The 2019 Ethiopian Collegiate Programming Contest

Problem G
Enumeration
Time Limit: 1 Second

We are given a set $\sum$ of n English lowercase characters. We select k characters from $\sum$ without repetition and arrange these k characters in alphabetical order, then we get a word of k characters, which is called a k-*word*. For example, let $n = 5$, $k = 3$, and $\sum = \{a, b, c, d, e\}$. Then there are ten 3-words which are $abc, abd, abe, acd, ace, ade, bcd, bce, bde,$ and cde. Given two distinct k-words, S and T, we want to enumerate all k-words satisfying two conditions: (C1) the first k-word is S and the last k-word is T, and (C2) the number of common characters in any two consecutive k-words is exactly $k - 1$. In the above example, if we enumerate all 3-words for $S = abd$ and $T = bde$, then we have a list of 3-words, $(abd, abe, abc, ace, bce, bcd, cde, acd, ade, bde)$.

Given $\sum, k, n, S,$ and T, enumerate all k-words so that the above two conditions (C1) and (C2) are satisfied.

Input
Your program is to read from standard input. The input consists of three lines. The first line contains two integers, n and k, where $2 \leq n \leq 20$ and $1 \leq k \leq n - 1$. The second line contains a string of n characters of $\sum$ in alphabetical order. The third line contains two distinct k-words S and T separated by a single space.

Output
Your program is to read from standard output. The first line contains an integer representing the number of k-words in the enumeration list which satisfies two conditions (C1) and (C2). The second line contains all k-words in the order of enumeration. If there are many solutions, print any one of the solutions. If there is no solution, print -1 only.

The following shows sample input and output for three test cases.

Sample Input 1	Output for the Sample Input 1
5 3 abcde abd bde	10 abd abe abc ace bce bcd cde acd ade bde

Sample Input 2	Output for the Sample Input 2
5 1 abcde d c	5 d a b e c

Sample Input 3	Output for the Sample Input 3
4 3 befy efy bef	4 efy bey bfy bef