



## TD2 Conditional Structures

### Ex 2.1 Even or Odd ?

Write a program that asks the user for an integer N and displays whether the number N is odd or even according on its parity.

### Ex 2.2 Tax Calculation

We want to calculate the amount of tax paid by an employee. The grid to use is as follows:

Salary	Tax rate
Salary < 25000 DA	5%
25000 DA ≤ Salary < 50000 DA	10%
50000 DA ≤ Salary < 80000 DA	20%
80000 DA ≤ Salary	25%

Write a program that enters the salary and displays the amount of tax to be paid.

### Ex 2.3 Multiple

Write a program that asks the user to enter a number and check whether it is a multiple of 3, 5, both or neither. Display a corresponding message.

### Ex 2.4 Seasons

1. Write a program that, given the number of a month (1 to 12), displays the corresponding season. For example:
  - If month = 1, the program displays "Winter".
  - If month = 8, the program displays "Summer".
2. Modify the program so that it also displays the number of days corresponding to that month.

### Ex 2.5 Intersection

Write a program that asks the user to enter 4 integers A, B, C, and D, and then indicates the intersection of the intervals [AB] and [CD].

### Ex2.6 Sort

Create a program that requires the user to enter three numbers and sort them in ascending order using conditional structures.

## Ex 2.7 Cartesian Coordinates

A Cartesian plane is defined by 2 perpendicular axes:  
The x-axis, which is horizontal, and the y-axis, which is vertical.

The two axes intersect at the point (0,0) called the origin.

Any point  $P$  can therefore be identified by two real numbers (abscissa  $x$  and ordinate  $y$ ), called Cartesian coordinates.

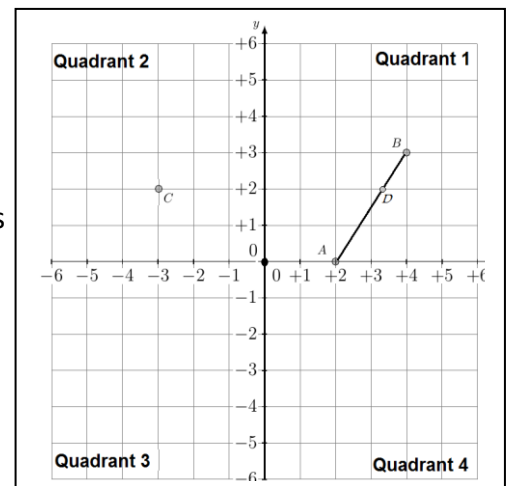
The Cartesian plane is divided into 4 regions called quadrants numbered 1 to 4, as shown in the figure.

Write a program that:

1. Asks the user to enter the Cartesian coordinates of three points  $A(x_A, y_A)$ ,  $B(x_B, y_B)$  and  $C(x_C, y_C)$ .
2. calculates and displays the distance between the two points  $A$  and  $B$ . Knowing that the distance  $AB$  is calculated by the following formula:

$$AB = \sqrt{(x_B - x_A)^2 + (y_B - y_A)^2}$$

3. Displays the number of the quadrant in which point  $C$  is located.
4. Displays whether point  $C$  is on the segment formed by the two points  $A$  and  $B$  or not.



## Ex 2.8 One More Second

Write a program that adds one second to a given time in the form "H:M:S".

The program must take into account cases where the addition of one second can lead to a change in the minutes or hours.