

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION SEMESTER I **SESSION 2021/2022**

COURSE NAME

: ALGORITHM AND PROGRAMMING

COURSE CODE

: BIC 10204

PROGRAMME CODE : BIS / BIP / BIW / BIM

EXAMINATION DATE : JANUARY / FEBRUARY 2022

DURATION

: 3 HOURS

INSTRUCTION

: 1. ANSWER ALL QUESTIONS.

2. THIS FINAL EXAMINATION IS CONDUCTED ONLINE AND

CLOSE BOOK

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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Write C programs to print the multiplication table of 5 from 1 to 10, by using do - while loop.

(5 marks)

Write an interactive C program using if - else statement, to input water unit charge and calculate the total water bill according to the given condition:

For the first 50 units RM 0.40/unit For the next 100 units RM 0.80/unit For the next 100 units RM 1.20/unit For above 250 units RM 1.55/unit

An additional surcharge of 15% is added to the bill.

(15 marks)

Q3 Based on **Table 1**, you are required to write a C program to calculate an assessment mark for a student, which receives input of user's tests, homeworks, midterm and final mark using while loop. The program will then calculate Grand Total and Grade based on the given calculation method and **Table 2**.

TABLE 1: Student's Assesment Mark

Assessment	Mark		
Test1	70		
Test2	70		
Test3	70		
Total Test	14		
Hw1	40		
Hw2	40		
Hw3	40		
Hw4	40		
Hw5	40		
Hw6	40		
Total HW	24		
Mid Term	70		
Total Mid Term	7		
Final	70		
Total Final	28		
Grand Total	73		
Grade	?		



TABLE 2: Grade Classification

Marks range	Grade
GrandTotal >= 80	A
(GrandTotal >= 70 && GrandTotal < 80)	В
(GrandTotal >= 60 && GrandTotal < 70)	С
(GrandTotal >= 50 && GrandTotal < 60)	D
(GrandTotal >= 40 && GrandTotal < 50)	Е
GrandTotal < 40	Failed

Calculation method:

```
Total test = ((test1 + test2 + test3) / 300) \times 20\%

Total Hw = ((Hw1 + Hw2 + Hw3 + Hw4 + Hw5 + Hw6) / 300) \times 30\%

Total Mid Term = 10\% from the midterm marks

Total Final = 40\% from the final exam marks

Grand Total = ?

Grade = ?
```

Example of output:

Grade = B

1	1		
Enter	test1	:	70
Enter	test2	:	70
Enter	test3	:	70
Total	Test	:	14.00
Enter	hw1	:	40
Enter	hw2	:	40
Enter	hw3	:	40
Enter	hw4	:	40
Enter	hw5	:	40
Enter	hw6	:	40
Total	HW	:	24.00
Enter	Mid Term	:	70
Total	Mid Term	:	7.00
Enter	Final	:	70
Total	Final	:	28.00
Your t	total mark	is :	73.00

(15 marks)

Q4 Based on Figure Q4, answer the following questions.

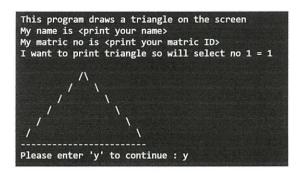


Figure Q4

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(a) Write pseudocode to print your Name and Matric ID. Then, request a user to invoke selection number 1 to print the menu and triangle as shown in **Figure Q4**.

(6 marks)

- (b) Write the C program that can print your Name, Matric ID and the triangle design. Using a while loop, the program allows the user to repeat the process by invoking letter 'y' and the process will be terminated when the user invokes any letter, except letter 'y'. The program consists of the following functions:
 - Main call the other function to print messages. Then, prompt and ask user to invoke number 1 to call other functions to print a triangle. Afterward, prompt and ask user to invoke letter 'y' to repeat the process as shown in **Figure Q4**.
 - print_menu print messages including your Name and Matric ID as shown in Figure Q4.
 - draw_triangle print a triangle.

(17 marks)

Q5 Given days = "Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday". Write a complete C program using an array that permits interaction with the user in this manner.

Example of output:

Enter a Day Number : 3
The day name = Tuesday

(5 marks)

Q6 Based on Figure Q6, answer the following questions.

Figure Q6

(a) Define a structure of fuel containing the details such as pumpNo, fuelType and pricePerLitre.

(4 marks)

(b) Based on the answer in **Q5** (a), write a program that accepts from a user and displays the fuel details using structure with pointer.

(13 marks)

-END OF QUESTIONS -

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