Examination ProgMod

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1 Exercise 1

1. (1pt) Write a function which takes as argument an integer n and computes $n!$ ("factorial n")
2. (1pt) Write a small program which makes use of this function

2 Exercise 2

1. (1pt) Write a subroutine which takes as arguments two integers n and m and returns $\sqrt{n/m}$
2. (1pt) Write a small program which makes use of this subroutine

3 Exercise 3

Write a fortran program according to the following specifications:

1. (1pt) Let us consider `N=100` points. Declare the arrays `xcoords` and `ycoords` of the points.
2. (1pt) Fill these arrays with random numbers.
3. (1pt) Open a file and use a do loop to write the coordinates of these points on two columns
4. (1pt) compute the barycenter coordinates of the points

$$x_M = \frac{1}{N} \sum_{i=1}^{N} x_i \qquad y_M = \frac{1}{N} \sum_{i=1}^{N} y_i$$

4 Exercise 4

Write a program according to the following specifications:

1. (1pt) define an array to contain 11 real numbers and fill the array with values of your choice with the method of your choice
2. (1pt) have the program display the error message 'sum too large' if the sum of all the numbers in the array is larger than 100
3. (1pt) have the program display the error message 'negative nb' if one of the numbers is negative

Recommendations:

- Every single used variable has to be defined.
- Comment your code appropriately.
- Points will be deduced for unclear/unreadable statements.
- Every single used variable has to be defined (I insist).