



FINAL
Examination Paper

(COVER PAGE)

Session : April 2013

Programme : Diploma In Information And Communication Technology (DICTN)

Course : CSC1103
ICT1103 : Structured Programming

Date of Examination : August 2, 2013

Time : 5:00pm – 7:00pm Reading Time: Nil

Duration : 2 Hours

Special Instructions :

Part A : Answer ALL compulsory questions.

Part B: Answer any TWO (2) questions.

Materials permitted : Nil

Materials provided : Nil

Examiner (s) : Ms. Pawani Rasaratnam, Annida Said.

Moderator : Dr. Ang Tan Fong

This paper consists of 5 printed pages, including the cover page.

INTI INTERNATIONAL COLLEGE SUBANG

DIPLOMA IN COMPUTING & INFORMATION TECHNOLOGY PROGRAMME

(DICTN)

ICT 1103: STRUCTURED PROGRAMMING

FINAL EXAMINATION: APRIL 2013 SESSION

Instructions: This paper consists **TWO (2)** parts. Answer **ALL** the questions in **PART A** and any **TWO (2)** out of **THREE (3)** questions from **PART B** in the answer booklet provided. All questions carry equal marks.

Part A (50 marks): Answer **TWO (2)** compulsory questions.

Question 1

(a) Write a single C++ statement to accomplish each of the following:

- (i) Declare the variables **c**, **thisIsAVariable**, **q76354** and **number** to be of type **int**.
- (ii) Prompt the user to enter an integer. End your prompting message with a colon (:) followed by a space and leave the cursor positioned after the space.
- (iii) Read an integer variable called **age** from the user using the keyboard.
- (iv) Print the message "This is a C++ program" with each word on a separate line.

(8 marks)

(b) Write a program that asks the user to enter two integers in the **main()** function. Use another function to print the larger number followed by the words "is larger." If the numbers are equal, print the message "These numbers are equal."

(7 marks)

(c) Write a program that reads in two integers and determines and prints if the first is a multiple of the second.

(7 marks)

(d) What does the following code print?

```
cout << "*" \n ** \n *** \n **** \n *****" << endl;
```

(3 marks)

Question 2

(a) Write C++ statements to accomplish each of the following tasks.

- (i) Declare variables **sum** and **x** to be of type **int**.
- (ii) Set variable **x** to 1.
- (iii) Set variable **sum** to 0.
- (iv) Add variable **x** to variable **sum** and assign the result to variable **sum**.
- (v) Print "The sum is: " followed by the value of variable **sum**.

(10 marks)

(b) Write a program to read 10 integers using the keyboard and store them into an array. Display the content of the array onto the screen. Then, sort the array in ascending order and display the sorted array content onto the screen.

(10 marks)

(c) Write a C++ fragment that uses a for loop statement and the tab escape sequence `\t` to print the following table of values:

N	10*N	100*N	1000*N
1	10	100	1000
2	20	200	2000
3	30	300	3000
4	40	400	4000
5	50	500	5000

(5 marks)

Part B (50 marks): Answer any **TWO (2)** out of **THREE (3)** questions.

Question 1

- (a) State **TWO (2)** examples of data structure that use static memory allocation. (4 marks)
- (b) Explain the difference between initialization and defining a variable using an example. (4 marks)

(c) Trace the output of the following program:

```
#include<iostream>
using namespace std;
int main()
{
    int myAge;
    int *pAge = NULL; // a pointer

    myAge=5;
    pAge = &myAge;
    cout << "myAge: " << myAge << "\n";
    cout << "*pAge : " << *pAge << "\n\n";

    cout << "*pAge = 7\n";
    *pAge = 7;
    cout << "*pAge : " << *pAge << "\n";
    cout << "myAge : " << myAge << "\n\n";

    cout << "myAge = 9\n";
    myAge = 9;
    cout << "myAge: " << myAge << "\n";
    cout << "*pAge : " << *pAge << "\n";
    return 0;
}
```

(8 marks)

(d) Write a program using **switch** statement to create a simple calculator.

Sample run

Enter the first number: 5
 Enter the second number: 10
 Enter the operator (+,-,*,/): +
 Output: 5 + 10 = 15

(9 marks)

Question 2

(a) Trace the output for the following statements:

```
char line1[100] = "It's the best joke ever";
char line2[100] = "Anything goes";

cout << line1 << "\t\t" << line2 << endl;
strcpy (line2, line1);
strcpy (line1, "Laugh a lot");
cout << line1 << "\t\t" << line2 << endl;
strcat (line1, line2);
cout << line1 << "\t\t" << line2 << endl;
strupr (line1);
strlwr (line2);
cout << line1 << "\t\t" << line2 << endl;
```

(8 marks)

(b) Explain the difference between sequential search and binary search by using an example for each.

(6 marks)

(c) Develop a C++ program that will determine if a department store has exceeded the credit limit on a charge account. The following facts are available for each customer:

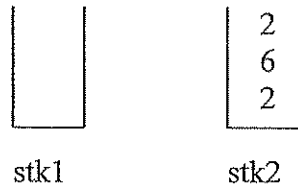
- (i) Account number (an integer)
- (ii) Balance at the beginning of the month
- (iii) Total of all items charged by the customer this month
- (iv) Total of all credits applied to this customer's account this month
- (v) Allowed credit limit

The program should input each of these facts, then calculate the *new balance* (= *beginning balance* + *charges* – *credits*), and determine if the new balance exceeds the customer's credit limit. For those customers whose credit limit is exceeded, the program should display the customer's account number, credit limit, new balance, and the message "Credit limit exceeded".

(11 marks)

Question 3

- (a) Use an example to explain and differentiate local variable and global variable. (6 marks)
- (b) Draw the memory diagram based on the stack operation if you are given two stack stk1 and stk2. The initial contents of stk2 are '2', '6' and '2'. Draw the memory diagram for each operation in sequence:



- (i) push.stk1 (pop.stk2(top)) (2 marks)
- (ii) push.stk1('0') (1 mark)
- (iii) pop.stk2() (1 mark)
- (c) Using the Book structure declared as follows, write a program that dynamically creates an array of books and populate the array with input. It should then display all book titles with prices more than RM100, and finally delete the array.

```

struct Book
{
    char title[100];
    char author[100];
    long isbn;
    float price;
}

```

(15 marks)

--THE END--
 ICT1103 / (F) / April2013