Badji Mokhtar Annaba university
Bachelor Of Computer Science - First Year - S1 Academic Year 2023/2024
Exam in Algorithmics and Data Structures

Duration : 1h30 **21-01-2024**

Note:

1- Answers can be provided either in Algorithmics or C language; both are accepted
2- The written algorithms or C programs must include the variable declaration section.

Exercise 1: (5 pts)

Write an algorithm/C program that displays the biggest and the smallest divisors of a given number. (Example: biggest and smallest divisor of **10** are respectively **5** and **2**, the number itself and the number 1 are not included).

Exercise 2: (5 pts)

- Write an algorithm/C program that:

1- Asks the user if he wants to calculate the area of a circle or a rectangle.

2- Allows the user to input data, including the width and length for a rectangle, and the radius for a circle.

3- Displays the result.

- Provide a solution using a flowchart.

Exercise 3: (5 pts)

Write an algorithm/C program that calculates the number of '0' (zeros) in the lower part of a square matrix regarding its first diagonal.

Example:

Number of 0 = 4.

1	2	0	1	0
1	4	2	4	0
1	4	3	0	1
3	**0**	**0**	3	0
0	1	1	**0**	3

Exercise 4: (5 pts)

Write an algorithm/C program that:

1- Searches for a given letter in one dimension array.
2- Moves all its occurrences to the left and shift the others to the right.

Example:

C	A	L	C	U	L	A	T	E

Processed letter is 'A'

1-