How Insert in Order Works

Problem: Suppose you are to read a file and insert data in the file in order to an array. We also note that in order to sort a set of data, the data must have a way to compare. For example, ints are compared using < == or > and strings (or arrays of characters) are compared using strcmp from string.h library.

Algorithm: Suppose you are given a random data set as follows 12 30 10 50 15 22. You are expected to insert the data elements into an array in order. As you insert elements, you need to maintain the array in order.

Step 1: Insert the first element into array location 0. Set the size to 1 (note the array capacity is 10)

12									

Step 2: Compare the new element to ones to the left and find the place to insert. You may shift the current elements in the array to right so that you can free up the space to insert. Note that in this case, since 30 is bigger than 12, we did not have to move any elements. 30 is inserted into the last place.

12	30								

Step 3: Consider the third element 10. Since 10 is smaller than 30 shift 30 to the right. Then compare 10 to 12 and since 10 is smaller than 12, push 12 to the right. Now since we have no more elements to compare, we insert 10 to the first place in the array. Set the size to 3

12	30								
12		30							
	12	30							
10	**12**	**30**							

Step 4: Consider the fourth element 50. Since 50 is bigger than the current last element we do not need to shift any element to the right. We just insert 50 to the last place.

12	30								
12		30							
	12	30							
10	**12**	**30**	**50**						

For Lab1 you will need to deal with strings and note that you **cannot** compare with < > ==

You will need to use strcmp function from the <string.h> library.