Assignment 2 - Quiz Grader Revisited!

Date assigned: Wednesday, February 11, 2009
Date due: Friday, February 20, 2009
Points: 30

For this assignment, you are to solve the same grader problem as in assignment #1 except this time you are going to use an array of structs for each student's class data and a struct for the class average, high score, and low score. In fact, your program is to start with the following C++ code:

```cpp
#include <iostream>
#include <iomanip>
#include <fstream>

using namespace std;

const int MAX_STUDENTS = 100;
const int MAX_QUIZ_QUESTIONS = 25;

struct StudentInfo
{
  int   idNumber;
  int   answers[MAX_QUIZ_QUESTIONS];
  float percentScore;
  int   missedAnswers[MAX_QUIZ_QUESTIONS];
  int   numQuestionsMissed;
};

struct ClassStatistics
{
  float classAverage;
  float highScore;
  float lowScore;
};

void printHeadings();
void readKeyAnswers(int[], int &, ifstream &);
void readStudentsAnswers(StudentInfo[], int, int &, ifstream &);
void calculateClassResults(StudentInfo[], int, int,
                           const int[], ClassStatistics &);
void printClassResults(const StudentInfo[], int, int, ClassStatistics);
```

The description of all of the functions are listed below:

`void printHeadings();` is a function that is to print the first four lines of text from the example output below.

`void readKeyAnswers(int[], int &, ifstream &);` is a function that returns the quiz answers in the first argument and the number of answers in the second argument.

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`void readStudentsAnswers(StudentInfo[], int, int &, ifstream &);` is a function that returns ALL of the rest of the student information from the datafile in the first argument, accepts the number of answers as the second argument, and returns the number of students in the class in the third argument.

`void calculateClassResults(StudentInfo[], int, int, const int[], ClassStatistics &);` is a function that accepts the class information in the first argument, the number of questions in the second argument, the number of students in the third argument, the quiz answers in the fourth argument, and returns the class statistics in the fifth argument. This function will also record the missed answers, number of missed questions, and percent score in the array of structs for each student in the class.

`void printClassResults(const StudentInfo[], int, int, ClassStatistics);` is a function that will output each line of student information from the example output below where the first argument is all calculated class data, and the second argument is the number of students in the class.

Notes:
- You must use the above C++ code and implement each function exactly as described.
- If you have any questions, please see me early.
- Do not change any of the function prototypes.
- The input to and output from the program are exactly the same as in assignment 1.
- Your main program should be opening the file, making the function calls, closing the file, and returning. That is all of the logic that needs to go in the main program.
- You are to follow version 5 of the coding standards. These are an expansion of the coding standards that you used in CS150. I am more than happy to take a look at your code and give you feedback, but I will be taking off points if the code does not conform to the coding standards. The coding standards are available on the website.

What to Submit
- Save your program as 02PUNet.cpp fully documented in a project folder called 02PUNet. So as an example, I would save this program as 02khoj0332.cpp in a folder called 02khoj0332.
- Your code is to be written using Visual Studio and placed in the CS250 Drop Box by 9:15am on the day in which the assignment is due. A stapled hard copy must be placed on the instructor's desk before 9:15am on the day the assignment is due.