Problem E. Double-Colored Papers

Input file:	standard input
Output file:	standard output
Time limit:	3 seconds
Memory limit:	1024 mebibytes

In your factory, you are making two kinds of colored paper, one colored red, and the other colored blue.

Each red-colored paper has a string S written on it: it is made of $|S|$ unit squares in a row, and S_i is written on the i-th square from the left.

Each blue-colored paper has a string T written on it: it is made of $|T|$ unit squares in a row, and T_i is written on the i-th square from the left.

You plan to make a new kind of paper called *double-colored paper* out of red and blue paper. To do so, you will cut a piece of red paper to leave a continuous part with positive integer length, then do the same with a piece of blue paper. After that, you will glue the end of the red piece to the start of the blue piece.

For example, suppose S is abcde and T is fghij. You can make a *double-colored paper* with string bcdfg or abcij written on it. However, you cannot make a *double-colored paper* with string acdghij or fghij written on it. (Here the underlined string denotes a red piece, and the rest denotes a blue piece.) Two pieces of *double-colored paper* are considered the same if they have the same red string and the same blue string written on them.

Among all different pieces of *double-colored paper* that can be made, you want to know the one with the lexicographically K-th smallest string written on it. Note that there may be papers with the same strings written on them, but with different lengths of red paper: in this case, you may order them arbitrarily.

Input

The first line contains the string S.

The second line contains the string T.

The third line contains the integer K.

- $1 \le |S| \le 75\,000$
- $1 \le |T| \le 75\,000$
- S and T consist of lowercase English letters
- $1 \le K \le 8 \cdot 10^{18}$

Output

If the total number of possible *double-colored paper*s is strictly less than K, output -1.

Otherwise, output the lexicographically K-th smallest string of all possible *double-colored paper*s that can be made.

Example

standard input	standard output
tww wtw 21	wwtw