CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Computing@CIT

LINEAR DATA STRUCTURES AND ALGORITHMS

Lab02: Our First 3 Algorithms

BACKGROUND.

The folder **/src** contains the following files:

- **myMain.java:** The class tests the 3 algorithms of the lab.

The folder **/doc** contains the documentation of the project. In particular:

- **myMain.html:** Contains the description of the 3 algorithms/functions to be completed.

EXERCISE.

Implement the 3 functions of myMain.java

Step 1: Reason about the algorithms in a high level language.

Before jumping into coding, take a piece of paper and reason about each algorithm in terms of the following sections:

i) Which is our output variable?
If not one of our input arguments, then create a new variable for it, and assign it an *initial value*.

iv) Create a single return statement for our output variable.
Place it at the end of the method. It will return the variable with its *final value*.

iii) What operations are needed to bring the output variable from *initial value* to *final value*?

- Discuss the operations and the order in which they have to take place.
- If some operations are particularly difficult, you can consider encapsulate the operation into its own algorithm.

ii) What additional information is needed to carry out the operations of iii)?
Create an auxiliary variable for each piece of additional information.

Note: You don't need to think about the sections in Java. You can use a more high level language (i.e., reason about them in English).

Step 2: Translate your high-level algorithm into Java.

Now that you have clear what do you want to do (in a high-level language as English) its time to do it in Java. Take your piece of paper and start coding the method by translating the sections i), ii), iii) and iv) in order.