Question **1**

Correct

Mark 1.00 out of 1.00

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Edit question

What does this method do on a linked list (like the ones we have programmed in class), where first is the reference to the first node in the linked list?

```
public void method(){
    if(first != null){
        Node aux = first;
        while(aux.getNext()!=null){
            aux = aux.getNext();
        }
        System.out.println(aux.getInfo());
    }
}
```

Select one:

- a. It prints the information contained in the second-to-last (penultimate) element of the linked list.
- b. It prints the information contained in the last element of the linked list. ✔
- c. It prints the information contained in all the elements of the linked list.
- d. It prints the information contained in first element of the linked list.

Question **2**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

We have 1000 strings and we store them both in an array with a capacity for 1000 elements and in a linked list with 1000 nodes. Which of the following operations is more efficient on the linked list than on the array?

Select one:

- a. Access to the string that is the position number 20 in the array/list
- b. Access to the second string stored in the array/list
- c. Access to the last string stored in the array/list
- d. Extraction of the first string stored in the array/list ✔

Question **3**

Correct

Mark 1.00 out of 1.00

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The complexity of the Selection Sort algorithm is:

Select one:

- a. Logarithmic
- b. Linear
- c. Exponential
- d. Quadratic ✔

Question **4**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Given a linked list with 10 elements and with first the reference to the first node of the list, how many elements has the linked list after running the following code?

```
public void m() {
    while(first != null) {
        System.out.print(first.getInfo());
        first = first.getNext();
    }
}
```

Select one:

- a. 1
- b. We cannot know it.
- c. 0 ✔
- d. 10

Question **5**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Given the following code, what is shown on screen when running the program? Note: % in java calculates the remainder of the integer division.

```
public class R{
    public static String m(int i){
        if (i<0)
            return "";
        else if ( (i%3) != 0)
            return "" + m(i-1);
        else
            return i + " " + m(i-1);
    }
    public static void main(String args []){
        System.out.println(R.m(10));
    }
}
```

Select one:

- a. The program leads to a StackOverflowError as the recursion is not well formed
- b. 10 9 8 7 6 5 4 3 2 1 0
- c. 10 7 4 1 0
- d. 9 6 3 0 ✔

Question **6**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Given an empty stack, what does the call to top() return after the next sequence of method calls are executed: push(1); top(); pop(); push(2); push(3); pop(); push(4); top(); pop();

Select one:

- a. 4
- b. 2 ✔
- c. 3
- d. null or an exception would be thrown because the stack is empty.

Question **7**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Given the following method:

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

Select one:

- a. It is a mutual recursion.
- b. It is not recursive.
- c. It is a nested recursion. ✔
- d. It is a linear recursion.

Question **8**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Given the binary tree represented by the array of integers {101, 237, 381, 0, 0, 490, 518}. Indicate the height and depth of the node whose value is 490.

Select one:

- a. height: 0, depth: 3
- b. height: 3, depth: 0
- c. height: 0; depth: 2 ✔
- d. height: 2, depth: 0

Question **9**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Given a min-heap represented by the array {1, 4, 6, 8, 12}, what would be the content of the heap after executing the following operations: insert(2); extract();

Select one:

- a. 6, 4, 2, 8, 12.
- b. 2, 4, 6, 8, 12. ✔
- c. 1, 4, 2, 8, 12, 6
- d. 4, 8, 2, 6, 12.

Question **10**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

How many swaps does the Bubble Sort algorithm needs to sort this array of integers from the lowest to the highest?

```
{47, 29, 32, 14}
```

Select one:

- a. 4
- b. 3
- c. 5 ✔
- d. 2