ARRAYS : Guided Exercises

1. Algorithms dealing with a single array

- Find the maximum value in a array.
- Calculate the average of students in a class of n students for a given subject. (An element of the array is a structure with 2 fields: Name and Grade).
- Calculate the value of a polynomial P(X) of a given degree n using the array of its coefficients for a given value of X.

2. Algorithms dealing with multiple arrays

- Given 2 arrays A[1..N] and B[1..M] of integers. Create a third array C containing all elements that are squares from A and B.
- Create the intersection array from two given arrays.
- Similarly, create the difference and union arrays.
- Split a array V of positive integers into 2 arrays A and B based on a criterion (prime or not). Use the "is_prime" predicate.
- Merge two sorted arrays.

3. Update algorithms

- Insert a given element after a given value in the array.
- Insert a given element at a given position in the array.
- What modifications are needed in the above two algorithms if the array is sorted?
- Logical deletion of an element involves using an additional field to indicate the presence or absence of the element. Define the array's structure and write the corresponding algorithm.
- Physical deletion of an element involves completely eliminating it from the array. Write the corresponding algorithm.