

Shoumiks Weakness

Shoumik loves problem solving but he is weak in string related problems. So he is practicing string related problems. But he thought that creating a string related problem and solving that would be a great idea to be strong in strings. So he thought of a problem.

Given a string S of N lower case alphabets how many distinct substrings T are there with length L ($L=|T|$) and S contains exactly X occurrences of T . In the string $S="abcbcb"$ the substring $T="bcb"$ has length $L=3$ and S has $X=2$ occurrences of T . (See hints for more clarification)

But as Shoumik is weak in string, he is stuck with this problem. You have to help him answering Q queries for a given string S .

Input

First line of input will contain the number of test cases T_s .

Then T_s test cases follows. Every test case contains two integers N and Q in the first line. Next line will contain a string S , consisting of N lower case characters. The next Q lines will contain Q queries with two integers L , length of T for this query and X , Occurrences of T in S .

$$1 \leq T_s \leq 15$$

$$1 \leq N \leq 10000$$

$$1 \leq Q \leq 100000$$

$$1 \leq L < 2^{31}$$

$$0 \leq X < 2^{31}$$

Sum of N over all test cases ≤ 60000 ($6 \cdot 10^4$)

Number of queries Q over all test cases ≤ 600000 ($6 \cdot 10^5$)

Output

For every query print the number of distinct substrings T in the string S which are of length L and have exactly X occurrences in S .

Example

Input:

1

6 5

abcbcb

3 2

4 1

6 2

6 1

1 2

Output:

1

3

0

1

1

Hints

For the 2nd query we have 3 distinct substrings of length 4 "abcb", "bcbc", "cbcb" and all of them have 1 occurrence in S. So the answer is 3.

For the 5th query we have 3 distinct substrings of length 1 "a", "b", "c" but only "c" has 2 occurrences in S. So the answer is 1.