C++ Project Description Fall'20

One of the functions of the Learning Management System (LMS) is to provide teachers with tools to view and analyze students' grades. The aim of this exercise is to import students' data and perform some statistical operations such as normalization and transform them into symbol grades representation. The program should have a menu of the following functions:

- Import/export student data...
- Import/export student grade
- Modify grades:
    - Normalize
    - export GPA grades

The implementation of the project can be done in following parts:

Part 1:

The file "studentsData.csv" contains the data of the students represented as columns. Use this file to create an array that holds the students' information (ID, Name, Age, Gender, etc..). You can either represent the data as a Multidimensional array or an Array of Objects (of course you would first have to create the Student Class first).

Part 2:

The file "studentsGrades.csv" contains the student's grades for five different courses. All the grades are marked out of 100. Write a function to normalize the results of each course. The function takes the raw data as input, calculates the mean and standard deviation and then computes the normalized data. Use the following equations to normalize the data:

$o = \frac{x-\mu}{\sigma} where:$

μ: is the mean of the grades in the course
σ: Standard deviation of the grades

Part 3:
Replace the students' grades with grades symbols according to the following table:

Range	Symbol
≥ 90	A
$90 < 85$	B+
$80 < 85$	B
$75 < 80$	C+
$70 < 75$	C
$65 < 70$	D+
$60 < 65$	D
60	F

Then export the modified data to a CSV file.

Part 4:
Write a function that provides statistics for every grade band for each course. For example, in the Maths(1) course: 10% of the students got A, 20% got B, 40% got C and so on.

Part 5:
Write a function that prints a student's basic information and grades given the student's ID.

Sample data to try your program on is found in this link

Deliverables:
Students are encouraged to work in **groups of four individuals**. Each group should submit the following **a compressed file** containing the following deliverables:

- Source code files. (Project folder)
- In case of a group submission: A text file which contains the contribution of each member of the group (What did each member do?).
- A report in one PDF file containing:
  1. Flow charts of the main flow of the program.
  2. Screenshots of the program while running.

Deadline: 31 January 2021 11:59 PM

Upload your answers to the following form