University of BATNA 2
Faculty: Mathematics and Computer
Department: Common Core in Mathematics and Computer Science
1st Year CC-MCS 2024-2025 academic year

Seriesof 1st supervised exercises

Exercise 1

Either the following problems:

1. Calculation of the perimeter of a circle with radius R
2. Calculation of the area of a disc with radius R
3. Calculation of the sum of two complex numbers
4. Calculation of the product of two complex numbers
5. Solution of a second-degree equation in the set of real numbers (R).
6. Deliberation of a group of 20 students, displaying for each student: their name, surname, registration number, average, and the deliberation decision of the jury, either "Admitted" or "Deferred". Knowing that:
   - All students in the group take 4 modules (M1, M2, M3, and M4).
   - The respective coefficients of the modules are: 2, 1, 3, and 2.
   - The student is declared "Admitted" if their average is 10 or higher, otherwise they are declared "Deferred".

Question: Determine for each of the previous problems
   - The input data.
   - The output results.
   - The main steps for solving,

Exercise 2

1. We have a = 4, b = 5, c = -1 et d = 0, Evaluate the following logical expressions:
   - $(a < b)$ AND $(c \geq d)$
   - NOT $(a < b)$ OR $(c \neq b)$
   - NOT $[(a < b)$ OR $(c \neq b)]$
   - NOT $((a \neq b^2)$ AND $(a*c < d))$

2. Knowing that : A= TRUE , B=FALSE, C= TRUE ; evaluate the following logical expressions:
   - (A ORB) AND (A ORC)
   - (NOT A AND B) OR (A AND NOT B)
   - (A AND B) AND (B AND C) OR (C AND A)
   - (A AND B) OR (B AND C) AND (C AND A)
   - (A OR(A AND B)) AND (A OR(B AND C))

3. Knowing that A=3, B=4, X=3.0, Y= -1.0, C='K' et F=False.
   Specify the evaluation order as well as the value of each of the following expressions below:
   - -X*A+Y,
   - B-A/Y+2,
   - $(4+A*4–B+(A+2^4))/(Y–9+6*3)$,
   - $(((B–2)/(Y/3))/2)*((5*X)-4^2)$,
   - F AND NOT(C<'A'),
   - (X>Y) OR(A>B),
   - (X≤Y) AND(A<B).

Exercise 3

What is the type of each variable: A=1, B=TRUE, test= 12.23, specialite='m',

Exercise 4

Let A and B be two variables of integer type; C and D be two variables of real type; E and F be two variables of boolean type

What is the type of the followingvariable: A1, B1, C1, A2, B2, C2, D2, A3, B3, C3, D3

A1 ← A+B ; B1 ← A*B; C1 ← A/B; A2 ← C+D; B2 ← C*D; C2 ← C/D; D2 ←true; A3 ← E and F; B3 ← E and F; C3 ← (A>B) ; D3 ←A*C;

Exercise 5

What are the valid identifiers and those that are not valid? A, cA, 12, 1exo, exo2, A12m, batna ,valide?, if,exo 1, égale.

Exercise 6

Let be the following algorithms :

Algorithm Algo_01 ;
Var   A, B, C : **integer** ;
      D : **boolean** ;
Begin
   A ← 5 ;
   B ← 6 ;
   C ← A + B*2 + 3 ;
   D ← (C **mod** A) < (C **div** B) ;
   Write (A,B,C,D) ;
end.
	Algorithm Algo_02 ;
	Var A, B, C : **integer** ;
	      D : **boolean** ;
	begin
	   Read (A) ;
	   Read (B) ;
	   C ← A + B*2 + 3 ;
	   D ← (C **mod** A) < (C **div** B) ;
	   write (A,B,C,D) ;
	End.

Algorithm Algo_03 ;
Var x, y : **real ;**
Begin
   x ← 10 ;
   y ← x * 2 ;
   Write (x,'' *2= '', y) ;
End.
	Algorithm Algo_04 ;
	Var x, y : **real ;**
	Begin
	   Read (x) ;
	   y ← x * 2 ;
	   Write (x,'' *2= '', y) ;
	End.

Questions :
1. Perform the trace of algorithm **Algo_01**and algorithm **Algo_02**.
2. What results does algorithm **Algo_03** produce?
3. What results does algorithm **Algo_04** produce?
4. What is the difference between the last two algorithms? .