TEST I (PRACTICAL)

SEMESTER I 2016/2017

SUBJECT CODE	: SCSJ1013
SUBJECT NAME	: PROGRAMMING TECHNIQUE I
YEAR/COURSE	: 1 (SCSJ / SCSV / SCSB / SCSR / SCSD)
TIME	: 2 HOURS
DATE	: 8 th NOVEMBER 2016
VENUE	: N28 MPK1-MPK10

INSTRUCTIONS TO THE STUDENTS:

- Use the tool Dev C++ for writing your program.
- You are given **TWO HOURS** to complete the test inclusive the submission of your program.
- Your program must follow the input and output as shown in the examples. You must test the programs with (but not limited to) all the input given in the examples.

MATERIAL FOR THE TEST:

- You are provided two samples of input files, `input1.txt`, and `input2.txt`. All these files are compressed into a RAR file.
- Download the RAR file from the UTM's e-learning to your computer's hard drive. **IMPORTANT:** You must extract the RAR file into your local hard drive. Do not edit directly from the program WinRar.

SUBMISSION PROCEDURE:

- Only the source code (i.e. the file with the extension `.cpp`) is required for the submission.
- Submit the source code via the UTM's e-learning system.

This question booklet consists of 5 pages inclusive of the cover page.

Problem**70 Marks**

Dynamic Restaurant is a new restaurant operating in Skudai, Johor. The restaurant offers three main menus that are Seasonal Fruit Box, Grilled Peri Peri Chicken with Bean Salad, and Mongolian Stir Fried Beef with Baby Bok Choy and Fragrant Rice. Each week the sales manager should provide a weekly sales report. However, he faced difficulties with an increasing number of sales each day. Therefore, write a complete C ++ program that can assist the sales manager to provide a weekly sales report for Dynamic Restaurant.

Table 1 below shows the three main menus and the respective code of the menu. The menu's code is a four-digit integer number, where the last two digits represent the price of the menu. For example, the menu's code of **3314** means that the price of the menu is **RM14.00**. **Notes:** You may use the **modulus operator** or the selection instructions to get the price of the menu from its code.

Table 1: List of menus

Menu	Code
Seasonal Fruit Box	3314
Grilled Peri Peri Chicken with Bean Salad	1118
Mongolian Beef with Stir Fried Baby Bok Choy and Fragrant Rice	2220

In order to boost the sales, the restaurant offers 5% of discounts from the gross amount for each order with the quantity more than or equal to 15. The customers also need to pay 6% of additional charges for the Good and Services Tax (GST) for all the menus except the menu with the code of 3314. The GST is calculated based on the amount after deducting the discount.

The input of the program should be read from a file. The file contains a list of sales, in which each sale (i.e., each line) is represented by the code and the quantity of the ordered menu. Examples of the input files are shown in **Figure 1(a)** and **2(a)**. **Notes:** The input data are read from the file until the menu's code equals to the value of zero.

The output of the program should be displayed into another file. Examples of the output files can be seen in **Figure 1(b)** and **2(b)**. The output file should include the following information:

- a) Sales Details: the list of sales, where each sale consists of the
- menu's code,
 - quantity of the ordered menu,
 - price of the menu,
 - gross amount of charges to the customer (i.e., the amount before the GST and discount are included),
 - discount rate given to the customer,
 - GST rate and
 - nett amount paid by the customer (i.e., inclusive of GST and discount).

- b) The sales statistics, which shows the total quantity of orders for each menu.
- c) The weekly total sales (i.e., inclusive of the discounts and GSTs).

The assessment criteria are as shown in **Table 2**.

```
1118 5
2220 8
3314 20
3314 12
1118 30
3314 9
1118 10
0
```

(a) Input file named “input1.txt”

Dynamic Restaurant's Weekly Sales Report						
::SALES DETAILS::						
Code	Quantity	Price (RM)	Amount (RM)	Discount (%)	GST	Total (RM)
1118	5	18.00	90.00	0.00	6.00	95.40
2220	8	20.00	160.00	0.00	6.00	169.60
3314	20	14.00	280.00	5.00	0.00	266.00
3314	12	14.00	168.00	0.00	0.00	168.00
1118	30	18.00	540.00	5.00	6.00	543.78
3314	9	14.00	126.00	0.00	0.00	126.00
1118	10	18.00	180.00	0.00	6.00	190.80
::SALES STATISTICS::						
Code	Total Quantity					
1118	45					
2220	8					
3314	41					
Total Sales = RM 1559.58						

(b) The output file for the input file “input1.txt”

Figure 1: First example run

```

3314 12
1118 5
3314 20
3314 9
1118 10
2220 4
1118 7
3314 16
2220 18
2220 13
1118 10
3314 14
3314 8
1118 9
0

```

(a) Input file named “input2.txt”

Dynamic Restaurant's Weekly Sales Report						
::SALES DETAILS::						
Code	Quantity	Price (RM)	Amount (RM)	Discount (%)	GST	Total (RM)
3314	12	14.00	168.00	0.00	0.00	168.00
1118	5	18.00	90.00	0.00	6.00	95.40
3314	20	14.00	280.00	5.00	0.00	266.00
3314	9	14.00	126.00	0.00	0.00	126.00
1118	10	18.00	180.00	0.00	6.00	190.80
2220	4	20.00	80.00	0.00	6.00	84.80
1118	7	18.00	126.00	0.00	6.00	133.56
3314	16	14.00	224.00	5.00	0.00	212.80
2220	18	20.00	360.00	5.00	6.00	362.52
2220	13	20.00	260.00	0.00	6.00	275.60
1118	10	18.00	180.00	0.00	6.00	190.80
3314	14	14.00	196.00	0.00	0.00	196.00
3314	8	14.00	112.00	0.00	0.00	112.00
1118	9	18.00	162.00	0.00	6.00	171.72
::SALES STATISTICS::						
Code	Total Quantity					
1118	41					
2220	35					
3314	79					
Total Sales = RM 2586.00						

(b) The output file for the input file “input2.txt”

Figure 2: Second example run

Table 2: Assessment criteria

Item	Criteria	Marks
A	The program is able to run and generate a correct output	5
	Using an appropriate structure for the program (<i>e.g.</i> all required header files are included, the function main is properly written, <i>etc.</i>)	2
B	The input:	
	- Reading input of sale, i.e., the menu's code and order quantity.	2
	- The inputs are read from a file.	1
	- The reading process has been done for a list of inputs	2
C	The processes:	
	- Determining the price of the ordered menu for each sale.	3
	- Calculating the gross amount for each sale.	3
	- Calculating the amount of GST incurred by and discount given to the customer for each sale.	8
	- Calculating the nett amount paid by the customer for each sale.	4
	- Calculating the total quantity of orders for each menu.	6
	- Calculating the weekly total sales.	2
	- The above calculations have been done for a list of sales.	7
D	The output:	
	- Printing the sale information, i.e., the menu's code, quantity, price, gross amount, GST rate, discount rate, and nett amount of the sale, for the Sales Details.	7
	- Printing the summary of sales, which includes the menu's code and total ordered quantity for each menu.	2
	- Printing the weekly total sales	1
	- Printing the outputs with proper formats (<i>e.g.</i> width, decimal points, <i>etc.</i>).	3
	- The outputs are printed into a file.	5
	- The printing of Sales Details has been done for a list of sales.	7
Total		70