

# LAB 03: POINTER

## 1 IN-CLASS

Use the Pointer technique to complete the following functions:

1. Input a n-element integer array with `int *a` is the pointer point to the allocated dynamic memory:

- `void InputArray(int* &a, int &n);`

2. Remove allocated dynamic memory:

- `void DeallocateArray(int* &a);`

3. Output all elements of the array:

- `void PrintArray(int* a, int n);`

4. Find the smallest value from the array:

- `int FindMin(int* a, int n);`

5. Find the greatest absolute value from the array:

- `int FindMaxModulus(int* a, int n);`

6. Check if the array is ascending:

- `bool IsAscending(int* a, int n);`

7. Find the total value of all elements of the array:

- `int SumOfArray(int* a, int n);`

8. Count the number of prime numbers in the array:

- `int CountPrime(int* a, int n);`

9. Create a new dynamic array which is the reverse of the given array:

- `int ReverseArray(int* &a, int* b, int n);`

From Ex 10. to Ex 12. are Searching Algorithms. Return the first position found, else, return  $-1$ .

10. Sequential Search:

- `int LinearSearch(int* a, int n, int key);`

11. Sequential Search (using flag):

- `int SentinelLinearSearch(int* a, int n, int key);`

12. Binary Search:

- `int BinarySearch(int* a, int n, int key);`

## 2 HOMEWORK

## 3 PREPARING YOUR SUBMISSION

Create a new folder and name it with your **Student ID**, e.g. 19127001. This folder includes

- **Code**: a sub-folder that contains your source code (\*.cpp, \*.h, etc.). Do not forget to delete all intermediate files.
- **Report** (if required): a sub-folder that contains your written report (\*.pdf).