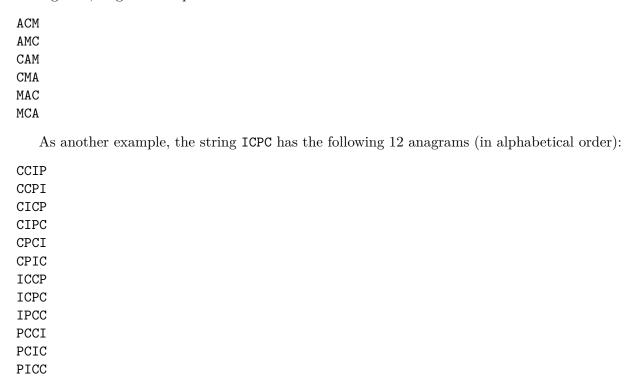
# 6814 Lexicography

An anagram of a string is any string that can be formed using the same letters as the original. (We consider the original string an anagram of itself as well.) For example, the string ACM has the following 6 anagrams, as given in alphabetical order:



Given a string and a rank K, you are to determine the K-th such an agram according to alphabetical order.

### Input

Each test case will be designated on a single line containing the original word followed by the desired rank K. Words will use uppercase letters (i.e., A through Z) and will have length at most 16. The value of K will be in the range from 1 to the number of distinct anagrams of the given word. A line of the form '# 0' designates the end of the input.

**Warning:** The value of K could be almost  $2^{45}$  in the largest tests, so you should use type long in Java, or type long in C++ to store K.

#### Output

For each test, display the K-th anagram of the original string.

### Sample Input

ACM 5 ICPC 12 REGION 274 # 0

# Sample Output

MAC PICC IGNORE