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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : PRINCIPLES OF PROGRAMMING

COURSE CODE : DAT 10603

PROGRAMME CODE : DAT

EXAMINATION DATE : JULY 2022

DURATION : 3 HOURS

INSTRUCTION

1. ANSWER **ALL** QUESTIONS.

2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**.

3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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SECTION A (10 MARKS)**Answer True or False for each of the following.**

- Q1** There is a `string` data type in C.
- Q2** The statement `int age[5] = {20};` means that only the first element in the array stores the value 20.
- Q3** The maximum dimension for an array is two.
- Q4** The size of an array can be changed during program execution.
- Q5** Array and pointer are the same thing.
- Q6** `NULL` pointer is not the same as an uninitialised pointer.
- Q7** The statement `int* ptr1, ptr2;` means that `ptr1` and `ptr2` are pointing to some random address that may or may not be a valid address.
- Q8** When `fopen()` is not able to open a file, it returns `NULL`.
- Q9** `a` in the statement `fp = fopen("Random.txt", "a");` means to append.
- Q10** `FILE*` is used to represent a file in C.

SECTION B (60 MARKS)

- Q11** Differentiate between programmer, program, and programming. (3 marks)
- Q12** List the phases in a program development life cycle. (4 marks)
- Q13** Categorise the following into the correct character set. (3 marks)
- (i) `*`
 - (ii) `if`
 - (iii) `8`

Q14 Classify the following into the correct token.

- (i) <
- (ii) status
- (iii) pi
- (iv) for
- (v) []

(5 marks)

Q15 Suggest a suitable data type for the following input.

- (i) age
- (ii) salary
- (iii) telephone number
- (iv) grade

(4 marks)

Q16 Determine whether the following variable name is valid or invalid.

- (i) 2ndNum
- (ii) TOTALPRICE
- (iii) totalprice
- (iv) TotalPrice
- (v) Totalprice
- (vi) totalPrice
- (vii) tp
- (viii) total_price
- (ix) total price
- (x) total\$

(5 marks)

Q17 Identify the type of statement of the following.

- (i) `printf("Enter name: ");`
- (ii) `if(gender=='f')`
- (iii) `i+=1;`
- (iv) `float bill;`
- (v) `sum = 0;`
- (vi) `return 0;`

(6 marks)

Q18 Differentiate between multi-line and single-line comments in terms of purpose and syntax.

(4 marks)

Q19 State the header file for the following functions.

- (i) `sqrt()`
- (ii) `strlen()`
- (iii) `isdigit()`
- (iv) `getche()`
- (v) `putchar()`

(5 marks)

Q20 Create a program that classifies the income category of a household based on the table below.

Income range (RM)	Income category
Less than or equal to 4850	B40
4851 - 10970	M40
More than or equal to 10971	T20

(8 marks)

Q21 Produce a program that counts, in a class of 30 students, how many have taken the Covid-19 booster dose and how many have not.

(11 marks)

Q22 The cumulative grade point average (CGPA) for 50 students are declared as follows:

```
float cgpa[50];
```

Write a program that displays all CGPAs eligible for the vice-chancellor award, i.e. 3.5 or above in multiple rows and the total number of students that will receive it.

(12 marks)

SECTION C (20 MARKS)

Q23 The parking rate at an airport is given as below.

Duration	Rate (RM)
1st - 3rd hour	4.00 / hour
4th - 9th hour	3.00 / hour
10th hour & above	2.00 / hour
Max rate per day (1st-3rd day)	46.00
Max rate per day (4th day & above)	20.00

The following are samples of parking hours entered and parking charge.

Hours	Charge (RM)
11	34
26	54
108	178

Write a program that calculates the parking charge based on hours entered using the following functions:

- (a) calculate()
 - (i) Receives parking hours.
 - (ii) Partially calculates the parking charge.
 - (iii) Returns result of calculation.

- (b) `main()`
- (i) Receives parking hours from the user.
 - (ii) Calls function `calculate()`.
 - (iii) Partially calculates the parking charge.
 - (iv) Displays parking charge.

Note that users can enter parking hours other than those used in samples.

(20 marks)

-END OF QUESTIONS-

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