Course No: ESGD2202
Course Title: Programming 2
Date: 21/05/2011
No. of Questions: 5
Time: 2 hr
Using Calculator (No)

University of Palestine

Final Exam
Second term 2010/2011
Total Grade: 50

Instructor: Eng. Tasneem Darwish
Student No.: _____
Student Name: _____
College Name: Eng. College
Dep. / Specialist: Software Engineering

First Question (12)

A) Find and correct the error in each of the following program segments:

1)
```
final int ARRAY_SIZE = 5;
ARRAY_SIZE = 10;
```

2)
```
int b[ ] = new int[ 10 ];
for ( int i = 0; i <= b.length; i++ )
b[ i ] = 1;
```

3)
```
int a[ ][ ] = { { 1, 2 }, { 3, 4 } };
a[ 1, 1 ] = 5;
```

4)
```
int sum( int x, int y )
{    int result;
     result = x + y;     }
```

5)
```
int f( float a );
{  return a;  }
```

6)
```
void product()
{  int a = 6, b = 5, c = 4, result;
   result = a * b * c;
   System.out.printf( "Result is %d\n", result );
   return result;     }
```

B)Perform the following tasks for an array called fractions:

1) Declare a constant ARRAY_SIZE that is initialized to 10.
2) Declare an array with ARRAY_SIZE elements of type double, and initialize the elements to 0.
3) Assign the value 1.667 to array element 9.
4) Assign the value 3.333 to array element 6.
5) Sum all the elements of the array, using an enhanced for statement.

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Second Question (13)

A) Write an enum type TrafficLight, whose constants (RED, GREEN, YELLOW)

- **It take one parameter the *duration_of_light* which is an integer**
- **It has one method getDurationOfLight that returns the value of *duration_of_light***

B) What does the following program segment do?

```
for ( i = 1; i <= 5; i++ )
{
    for ( j = 1; j <= 3; j++ )
    {
        for ( k = 1; k <= 4; k++ )
            System.out.print( '*' );

        System.out.println();
    } // end inner for
    System.out.println();
 } // end outer for
```

c) Assuming that x = 2 and y = 3, what does each of the following statements display?

1) **System.out.printf("x = %d\n", x);**
2) **System.out.printf("Value of %d + %d is %d\n", x, x, (x + x));**
3) **System.out.printf("x =");**
4) **System.out.printf("%d = %d\n", (x + y), (y + x));**

Third Question (12)

Read the following code carefully and rewrite the student class using *Inheritance* instead of *composition*:

```
class person
{       private String name;
        public int age;
        person() {
                    name = null;
                  age = 0;
                }
        person(String name, int age) {
                this.name = name;
```

```
                this.age = age;
                }
        public String getName()
        { return name; }
        public void Display()
        {   System.out.println("Name = "+ name);
            System.out.println("Age = "+age);
         }
}

class student
{         private int RollNo;
          private person persondata;
          public String branch;

         student(String name, int age, int RollNo, String branch)
         {    persondata= new person(name, age);
             this.RollNo = RollNo;
             this.branch = branch;
         }
         void Display()
        {      System.out.println("Roll No = "+RollNo);
              System.out.println("Name = "+getName());
              Persondtat.Display();
        }

}
```

Fourth Question **(13)**

a) Create a class Point with the following characteristics:

1. **The class point has the attributes Xvalue and Yvalue, each of which is *double* and *defaults to 0.0*.**
2. **It has methods that make set and get for the Xvalue and Yvalue.**

b) After creating the class Point, use this class in the creation of a class called Circle.

1. **The class Circle has three attributes the Xvalue and Yvalue of the center and**

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the circle radius Rad.

2. Also it has the set and get methods for the three attributes and a method called Area which calculates the circle Area using the equation: $Area= 3.14*(Rad)^2$

i) Write down the code for the previous classes
ii) What is the relation between the two classes??

Fifth Question — 5 BONUS MARKS

Write an application that displays the following patterns. Use for loops to generate the patterns.

```
**********          **********
*********            *********
********              ********
*******                *******
******                  ******
*****                    *****
****                      ****
***                        ***
**                          **
*                            *
```

Good Luck