

Exercise Series N°: 06

Exercises	
Tutorials	<ol style="list-style-type: none"> 1. Write an algorithm that reads an integer array of N elements, and displays the elements with odd index. 2. Write an algorithm that reads an array of N reals, it also reads an integer p, and then it puts the elements starting at index p into another array. 3. Write an algorithm that reads a binary integer coded in SVA on 8 bits; the algorithm calculates its decimal value and its representation in C1 (index bit 0 is the sign bit) 4. Write an algorithm that reads a matrix of R rows and C columns and displays the inner part of the matrix 5. Write an algorithm that reads a matrix of real numbers, calculates and displays its transpose 6. Write an algorithm that reads a square matrix and calculates the sum of its lower half and the sum of the two diagonals 7. Write an algorithm that reads a character string; it adds the character '.' to the end of the string. 8. Write a program that reads a CH character string and converts all uppercase letters into lowercase letters and vice versa. The result will be stored in the same CH variable and displayed after the conversion. 9. Write an algorithm that reads a character string and starting from the character ';' it transfers the rest of the chain to another chain.
Practical Work	<ol style="list-style-type: none"> 1. Write a program to calculate the number of occurrences of a given element in an integer array of N elements. 1. Write a program that reads the averages of a module of n students; the program sets averages between 9.5 and 10 to 10 ; the program also displays a grade summary containing: best grade; bad grade ; students who have the module. 2. Write a program that reads a matrix of R rows and C columns and sets its negative elements to zero. 3. Write a program that reads a square matrix and check whether it is symmetric or not. A symmetric matrix $\leftrightarrow M[i][j] = M[j][i] \forall i, j < n$ 4. Write a program that reads a CH character string and an integer n then deletes the last n characters of CH, finally it displays the CH string after this change. 5. Write an algorithm that reads two character strings CH1 and CH2 and adds CH2 at the end of CH1.
Additional Exercises	<ol style="list-style-type: none"> 1. Write an algorithm that concatenates two vectors V1 and V2 into a vector V. 2. Write an algorithm that reads an integer and puts the digits of that number into a vector (each digit in a cell) 3. Write an algorithm that calculates the sum of two vectors of the same size. 4. Write an algorithm that reads a decimal and gives its binary representation in the codes: SVA, C1, C2. 5. Write an algorithm that reads a matrix and calculates the sum of each column. 6. Write an algorithm that reads a matrix that sets to zero the elements of the row and column where the smallest element in the array appears. 7. Write an algorithm that reads a character string and replaces each occurrence of the character a with another character b (a, b entered by the user) 8. Write an algorithm that reads a character string and calculates the number of letters, the number of digits and the number of other characters in this string 9. Write an algorithm that reads a character string which calculates the number of words in the string in the following two cases: <ul style="list-style-type: none"> - Two words are separated by a space. - Two words can be separated by one or more spaces. 10. Write an algorithm that reads a vector of n integers, the algorithm arranges the elements of the vector in a matrix of R rows and C columns. 11. Write an algorithm that reads an integer matrix of R rows and C columns; the algorithm arranges the elements of this matrix in a vector.