# PROGRAMMING FUNDAMENTALS I

## THEORETICAL PROJECT

**Objective**

This assignment is proposed with the intention that the student consolidates what has been learned in theoretical and laboratory classes throughout the course. In addition, it aims to contribute to improving the ability to solve problems by applying engineering techniques and using information and communication technologies and teamwork. At the same time, it seeks to promote the development of their capacity for analysis, synthesis and evaluation, as well as critical reasoning and recognition of diversity, equality and multiculturalism.

**Method**

In order to do this, it is proposed to approach a problem whose solution is obtained through the tools and techniques explained throughout the course.

**Presentation**

It will be mandatory to record a video showing the work done. The presentation may contain textual descriptions, tables, graphs, diagrams, etc. accompanied by students' voice.

**Groups**

- For the ordinary call the students will be organized in groups exclusively of 4 people and of the same group of theory.
- For the extraordinary call, the work will be done individually.
- A Virtual Campus Forum has been prepared for searching colleagues for the different groups.
- All members of the group must appear during the presentation done and their voice must be heard.

**Video requirements**

- The first 5 seconds of the video will show the title of the work, the names and photographs of the students, the part of the work done by each of them along with their involvement degree, agreed by all, in an interval from 1 to 5 points.
- The video must have a minimum duration of 5 minutes and a maximum of 6 minutes.
- The size of the file with the video may not exceed 20 MB and must be named by the first surname of each student in the group.

**Documentation to be submitted**

Each group will deliver:

- A single copy of the video. If the video "weighs" too much, it will be uploaded to any other platform and only a text file will be uploaded to Virtual Campus containing the link to the video on that platform.
- A text document (in pdf) with the content used to create the video:
    - Names, surnames and theory group of the 4 members of the group
    - Statement of the chosen problem

        - Analysis of the problem and justification of the representation of the chosen data, as well as of the modular decomposition carried out.
        - Pseudocode of the algorithm that resolves it
        - Lessons learned
    - The source code of the program that solves the problem, properly documented
    - All files will be compressed and uploaded to the task prepared for it on Virtual Campus.

**Delivery terms**

The submission deadline will be January 10th 2021, in the case of the ordinary call, and May 25th 2021 for the extraordinary call.

**Assessment of the work**

To obtain a minimum score of 5 points, the program must follow the principles of the structured programming and concepts studied in the subject of PFI, not being recommended the use of the programming oriented to objects neither of structures or advanced classes that we have not seen throughout the course. It will be assessed negatively, which may mean that the work is not passed on, the following aspects:

- use of global variables when not applicable,
- incorrect modularization of the program,
- incorrect parameterization of the methods,
- incorrect use of the parameters,
- excessive size of the "main" method

In all programs, the correct input of data must be controlled, avoiding that the program ends when incorrect values are entered, in which case the user will be given the opportunity to try again until the entry is correct. This means that, for example, if you have to enter a number positive and the user enters a negative or zero value, the program will display a message warning of the error and providing the possibility for the user to try again, repeating this process as many times as necessary until that the user enters the positive value. However, there is no need to control the cases in which the user enters a value of a different type of data than the one being requested. For example, if you are asked to enter a number and instead enter a character.

**Other**

- For the evaluation of the work, the criteria detailed in a section accessible on Virtual Campus will be used.
- It should be remembered that this work will represent 15% of the total grade of the subject.
- This activity is non-mandatory and re-assessable.