Exam Statistics Program (25pts)

Due Friday, 1 September 2017

You are to write a program that reads in a list of grades from a file and then computes the average grade, the minimum and maximum grade, the median grade, and the grade distribution (how many A's, B's, etc.). You will need to get a filename supplied by the user, then read in the list of numerical grades (i.e. percentages) from a text file. The first line of the text file will contain the number of grades you will be reading in and the following lines will contain the grades. Store the grades in an integer array and complete the functions outlined in the template I provide. To receive full credit, you may NOT use any built-in functions for computing average, min/max, or median.

Sample Listing

```
Enter the name of the text file containing the scores.
>>grades.txt
There are 6 grades in this file.
The average of the scores is 82.5.
The lowest grade is 72.
The highest score is 92.
The median score is 83.
The grade distribution is as follows:
        0 F's
        0 D's
        2 C's
        3 B's
        1 A's
Thank you for using ESP!
```

Extra Credit

- (3pts) Modify your program to compute the standard deviation of the grades. The standard deviation is defined as $\sigma = \sqrt{\frac{\sum_{i=1}^{N}(x_i - \bar{x})^2}{N-1}}$ where

each x_i is an individual value, $\bar{x}$ is the average value, and there are N total values. You may NOT use a built-in standard deviation function to receive full points.

Hand-in and Notes

Turn in a printed listing and console run of your program. Be sure to include your name at the top of the source code in comments, to include comments in the source code, and to use proper indenting structure. Use the grading scale for this class as a basis for the grade distribution.