



Level: 1st year of computer science
Course: ADS1

series TD/TP N°: 06

Academic year: 2025/2026
Chapter 5 : Arrays

Exercise 1: TD/TP

Write an algorithm with its C program that allows filling an array of N real numbers and then displays them in reverse order.

Exercise 2: TP

Write a C program to find the MAX and its position in an array of N real elements.

Exercise 3: TD

Write a C program to calculate the scalar product of two N-dimensional vectors. If u is the vector of grades and v is the vector of coefficients, modify the program to calculate the average.

N.B.: The scalar product of two vectors is equal to the sum of the products of their corresponding components. $\vec{u} \cdot \vec{v} = \sum u_i \cdot v_i$

Exercise 4: TP

Write a C program to calculate the number of occurrences of a given element in an integer array of N elements.

Exercise 5: TD

Write an algorithm that splits a vector T of N integers into two vectors 'pos' and 'neg', containing the positive and negative numbers of T, respectively.

Exercise 6: TP

Write a C program that allows filling an array of N real numbers and calculating the sum of negative numbers, the product of positive numbers, and the count of zeros.

Exercise 7: TD

Write an algorithm that converts a decimal number to an octal number using an array to store the remainders and then displays them in reverse order

Ex : 964

4	0	7	1		
---	---	---	---	--	--

To display 1704

Exercise 8 : (at home)

A polynomial will be represented using an array of floating-point numbers containing its coefficients. The coefficient of degree i will be found in the array element at index i.

For example, the polynomial $2.5 + 4X + 8X^3$ will be represented by the array [2.5, 4, 0, 8]. A polynomial of degree d will have a size of d+1.

Write an algorithm that:

- Reads the coefficients of the polynomial of degree d.
- Displays this polynomial, ignoring terms with coefficients of 0.
- Calculates the value of the polynomial for the given value x (provided by the user without using pow()).
- Calculates the derivative of this polynomial