

Exercise 1

Write an algorithm that reads an integer X and then displays whether it is even or odd.

Exercise 2

Write an algorithm that reads an integer X and then displays whether it is positive, negative, or zero.

Exercise 3

Write an algorithm that reads three integer numbers A, B, and C, and then displays the maximum of the three numbers.

Exercise 4

Let the following algorithm be :

Algorithm Interrogation

```
a,b,c,d : integers ;
begin
read (a,b,c,d) ;
if (a > 0) then
a ← a+4 ; b ← b+4 ; c ← c+4 ; d ← d+4 ;
else
  If (b > 0) then
  a ← - a ; c ← - c ;
  Endif ;
  If (c >0) then
  a ← a+10 ; b ← b+10 ; c ← c+10 ; d ← d+10 ;
  Else
  If (d > 0) then
  a ← a+1 ; b ← b+a ; c ← c+b ; d ← d+c ;
  Endif ;
  If (a > 0) then
  a ← a+3 ; b ← b+3 ; c ← c+3 ; d ← d+3 ;
  Endif ;
  Endif ;
Endif ;
write (a,b,c,d) ;
End.
```

Provide the output values for the variables a, b, c, and d in the case of the following input values: (a=1, b=1, c=1, d=1), (a= -1, b= -1, c=1, d=1), (a= -1, b=1, c=-1, d=1), (a= -1, b=1, c=1, d=1), (a= -1, b=1, c=1, d= -1).

Exercise 5

Every person who wants to buy a new vehicle must pay a tax. The tax depends on the price and the type of the vehicle :

- If the price of the vehicle is less than or equal to 70,000 DA, the tax is 3% of the vehicle's price.
- If the price of the vehicle is more than 70,000 DA and less than or equal to 1,000,000 DA, the tax

is 5% of the price.

- If the price of the vehicle is more than 1,000,000 DA and less than or equal to 1,500,000 DA, the tax is 6% of the price.
- If the price of the vehicle is more than 1,500,000 DA, the tax is 8% of the price.
- If the vehicle is a commercial vehicle or a transport vehicle, then the tax is reduced by 50%.
- In addition to the tax, the person must pay a stamp duty of 20,000 DA.

Write an algorithm that reads the price without tax and the type of a new vehicle and displays its price including all taxes (All Taxes Included-- ATI).

Exercise 6

Write an algorithm that asks the user for the average grades in the subjects Algebra 1, Analysis 1, and Algorithmics for a student. Then, calculate and display the total credits for the core unit composed of these three subjects. Considering the following :

- The credit for the Algebra1 subject is 5, for Analysis1 is 6, and for Algorithmics is 6.
- The weight (coefficient) for the Algebra1 subject is 2, for Analysis1 is 4, and for Algorithmics is 4.
- The total credit for the core unit is 17 if the average grade is ≥ 10 ;
- otherwise, it is the sum of credits of the subjects with an average grade ≥ 10 (in this case, the credit for a subject is 0 if its average grade is < 10).

Note: The average grade for the unit is calculated based on the weights and the subject averages.

Exercise 7

The University Center of Mila is open every day from 8 am to 5 pm, except on Fridays when it is closed all day.

- Write an algorithm that asks the user to enter a day represented by an integer between 1 and 7 (Saturday = 1) and an hour (an integer between 0 and 23), then displays the message "open" or "closed."

Exercise 8:

Write an algorithm that asks the user for a number N consisting of four digits and then displays this number in words.

- Example: If $N = 3235$, the program displays: "three thousand two hundred thirty-five"