**INFO1112 Assignment#3**

**This assignment is due on March 22, 2022 at 10am.** *Late submission is accepted with late penalty.*

Write a program that keeps of track students' scores using a **vector**. Your program will read a set of students' scores (note: a score may contain decimal point, e.g., 83.34) until a termination code is entered. After, it provides a summary of all scores. (Please read scenarios on the following page to see how the program works)

**Termination Code:**

- The termination code, which is a negative number, uses **the last two digits of your student ID**. For example,
  - if your ID is 109999901, the secret number becomes -1.
  - if your ID is 109999987, the secret number becomes -87.
  - if your ID is 109999999, the secret number becomes -99.

**Assumption:**

- The user will not enter more than 5 scores (But, he could enter less than 5 scores).
- The user always enters numbers (i.e., no need to check for non-numeric inputs). A valid score is a number with or without decimal points falling between 0 and 100 inclusively (i.e., 0 and 100 are also valid inputs)

**Requirements:**

- No global variables are allowed ***(-100% if any global variable is used).***
- Use function prototyping technique so that the main function is always the first function in your program.
- Use **vector** to keep track students' scores ***(-75% if vectors are not used. However, you may use array operations when manipulating the content of the vector)***
- Use loop(s) in your program
- Use One procedure (a procedure is a function of void return type) and One function to implement your solution. The procedure / function should be designed in such a way that it can be re-used by other programs:
  - Write a **procedure** named **"determine_grade"**. In the summary, for each score stored in the vector, the program will call this procedure and display its equivalent letter grade

    | | |
    |---|---|
    | Grade A | 80 – 100 (inclusive) |
    | Grade P | 60 - 79 (inclusive) |
    | Grade F | 0 – 59 (inclusive) |

  - Write a **function** named **"calc_average"** that takes the vector and **returns** the average of the scores.
  - In the summary, all numbers must be **formatted with 2 decimal points when they are displayed** (e.g., 66.66, 78.50, 34.00). Proper formatting and alignments of output are required (see scenarios on next page).

**Submission:**

- Submit ONLY the source main_YourStudentID.cpp. (i.e., the word "main", followed by "_" and your student ID. (e.g., the file name is "main_109999983.cpp" where 109999983 is the student ID) to the **Assignment#3_Descirption_Submission** link on the course website.

**Assessment**

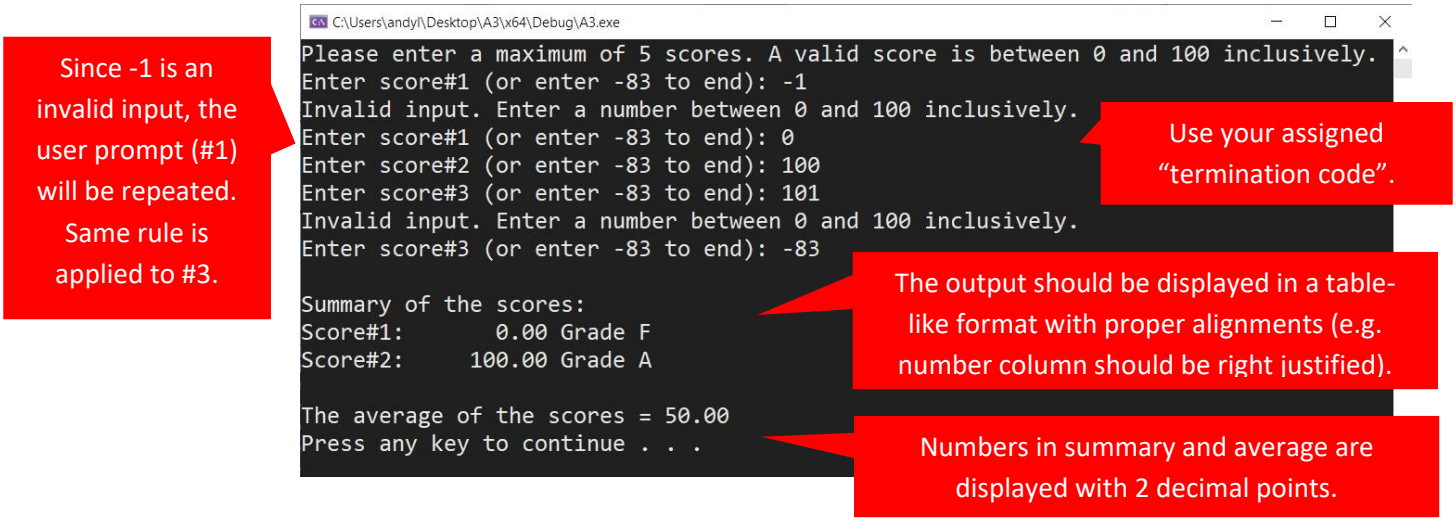
The following penalties will be applied in assessment. Penalty will be applied to overall quality of work.
*(Note: assessment on quality is subject to the decision of the instructor)*

| | |
|---|---|
| Project is not built successfully | -100% (Note: a programming project will have 0 mark if it is not built successfully. For a complex project, you may decide to skip some requirements to get partial marks instead of 0) |
| Requirements not fulfilled | Up to -100%; it depends on the % of requirements completed |
| Incorrect file name(s) | -5% per name (there should be no space in a name) |

| | |
|---|---|
| improper code format, output format, no code comments | Up to -30% |
| low quality coding (e.g., redundant or unused code statement, hard-coded constant if a variable should be used, etc.) | Up to -100% |

**Study the following scenarios to understand the program requirements**

In the following scenario, the user has entered -1, 0, 100, 101, and -83. (Note: -1 and 101 are invalid inputs; -83 is termination code. These three numbers should not be taken into account when calculating the average.)




In the following scenario, the user has entered -1, 90.4, 74.6, 111, 34.60 and -83. (Note: -1 and 111 are invalid inputs; -83 is termination code. These three numbers should not be taken into account when calculating the average.)