Assignment 7: Reading and Programming Project due 11/5

Reading Assignment

Read Section 6.1 completing the self-test exercises, and review Handout 7 on Arrays.

Our next topic will be Recursion and the Binary Search Algorithm - so read Chapter 11 of the textbook completing self-test exercises.

Programming Project

**WordStats: Compute word statistics**

Due 11:00 p.m. on 11/5, Wednesday

Worth 15 points, 5 points extra credit

This week’s programming assignment focuses on arrays and using arrays in methods as parameters and return values. The design of the program (methods, their parameters, return values and functionality) is described in the assignment and should be followed to get full credit for the assignment.

The **WordStats** program is required to implement the following functionality. The user will be asked to enter several words, and the program will calculate and display the statistics of the word set: the sizes of the shortest and the longest words in the set, and the shortest and the longest word in the set.

For extra credit (5 points) - include the count of how many words of different sizes there are, assuming that no word will be more than 100 characters long.

**Interaction:** The user should be prompted to enter how many words there are in the set, and then prompted to enter that many words. The program should print out

- the shortest word in the set (in upper case letters) and its length,
- the longest word in the set (in upper case letters) and its length.

Consider the following sample interaction:

```
This program computes word statistics for a set of words.
Please enter how many words there are in the set: 8
Please enter the next word: technology
Please enter the next word: circus
Please enter the next word: mop
Please enter the next word: Halloween
Please enter the next word: system
Please enter the next word: contemporaneous
Please enter the next word: concentric
Please enter the next word: alternative
Printing word set statistics:
The shortest word is MOP, 3 characters long.
The longest word is CONTEMPORANEOUS, 15 characters long.
```
For extra credit, the program would also print

There are words of 6 different lengths in the set.

Program design:

Your program should include the following methods

1. (3 points) The main method should print a greeting to the user, then invoke method readStringArray() described below to get the array of words that the user has entered. Then the main method should invoke the findShortest() method to get the shortest word in the set, and invoke findLongest() to get the longest word. Finally, main should print out the statistics.

2. (4 points) Method readStringArray() receives no parameters and returns an array of strings. It should work as follows. At first, it must prompt the user to enter the number of words in the set. Then it should create an array to store that many string values, and fill it up with the values that the user enters. Once that is done, the method should return the filled array of strings.

3. (6 points) Method findShortest() (findLongest()) will be passed an array of strings, and return the shortest (longest) word in the array.

2 points are awarded for submitting relevant code that compiles and uses good programming style.