

American Computer Science League

2020 Finals ● Program 2: Passort ● Junior/Intermediate Divisions

PROBLEM: The Passort algorithm for sorting a string operates as follows:

1. Find the smallest character not in its correct final position. Swap it with the character where it belongs. Use the first occurrence when characters are the same.
2. Find the largest character not in its correct final position. Swap it with the character where it belongs. Use the last occurrence when characters are the same.
3. Repeat steps 1 and 2 until the string is sorted.

Characters are compared based on their ASCII codes: numbers, then upper case letters, and finally lowercase letters.

EXAMPLE:

		A S O R T I N G
pass 1:	smallest character not in position is the G	
	swap it with the S:	A G O R T I N S
pass 2:	largest character not in position is the T	
	swap it with the S:	A G O R S I N T
pass 3:	smallest character not in position is the I	
	swap it with the O:	A G I R S O N T
pass 4:	largest character not in position is the S	
	swap it with the N:	A G I R N O S T
pass 5:	smallest character not in position is the N	
	swap it with the R:	A G I N R O S T
pass 6:	largest character not in position is the R	
	swap it with the O:	A G I N O R S T

At this point, the string is sorted so we are done. There were 6 swaps.

INPUT: There will be 10 lines of data. Read each line as a string.

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OUTPUT: Run Passort on each input string after all non-alphanumeric characters have been deleted from the string. Print the number of swaps made during the execution.

SAMPLE INPUT:

ASORTING

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SAMPLE OUTPUT:

1. 6

2. 11

3. 9

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TEST DATA

TEST INPUT:

ASORTINGALGORITHM

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0123456789BDFHJLNPRTVXZacegikmoqsuwx

ZYXWVUTSRQPONMLKJIHGFEDCBA

AP COMPUTER SCIENCE PRINCIPLES is abbreviated AP CSP

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CONNECTICUT is the CONSTITUTION STATE!

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There are 10 Kinds of People in the World, Those Who Know Binary and Those Who Don't.

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PROBLEM 问题: Passort 算法按照下列方法将字符串排序:

1. 在字符串中, 找到不在最终正确位置的最小字符 (在字母顺序表中靠前的字母), 将该字母与其正确位置的上的字母交换位置。若字符相同, 请按照从左到右选择第一次出现的字母进行操作。
2. 找到不在最终正确位置中的最大字符 (在字母顺序表中靠后的字母)。将该字母与其正确位置的上的字母交换位置。若字符相同, 请按照从左到右选择最后一次出现的字母进行操作。
3. 重复第一和第二步骤, 直到字符串已经正确排序。

字符根据其ASCII码的排序位置为: 数字, 然后是大写字母, 最后是小写字母。

EXAMPLE 示例:

		A S O R T I N G
pass 1:	字符串中最小的字符且没在正确位置的是G	
	将G与S进行交换:	A G O R T I N S
pass 2:	字符串中最大的字符, 且没在正确位置的是T	
	将T与S进行交换:	A G O R S I N T
pass 3:	字符串中最小的字符且没在正确位置的是I	
	将I与O进行交换:	A G I R S O N T
pass 4:	字符串中最大的字符, 且没在正确位置的是S	
	将S与N进行交换:	A G I R N O S T
pass 5:	字符串中最小的字符且没在正确位置的是N	
	将N与R进行交换:	A G I N R O S T
pass 6:	字符串中最大的字符, 且没在正确位置的是R	
	将R与O进行交换:	A G I N O R S T

此时, 该字符串已经排序完毕, 所以一共进行了6次交换。

INPUT (输入): 一共有10行输入值, 每一行为一个字符串。

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OUTPUT (输出) : 在从字符串中删除所有非字母数字字符后，对每个输入运行 Passort。打印输出执行期间进行的交换次数。

SAMPLE INPUT 示例输入:

ASORTING

10 Java Programs

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SAMPLE OUTPUT 示例输出:

1. 6

2. 11

3. 9

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TEST DATA

TEST INPUT:

ASORTINGALGORITHM

ACSL All-Star Contest

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ZYXWVUTSRQPONMLKJIHGFEDCBA

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