

Level: Admitted with debts

Date: 09/01/2025

Module: Algorithmic and Data Structures 1

Duration: 1h30m

Exam n°1 « Typical correction »

Exercise n°1

(6 points)

Algorithm tests

Variables code1, code2, code3: integer;

(0.5 point)

Begin

Write (« Enter the first code ») ; Read (code1);

(1 point)

If (code1>=1 and code1<=5) then

Write (“Enter the second code”); Read (code2);

If (code2>=97 and code2>=100) then

Write (“Enter the third code”); Read (code3);

If (code3=321) then

Write (“Welcome”);

else

Write (“incorrect code”);

endif

else

Write (“incorrect code”);

endif

else

Write (“incorrect code”);

Endif

End

(4.5 points)

Exercise n°2

(6 points)

Algorithm population

Variables Nbrs_years: integer; pop_alg, pop_const: real;

(0.5 point)

Begin

pop_alg ← 7000000;

pop_const ← 1000000;

Nbrs_years ← 0;

While (pop_alg > pop_const) do

pop_alg ← pop_alg +5000 ;

pop_const ← pop_const+ (pop_const*0.08);

Nbrs_years ← Nbrs_years+1;

Endwhile

(1.5 point)

(4 points)

Write ("Constantine will exceed Algiers after", Nbrs_years,"years");

END

Exercise n°3

(8 points)

Algorithm students_marks;

Variables T: array[1..40] real; S , Moy, max,min, X : real ;

(0.5 point)

n,i,j,k,a,c,p: integer;

Write ("Enter the number of marks ");

Read (n);

If (n=0) then

Write ("Array is empty");

Else

For i ← 1 to n do

Write ("Enter the mark n°", i);

Read (T[i]);

Write (T[i]);

S ← S+T[i];

Endfor

Moy ← S/n ;

Write ("The average of marks is Average =",Moy);

(1.5 point)

max ← T[1];

For i ← 2 to n do

If (T[i]>max) then

max ← T[i];

Endif

Endfor

Write("The maximum mark is max= ", max);

(1.5 point)

min ← T[1];

For i ← 2 to n do

If (T[i]<min) then

min ← T[i];

Endif

Endfor

Write ("The minimum mark is min= ", min);

(1.5 point)

Write ("Give the requested element ");

Read (X);

a ← 0;

For i ← 1 to n do

If (T[i]=X) then

a ← 1;

Endif

Endfor

If (a <> 0) then

Write ("The mark" ,X, " find in the array ");

Else

(1.5 point)

Write ("The mark ",X," does not exist");
Endif

Write ("Give an element to determine the number of occurrences ");

Read (X);

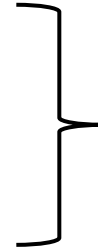
$c \leftarrow 0$;

For $i \leftarrow 1$ to n do If ($T[i] = X$) then $c \leftarrow c+1$; Endif

Endfor

Write ("The number of occurrences of ",X, " is =",c);

END



(1.5 point)

