

Problem K. Subsequence Queries

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 1024 mebibytes

A **subsequence** of string S is a string that can be obtained from S by removing zero or more characters without changing the order of the remaining characters. For example, the string “ababA” has 24 different subsequences: (empty string), “a”, “b”, “A”, “ab”, “aa”, “aA”, “ba”, “bb”, “bA”, “aba”, “abb”, “abA”, “aab”, “aaA”, “bab”, “baA”, “bbA”, “abab”, “abaA”, “abbA”, “aabA”, “babA”, and “ababA”. Note that we distinguish uppercase and lowercase letters in this problem.

You are given a string of length n , $S = c_1c_2\dots c_n$, and Q contiguous substrings of S . Calculate the number of different subsequences for each of these Q substrings.

To reduce and encode input, we will use the following pseudo-random generator. The numbers a_0 , b_0 , p , q , and r are given initially. The values a_i , b_i , x_i , y_i , z_i are then produced as follows (let $z_0 = 0$ and $X = 10^9 + 7$ for convenience):

$$\begin{aligned}a_i &= (p \cdot a_{i-1} + q \cdot b_{i-1} + z_{i-1} + r) \bmod X \\b_i &= (p \cdot b_{i-1} + q \cdot a_{i-1} + z_{i-1} + r) \bmod X \\x_i &= \min(a_i \bmod n, b_i \bmod n) + 1 \\y_i &= \max(a_i \bmod n, b_i \bmod n) + 1 \\z_i &= (\text{the number of different subsequences of } c_{x_i}c_{x_i+1}\dots c_{y_i-1}c_{y_i})\end{aligned}$$

Your program must print only one integer: the value z_Q .

Input

The first line contains the string S which can contain uppercase and lowercase English letters. The length of S is between 1 and 10^6 letters, inclusive.

The second line contains six integers Q , a_0 , b_0 , p , q , and r ($1 \leq Q \leq 10^6$, $0 \leq a_0, b_0, p, q, r < X = 10^9 + 7$).

Output

Print the integer z_Q .

Example

standard input	standard output
ababA 2 4 6 8 10 12	7