University A. MIRA of Béjaïa
Faculty of Exact Sciences
Department of Computer Science
L1 Computer Science

Algorithms and Data Structures 1 (ADS1)
Semester 1 - 2025/2026
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Tutorial No. 4 : Arrays

Exercise 1:
Let T be a vector of n real numbers (n ≤ 100). Write an algorithm to reverse T:
a. Using another vector V.
b. In the same vector T.

Exercise 2:
Let T be a vector of n integers (n ≤ 100). Write an algorithm that replaces repeated elements in this vector with the value -1, except for the first occurrence of the repeated element.

Exercise 3:
Let M be a matrix of integers. Write an algorithm to construct MT, the transpose of M.

Exercise 4:
Write an algorithm that, given a real matrix M, constructs:
a. A vector TMax containing the maximum of each row of M.
b. A vector TMin containing the minimum of each column of M.

Exercise 5:
Let M be a square matrix of integers. Write an algorithm that swaps the two diagonals of M.

Exercise 6:
Let M be a matrix of integers of size (n ≤ 50, m ≤ 100) and *val* a given value. A row of a matrix is called constant if all its values are identical. For example, a row consisting only of the value 1 is considered constant and equal to 1. Write an algorithm that creates a matrix M such that:
a. The first row of M is constant and equal to the given value val.
b. Each following row is also constant and equal to the sum of the values of the previous row.

printf("It is by trying again and again that one finally succeeds. ");