INTI
International College Subang
LAUREATE INTERNATIONAL UNIVERSITIES

FINAL
Examination Paper

(COVER PAGE)

Session	:	**August 2012**		
Programme	:	Diploma In Information And Communication Technology (DICTN)		
Course	:	**ICT1103 : Structured Programming**		
Date of Examination	:	December 10, 2012		
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) : **Pawani Rasaratnam,** Annida Said.

Moderator : Dr. Ang Tan Fong

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

INTI INTERNATIONAL COLLEGE SUBANG
DIPLOMA IN COMPUTING & INFORMATION TECHNOLOGY PROGRAMME
(DICTN)
ICT 1103: STRUCTURED PROGRAMMING
FINAL EXAMINATION: AUGUST 2012 SESSION

Instructions: 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) Trace the output for the following programs:

(i)
```
#include <iostream>
using namespace std;

void myFunc()
{
    int x = 8;
    cout<<"\nx is: "<<x;
    x = 9;
    cout<<"\nx is: "<<x;
}
int main()
{
    int x = 5;
    myFunc();
    cout<<"\nx is: "<<x;
    return 0;
}
```

(3 marks)

(ii)
```
#include <iostream>
using namespace std;

void swap(int &x, int y)
{
    int temp;
    temp = x;
    x = y;
    y = temp;
    cout<<"Swap function, after swap, x: "<<x<<"\ty: "<<y<<"\n";
}
int main()
{
    int x =5, y = 10;
    swap(y,x);
    cout<<"Main function, after swap, x: "<<x<<"\ty: "<<y<<"\n";
    return 0;
}
```

(4 marks)

(iii)
```
#include <iostream>
using namespace std;

intAreaCube(int len, int wid, int height)
{
    return (len*wid*height);
}

int main()
{
    int length = 100, width = 50, height = 50, area;
    area = AreaCube(length, width, height);
    cout<<"First area equals: "<<area<<"\n";

    length = 10;
    width = 5;
    height = 1;
    area = AreaCube(length, width, height);
    cout<<"Second area equals: "<<area<<"\n";
return 0;
}
```

(3 marks)

(b) Trace the output of the following code fragment.

```
int n1 = 8, n2 = 16, n3;
char c1 = 'H', c2 = 'R';
int* ptr1 = &n1, ptr2 = &n2;
char* ptr3 = &c1, ptr4 = &c2;

cout<< n1 << n2 << c1 << c2
   << *ptr1 << *ptr2 << *ptr3 << *ptr4 <<endl;

n1 += 6; n2--; (*ptr1)++; (*ptr2)++; (*ptr3)--;
cout<< n1 << n2 << c1 << c2 << *ptr1 << *ptr2 << *ptr3 <<endl;

n3=*ptr1+*ptr2; *ptr1=n1*n2; (*ptr2)+=6; (*ptr3)=(*ptr4); (*ptr4)--;
cout<< *ptr1 << *ptr2 << *ptr3 << *ptr4 << n3;
```

(10 marks)

(c) With reference to the following C++ statements below, describe what does it achieve?

(i) B = *A
(ii) B = &A
(iii) B = **A
(iv) B = A
(v) int &a

(5 marks)

Question 2

(a) A function called *newArray* receives two character arrays named *arrayIn* and *arrayOut*. Both arrays stores 10 characters. The function should then copy the content of *arrayIn* to *arrayOut*in reverse order.

(i) Declare the function *newArray*.

(ii) Define the function *newArray*.

(iii) Write the main function to call *newArray*.

(7 marks)

(b) Explain what each line in the following program statement does and show the values in the storage where necessary.

```
#include <iostream>
using namespace std;
int main()
{
int *ptr1,*ptr2;
int number[] = {28,2,5,73,25,13,12,18};

ptr2 = number;
ptr1 = &number[3];
*ptr2 = *(ptr1++);
cout<<*ptr2<<*ptr1;
 ptr2 += 5;
*ptr2 += 3;
cout<< ptr2 - ptr1;
return 0;
}
```

(10 marks)

(c) What will be displayed after the following statements are executed?

```
char line1[50] = "The Day Is Good.";
char line2[50] = "Whatever happens.";

cout<< line1 <<"\t\t"<< line2 <<endl;
strcpy (line2, line1);
strcpy (line1, "The sun is shining.");
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)

Question 3

(a) Computers are playing an increasing role in education. Write a program using a function that will help an elementary school student to learn multiplication. Use rand to produce two positive integers with one digit. The program then displays a question such as:

How much is 5 times 3?

The program asks the student for answer and verify the student's answer. If it is correct, print "**Very Good!**" and then ask another multiplication question. If the answer is wrong, print "**No, Please try again**" and then let the student try the same question again repeatedly until the student finally gets it right.

(10 marks)

(b) Write a program that reads the side length of a cube and its weight to determine and display its product code and class based on the table given below. The program should contain the following functions:

- A function that reads and return the side length of the cube and its weight.
- A function that accepts the side length and its weight then returns the product code.
- A function that accepts the product code and display the class.

Class	Product code	Side length	Weight
Light 1	A	< 20 cm	Less than 1 kg
Compact 1	B		1 kg and more
Light 2	C	20 – 50 cm	Less 3 kg
Compact 2	D		3 kg and more
Light 3	E	> 50 cm	Less than 6 kg
Compact 3	F		6 kg and more

(15 marks)

Question 4

(a) Write a complete C++ program that will prompt the user for 10 integers values and store it an array. Sort the array in descending order. Use a function to sort the values in the array and use another function to display the sorted array.

(12 marks)

(b) Write a program to determine and display the total points given by an electrical store to their members. For each RM5, one point is given. If the member spent more than RM1000, extra 50 points is presented. If the customer's birthday is on the same day as the purchase day, an additional 50 points is given.

(8 marks)

(c) Write a function to locate and find out the largest integer in an array called Number and it's position in the array. You may assume your own array size. (reminder: do not sort the array)

(5 marks)

Question 5

(a) Write a program using struct to represent a bank account. Include the following members:

Data members :
(i) Name of the depositor
(ii)Account Number
(iii) Type of account
(iv) Balance amount in the account

Member functions :
(i) To assign the initial values
(ii) To deposit an amount
(iii) To withdraw an amount after checking the balance
(iv) To display the name and balance

(13 marks)

(b) A parking charges a $2.00 minimum fee to park for up to three hours. An additional $0.50 per hour for each hour or part thereof in excess of three hours is charged further. The maximum charge for any given 24-hour period is $10.00. Assume that no car parks for longer than 24 hours at a time. Write a program that will calculate and print the parking charges for 3 cars. You should enter the hours parked for each car. You should print the results in a neat tabular format, and should calculate and print the total of yesterday's receipts. The program should use the function calculatecharges to determine the charge for each customer. Your output should appear in the following format:

Car	Hours	Charge
1	1.5	2.00
2	4.0	2.50
3	24.0	10.0
Total	29.5	14.50

(12 marks)

Question 6

(a) Write a program that reads a positive integer value that is not more than 10000 and extracts each digit from the integer and displays it as a word. For example, the value input 932 should display:

932 : nine three two

(10 marks)

(b)
```
struct node
{
    intnum;
    node *next;
}
```

Based on the declaration above, write a program that will create a linked list. Display all the nodes in the linked list and then calculate and display the average of all even values and the average of all odd values in the linked list.

(15 marks)

-The End-