

Homework #1

In this assignment, you will maintain data on students in a class. Each student has a first name, last name, an exam grade, and a letter grade (which all must be stored). There are no more than 100 students in the class.

1. You will read in data from a file called students.txt. Each line in the file will look like this:
Ari Mermelstein 89

The file has neither header nor trailer values.

2. After you have read in the information for all of the students, you must calculate the following.
 - a. Compute the letter grade for each student. Print out each student's name with their associated letter grade.
 - b. Display the name and grade of the student who attained the highest grade.
 - c. Calculate and display the mean (average) of the grades in the class.
 - d. Calculate and display the standard deviation of the grades in the class.

The formula for standard deviation is as follows.

$$\sigma = \sqrt{\frac{1}{n-1} \sum_{i=0}^{n-1} (test_i - \bar{X})^2}$$

This means, subtract each test from the average, then square the result of the subtraction, and add it to a running total. After you've done this, divide by n-1 and take the square root. σ is the symbol for standard deviation and $\bar{X}$ is the symbol for the mean.

Note: All calculations and file reading must be done in methods. Your main program should be relatively short. I'm looking to see your programming style and your thought process. All methods should be commented explaining to me what they do. I can't read your minds. You should have one array per piece of information: one for first names, one for last names, one for the exam grade and one for the letter grades. These should be organized such that index i in each array has the information for student i . Obviously, you know much fancier techniques, but I want you to write this program using low level techniques so you can get used to writing basic, low-level C++.