Estruturas de Dados

Lab Test 1 – 10 de November 2015

Name:_____

Number:_____

1 – Identify the complexity of the following code, in terms of N. Provide a brief justification of your response.:

```
for(int i=0;i<N;i++)
      for(int j=0;j<i;j++)
            for(int k=0;k<j;k++)
                  sum ++;
```

R:

2- Assume a method with prototype `int searxh (int m[],int value)` that implements a binary search. This method returns the position of the searched value, or a negative value (-X) if the value is not found. In that case, the expression `abs(X+1)` indicates the position where the searched value would have to be inserted to preserve the ordering. **<u>This method already exists, you do not need to implement it</u>**. Create a method `int larger(int m[],int value)` that indicates how many values greater than `value` can be found in `m`. The array `m` is sorted, and at most two copies of the same value can be found in it. The method must have logarithmic performance.

R:

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3 – Create the prototype of a method `f` receiving two parameters:

- A `value` parameter of generic type `T`

- A second parameter through which can be passed to the method any and all `ArrayList` in which `value` can be stored.

R:

4 – Consider an iterable class `MyInteger`, which sotres always one and only one `int`, which is always initialized in the constructor. It is not possible to change that value after initialization. Create an iterator, including support for all exceptions that may be thrown (you should **ignore** all those that do not make sense for this data structure).

R:

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5- Consider the following method

```
static void removeZeros(List<Integer> list){
Iterator<Integer> it=list.iterator();
while(it.hasNext()){
      Integer i=it.next();
      if(i==0) it.remove();
      }
}
```

What is the complexity of the method, in the worst case? (consider that list may be either an `ArrayList` or a `LinkedList`). Justify your answer-