

2024 Spring Object-Oriented Programming

HW4

1. Write a grading program for a class with the following grading policies:
 - a. There are two quizzes, each graded on the basis of 10 points.
 - b. There is one midterm exam and one final exam, each graded on the basis of 100 points.
 - c. The final exam counts for 50 percent of the grade, the midterm counts for 25 percent, and the two quizzes together count for a total of 25 percent. (Do not forget to normalize the quiz scores. They should be converted to a percent before they are averaged in.)

Any grade of 90 or more is an A, any grade of 80 or more (but less than 90) is a B, any grade of 70 or more (but less than 80) is a C, any grade of 60 or more (but less than 70) is a D, and any grade below 60 is an F.

The program will read in the student's scores and output the student's record, which consists of two quiz and two exam scores as well as the student's average numeric score for the entire course and the final letter grade. Define and use a structure for the student record. If this is a class assignment, ask your instructor if input/output should be done with the keyboard and screen or if it should be done with files. If it is to be done with files, ask your instructor for instructions on file names.

規則:

- a. 需要建立一個 **struct**
- b. **struct** 中有 6 個變數
 - **Quiz 1 score**
 - **Quiz 2 score**
 - **Midterm score**
 - **Final score**
 - **Average score**
 - **Final letter grade**

2. Redo Programming Project 1 (or do it for the first time), but this time make the student record type a class type rather than a structure type. The record class should have member variables for all the input data described in Programming Project 1 and a member variable for the student's weighted average numeric score for the entire course as well as a member variable for the student's final letter grade. Make all member variables private. Include member functions for each of the following: member functions to set each of the member variables to values given as an argument(s) to the function, member functions to retrieve the data from each of the member variables, a void function that calculates the student's weighted average numeric score for the entire course and sets the corresponding member variable, and a void function that calculates the student's final letter grade and sets the corresponding member variable.

規則:

- a. 需要建立一個 class
- b. class 的 private member variables (總共 6 個)
 - Quiz 1 score (double type)
 - Quiz 2 score (double type)
 - Midterm score (double type)
 - Final score (double type)
 - Average score (double type)
 - Final letter grade (char type)
- c. class 的 public member functions (總共 14 個)
 - 6 個 private member variable 的 set function
 - 6 個 private member variable 的 get function
 - 計算 average score 的 void function
 - 計算 grade 的 void function

輸入說明:

1. 按照 Quiz 1 score, Quiz 2 score, Midterm score, Final Score 順序輸入分數，使用 cin
2. 輸入的 Quiz score 一定會在 0~10 之間
3. 輸入的 Midterm/Final score 一定會在 0~100 之間
4. 輸入的分數一定是整數

輸出說明:

1. 輸出 struct/class 中的 6 個變數，使用 cout

Sample Case:

```
Quiz 1 score (0-10), Quiz 2 score (0-10), Midterm score (0-100), Final score (0-100)
5 5 90 90

Student Record:
Quiz 1 score: 5
Quiz 2 score: 5
Midterm score: 90
Final score: 90
Average Score: 80
Grade: B
```

```
Quiz 1 score (0-10), Quiz 2 score (0-10), Midterm score (0-100), Final score (0-100)
7 3 19 37

Student Record:
Quiz 1 score: 7
Quiz 2 score: 3
Midterm score: 19
Final score: 37
Average Score: 35.75
Grade: F
```

Note:

1. 兩題的輸入輸出格式一樣
2. $\text{Average Score} = \text{Quiz 1 score} * 10 * 0.125 + \text{Quiz 2 score} * 10 * 0.125 + \text{Midterm score} * 0.25 + \text{Final score} * 0.5$
3. 本次作業和 file I/O 無關，使用 cin/cout
4. 務必注意 cout 出的大小寫、空格、換行等，會影響 online judge 的通過與否

Submission - Deadline: 2023/3/25 23:59

- 請將兩個程式碼(.cpp 檔)上傳至 E3 作業繳交區
- OJ 指令:
 - /home/share/demo_OOP112 Hw 04-1
 - /home/share/demo_OOP112 Hw 04-2
- 程式碼命名:
 - 第一題(struct) : Hw-04-1.cpp
 - 第二題(class) : Hw-04-2.cpp