Characters Counting

Write a program that takes a string as input and counts the occurrence of each English letter, regardless of case (i.e., treat 'a' and 'A' as the same).

Input

A single line as string.

Output

List all the unique characters present in the input string, followed by their respective counts, one character per line. Sort the output in descending order based on the character counts. If two or more characters have the same count, sort them alphabetically. (See example for reference.)

Example

Input (from keyboard)	Output (on screen)
AaBbbbbbbCcDddd	**b -> 7** **d -> 4** **a -> 2** **c -> 2**

Hint

Assume we have a list `x = [ [ 2,"b"], [ 3,"f"], [ 4,"x"], [ 2,"a"] ]`

Transform list x into `[ [-2,"b"], [-3,"f"], [-4,"x"], [-2,"a"] ]`

Sort this new list in ascending order to get

`[ [-4,"x"], [-3,"f"], [-2,"a"], [-2,"b"] ]`

If we ignore the negative signs, it's as if we've sorted the original data in x in descending order based on the first element, and then alphabetically based on the second element.

The result would be `[ [ 4,"x"], [ 3,"f"], [ 2,"a"], [ 2,"b"] ]`