

Course Work

1. Problem

Build a simple system to manage exam grade.

- a) The program will first ask the user to input the name of a file that contains the exam grade of some students, e.g.

```
Please input data file name : in.txt
```

- b) The program then will scan the file to read student information, including id, name and the grade of 4 courses.

The file content is organized as follows:

The first line of this file is an integer N, which means this file contain N students' information.

In the next N lines, each line contains 6 fields. The first two fields represent student id (integer) and student name (string). The last four fields are the grade of 4 courses (real number). Each field is separated by one blank.

You need to manage these data with structure array.

E.g.

```
5
1 a 90 80 88 70
2 b 88 60 78 77
3 c 90 95 90 100
4 xueba 100 100 100 100
5 xueza 0 0 0 0
```

- c) After reading data from the file, the program shows a menu to operate the student grade, e.g.

```
*****MENU*****
1.student information
2.course avg_score
3.student avg_score
4.output into file
5.course ranking
6.exit
*****MENU*****
```

- d) The program should contain four functions.
- a) Show the student's information (including id, name and grade of each course), e.g.

ID	NAME	C00	C01	C02	C03
1	a	90.0	80.0	88.0	70.0
2	b	88.0	60.0	78.0	77.0
3	c	90.0	95.0	90.0	100.0
4	xueba	100.0	100.0	100.0	100.0
5	xueza	0.0	0.0	0.0	0.0

- b) Output the average score of each course, e.g.,

ITEM	C00	C01	C02	C03
AVG	92.0	83.8	89.0	86.8

- c) Output the average score of each student, e.g.

ID	NAME	SCORE
1	a	82.00
2	b	75.75
3	c	93.75
4	xueba	100.00
5	xueza	0.00

- d) Write the average score of each course and each student into a file, e.g.,

ID	NAME	C01	C02	C03	C04	AVG
1	a	90.0	80.0	88.0	70.0	82.0
2	b	88.0	60.0	78.0	77.0	75.8
3	c	90.0	95.0	90.0	100.0	93.8
4	xueba	100.0	100.0	100.0	100.0	100.0
5	xueza	0.0	0.0	0.0	0.0	0.0
-	-	73.6	67.0	71.2	69.4	-

- e) (Optional) The program may also offer a ranking function. According to the user's input, the program output all scores of the chosen course in a decrease order, or all student average score in a decrease order.

Input course id(0 for avg score ranking) : 1			
RANK	ID	NAME	SCORE
1	4	xueba	100.0
2	1	a	90.0
3	3	c	90.0
4	2	b	88.0
5	5	xueza	0.0

Input course id(0 for avg score ranking) : 0			
RANK	ID	NAME	SCORE
1	4	xueba	100.0
2	3	c	93.8
3	1	a	82.0
4	2	b	75.8
5	5	xueza	0.0

2. Requirements

Your programming report should include:

- (1) Title page. Pseudocode or flowchart to describe the algorithm of your program. The printout on the screen. (2 points)
- (2) The C source file (8 points)

You will be marked based on your program's:

- Correct
- Readability
- Robustness
- Conciseness