Charles Darwin University

Final Examination

Family Name	
Given Name/s	
Student Number	
Teaching Period	Semester 1, 2019

HIT365 – C Programming	DURATION	
	Reading Time:	**10** minutes
	Writing Time:	**180** minutes

INSTRUCTIONS TO CANDIDATES

a. Attempt ALL 9 questions.

b. All answers are to be written in the answer booklet provided.

c. Questions ARE NOT of equal value. Marks are shown for all questions.

d. Read all the questions carefully before attempting.

e. This examination is worth 50% of the total assessment for this unit.

EXAM CONDITIONS

<u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

No calculators are permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 20 Page Book

THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Question 1

(a) Explain the meaning of "pass-by-reference" and "pass-by-value" in C programming.

(b) In most cases, a **for** statement in a C program can be represented with an equivalent **while** statement. However, there is one exception. Discuss this exception.

(c) Describe the technique to generate a different sequence of random numbers each time the program runs.

(9 marks)

Question 2

Write a C program that takes an arithmetic operator +, -, *, / and two operands from the user and performs the calculation on the two operands depending upon the operator entered by the user, using **switch** and **break** statements.

(6 marks)

Question 3

Write a C program to add numbers until user enters zero, using a **do … while** loop.

(4 marks)

Question 4

What will the output be when you execute the following C code?

```c
#include<stdio.h>
int main(){
    const int *p;
    int a=10;
    p=&a;
    printf("%d",*p);
    return 0;
}
```

(4 marks)

Question 5

Write a C program that asks user to enter a string and a character and checks how many times the character is repeated in the string.

(5 marks)

Question 6

Write a program that takes three integers entered by a user and stores them in variable a, b and c respectively. Then, these variables are passed to a function using pass by reference. This function swaps the value of these elements in cyclic order. The program prints the output on the screen. Below is the sample output of the program:

Enter value of a, b and c respectively: **1 2 3**
Value before swapping:
a=1
b=2
c=3
Value after swapping numbers in cycle:
a=3
b=1
c=2

(6 marks)

Question 7

Write a C program to store the information (name, roll and marks) of 10 students using structures. In the program, a structure, student is created. This structure has three members: name (string), roll (integer) and marks (float). Then, a structure array of size 10 to store information of 10 students is created. Using **for** loop, the program takes the information of 10 students from the user and displays it on the screen. Below is an example of program output:

Enter information of students:

For roll number 1,
Enter name: **Tom**
Enter marks: **98**

For roll number 2,
Enter name: **Jerry**
Enter marks: **89**
.
.
.
Displaying Information:

Roll number: 1
Name: Tom
Marks: 98
.
.
.

(6 marks)

Question 8

Write a C program to calculate the power of a number using recursion.

(6 marks)

Question 9

Assume that integer array b[5] and integer pointer variable bPtr have been defined. Write a statement to set bPtr equal to the address of the first element in array b. Write a statement using pointer expression to reference the array element b[3].

(4 marks)