Course No: TEC2408 **Course Title: Programming II** **Date: 13/ 09/ 2014** **No. of Questions: 3 Questions** **Time: 2 hours** **Using Calculator (No)**	**University of Palestine** **Final Exam** **Summer 2013-2014** **Total Grade: 100**	**Instructor Name: _____** **Student No.: _____** **Student Name: _____** **College Name: _____** **Dep. / Specialist: _____** **Using Dictionary (No)**

First Question	**No. of Branches (4)**	**50 Marks**

A) Find the error in each of the following program segments. Explain how to correct the error.

1.
```
int sum( int x, int y )
{
    int result;
    result = x + y;
}
```
……
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2.
```
void f( float a );
{
    float a;
    System.out.println( a );
}
```
……
……
……

3.
```
final int ARRAY_SIZE = 5;
ARRAY_SIZE = 10;
```
……
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……

4.
```
Assume int b[] = new int[ 10 ];
for ( int i = 0; i <= b.length; i++ )
    b[ i ] = 1;
```
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5.
```
Assume int a[][] = { { 1, 2 }, { 3, 4 } };
    a[ 1, 1 ] = 5;
```
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B)State whether each of the following is *true* or *false*. If a statement is *false*, explain why.

1. A *has-a* relationship is implemented via inheritance. ( )
2. Inheritance encourages the reuse of proven high-quality software. ( )
3. When a subclass redefines a superclass method by using the same signature, the subclass is said to overload that superclass method. ( )
4. An array can store many different types of values. ( )
5. An array index should normally be of type float. ( )

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C)Find the output of the following programs:

Program 1:

```
public class Faculty extends Employee  {
    public static void main(String[] args) {
        new Faculty();
    }
    public Faculty()  {
        System.out.println("(4) Performs Faculty's tasks");
    }
}
class Employee extends Person{
    public Employee() {
        this("(2) Invoke Employee's overloaded constructor");
        System.out.println("(3) Performs Employee's tasks ");
    }
    public Employee(String s) {
        System.out.println(s);
    }
}
class Person {
    public Person() {
        System.out.println("(1) Performs Person's tasks");
    }
}
```

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Program 2:

```
class Base {
    public void method(int i) {
        System.out.print("Value is " + i);
    }
}

public class MainClass extends Base {
    public void method(int j) {
        System.out.print("This value is " + j);
    }

    public void method(String s) {
        System.out.print("I was passed " + s);
    }

    public static void main(String args[]) {
        Base b1 = new Base();
        Base b2 = new MainClass();
        b1.method(5);
        b2.method(6);
    }
}
```

……

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Program 3:

```
class square{
  int sqarea(int side){
      int area = side * side;
      return(area);
  }
}

class rectangle{
   int rectarea(int length,int width){
      int area = length * width;
      return(area);
   }
}

public class ObjectClass{

    public static void main(String args[]){
       int sq_area1;
       int rect_area1;
       square sq = new square();
       rectangle rect = new rectangle();
       int a=20;

       System.out.println("Side of the square = " + a);
       sq_area1 = sq.sqarea(a);
       System.out.println("Area of the square = " + sq_area1);

       int x = 10, y = 20;
       System.out.println("Length of the Rectangle = " + x);
       System.out.println("Width of the Rectangle = " + y);
       rect_area1 = rect.rectarea(x,y);
       System.out.println("Area of thet Rectangle = " + rect_area1);
    }
}
```

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D)Read the following code:

1. Can you run the code without errors? if no find the error and correct it.
2. what is the output of the code?
3. what is the relation between class A and B?

```
class A {
   int data;

   public void f(int arg) { data = arg; }
   public int g() { return data; }
}

Public class B {
   A x;
}
public class Test{

public static void main(String args[]) {
   B obj;
   obj.x.f(20);
   system.out.println( obj.x.g());
   system.out.println (obj.g());
}
}
```

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Second Question **No. of Branches (3)** **30 Marks**

1. Write a method that takes an array of integers as a parameter and returns the position of the smallest element.

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2. Write a java program that reads three integers and then print the maximum of them.

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3. **What is the difference between Overloading and overriding? Give examples?**

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Third Question: No. of Branches (1) 20 Marks

2. Write a class named **Book** that keeps track of book objects such that the instance data contains the book's ***title*** and ***author*** and ***id*** .

The required methods in the Book class are as follows:

i) 2 constructors: One without parameters that sets the title and author to "unknown" and id to 0; the other takes 3 parameters string mytitle, string myauther and integer my_id and let the class attributes take their values from the parameters.

ii) The setter methods for title, author and id.

iii) The getter methods for title, author, and id.

iv) Display method that prints the values of the attributes.

Define another class called ***Test*** that have a main method and define in the main 2 objects from **Book**, the first uses the no-argument constructor. And then print the values of its attributes. The other object uses the second constructor with parameters that the user inters from scanner. Then display the values of the second object's attributes.

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Good Luck