University center of Mila
Institute of Mathematics and Computer Science
Department of Mathematics
1st Year LMD

DIRECTED WORK SERIES NO. 1

Module: Algorithms and data structures 2 Academic year: 2023/2024

Exercise 1

A clinic wants to automate the management of its patients (sick people) and entrusts you with this task. For this, a patient will be identified by: patient number, last name, first name, date of birth (Day, Month and Year), telephone number, address and the name of their illness.

1) Write the data structures necessary to define a patient and a structure allowing the management of 1800 patients?
2) Write an algorithm to display a patient searched for by number?
3) Modify the algorithm so that it displays all patients in the wilaya of Mila?

Exercise 2

The Wilaya of Mila wants to automate the management of its municipalities and entrusts this task to you. For this, a municipality will be identified by: municipality number, name, date of creation (Day, Month and Year), surface area and number of inhabitants.

1) Write the data structures necessary to define a municipality and a structure allowing the management of 50 municipalities?

2) Write an algorithm that performs the following tasks:

a) Enter **N** municipalities in the table.

b) Display the municipalities which have a number of inhabitants lower than a **Nbr** number and their creation dates do not exceed **15 years**?

Exercise 3

The administration of the Mathematic department wants to automate the management of its students and entrusts this task to you. For this, a student will be identified by: his student number, his last name, his first name, his date of birth (which will be broken down into day month and year), year of study, a table containing the averages for the 6 EU prepared (for the current year).

1) Write the data structures necessary to define a student and a structure allowing the management of **1500 students**.

2) Write an algorithm allowing the following tasks:

a) Search for a student by number.

b) Display students searched by first and last name.