

Name: _____ SSN: _____

Signature: _____ Email: _____

Write a COMPLETE C++ program that will do the following. Your program must have at least one method or function. Your program will read multiple input values from a data file, in which each input contains the name of a student and some number of grades for that student. Your program will have to calculate the weighted total value for each student and then print out the following information:

1. The average weighted total for the students given in the input
2. The student name and weighted total for all students whose weighted total is greater than the average weighted total. The student names are to be listed in the same order as given in the input data file.
3. The student name and weighted total for the top 10% of the weighted totals. The weighted totals are to be listed in decreasing order (largest value first).

Your program is to prompt the user for a file name, open this file and read the data from the file. If an error occurs, print out a descriptive error message and quit the program.

The first two lines of the data file will contain information on how the data file is arranged and how the program will calculate a weighted total of the data. The first line will contain two integer values: The first integer value will be the number of input values contained in the file. This value can be any positive integer value. The second integer value will be the number of grades the file contains for each student. This value can be any integer value in the range from 1 to 20. The second line of the input file contains the weight values used for the weighted total calculation. The number of weight values will match the second number given on the first line of the file. Since there is no limit on the number of students that could be in the data file, a dynamically allocated array will be used to hold the proper amount of information for all of the students.

The input values for each student will be given starting at the third line in the file. Each student will have two lines of information. The first line for each student will be the student name. This name can be any length and may contain space characters. You only need to store the first 30 characters of the name. If you are reading in the name character-by-character, remember that the '\n' character will make the end of the line (and thus the end of the name). The second line for each student will be the grades for the student. There number of grades will match the second number given on the first line of the file.

The weighted total for each student is calculated by summing the result of multiplying the i-th grade by the i-th weight value. For example assume the data file appears as follows:

```

125  3
0.40 0.35 0.25
Steve Allen
87.5 92 100
Woody Allen
91.5 92 45
...

```

The file contains information for 125 students (only the data for the first two students is shown). For each student there are 3 grades. The weighted total for the first student is the result of:

$$(87.5 * 0.40) + (92 * 0.35) + (100 * 0.25)$$