CS150 Assignment 6
Grader

Date assigned: Monday, November 1, 2010
Design Documents Due: Friday, November 5, 2010, 5 pm (5 points)
Date due: Friday, November 12, 2010, 1:00 pm (45 points)
Total points: 50

Problem

The results of a true-false Quiz given to a Computer Science class over the Web have been saved in a file called: **quiz6.txt**. The information available for each student consists of a student identification number and the student's answers for up to 25 true-false questions. The first line of data consists of the number of true-false answers followed by the actual answers to the Quiz where a 1 stands for true and 0 stands for false. Each subsequent line contains a student ID number and the student's answers to the Quiz. There is an unknown number of students in the datafile and at most 25 questions.

You are to write a C++ program that will print information for each student shown below.

The following is a sample datafile that might be used in your program:

```
10    0 1 0 0 1 0 0 1 0 1
1080 0 1 1 0 1 0 1 1 0 1
1340 0 1 0 1 0 1 1 1 0 0
1462 1 1 0 1 1 1 0 0 1 0
1512 1 0 1 0 1 0 1 0 1 0
1341 0 1 1 0 1 1 1 1 1 1
1401 1 1 0 0 1 0 0 1 1 1
1463 1 1 1 1 1 1 1 1 1 1
1464 0 1 0 0 1 0 0 1 0 1
```

Your output must look exactly like the following:

```
STUDENT ID: 1080      GRADE: 80.0

                     1   2   3   4   5   6   7   8   9 10
CORRECT ANSWERS:     0   1   0   0   1   0   0   1   0   1
YOUR ANSWERS:        0   1   1   0   1   0   1   1   0   1
--------------------------------------------------------

STUDENT ID: 1340      GRADE: 50.0

                     1   2   3   4   5   6   7   8   9 10
CORRECT ANSWERS:     0   1   0   0   1   0   0   1   0   1
YOUR ANSWERS:        0   1   0   1   0   1   1   1   0   0
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and so on



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SUMMARY STATISTICS


                     1   2   3   4   5   6   7   8   9 10
TOTAL CLASS MISSED:  X   X   X   X   X   X   X   X   X   X


CLASS AVERAGE:       XX.XX
```

Notes

1. Minimally, a data file must consist of at least the first line of true/false answers.
2. I will run your program on the test data supplied and few more files, so make sure you test all border cases.
3. Save all output to a file called **graderresults.txt**. No output should go to the screen.

EXTRA CREDIT (5 pts)

Five points of extra credit are available if you provide a histogram of the class scores. The histogram information must be maintained in an array as you go through and grade the quizzes. Then after the CLASS AVERAGE is printed out above, print out a histogram as shown below. The range of scores is inclusive of the score on the left but exclusive of the score on the right. As an example, 30-40 means $>= 30$ and < 40, EXCEPT 90-100 which is $>=90$ and $<= 100$.

```
--------------------------------------------------
HISTOGRAM

SCORES:

 00-10: *
 10-20:
 20-30:
 30-40: *
 40-50: **
 50-60: *
 60-70: **
 70-80: *****
 80-90: ****
90-100: **
--------------------------------------------------
```

To complete this assignment you must

1. Create a new C++ project in Visual Studio. Name your project **06Graderxxxxxxxx**, where xxxxxxxx must be replaced by your PUNetID. As an example, my project would be called "06Graderkhoj0332". It is vital that you name your project correctly!
2. Type the solution (**fully documented/commented**) to the problem into your project.
3. Remember to enter in your name as the author of the program.
4. Make sure that your program compiles and runs correctly. If you get any errors, double check that you typed everything correctly. Be aware that C++ is case-sensitive. Also, there must not be any warnings when compiling your program.
5. Once you are sure that the program works correctly, it is time to submit your program. You do this by logging on to Turing and placing your complete project folder in the **CS150-01 Drop** folder. Make sure that you copy your program folder and don't move the folder. If you move the folder, then you will not have your own copy!

Submit an electronic copy of your design document

Before you start you need to think about the data in your program and the calculations and loops you will need to perform. Answer the following questions in a **new** GoogleDoc (**CS150_06ProgramDesignPUNetID**) and share the document with the instructor (ShereenKhoja@gmail.com). Be sure to answer the questions in complete sentences where appropriate. This design document is due on **Friday, November 5 by 5pm.**

Design Questions:

1) Give an English algorithm that step by step describes how the main program is going to work.

2) Give a datafile that will test a border condition for your program. Briefly explain why your datafile tests a border condition.

Additional Notes

1. You must follow the coding standards.

2. You must use constants when possible.

3. Your program will be graded on **efficiency**. In other words, you will be marked down for repeating code statements unnecessarily.

4. Your output must look **exactly** like the sample given.

5. If this program sounds difficult, it's not that bad if you get an EARLY start. Make sure you understand all of the pieces before beginning to code your solution. Code your solution a piece at a time not all at once. It makes for much smoother debugging.

   Remember, this is an individual assignment. Refer to the syllabus for assignment policies