

Problem H. Plagiarism

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 64 megabytes

Modern computer systems are quite advanced in plagiarism detection. Consider some text p pretending to be original and text o , which has been copied from some source. Text p is considered as a plagiarism of order k if it has several disjoint substrings of length at least k , concatenation of which is a text o . The order of substrings concatenation to text o corresponds to their order in text p .

Since plagiarism from a single source is a well known problem, engineers started development of a system determining plagiarism from multiple sources. At the very first stage of the system design many training texts are required. Therefore, during the first stage they need to generate a text, which is a plagiarism of order k of two given original texts a and b .

Input

First line contains positive integer k – order of plagiarism for a text, minimal length of which you are required to find.

Second and third lines contain strings a and b – original texts to generate a plagiarism of order k .

All the strings consist of lower case Latin symbols.

$$1 \leq k \leq 100$$

$$1 \leq |a|, |b| \leq 100$$

Output

The minimal length of plagiarism of order k text for original texts a and b should be printed in a single line.

Examples

standard input	standard output
2 abaaa babaa	6
3 abacabadabacaba bababanana	19