

13128 Tangamandapio

Tangamandapio's national competition is coming and it is time to write problems so all students are very excited to present their own problems.

X likes subsequences and he wants to propose a problem about counting subsequences.

Y loves permutations and he wants to propose a problem that requires knowing if a string has exactly K different permutations.

Both of them think that their own problem is the best.

Z is a friend of X and Y, and he wants to finish the discussion so he proposes to create a problem that combines both problems in one.

Thus, they came with the following problem:

Given a string of text S count the number of subsequence that have exactly K different permutations.

A string T is a subsequence of another string S , if deleting some elements from S and without changing the order of the remaining elements, it is possible to get T .

Input

There are multiple test cases. Each Test case contains two lines. The first line is a string S ($1 \leq |S| \leq 10^3$) consisting of lowercase English alphabet. The second line contains an integer K ($1 \leq K \leq 10^3$).

Output

For each test case print exactly one line containing one integer representing the number of subsequences that have exactly K different permutations *modulo* $10^9 + 9$.

Sample Input

```
aaab
3
abcc
2
```

Sample Output

```
3
5
```