


<b>EXAM 2 PROGRAMMING</b> <b>December 2008</b> <b>COMPUTING ENGINEERING</b> <b>Leganés</b>		 Universidad Carlos III de Madrid	
<b>Surname(s)</b>		<b>Name</b>	
<b>Signature</b>		<b>NIA</b>	<b>Group</b>

**READ THESE INSTRUCTIONS CAREFULLY BEFORE YOU BEGIN WITH THE EXAM:**

- Fill in all the sheets with a blue or black pen, both the personal information and the answers.
- Make sure that you have provided your NIA and the actual group you belong to.
- You have one hour to complete the exam.
- During the exam the only materials allowed on the table is the exam paper and the pen.
- Use only the exam sheets for your answers. Any additional papers will not be collected.

Part 1: Questions

**Question 1 (1 mark).**- Indicate whether the following statement is correct, and briefly explain why.

*“A class always has at least one constructor.”*

**Question 2 (1 mark).**- Indicate whether the following statement is correct and briefly explain why.

*"The length of the string "Hola\n" is 6"*

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**Question 3 (1 mark).**- What is the result of the following code, and why.

```
public class Main {
    public static void main (String [] args) {
        Counter n1 = new Counter ();
        Counter n2 = new Counter ();
        n2.print ();
    }
}

class Counter {
    private static int c = 2;
    public Counter () {
        c += 1;
    }

    public void print () {
        System.out.println ("Result: " + c);
    }
}
```

**Question 4 (1 mark).**- Find the errors in the following code and suggest a way of resolving them.

```
public class Main {  
    public static void main (String [] args) {  
        Question n1 = new Question (1, 'c');  
    }  
}  
  
class Question {  
    int a = 0;  
    static char c;  
  
    public Question (int a, char c) {  
        this.a = a;  
        Question.c = c;  
    }  
  
    public void Question (char c, int a) {  
        this.a = a;  
        this.c = c;  
    }  
}
```

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**Question 5 (1 mark).**- What is the purpose of a constructor?

**Question 6 (1 mark).**- What does the term “method overloading” describe?

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**Question 7 (1 mark).**- How are arguments passed to methods? What is the value of x after executing the following code?

```
public class Main {  
    public static void main (String [] args) {  
        Question n1 = new Question ();  
        int x = 0;  
        n1.increment (x);  
    }  
}  
  
class Question {  
    public void increment (int n) {  
        n += 1;  
    }  
}
```

**Question 8 (1 mark).**- What is the difference between a variable defined as “static final” and a variable defined as “final”?

```
public class Main {  
    public static void main (String [] args) {  
        Question q = new Question ();  
    }  
}  
  
class Question {  
    static final int x = 0;  
    final int y = 0;  
}
```

## PART 2: PROBLEMS

**Problem 1 (2 marks).**- Write a function which given an array of characters should return an array of characters containing the characters of the first in reverse order. For example

```
Inverse q = new Inverse ();  
char [] c = {'a', 'b', 'c', 'd'};  
char [] i = q.inverse (c);
```

The value of *i* should be: {'d', 'c', 'b', 'a'}.