FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**April 2020**
Programme	:	Diploma in Information Technology (DITN) Diploma in Information and Communication Technology (DICTN) Diploma in Electrical & Electronic Engineering (DEEI)
Course	:	**ICT1103: Structured Programming**
Date of Examination	:	6 August 2020 (Thursday)
Time	:	8.00am – 10.30am Reading Time : Nil
Duration	:	2 Hours 30 Minutes

Special Instructions :

This **paper** consists of **SIX (6)** questions. Answer **ALL** questions in your own foolscap papers.

Material permitted :
Non-Programmable Scientific Calculator

Materials provided :
Nil

Examiner(s)	:	**Mr Lai Kim Min, Ms Siti Hajar Khairuddin, Ms Nor Athira Azlan**
Chief Moderator	:	Ms Ng Ruoh Ling

*This paper consists of **6** printed pages, including the cover page*

DIPLOMA IN INFORMATION TECHNOLOGY PROGRAMME (DITN)
DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY PROGRAMME (DICTN)
DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING PROGRAMME (DEEI)
ICT1103: STRUCTURED PROGRAMMING
FINAL ALTERNATIVE ASSESSMENT: APRIL 2020 SESSION

Instruction: This **paper** consists of **SIX (6)** questions. Answer **ALL** questions in your own foolscap papers.

SECTION A: 60 Marks

Question 1

(a) Write a statement to accomplish each of the following tasks:

i) Declare the variables `interest` and `amount` to be of type `float`.
ii) Read three integers from the keyboard and store them in the integer variables `a`, `b` and `c`.
iii) Print out the character with ASCII code `70`.
iv) Round up a variable called `fraction` as double type. Display the result as an integer format.
v) Use the ternary operator to compare the `largest` to `number1`. If the value of `number1` is larger, replace `largest` with `number1`.

(7 marks)

(b) Based on the following fragment of code, answer the following questions:

```
cout << "Enter salary: "; //as double type
cin >> salary;

cout << "Enter name: ";   //as string type
getline(cin,name);
```

i) State a problem with the above code. Provide an appropriate solution with an example.

(4 marks)

ii) Briefly explain the outcome if the user enters salary with value "`ABCD`"? Identify a way to solve this problem.

(4 marks)

(Total: 15 marks)

Question 2

(a) Write a fragment of code that prompts the user to input four integers. Print the result of first integer times the second integer and third integer minus the forth integer. You are not required to declare the variables.

(6 marks)

(b) Based on the information given in the table below, use the switch statements to display the details of the discount code. Assume the discount code is stored into two distinct variables called `letter1 (e.g. 'D')` and `letter2 (e.g. '+')` as `char` type.

Discount code	Discount Details
D+	You get 50% discount
D	You get 30% discount
D-	You get 15% discount

(9 marks)

(Total: 15 marks)

Question 3

(a) Use only one variable, write a fragment of code with `while` loop to produce the following output:

```
1 + 2 = 3
3 + 4 = 7
5 + 6 = 11
7 + 8 = 15
9 + 10 = 19
```

(6 marks)

(b) Write a method called `power`. This method will accept two arguments namely `base` and `exponent` as an integer type. Use a loop to produce and return back the answer as long type to the calling environment. Beware that if the `exponent` is 0, 1 will be returned. For example:

```
cout << power(2,3); //2^3 =  8
```

(9 marks)

(Total: 15 marks)

Question 4

(a) Write a C++ statement(s) that performs the following tasks:

i) Create a char array called `blur` and assign it with value "`I AM BLUR`".
ii) Declare a pointer variable called `b1` that points to the first element of `blur` array.
iii) Create a `char` variable called `b2`. Assign the value of `b1` to `b2`.
iv) Replace the '`R`' letter to '`E`' letter by using `b1` pointer variable.

(5 marks)

(b) We have 25 students in the class and each student has three coursework components namely assignment, test and project. Answer the following questions:

i) Create a 2D array to store the marks for 25 students. Assume the marks can be in decimal format (e.g. 82.45). Create appropriate constant values to hold the dimension for row and column.

(4 marks)

ii) Assume that you have wrongly set the assignment component as the first column and it should be set under second column (currently is test column). Write a fragment of code to exchange the data between column 1 and column 2.

(6 marks)

(Total: 15 marks)

SECTION B: 40 Marks

Question 1

Write a C++ program that reads a sequence of up to 5 pairs of name and unit price of book details. Store the data into the respective array. Then, after the input has been read in, print the list in an appropriate format to the screen. Create the following functions to capture and print out the book details:-

- `inputBookDetails`:- This function should accept the name array, price array, and size of the array. Then prompt the user to enter all the data into the arrays.

- `printBookDetails`:- This function should print out the books' details in tabular format and the price must be in 2 decimal places. Pass appropriate parameters to this function. Set the width of the book name as 30 and 15 for the price field.

Call the above functions in the main program. The sample output is as follows:

```
Book #1
Enter Book Name : Professional C++ 11
Enter Price (RM): 150

Book #2
Enter Book Name : Android Studio 3.5
Enter Price (RM): 200
...



          BOOK NAME            PRICE (RM)
Professional C++ 11                150.00
 Android Studio 3.5                200.00
...
```

(Total: 20 marks)

Question 2

Write a C++ program that allows users to handle a set of document objects with a customized data type. Your program should perform the following operations:

- Create a structure named `Colour`. Include `r`, `g`, and `b` as data elements with value range 0 to 255.
- Create a structure named `Document`. Each document should have a `title` member as char array type with size 50 and `colour` code as `Colour` type.
- Create an array of five as `Document` type.
- Create a function named `createDocument` to prompt the user to enter data for each document. You should pass appropriate arguments to this function.
- Use a loop to display those documents with web safe colour code (at least 2 colour elements are similar. For example R=**100**, G=**100**, B=200).

```
Enter document #1 title      : Sales Report
Enter color code for R, G & B: 100 200 100

Enter document #2 title      : July Expenses
Enter color code for R, G & B: 0 50 0

Enter document #3 title      : Meeting Minute
Enter color code for R, G & B: 5 20 255

….

Document with color safe code

Title          Color Code
Sales Report   RGB(100,200,100)
July Expenses  RGB(0,50,0)
```

(Total: 20 marks)

~THE END~

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