Assignment 5
Programming Fundamentals (Section 1N)

Assume that there are a maximum 100 students registered in 1st semester in a university and every student is registered in 5 courses: Calculus, Programming, Physics, English and Islamiyat. Further assume that Calculus and Programming are 4 credit-hour courses each, while the other are 3-credit hour courses. The individual scores of all the assessments are stored in a file in the following format:

No_Of_Students
Roll_Number, Name Marks_Calculus, Marks_Programming, Marks_Physics, Marks_English, Marks_Islamiyat

(Different fields of a single record are separated by commas, and each record is on new line).
e.g., if the file contains record of five students, then the file may have data as shown below:

5
21L1389, Sajjad Ahmad, 85, 73, 58, 62, 51
21L1819, Faisal Noor, 93, 63, 55, 52, 67
21L3283, Asim Shahzad, 37, 51, 61, 62, 50
21L3821, Fiaza Saleem, 88, 73, 59, 67, 55
21L1733, Saleem Shah, 77, 75, 67, 78, 72

(in this example file, the first number mentions that we have data of 5 students only, but you will populate data in the input file for at least 15 students).

It is required to read these results and then display the name of every student, his marks, his **grade and his GPA in each course** and finally his SGPA (i.e., Semester Grade Point Average). The computer program should also compute and display average SGPA of the class and the name and SGPA of a student with highest SGPA in the class.

Assume the following mapping while computing the GPAs of individual course.

Marks	Grade	GPA
≥ 80	A	4.0
< 80 and ≥ 70	B	3.0
< 70 and ≥ 60	C	2.0
<60 and ≥ 50	D	1.0
≤ 50	F	0.0

The output should look like this

Name: Ahsan Lateef
Roll Number: 21L3382

SUBJECT	MARKS	GRADE	GPA
Calculus	**75**	**B**	**3.0**
Programming	**85**	**A**	**4.0**
Physics	**73**	**B**	**3.0**
English	**58**	**D**	**1.0**
Islamiyat	**79**	**B**	**3.0**

SGPA = 2.89

(Note that the SGPA is not 2.80 but 2.89 because few courses are 4 credit hours.)

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Average SGPA of the class = 2.64
Highest SGPA of the class = 3.93 by Mohsin Kamal

Guidelines

- Use multiple 1-D arrays (No 2-D arrays at this stage).
- Identify the number of arrays with their types correctly before writing down the program.
- USE MODULAR APPROACH (functions) with proper parameters.
- Create input files and populate data in these files according to the given specifications.