

## Problem L. LCSLCSLCS

Input file: *standard input*  
Output file: *standard output*  
Time limit: 10 seconds  
Memory limit: 1024 mebibytes

Suppose we have two non-empty strings  $A$  and  $B$  ( $|A|, |B| \leq 500$ ) of capital English letters, and two integers  $n$  and  $m$  such that  $1 \leq n, m \leq 10^{15}$ .

Let string  $A^n$  be a concatenation of  $n$  copies of string  $A$ . Let string  $B^m$  be a concatenation of  $m$  copies of string  $B$ . Your task is to find the longest common subsequence of  $A^n$  and  $B^m$ .

### Input

On the first line, there are two integers  $n$  and  $m$  ( $1 \leq n, m \leq 10^{15}$ ).

On the second line, there is a non-empty string  $A$  with length at most 500.

On the third line, there is a non-empty string  $B$  with length at most 500.

Both strings consist of capital English letters.

### Output

Output one integer: the length of the longest common subsequence of  $A^n$  and  $B^m$ .

### Examples

<i>standard input</i>	<i>standard output</i>
10 10 AB BA	19
100000000 100000000 A AB	100000000