# CSC 212 Programming Assignment # 0
## Warm Up
## **Due date: 23/09/2018**

| | |
|---|---|
| Guidelines: | This is an **individual** assignment.<br>This assignment is optional.<br>The assignment must be submitted to **Web-CAT** |

This assignment consists of two independent parts:

1. Write a method that counts the number of Fibonacci numbers that are less or equal a given number $n$. Your method must work even for very large values of $n$. The Fibonacci sequence is defined as:

$$F_1 = 1$$
$$F_2 = 1$$
$$F_n = F_{n-1} + F_{n-2}$$

   Method signature:

```
public static int nbFibLeq(int n)
```

   **Example 1.** *nbFibLeq(1) should return 2, nbFibLeq(10) should return 6.*

2. We want to implement a generic array class having the following interface:

```
public interface MyArray<T extends Comparable<T>> {
  // Return the element at position i
  T get(int i);
  // Set the element at position i
  void set(int i, T e);
  // Return the index of smallest element in the array (index of first
     occurrence returned)
  int min();
  // Return the index of largest element in the array (index of first
     occurrence returned)
  int max();
  // Return the number of elements largest or equal e1 and smallest or
     equal e2
  int nbBetween(T e1, T e2);
}
```

   Write a class that implements the interface `MyArray`. Additionally, complete the implementation of the class `MyArrayFactory` which simply creates and returns an object of your implementation of the interface `MyArray`.

```
public class MyArrayFactory {
  // Create and return an array of size n
  public static <T extends Comparable<T>> MyArray<T> getMyArray(int n) {
    return new ...;
  }
}
```

# 1 Deliverable and rules

You must deliver:

1. Source code submission to Web-CAT. You have to upload the following classes in a zipped file:

   - `FibPb`
   - `MyArrayFactory`
   - Your implementation of the interface `MyArray` (the name of this class is not important).

   Notice that you should **not upload**:

   - The interface `MyArray`.

The submission **deadline** is: **23/09/2018**.

You have to read and follow the following rules:

1. The specification given in the assignment (**class and interface names, and method signatures**) must not be modified. Any change to the specification results in compilation errors and consequently the mark zero.

2. All data structures used in this assignment **must be implemented** by the student. The use of Java collections or any other data structures library is strictly forbidden.

3. This is an individual assignment. Sharing code with other students will result in harsh penalties.

4. Posting the code of the assignment or a link to it on public servers, social platforms or any communication media including but not limited to Facebook, Twitter or WhatsApp will result in disciplinary measures against any involved parties.

5. The submitted software will be evaluated automatically using Web-Cat.

6. All submitted code will be automatically checked for similarity, and if plagiarism is confirmed penalties will apply.

7. You may be selected for discussing your code with an examiner at the discretion of the teaching team. If the examiner concludes plagiarism has taken place, penalties will apply.