COSC 1436
Programming Assignment 5
Due: May 6, 2016

Programming Assignment 5

In this assignment, you will refactor the program that you wrote for Assignment 3. The output of this program should be exactly the same as Assignment 3 except that the data will be sorted. The program should present a menu to the user asking if they would like display the average grade, maximum grade, or minimum grade. The program should then display the information in a table. The table should include the student name along with the chosen data (average, minimum, or maximum). In addition, the information should be sorted from high to low by the data selected.

Instead of using parallel arrays, you will need one vector of a struct of students. You can use the following struct:

```
struct Student
{
      string fName;
      string lName;
      double average;
      int max;
      int min;
};
```

The program should do the following:

- Load the names of students into a vector of Student struct. For each student calculate the average, maximum, and minimum grade and store that in the struct as well. The file used will be called NamesGrades.txt.
- Continuously present a menu to the user given him/her the options of average, maximum, minimum, or quit. If the user chooses to quit, the program should end otherwise the presentation of the menu should continue.
- Display a table of appropriate grades based on the user's selection sorted by the appropriate grades.

Make sure you use good programming style. This includes commenting ALL your variables and commenting throughout your code. Comments should explain why you are doing something. Use good indentation (see my examples and the books examples for demonstration of good indentation). Make sure variable names are self-documenting. Make good use of white space. Group logical sections together with one blank line between logical sections.

Your output should be neat and pleasant to read.

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Make sure you follow the specifications. If you must, you can add to the program, but do not change the specifications in doing so.

You need to submit a file by the name of the file to PA5_lastName_firstName.cpp, replacing lastName with your actual last name and firstName with your actual first name. Failure to properly name your file results in loss of points.

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Below is possible output for a sample run for this programming assignment:

```
Grade Report Program

        1. Display Average Grade
        2. Display Maximum Grade
        3. Display Minimum Grade
        4. Quit Program

Enter your choice (1-4): 1


Grade Averages
Name              Average Grade
Zack Nutt            87.2     B
Haily Wright         84.2     B
Victoria Taylor      83.0     B
Edward Maun          82.6     B
Rebecca Brown        81.6     B
Sidra Amartey        78.4     C
Diana Patel          77.0     C
Dawn Hopkins         76.2     C
Hannah Shrestha      76.2     C
Ashley Guillen       75.8     C
Kyle Jiwani          75.0     C
Abigail Peterson     75.0     C
Leslie Carter        74.8     C
Angelo Morrison      74.6     C
Jennifer Putnam      73.0     C
Ryan Hilliard        72.4     C
Michael Nguyen       70.6     C
Melvin Johnson       68.4     D
Linda Stoll          64.2     D
Kimberly Sanjel      63.2     D
Marisa Santos        61.0     D
Patrick Perez        56.0     F
Press any key to continue . . .
```

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```
Grade Report Program

        1. Display Average Grade
        2. Display Maximum Grade
        3. Display Minimum Grade
        4. Quit Program

Enter your choice (1-4): 2


Max Grades
Name               Max Grade
Ryan Hilliard      100     A
Kyle Jiwani         99     A
Edward Maun         99     A
Hannah Shrestha     99     A
Haily Wright        99     A
Rebecca Brown       98     A
Zack Nutt           98     A
Angelo Morrison     97     A
Kimberly Sanjel     97     A
Ashley Guillen      95     A
Victoria Taylor     95     A
Michael Nguyen      93     A
Leslie Carter       92     A
Jennifer Putnam     91     A
Linda Stoll         91     A
Sidra Amartey       90     A
Marisa Santos       90     A
Dawn Hopkins        88     B
Melvin Johnson      88     B
Diana Patel         88     B
Patrick Perez       88     B
Abigail Peterson    85     B
Press any key to continue . . .
```

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```
Grade Report Program

        1. Display Average Grade
        2. Display Maximum Grade
        3. Display Minimum Grade
        4. Quit Program

Enter your choice (1-4): 3


Min Grades
Name              Min Grade
Zack Nutt          74     C
Rebecca Brown      73     C
Edward Maun        72     C
Sidra Amartey      70     C
Diana Patel        68     D
Haily Wright       68     D
Dawn Hopkins       66     D
Abigail Peterson   64     D
Victoria Taylor    63     D
Ryan Hilliard      52     F
Jennifer Putnam    39     F
Melvin Johnson     38     F
Leslie Carter      36     F
Angelo Morrison    31     F
Michael Nguyen     28     F
Ashley Guillen     26     F
Linda Stoll        23     F
Marisa Santos      15     F
Hannah Shrestha    13     F
Kimberly Sanjel    12     F
Kyle Jiwani         7     F
Patrick Perez       7     F
Press any key to continue . . .
```

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```
Grade Report Program

        1. Display Average Grade
        2. Display Maximum Grade
        3. Display Minimum Grade
        4. Quit Program

Enter your choice (1-4): 4


--------------------------------
Process exited with return value 0
Press any key to continue . . .
```