uc3m

FIRST NAME:
LAST NAME:
NIA:
GROUP:

First midterm exam

Second Part: Test (3 points out of 10)

Duration: 20 minutes
Highest score possible: 7 points
Date: March 24, 2021

Overall instructions for the exam:
- Books, notes, mobile phones, as well as other electronic devices are not allowed during the exam. Breaking this rule may result in expulsion from the examination
- Complete your personal information before starting the exam.
- There is only one correct option for each question. Each correct answer adds 0.3 points. Each incorrect answer substracts 0.1 points. Unanswered questions do not add or subtract points.

Question 1

Given the following code snippet, what is printed on the screen after its execution?

```java
public class A{
  public static void main(String[] args){
    int x = 1;
    m(x);
    System.out.println(x);
  }
  private static void m(int x){
    x = x * 2;
  }
}
```

Select one:

○ a. 2

○ b. x*2

○ c. 0

○ d. 1

Question 2

The final modifier applied to a class...

Select one:

○ a. indicates that the methods of the class cannot be overridden.

○ b. indicates that the class uses constants.

○ c. Indicates that the class cannot have derived classes.

○ d. The final modifier cannot be applied to classes.

Question 3

In this ArrayList: ArrayList<Object> a = new ArrayList<Object>(); we can store...

Select one:

○ a. Objects of the class Object only.

○ b. Objects of the class ArrayList only.

○ c. Objects of any class in Java.

○ d. Objects of the classes Object and String only.

Question 4

Given the following code, divided in two files, one per class, which of the following sentences is correct?

```java
public class A{
    public static void main(String [] args){
        B b = new B(10);
    }
}
public class B extends A {
    int b;
    public B() { ; }
}
```

Select one:

○ a. In order to create an object of class B, the main method must be in class B.

○ b. Class A in its main method cannot create an object of class B.

○ c. The compiler shows an error and does not finish the compilation.

○ d. The code is compiled and executed without problems, creating an object of class B.

Question 5

Given the following class hierarchy (with each class in a separate file), which of the following sentences is correct?

```
public class File{ ; }

public class FileOfficeMicrosoft extends File { ; }

public class FileExcel extends FileOfficeMicrosoft{ ; }

public class Folder extends FileOfficeMicrosoft{ ; }

public class FileWord extends FileOfficeMicrosoft{ ; }
```

Select one:

○ a. FileOfficeMicrosoft is a subclass of Folder

○ b. FileExcel is a parent class of File

○ c. Folder is a superclass of FileExcel

○ d. FileOfficeMicrosoft is a base class for FileWord

Question 6

Method overloading consists of:

Select one:

○ a. Replacing an inherited method by another one with the same name in the subclass.

○ b. Programming in a class methods with the same name, but that receive a different number or type of parameters

○ c. Programming in a class methods with the same name, same number and type of parameters but different return types.

○ d. Using class references to point to objects in classes that inherit from another class.

Question 7

Which of the following statements is correct in relation to equivalence classes for input/output testing?

Select one:

○ a. Equivalence classes allow having equivalence objects.

○ b. Input/output testing serves to inspect the code and achieve a certain coverage of methods/lines/instructions/branches.

○ c. Equivalence classes can implement equivalence interfaces.

○ d. Boundary values for equivalence classes must also be tested.

Question 8

We are asked to program a method that calculates the sine of a certain angle (in radians) received as input (double type). The behavior of this method must be such that it will return the result of the sine of x (sin(x)) for the range 0<=x<=2*pi, and an undetermined value for any other input value. Select the set of values that would allow to test all the equivalence classes for this method.

Select one:

○ a. -4.0, 4.0, 8.0

○ b. 0, 3.14, 6.28

○ c. -2.0, 0.0, 2.0

○ d. -6.0, -5.0, -4.0, -3.0, -2.0, -1.0, 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0

Question 9

Given the following recursive method, which statament is correct if this method is called with n equals to 5 and m equals to 2.

```
public static int method(int n, int m){
    if(n < m){
        return 3;
    }else{
        return 3*method(n-m, n+m);
    }
}
```

Select one:

○ a. This is a case of linear non-tail recursion.

○ b. The call to method(5,2) returns 27 as result.

○ c. This is a case of non-linear cascading recursion.

○ d. The call to method(5,2) returns 3 as result.

Question 10

Given the following method:

```java
public static int a(int x, int y) {
    if (x<=1) {
        return y;
    }
    else {
        return a(x-1, x + a(x-2,y));
    }
}
```

Select one:

○ a. It is a linear recursion.

○ b. It is not recursive.

○ c. It is a mutual recursion.

○ d. It is a nested recursion.

ANSWER KEY

1	2	3	4	5	6	7	8	9	10
D	C	C	C	D	B	D	A	A	D