INTI International University & Colleges

FINAL
Examination Paper

(COVER PAGE)

Session	:	April 2016
Programme	:	Diploma in Information And Communication Technology (DICTN)
Course	:	**ICT1103: Structured Programming**
Date of Examination	:	30 July, 2016 (Saturday)
Time	:	2:00pm – 4:00pm Reading Time : Nil
Duration	:	2 Hours

Special Instructions :

Answer any **FOUR (4)** questions in the answer booklet provided.

Materials permitted :

Nil

Materials provided :

Nil

Examiner(s) : **Chern Huey Rong,** and Ng Ruoh Ling

Moderator : Siti Hawa Binti Mohamed Said

This paper consists of 7 printed pages, including the cover page

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY (DICTN)
ICT1103: STRUCTURED PROGRAMMING
FINAL EXAMINATION: APRIL 2016 SESSION

Instruction: This paper consists of **SIX (6)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

QUESTION 1

(a) State if the following names of identifiers are valid or invalid.

(i) Student-marks
(ii) number2
(iii) int
(iv) _gameScore
(v) 4U2C

(5 marks)

(b) Differentiate between variable and constant.

(4 marks)

(c) Write a C++ program to read in 3 different positive integers into 3 different variables. Display the three integers in ascending order (from smallest to biggest). Use only **if** structure to arrange the output.

(11 marks)

(d) Write a program that reads an amount in US Dollar and convert it to Ringgit Malaysia. The exchange rate is 1 US Dollar is equal to 3.91 Malaysia Ringgit.

(5 marks)

QUESTION 2

(a) Write a program that reads a single-digit positive integer and prints the multiplication table of the integer. For example if the input integer is 9, then the output should be as follow:

9 x 1 = 9
9 x 2 = 18
:
9 x 12 = 108

(7 marks)

(b) Write a switch case statement to print the following output based on the grade received. Assume only one grade is entered by user.

Grade	**Output**
A	Outstanding
B	Good
C	Satisfactory
F	Poor

(7 marks)

(c) Write a complete program that prompts the user for the radius of a sphere, and calculates and prints the volume of that sphere. Use a function sphereVolume that returns the result of the following expression: (4.0 / 3.0 * 3.14159 * pow(radius, 3)).

(5 marks)

(d) Scientists measure an object's mass in kilograms and its weight in Newtons. If you know the amount of mass of an object, you can calculate its weight, in Newtons, with the following formula:

Weight = Mass × 9.8

Design a program that asks the user to enter an object's mass, and then calculates its weight. If the object weighs more than 1,000 Newtons, display a message indicating that it is too heavy. If the object weighs less than 10 Newtons, display a message indicating that it is too light.

(6 marks)

QUESTION 3

(a) Write a program that simulates the generation of 4D number. The program generates each digit separately (between 0 and 9) using the random function before showing the 4 digits together. The digit generation is done in a separate function that returns a random number.

(11 marks)

(b) Assuming the necessary variables and arrays are declared, write C++ statements to accomplish each of the following:

(i) Display the value of the 5^{th} element of a character array named **letter**.

(2 marks)

(ii) Input a value into the 10^{th} element of a single-subscripted float array called **temperature**.

(2 marks)

(iii) Average the first and the last elements of an integer array named **score**, with 20 elements and assign the average to a float variable named **average**.

(3 marks)

(iv) Convert all the characters in an array of char named **message** to uppercase and store the data back to the same array.

(3 marks)

(c) Differentiate between call-by-value and call-by-reference with reference arguments when they are passed to a function.

(4 marks)

QUESTION 4

(a) Design a program for the Hollywood Movie Rating Guide, in which users continuously enter a value from 0 to 4 that indicates the number of stars they are awarding to the Guide's featured movie of the week. The program executes continuously until a user enters a negative number to quit. If a user enters a star value that does not fall in the correct range, reprompt the user continuously until a correct value is entered. At the end of the program, display the average star rating for the movie.

(9 marks)

(b) What would be printed from the following C++ program?

```
#include<iostream>
#include<conio.h>
using namespace std;

int main(){
   int list[10]={1,2,3,4,5,6,7,8,9,10};
   int i;
   for(i=0;i<5;i++)
   {
      int temp=list[i];
      list[i]=list[9-i];
      list[9-i]=temp;
   }
   for(i=0;i<10;i++)
       cout<<list[i]<<"\t";
   getch();
   return 0;

}
```

(10 marks)

(c) (i) What is a dangling pointer?
(ii) What is the difference between char a[] = "string"; and char *p = "string";?
(iii) What does extern mean in a function declaration?

(6 marks)

QUESTION 5

(a) (i) Define a structure named **Record** to keep the following information:

- Name (array of char)
- Gender (char)
- Salary (float)

(4 marks)

(ii) Declare an array for the structure **Record** for 2 records with the following data:
Peter Parker, M, $3500 and Rose White, F, $3200

(3 marks)

(iii) Write a function that takes the array of the structure **Record** created in (a)(ii) and prints the name, gender and salary of each record. The function also calculates and prints the average of the salary.

(10 marks)

(b) Explain the following type and its range:

(i) wchar_t
(ii) short unsigned int
(iii) signed char
(iv) short

(8 marks)

QUESTION 6

(a) Give the output of the following program:

```
#include <iostream>
void main()
{    int arr[] = {25, 10, 35, 70};
     int x, y, *p = arr;

     x = *p;
     y = *(p+2);
     cout << "First line: x = " << x << "\t y = " << y << endl;
     int *a, *b;
     a = &x;
     b = &y;
     cout << "Second line: x = " << x << "\t y = " << y << endl;
     *a = 3;
     cout << "Third line: x = " << x << "\t y = " << y << endl;
     a = b;
     y = *a;
     cout << "Fourth line: x = " << x << "\t y = " << y << endl;
}
```

(8 marks)

(b) Explain global variable with example. Your example should show how to declare and use global variable.

(5 marks)

(c) Write a program that reads the name, the height (in cm) and the weight (in kg) of 5 persons. The program stores the records (each record in a line) into a character-based file called record.dat.

(12 marks)

~ The End ~