INTI
International College Subang
LAUREATE INTERNATIONAL UNIVERSITIES

FINAL
Examination Paper

(COVER PAGE)

Session	:	**April 2013**
Programme	:	Diploma In Information and Communications Technology (DICTN/DICTI) Diploma In Networking and Security (DNSI)
Course	:	**ICT2100/CSC2100 : Object-Oriented Programming** **CSC2114 : Java Programming**
Date of Examination	:	July 31, 2013 (Wednesday)
Time	:	8:00 am 10:00 am 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 :
Non-Programmable Calculator

Materials provided :
Nil

Examiner (s) : **Ms Ng Ruoh Ling**, Koo Lee Chun

Moderator : Dr Ang Tan Fong

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

INTI INTERNATIONAL COLLEGE SUBANG

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY PROGRAMME (DICTN/DICTI)
DIPLOMA IN NETWORKING AND SECURITY PROGRAMME (DNSI)
ICT2100/CSC2100 : OBJECT-ORIENTED PROGRAMMING
CSC2114 : JAVA PROGRAMMING
FINAL EXAMINATION: APRIL 2013 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) The following program unable to compile due to several compiling errors. Identify **SIX(6)** syntax errors in the code below. Rewrite the code with correction.

```
1  public class Question 1a {
2  public static void main(String[] args) {
3
4       int y = 10, z=0;
5       double x;
6       char d = "y";
7       String str;
8
9       str  = demo Program;
10      y = 2y ;
11      x = 70%;
12      z = x;
13   }
14 }
```

(6 marks)

(b) Trace the output of the following program fragment:

```
int x=17, y=15;

x = x + y /4;
System.out.println ("x :" + x);
x = x % 3 + 4;
System.out.println ("x :" + x);
y = --x + 2;
System.out.println ("y :" + y);
y -=  x-4 ;
System.out.println ("x :" + x);
System.out.println ("y :" + y);
```

(5 marks)

(c) Write a program that prompts user to enter two integers, x and y. Then, the program displays if X > Y, or Y > X or X=Y. Use if statement to solve the problem.

Below shows the sample output of the program:

```
Please enter first integer :5
Please enter second integer :70
5 < 70
```

(8 marks)

(d) Rewrite the *if* statement used in the above question using conditional operator.

(6 marks)

Question 2

(a) Write a program to read in a 5-digit integer from the user. If the input value is not a 5-digit number, ask to user to reenter the value. Your program then displays its first digit, third digit and last digit on screen.

Below shows the sample output of the program

```
Please enter a 5-digit integer: 235
Your input is not a 5-digit number, please enter again: 57924
The first digit is 5
The third digit is 9
The last digit is 4
```

(10 marks)

(b) Provide the drawing statement(s) used in the paint method of an Applet program to draw the following shapes in specific location:

(i) Draw a line from point 1 (20,50) to point 2 (70, 45)

(ii) Draw a 100 width x 50 height rectangle where the upper left corner of the rectangle is at point (30, 15)

(iii) Draw an upper half semi-circle with the radius value 80 and the upper left corner of the rectangle that is used to form the arc is at point (70, 90)

(6 marks)

(c) Differentiate between

(i) Instance variable and class variable

(ii) Object composition and inheritance

(iii) While loop and do/while loop

(9 marks)

Question 3

(a) (i) What is Exception?

(3 marks)

(ii) What is NumberFormatException?

(3 marks)

(iii) Write a fragment of code that demonstrates the handling of NumberFormatException.

(6 marks)

(iv) What is the purpose of the finally block?

(3 marks)

(b) Write a method called **stringDisplay** that is able to accept an array of String and display the longest string and shortest string in the array.

(10 marks)

Question 4

(a) Enhance the class Employee based on the requirements given below:

```
public class Employee{
     private intempID;
     private string name;
     private double salary;
}
```

Note: Combine your answers in **ONE(1)** class definition.

(i) Add a non-argument constructor that initializes the values of empID, name and salary to 0, "not defined", and 0 respectively.

(2 marks)

(ii) Add an overloading constructor that sets the values of empID, name and salary using incoming arguments

(4 marks)

(iii) Add accessors (getter methods) for all the attributes in Employee class.

(3 marks)

(iv) Add mutators (setter methods) for all the attributes in Employee class. The mutator methods should check the input parameter for its validity as below:

- empID shall be more than 0
- name shall not be blank
- salary shall be more than 0

(6 marks)

(v) Add an overridden to String method that returns a string consisting the empID name and salary of an employee.

(3 marks)

(b) Write a program called **testEmployee** that instantiates two Employee objects with the following data:

Object Name	empID	name	Salary
E1	1001	Siti	2409.60
E2	1002	Aziz	3200.00

Create the first object through the non-argument constructor and initializes the values through the accessors. Create the second object through the constructor with arguments. Display the information of both objects with the use of object method.

(7 marks)

Question 5

(a) Given the following classes:

```
public class A
{
      public int x=1;
      protected int y=2;
      private int z=3;
}
public class B extends A
{
      public int a=4;
      protected int b=5;
      private int c=6;
}
public class Test
{
      public static void main(String arg[])
      {
            A obj1=new A();
            B obj2=new B();
      }
}
```

(i) What is the relationship between class A and B?

(1 mark)

(ii) Which attributes (between x, y and z) can object **obj2** access from class A?

(1 mark)

(iii) Which attributes (between a, b and c) can object **obj1** access from class B?

(1 mark)

(iv) What are the differences between public, protected and private attributes?

(6 marks)

(b) Trace the output of the following snippet codes:

```
int[] list = new int[10];
int i = 0;
while (i<list.length){
    list[i] = i * 2 + 4;
    if (i > 2) list [i] = list [i-1] + list [i];
    System.out.println (list[i]);
    i++;
}
```

(10 marks)

(c) Trace the output for the following code :

```
public class Demo{
   int x;
   public static int y;

   public Demo(){
      x = 1;
      y = 2;
   }
   public int sum(){
     y = y * 3;
     return (x + y);
   }
   public int sum(int x){
     y--;
     return (this.x + x);
   }
}

public class TestRun{
  public static void main (String[] args){

    Demo c1 = new Demo();
    Demo c2 = new Demo();
    System.out.println ("c1 x before:" + c1.x);
    System.out.println ("c1 y before:" + c1.y);
    c1.x = 10;
    c1.y = 20;
    c2.x = 30;
    c2.y = 40;
    c2 = c1;
    System.out.println ("c1 x:" + c1.x);
    System.out.println ("c1 y:" + c1.y);
    System.out.println ("Demo y : " + Demo.y);
    System.out.println ("c2 Sum : " + c2.sum());
    System.out.println ("c2 Sum(10) : " + c2.sum(10));
  }
}
```

(6 marks)

Question 6

(a) Differentiate between abstract class and interface in TWO (2) areas.

(4 marks)

(b) Create an interface named **OutOfService** with a void method named **performRepair()**. Write a class named **Machine** that implements the **OutOfService** interface and displays the message "Out of service till 30/7/2013" in its **performRepair()** method.

(7 marks)

(c) Class **Circle** and **Triangle** are subclass of abstract class **Geometric**. Assume no constructor is defined in all the classes. State if the following statement is valid or invalid. Provide a reason for your answer.

(i) Geometric obj = new Geometric()

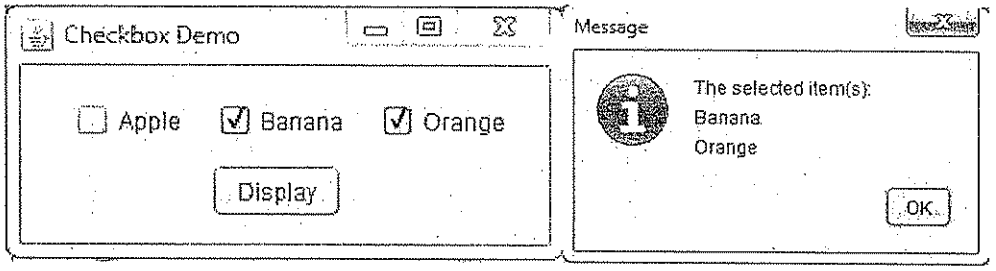
(ii) Circle c = new Circle();

(iii) Circle c = new Triangle();

(iv) Geometric obj = new Triangle();

(8 marks)

(d)



The above application displays the items selected from the checkboxes in a pop-up message box after the user has clicked on the "Display" button.

Given that the names of the checkboxes of the application above are: **cbApple**, **cbBanana**, and **cbOrange**, provide the code within the **actionPerformed** method for the Display button that will generate the message box and the message based on the selection.

(6 marks)

-THE END-

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