

**TD N°: 04**

**Exercise 1 :**

Consider T a one-dimensional array of N integer elements. Write an algorithm that allows:

- filling this array with values entered on the keyboard,
- displaying all array elements: from the 1st to the last and then from the last element to first.

**Exercise 2 : (optional)**

Write an algorithm that fills the elements of an array with values entered on the keyboard and then arranges these elements in reverse order without using a help table.

**Exercise 3 :**

Consider T a one-dimensional array of N integer elements. Write an algorithm that allows:

- filling this array with values entered on the keyboard,
- calculate the number of occurrences of the value 0 in the table T,
- delete all occurrences of the value 0 in the array T and pack the remaining elements (by moving them in the same order to the left to take the places of the zeros),
- Finally, display the resulting table.

**Exercise 4 : (optional)**

Consider two integer arrays A and B of N and M dimensions, respectively, and which are sorted in ascending order. Write an algorithm that merges the elements of A and B into a third array C sorted by ascending order.

**Exercise 5 :**

Write two algorithms that allow you to sort an array of N elements of integer type by:

- Selection sort
  - Bubble sort
- NB. Sorting follows ascending order.***

**Exercise 6 :**

Consider M a two-dimensional integer array (of R rows and C columns). Write an algorithm that allows:

- Filling the array with values entered on the keyboard,
- Calculating and displaying the sums of each row and each column.

**Exercise 7 :**

Write an algorithm that transfers a two-dimensional integer array M (with R rows and C columns) into a one-dimensional array T. Exp:

$$\begin{bmatrix} 1 & 7 & 3 \\ -5 & 0 & 9 \end{bmatrix} \rightarrow [1 \ 7 \ 3 \ -5 \ 0 \ 9]$$

**Exercise 8 :**

Write an algorithm that reads 6 words (not longer than 30 characters), separated by spaces. These words are stored in 6 variables M1, ..., M6 (Example: This is a string example!). Then :

- display words in reverse order,
- put the words (in initial order) in a line L,
- remove all appearances of the character 'e' by packing the remaining elements.