

E. Three strings

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

You are given three strings (s_1, s_2, s_3). For each integer l ($1 \leq l \leq \min(|s_1|, |s_2|, |s_3|)$) you need to find how many triples (i_1, i_2, i_3) exist such that three strings $s_k[i_k \dots i_k + l - 1]$ ($k = 1, 2, 3$) are pairwise equal. Print all found numbers modulo 1000000007 ($10^9 + 7$).

See notes if you are not sure about some of the denotions used in the statement.

Input

First three lines contain three non-empty input strings. The sum of lengths of all strings is no more than $3 \cdot 10^5$. All strings consist only of lowercase English letters.

Output

You need to output $\min(|s_1|, |s_2|, |s_3|)$ numbers separated by spaces — answers for the problem modulo 1000000007 ($10^9 + 7$).

Examples

input	Copy
abc bc cbc	
output	Copy
3 1	

input	Copy
abacaba abac abcd	
output	Copy
11 2 0 0	

Note

Consider a string $t = t_1 t_2 \dots t_{|t|}$, where t_i denotes the i -th character of the string, and $|t|$ denotes the length of the string.

Then $t[i \dots j]$ ($1 \leq i \leq j \leq |t|$) represents the string $t_i t_{i+1} \dots t_j$ (substring of t from position i to position j inclusive).