University of Echahid Hamma Lakhdar
Faculty of Exact Sciences
Department of Computer Science

Module: Algo & Data Structure I
University Year: 2025/2026
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Series of exercises N° : 01

Basic instructions

Exercise N° : 01

Give the header and the declaration part of the algorithms which have the following roles:

- Calculation of the sum of three integer numbers.
- Calculating the division of two integer numbers.
- Calculating the perimeter and area of a circle.
- Calculating the perimeter and area of a rectangle.

Exercise N° : 02

Among the following 10 assignments (considered independently of each other), which will cause errors, and why?

Variables A, B : Integer C : Real

1. A + 1 ← 3
2. B ← 10 / 2
3. C ← A + B
4. B ← A + B – C
5. C ← D
6. A ← read (B)
7. A ← A / 1
8. B ← A + Sin(90)
9. B ← [A / 2] // integer division
10. C ← [6.0 / 2.0] // integer division

Exercise N° : 03

What will be the values of all variables after running the following algorithms?

Algorithm A1
Variables
A, B : Integer
Begin
A ← 2
B ← A - 3
A ← A + 2
A ← 3
End

Algorithm A2
Variables
A, B : Integer
Begin
A ← -1
B ← A + 4
A ← A + 1 * B
B ← A – 4 * A
End

Algorithm A3
Variables
X, Y, Z : Integer
Begin
X ← 3
Y ← 1
Z ← X - Y
Y ← X + Y – Z
End

Algorithm A4
Variables
Val, Double : Integer
Begin
Val ← 123
Double ← Val * 2
Write (Val)
Write (Double)
End

Exercise N° : 04

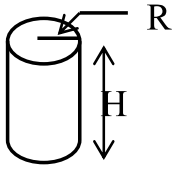
Write the algorithm allowing to do ::

- Initialize the variables X and Y successively with the values 5 and 7.
- Initialize the variable Z by a value exactly greater than that of X by 2.
- Change the value of variable X to that of Y – 1.
- Add the value of variable Z to the value of variable Y.

Give the final values of the three variables X, Y and Z.

Exercise N° : 05

Write an algorithm that calculates the External Lateral Surface Area (ELA) and the volume of a cylinder of radius R = 4 and height H = 2.5



Exercise N° : 06

Write an algorithm to exchange the values of two integer variables A and B

1. By using a third variable **2.** Without using a third variable

Exercise N° : 07

Write an algorithm that calculates the perimeter and area of a rectangle.