



Problem G Combinations

Input File: G.DAT

Program Source File: G.PAS or G.C or G.CPP

An n -set is a set with n elements. A k -combination of an n -set S is a k -subset of S . For example the 3-combinations of the set $\{a,b,c,d\}$ are $\{a,b,c\}$, $\{a,b,d\}$, $\{a,c,d\}$, $\{b,c,d\}$.

Let C_k be the set of all strings that represent k -combinations of letters from the English alphabet. Each string from C_k is sorted in ascending lexicographic order. For example, C_{52} contains the string $ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz$ (the entire alphabet).

Let X be a non-empty string made of letters from the English alphabet. Considering the lexicographic order of strings, we define the functions `floor` and `ceil` as follows:

- `floor(k,X)` finds the largest string from C_k not greater than X ; `floor(k,X)` is undefined if X is smaller than the smallest string from C_k ;
- `ceil(k,X)` finds the smallest string from C_k not smaller than X ; `ceil(k,X)` is undefined if X is greater than the largest string from C_k .

For example, `floor(3,AB)` is undefined, `ceil(3,AB) = ABC`; `floor(3,a) = Zyz`, `ceil(3,a) = abc`; `floor(3,bde) = ceil(3,bde) = bde`; `floor(3,xz) = xyz`, `ceil(3,xz)` is undefined.

input	output
3 AB	floor= null
3 a	ceil = ABC
3 bde	floor= Zyz
3 bdeaa	ceil = abc
3 xz	floor= bde
	ceil = bde
	floor= bde
	ceil = bdf
	floor= xyz
	ceil = null

Figure 1. An example of program input and output

Write a program that reads pairs of values k X from a text file and, for each pair, computes `floor(k,X)` and `ceil(k,X)`. Each pair k X is on a separate line of the text file, where k is an integer, $1 \leq k \leq 52$, and X is a non empty string made of at most 52 letters. The input file contains correct data.

For each pair k X of values, the strings `floor(k,X)` and `ceil(k,X)` are printed on successive lines on the standard output and are followed by an empty line. If the strings `floor(k,X)` and `ceil(k,X)` are undefined the messages `floor= null` and, respectively, `ceil = null` are printed. A sample of program input and output is illustrated in figure 1.