CIS 278 (CS1) Programming Methods: C++

Assignment 5: Searching & Sorting

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Learning Objectives

After the successful completion of this learning unit, you will be able to:

- Implement, explain, and analyze linear search, binary search, bubble sort, and selection sort.

Assignment 5.1 [45 points]

Write a program that records high-score data for a fictitious game. The program will ask the user to enter five names, and five scores. It will store the data in memory, and print it back out sorted by score.

The output from your program should look exactly like this:

```
Enter the name for score #1: Suzy
Enter the score for score #1: 600
Enter the name for score #2: Kim
Enter the score for score #2: 9900
Enter the name for score #3: Bob
Enter the score for score #3: 1012
Enter the name for score #4: Armando
Enter the score for score #4: 8000
Enter the name for score #5: Tim
Enter the score for score #5: 514

Top Scorers:
Kim: 9900
Armando: 8000
Bob: 1012
Suzy: 600
Tim: 514
```

Additional Requirements

The data must be stored in two arrays: an array of strings named names, and an array of ints named scores. These arrays must be declared in the main function.

All of the user input should be done in a function named initializeArrays(). It should have the following signature:

```
void initializeArrays(string names[], int scores[], int size)
```

You must also write two more functions: one to sort both arrays in descending order by score, and one to display the final list of names and scores. They should have the following signatures.

```
void sortData(string names[], int scores[], int size)
void displayData(const string names[], const int scores[], int size)
```

The main function should be very short. It should just declare the arrays and then invoke these three functions.

- You may use any sort algorithm, but I would recommend using the selection sort from **lesson 9.6**. Don't use C++'s sort() function, but you can use the swap() function.

Submit Your Work

Name your source code file according to the assignment number (a1_1.cpp, a4_2.cpp, etc.). Execute the program and copy/paste the output that is produced by your program into the bottom of the source code file, making it into a comment. Use the Assignment Submission link to submit the source file. When you submit your assignment there will be a text field in which you can add a note to me (called a "comment", but don't confuse it with a C++ comment). In this "comments" section of the submission page let me know whether the program works as required.

Keep in mind that if your code does not compile you will receive a 0.