# SESSION 3: CONTROL STRUCTURES. ITERATION (LOOPS)

**GOAL:**

- Practice with the different iteration control structures.
- Understand the differences among them and their intended uses.

**EXERCISE:**

Write a program that reads N positive numbers from the keyboard and checks if they are correct. If at any time the user enters a negative value, an error message will be displayed and the application will ask the user again to enter the value; this process will be repeated until the user enters a correct (positive) value.

When a value is entered, the program will print on the screen if said value is within the range [K1, K2]. To do this, consider that K1 and K2 are two positive integers that are defined as constants. In the case that K1>K2, the reference range will be defined by the interval [K2, K1].

Finally, the program will also show the amount of total values entered during the execution of the program and, the number of values introduced that were incorrect, and the number of values in the range [K1, K2] (or [K2, K1]).

In addition, the program must be properly documented, including representative names for the defined variables, and the interaction with the user must be properly explained.

**EXAMPLE OF EXECUTION:**

*Assuming that K1=5 and K2=15 and that, when asked for the value of N, the user enters the value 5, a possible execution of the program when entering, in this order, the values 0,-1,3,5,9,-4,-1,-3,0,9 and 10, would be as follows:*

```
How many positive numbers do you want to introduce?... 5
The reference range is [5, 15]
Introduce the positive number 1... 0
Error, you have introduced a number that is not positive. Try again... -1
Error, you have introduced a number that is not positive. Try again... 3
Introduce the positive number 2... 5
The number 5 is in the range [5, 15]
Introduce the positive number 3... 9
The number 9 is in the range [5, 15]
Introduce the positive number 4... -4
Error, you have introduced a number that is not positive. Try again... -1
Error, you have introduced a number that is not positive. Try again... -3
Error, you have introduced a number that is not positive. Try again... 0
```

```
Error, you have introduced a number that is not positive. Try again... 9
The number 9 is in the range [5, 15]
Introduce the positive number 5... 10
The number 10 is in the range [5, 15]

Throughout the execution of the program 12 numbers have been read. 6 of them
where wrong.
In total, 4 values in the range [5, 15] have been read.

***** End of the program... *****
```

**MILESTONE 1: SUBMISSION OF ASSIGNMENTS 1, 2 AND 3: 7 November**