Programming Assignment #1

Grade Some Tests

CS 2308.255 and 256, Spring 2013
Instructor: Jill Seaman

Due:
section 255: in class **Thursday, 1/31/2013** (upload electronic copy by 4:00pm)
section 256: in class **Wednesday, 1/30/2013** (upload electronic copy by 1:00pm)

Problem:

An instructor has given a multiple choice exam to a class of students. The exam consists of 20 multiple-choice questions, each of which has 4 choices for the answer (a, b, c, or d).

Write a C++ program that will grade a series of tests for the students in the class using an answer key, and then print a grade report, as described below.

Input: The input file named "grade_data.txt" will have the following format:

line 1: the key for the exam, for example: aadddaBDDcbcacBabcbc

lines 2-n: the students' answers, one line for each student.

Assume the following:
  • There will be no spaces between the 20 answers on a given line.
  • There will be no blank lines in the file (though the last character might be a newline).
  • There will be less than 1,000 students in the class.
  • The answers may be upper or lower case

Output:

Write the output to an output file named "grade_report.txt".

The program should output the **score** (number of correct answers out of 20) **for each student** (each row in the file).

It should also output a **grade distribution**, showing how many students got an A grade, how many got a B grade, and so on (see the table below to determine what is an A grade, etc).

It should output the **average (mean) score** (out of 20) formatted to 2 decimal places.

Score	Grade
18 - 20	A
16 - 17	B
14 - 15	C
12 - 13	D
0 - 11	F

Here is an example of how the output should appear.

```
Individual Scores:
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student 1 - 5
student 2 - 18
student 3 - 15
student 4 - 20
student 5 - 16
student 6 - 12
student 7 - 16
student 8 - 4

Grade Distribution
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A - 2
B - 2
C - 1
D - 1
F - 2

average score: 13.25
```

Style:

See the Style Guidelines document on the course website. Especially pay attention to the **comments** required for the top of the file and for functions. The grader will deduct points if your program violates the style guidelines.

NOTES:

- Use a string to input the set of answers from each student (and the key).

- This program should be developed using a Linux or Unix environment.

- The program must be modular, with at least three functions in addition to main. Each function should perform a single, well-defined task. Do not write trivial functions such as a function to output a single value.

Logistics:

Your program must be free of compiler errors.

Do you not use any features of C++ that we have not yet covered in class (use features from Chapters 1-7 and 10 only.)

Name your file **assign1_xxxxx.cpp** where xxxxx is your TX State NetID (your txstate.edu email id). The file name should look something like this: assign1_js236.cpp

There are two steps to the turn-in process:

1. Submit an electronic copy using the Assignments tool in TRACS no later than one hour before class the day the assignment is due (see top of page 1).

2. Submit a printout of the file at the beginning of class, the day the assignment is due. Please print your name on the front page, staple if there is more than one page.

   If you are unable to turn a printout in during class, you have until 5pm on the day the assignment is due to turn it in to the computer science department office (Nueces 247). They will stamp it and put it in my mailbox. DO NOT slide it under my office door.