



Algorithmic and Data Structures1 (ASD1)

Exercise Series N° 2

Exercise N°1:

1. For each identifier proposed, respond with valid or invalid

C_1 , purchase-Price , 2x , sum1 , percentage% , avg.student , poste 3, Z1Z, téta , _2x , char

2. Give an appropriate variable name for the following information and suggest a type:

Number of students in the section; the baccalaureate average; the degree of an earthquake, number of a wilaya, blood group, ranking of a club in the Algerian football championship, severity of a burn on the human body

Exercise N°2:

Consider the following declarations: *X: Real, C: Character, A: Integer, L: Boolean*

For each of the following instructions, indicate whether the assignment is permitted or not.

A ← 3	A + 1 ← A + 3
X ← 2.5	2X ← NOT X
A ← A DIV 3	A ← X MOD 2
A ← X + 1	A ← L AND A
L ← 1	X ← L * A

Exercise N°3:

Give the values of the variables after the execution of each algorithm

Alogorithme1	Alogorithme 2	Alogorithme3
<i>a, b : integer</i> $a \leftarrow 2$ $b \leftarrow 5$ $a \leftarrow a - b$ $b \leftarrow a * b - 1$ $a \leftarrow b + 4$ $a \leftarrow b + 4$ $b \leftarrow a + b$ $b \leftarrow a + b$	<i>a, b : integer x, y: real</i> $x \leftarrow 1$ $a \leftarrow 3$ $y \leftarrow a * x + 3$ $b \leftarrow y - 2$ $a \leftarrow a \text{ div } 2 + b \text{ mod } 3$ $x \leftarrow a * y + b * x$	<i>x, y : integer z, w : real</i> <i>u, t : boolean</i> $y \leftarrow 2$ $u \leftarrow \text{true}$ $z \leftarrow u + 5$ $t \leftarrow 'x' > 'Z'$ $u \leftarrow y > 3 \text{ et } z < 1 \text{ ou } t$ $w \leftarrow \text{not } t \text{ et } (x = y)$

Exercise N°4:

Write an algorithm that allows you to calculate the diameter, perimeter and area of a circle. To do this, we will proceed as follows:

- Declare the constant variable π and the variable Ray containing 10 as initial value.
- Declare three variables Dm, Pr and Sr.
- Assign respectively to Dm, Pr and Sr the values of the diameter, perimeter and surface of a circle whose radius is Ray.
- Display the following message "The circle of radius 10 has diameter 20cm , perimeter 62,8cm and surface 314 cm²".

Practical work

Consider the following program:

- Enter and save the program
- Detect syntactic errors and correct the program.
- Execute the program.
- What does the program do?
- Modify the program to calculate the sum of digits of a composite integer of 4 digits.

```
#include<stdio.h>
int main()
{
    int n,u,d,c,s;
    n=479;
    u=n%10 ;
    C=n /100 ;
    d=(n /10)%10 ;
    s=u+c+d,
    printf("resultat : %d\n",s);
    print ("end of programm ");
}
```