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

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

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).