

Problem G. LCS 8

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 1024 megabytes

You are given a string S of length N , consisting of uppercase letters, and a small nonnegative integer K .

Please compute the number of strings T of length N , consisting of only uppercase letters, such that the longest common subsequence of S and T has length at least $N - K$. As the number could be large, print the number of such strings modulo $10^9 + 7$.

A string $S = s_1s_2 \dots s_n$ is a subsequence of a string $T = t_1t_2 \dots t_m$ if there exists an increasing sequence of indices $1 \leq i_1 < i_2 < \dots < i_n \leq m$ such that $s_x = t_{i_x}$ for all $1 \leq x \leq n$.

Input

The first line of the input contains the length- N string S ($1 \leq |S| \leq 50\,000$). All characters of S are uppercase letters.

The next line of the input contains the single integer K ($0 \leq K \leq 3$).

Output

Print the number of such strings modulo $10^9 + 7$.

Examples

standard input	standard output
ACAYKP 0	1
CAPCAK 1	896
WEDONTNEEDNOEDUCATION 2	24651976
WEDONTNEEDNOTHOUGHTCONTROL 3	224129308