

Grade-Book Program

You are to complete the interactive grade-book program that we have been discussing in class. Download the hw7.zip file from:

<http://www.cs.uni.edu/~fienup/cs1160s14/homework/hw7.zip>

to your PC and upload the hw7.zip folder to student.cs.uni.edu. On student.cs.uni.edu, use the command: `unzip hw7.zip` to extract the hw7 subdirectory.

Currently the gradeBook.cpp program will read a file, display the gradebook, print the menu, and save the updated gradebook back to a specified file.

```

Enter the file containing student scores: students.txt
There are 3 students with 5 scores.

Student Names      HW 1   HW 2   Lab 1   Lab 2   Test 1
Doe, Jane         :     1     2     3     4     5 Average Score = 3.0
Morse, Cody       :   1.1   2.2   3.3   4.4   5.5 Average Score = 3.3
Smith, John       :  10.0  20.0  30.0  40.0  50.0 Average Score = 30.0
Column Averages   4.0    8.1   12.1   16.1   20.2

Grade Book Menu

(D)isplay all scores
(A)dd column of scores
(N)ew student
(C)hange a score
(E)xit program

Enter your choice:

```

You will need to add code to complete menu options:

- (A)dd column of scores - add a new column title and scores on the right side of the table
 - (N)ew student - add a new student name at the bottom of the table and prompt for their scores using column-headings
 - (C)hange a score - change a single score by prompting for a student's name and a column-heading
- HINT: Remember in class I suggested displaying a menu with the student names and letting the user choose the student, and then displaying a menu with the column-titles and letting the user choose the score to change.

ADDITIONAL REQUIREMENTS:

When you write your program, be sure to use:

- meaningful variable names with good style (i.e., useCamelCase or use_underscores)
- comments at the start of the program **and** before the definition of each function which describing what task it performs (not how they perform their task).
- a main function located at the “top” of program since it is the outline of the program
- global constants where appropriate with good style (ALL_CAPS_AND_UNDERSCORES) and limited usage of global variables.

EXTRA CREDIT: (Attempt only after you have the above working)

- Maintain the student names in alphabetical order when adding a new student
- Maintain the column of scores in alphabetical order when adding a new column

HINT: Implement a `listSearch` function with the following prototype:

```
void listSearch(string target, string stringList[], int stringCount, bool & found, int & locationFound);
```

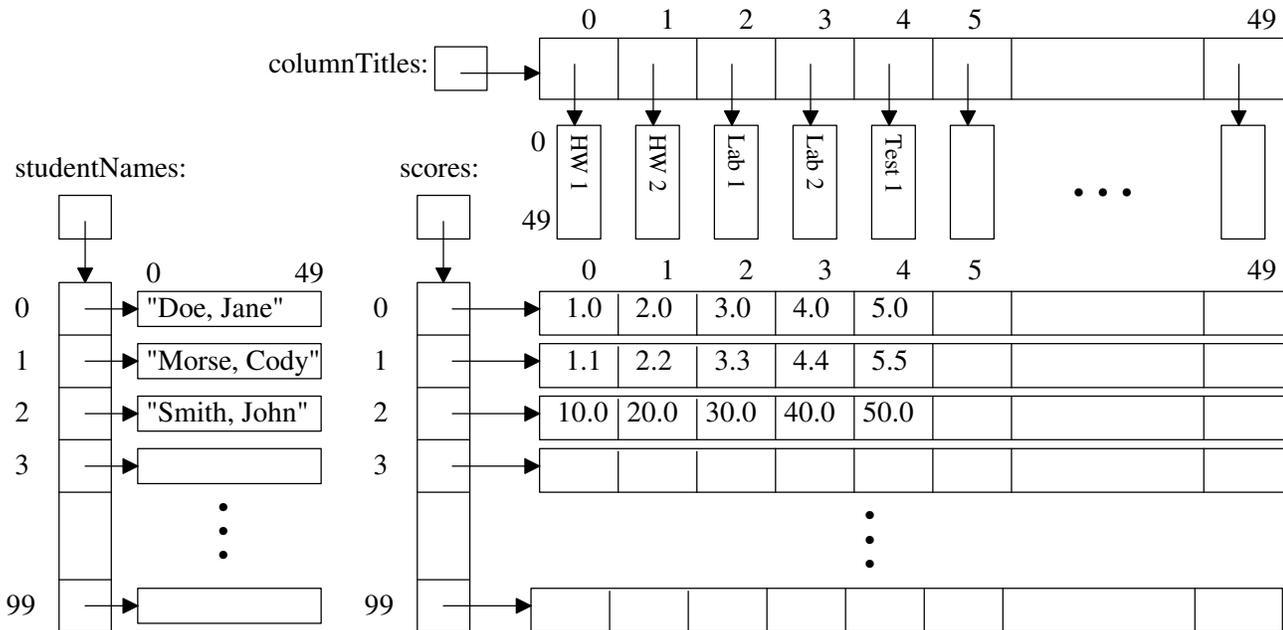
The `listSearch` should search `stringList` for `target` and set both `found` and `locationFound` accordingly. If the `target` is not found, then `locationFound` can be the index of where it should be inserted. You can potentially use this function for both of the above extra credit opportunities.

Submit a single file, **hw7.zip** containing the following:

- **gradeBook.cpp** (your updated C++ program)
- **out.txt** script file demonstrating the features of your program as it runs (recall the UNIX/Linux command “script out.txt” starts capturing everything that goes across the screen, then run the program, and finally Ctrl-d stops the script)

Recall that the grade book program uses the follow array declarations which we a visualize as:

```
// Global Constant
const int CLASS_SIZE = 100, MAX_SCORES = 50;
int main() {
    double scores[CLASS_SIZE][MAX_SCORES];
    string columnTitles[MAX_SCORES], studentNames[CLASS_SIZE];
    int numberOfScores, numberOfStudents;
```



The steps for the homework submission system are:

1. Design, write, debug, and test your program in the hw7 subdirectory on student.cs.uni.edu. When you are ready to submit your homework, copy it back to your computer using FileZilla (or WinSCP) program, zip the whole hw7 folder on your computer by right-clicking on it and selecting Send to | Compressed (zipped) folder. This will create a new file called hw7.zip which you will submit electronically. (This assumes Windows OS....)
2. Log on to the submission system at: https://www.cs.uni.edu/~schafer/submit/which_course.cgi
(It is very likely that you will get some security certificate warnings when trying to use this. You may add an exception and accept the existing security certificate.) Use the same CatID user-name and password you use to log on the lab computers.
3. Select the course and section number of "CS 1160, C/C++ Programming, Fienup". Click the "Continue".
4. Select the homework that you wish to submit: "HW 7: Gradebook Program". Click the "Continue" button.
5. Specify how many extra files you want to submit. Just leave it at 0. Click the "Continue" button.
6. Upload your program by Browsing and selecting your hw7.zip file. Click the "Continue" button.
7. The next page reports on the status of the upload(s). You can always continue to upload a better version of the program until the deadline. The newer file will replace an older file of the same name.
(If you miss the deadline, you'll need to submit it as above, but select "Late Homeworks" in step 4 above.)