Problem H: Top 25

Filename: `top`
Timelimit: `5 seconds`

In College Football, many different sources create a list of the Top 25 (or, Top ***n***) teams in the country. Since it's subjective, these lists often differ, but they're usually very similar. Your job is to compare two of these lists, and determine where they are similar. In particular, you are to partition them into sets, where each set represents the same contiguous positions in both lists, and has the same teams, and is as small as possible. If the lists agree completely, you'll have n sets, where n is the number of teams in each list. For example consider these two lists:

For example consider these two lists:

A	A
B	C
C	D
D	B
E	E

In this case, there are 3 sets: A, BCD, and E.

Input

Each input will consist of a single test case. Note that your program may be run multiple times on different inputs. Each test case will begin with an integer ***n*** ($1 \le n \le 1{,}000{,}000$), indicating the number of teams ranked. The next ***n*** lines will hold the first list, in order. The team names will appear one per line, and consist of between 1 and 8 capital letters only. After this will be ***n*** lines, in the same format, indicating the second list. Both lists will contain the same team names, and all ***n*** team names will be unique. .

Output

Output the size of each set, in order, one per line. Do not output any spaces, and do not output blank lines between numbers.

Samples

Input	Output
5 A B C D E A C D B E	1 3 1
3 RED BLUE ORANGE RED BLUE ORANGE	1 1 1
3 MOE LARRY CURLY CURLY MOE LARRY	3