INTI
INTERNATIONAL COLLEGE PENANG (507232-U)
LAUREATE INTERNATIONAL UNIVERSITIES

FINAL Examination Paper
(COVER PAGE)

Session : *JAN 2012*

Programme : DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING
DIPLOMA IN MICROELECTRICAL ENGINEERING
DIPLOMA IN TELECOMMUNICATION ENGINEERING

Course : **CSC1183: PROGRAMMING IN C++**

Date of Examination : 5 March 2012

Time : 8a.m. – 10a.m. Reading Time : Nil

Duration : 2 Hours

Special Instructions :

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

Materials permitted :

Nil

Materials provided :

Examiner(s) : Chern Huey Rong

Moderator : Annida Said

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

INTI INTERNATIONAL COLLEGE PENANG

DIPLOMA IN ENGINEERING
CSC1183: PROGRAMMING IN C++
FINAL EXAMINATION: JAN 2012 SESSION

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Question 1

(a) Write a program that inputs 3 integers from the keyboard. Print the sum, average and product of these numbers.

(6 marks)

(b) Identify and correct the errors in each of the following:

```
(i)   while (c <= 5) {
          product *= c;
          ++c;
(ii)  cin << value;
(iii) if (gender == 1)
          cout << "Woman" << endl;
      else;
          cout << "Man" << endl;
(iv)  while (z >= 0)
          sum += z;
(v)   for (y = .1; y != 1.0; y += .1)
          cout <<y<< endl;
(vi)  x = 1;
      while(x <= 10);
          x++;
      }
```

(6 marks)

(c) What is printed by each of these statements?

```
i.   int x = 1; cout << x++;
ii.  int x = 1; cout << ++x;
iii. int y = 2; y*= 3; cout << y;
iv.  cout << 4+3 * 4-3;
v.   cout << (1 > 2) ? 'a' : 'b';
vi.  for (int j=0; j<4; j++) {
         cout << j << " ";
     }
```

(6 marks)

(d) Write a program that is able to compute some operations on an integer. The program gets the value of the integer and writes the following menu :

1. Add 1
2. Multiply by 2
3. Subtract 4
4. Quit

The programs ask the user to type a value between 1 and 4. If the user types a value from 1 to 3 the operation is computed, the integer is written and the menu is displayed again. If the user types 4, the program quits.

(7 marks)

Question 2

(a) Write a function to determine if a number is divisible by 2 and 5.Write a program that can input a number and execute your function.

(5 marks)

(b) Write a function **qualityPoints** that receives a student's average as parameter and returns 4 if a student average is 90-100, 3 if the average is 80-89, 2 if the average if 70-79, 1 if the average is 60-69 and 0 if the average is lower than 60. Write a main program to get student average from user and execute your function.

(6 marks)

(c) Write a program that asks the user to type a positive integer. When the user types a negative value the program writes ERROR and asks for another value. When the user types 0 that means that the last value has been typed and the program must write the average of the positive integers. If the number of typed values is zero the program writes 'NO AVERAGE'.

(9 marks)

(d) Write a program that asks the user to type the width and the length of a rectangle and then outputs to the screen the area and the perimeter of that rectangle.

(5 marks)

Question 3

(a) Write program to sum the odd integers between 1 and 99 using a **for** statement.

(5 marks)

(b) Rewrite the following program by creating a separate function called **add()** to accept **TWO(2)** numbers and return the sum of the **TWO(2)** numbers:

```
#include <iostream>
using namespace std;

void main()
{
   int a, b, c;

   cout << "Enter two numbers: ";
   cin >> a >> b;

   c = a + b;

   cout << "Sum is: " << c;
}
```

(5 marks)

(c) Using **break** statements, write a program that will loop perpetually to continually input positive numbers from user and total them out and will only break out of the loop when user enters -1. Once the program breaks out of the loop, it will display the total.

(5 marks)

(d) Write a program that inputs a five-digit number, separates the number into its individual digits and prints the digits separated from one another by three spaces each. (Hint: Use the integer division and modulus operators.) For example, if the user types in **42339** the program should print: **4 2 3 3 9**

(10 marks)

Question 4

(a) What does the following program display?

```
#include <iostream>
using namespace std;


void main()
{
      int a = 6, b = 15;

      cout << a++ << endl;
      cout <<a << endl;
      cout << ++a << endl;

      cout << a-- << endl;
      cout << a << endl;
      cout << --a << endl;

      cout << a-- +  --b << endl;
      cout << --a + b++ << endl;

      cout << a-- + b-- << endl;
      cout << a++ + ++b << endl;

      cout << ++b - a-- << endl;
      cout << b++ - --a << endl;

}
```

(6 marks)

(b) Write a program that asks the user to type 10 integers of an array. The program will then display either "the array is in growing order", "the array is in decreasing order", "the array is constant", or "the array is mixture of growing and decreasing order."

(9 marks)

(c) An anagram is a word or a phrase that can be created by rearranging the letters of another given word or phrase. The all letters of "Desperation" can be rearranged to the phrase "A Rope Ends It".
Write a program that checks two given Strings whether one is an anagram of the other.

(10 marks)

Question 5

(a) Define each of the following terms:

(i) inheritance
(ii) base class
(iii) derived class

(6 marks)

(b) Write a program to read the following a file called "clients.dat" and only print out the names of those people whose age is above 30:

John	34
Albert	19
Mike	44
David	20
Clark	50

(6 marks)

(c) Write a program that reads three nonzero values entered by the user and determines and prints whether they could represent the sides of a triangle.

(5 marks)

(d) Assume an array:

```
a[10] = {1,2,3,4,5,6,7,8,9,10};
```

Write a program that contains a function **searchNumber** that accepts the array above and also a number which a user inputs to search for. If the number is found, the function should return the array index where the number was found. If the number is not found, then return -1. The main function should then print appropriate messages to indicate whether the number was found or was not found.

(8 marks)

Question 6

(a) (i) Declare a class called MyNumber that has 1 method called getMaximum which accepts 3 numbers and returns the maximum. Call it MyNumber.h

(ii) Declare in a separate file (MyNumber.cpp) , the function definition for MyNumber class above.

(iii) Create a main function in a separate file, called MyApplication.cpp, that creates an object m of type MyNumber class. Gets 3 numbers from user, calls the getMaximum function of class MyNumber and prints out the maximum number that is returned.

(9 marks)

(b) Determine the greatest common divider (GCD) of 2 numbers by recursive method.

(9 marks)

(c) Write a program that asks the user to type 2 strings. The program will delete each character in string 1 that matches any character in the string 2. Final output of string1 will be displayed.

(7 marks)

--THE END--