

Exercise 1 : (6 points)

Copy the correct answer which corresponds to what each of the following blocks of instructions does:

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|--|---|
| <p>1) If(a ≠ 0) then X ← -b /a ; Endif</p> <p>1- Calculate the expression : X-b/a 2- Solve the 2nd degree equation 3- Solve the 1st degree equation</p> | <p>2) S ← 0 ; For (i from 1 to N) do Read(x) ; if(x ≥ 0) then S ← S + 1 ; Endif Endfor</p> <p>1- Calculates the sum of positive values among N values entered by the user 2- Calculates the number of positive values among x values entered by the user 3- Calculates the number of positive values among N values entered by the user</p> |
| <p>3) S ← 0 ; For (i from 1 to N) do S ← S + i*i ; Endfor</p> <p>1- Calculate the expression : $\sum_{i=1}^N i + i$ 2- Calculates the expression : 1+2+...+N 3- Calculates the expression : $1^2 + 2^2 + \dots + N^2$</p> | <p>4) S ← 1 ; For (i from 1 to N) do S ← S * i ; Endfor</p> <p>1- Calculate the expression : $\prod_{i=1}^N i * i$ 2- Calculates the expression : 1*2*...*N 3- Calculates the expression : i !</p> |
| <p>5) S ← 1 ; For (i from 1 to N) do S ← S*x ; Endfor</p> <p>1- Calculate the expression : x^N 2- Calculates the expression: x ! 3- Calculates the expression : N^x</p> | <p>6) S ← 0 ; P ← 1 ; For (i from 1 to N) do P ← P * x ; S ← S + P ; Endfor</p> <p>1- Calculate the expression : $(S + x * p)^N$ 2- Calculates the expression : $x^1 + x^2 + \dots + x^N$ 3- Calculates the expression : $\underbrace{(P*x)+(P*x)+\dots+(P*x)}_{N \text{ times}}$</p> |

Exercise 2 : (9 points)

Let T be an array of N **strictly positive integers**, such that N is less than or equal to 150 (N ≤ 150). Write an algorithm to:

- 1) Fill the array T.
- 2) Add 5 to each array value that satisfies two conditions: the value is strictly less than 10 and greater than or equal to 5.
- 3) Calculate the number of values divisible by 10.
- 4) Split the array T into two arrays T1 and T2, such that T1 contains even values and T2 contains odd values.
- 5) Display all the results.

Exercise 3 : (5 points)

Write an algorithm that calculates and displays the value of the following expression given that n is strictly positive integer and x is an integer:

$$\sum_{i=1}^n ((x+i)!)^i / i = ((x+1)!)^1 / 1 + ((x+2)!)^2 / 2 + ((x+3)!)^3 / 3 + \dots + ((x+n)!)^n / n$$

We wish you good luck