



The Full Counting Sort ☆

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Problem

Submissions

Leaderboard

In this challenge you need to print the string that accompanies each integer in a list sorted by the integers. If two strings are associated with the same integer, they must be printed in their original order so your sorting algorithm should be *stable*. There is one other twist. The first half of the strings encountered in the inputs are to be replaced with the character "-" (**dash**).

Insertion Sort and the simple version of Quicksort are stable, but the faster in-place version of Quicksort is not since it scrambles around elements while sorting.

In this challenge, you will use counting sort to sort a list while keeping the order of the strings preserved.

For example, if your inputs are `[[0, a], [1, b], [0, c], [1, d]]` you could set up a helper array with three empty arrays as elements. The following shows the insertions:

i	string	converted	list
0			[[], [], []]
1	a	-	[[-], [], []]
2	b	-	[[-], [-], []]
3	c		[[- , c], [-], []]
4	d		[[- , c], [- , d], []]

The result is then printed: **- c - d**.

Function Description

Complete the `countSort` function in the editor below. It should construct and print out the sorted strings.

`countSort` has the following parameter(s):

- `arr`: a 2D array where each `arr[i]` is comprised of two strings: `x` and `s`.

Note: The first element of each `arr[i]`, `x`, must be cast as an integer to perform the sort.

Input Format

The first line contains `n`, the number of integer/string pairs in the array `arr`.

Each of the next `n` contains `x[i]` and `s[i]`, the integers (as strings) with their associated strings.

Constraints

$$1 \leq n \leq 1000000$$

`n` is even

$$1 \leq |s| \leq 10$$

$$0 \leq x < 100, x \in ar$$

`s[i]` consists of characters in the range `ascii[a-z]`

Output Format

Print the strings in their correct order, space-separated on one line.

Sample Input

```
20
0 ab
```



```

6 cd
0 ef
6 gh
4 ij
0 ab
6 cd
0 ef
6 gh
0 ij
4 that
3 be
0 to
1 be
5 question
1 or
2 not
4 is
2 to
4 the

```

Sample Output

```
- - - - - to be or not to be - that is the question - - - -
```

Explanation

Below is the list in the correct order. In the array at the bottom, strings from the first half of the original array were replaced with dashes.

```

0 ab
0 ef
0 ab
0 ef
0 ij
0 to
1 be
1 or
2 not
2 to
3 be
4 ij
4 that
4 is
4 the
5 question
6 cd
6 gh
6 cd
6 gh

```

```
sorted = [['-', '-', '-', '-', '-', 'to'], ['be', 'or'], ['not', 'to'], ['be'], ['-', 'that', 'is', 'the'],
['question'], ['-', '-', '-', '-'], [], [], [], []]
```