

## Problem B. Baby's First Suffix Array Problem

A suffix array for string  $s$  of length  $n$  is a permutation  $sa$  of integers from 1 to  $n$  such that  $s[sa_1..n], s[sa_2..n], \dots, s[sa_n..n]$  is the list of non-empty suffixes of  $s$  sorted in lexicographical order. The rank table for suffixes of  $s$  is a permutation  $rank$  of integers from 1 to  $n$  such that  $rank_{sa_i} = i$ .

Kotori has a string  $s = s_1s_2 \dots s_n$ . She would like to ask  $m$  queries. And in the  $i$ -th query, a substring  $x = s[l_i..r_i]$  of  $s$  is given, Kotori would like to know the rank of suffix  $s[k_i..r_i]$  of  $x$ .

Note  $s[l..r]$  means the substring of  $s$  which starts from the  $l$ -th position and ends at the  $r$ -th position, both inclusive.

### Input

There are multiple test cases. The first line of the input contains an integer  $T$  indicating the number of test cases. For each test case:

The first line contains two integers  $n$  and  $m$  ( $1 \leq n, m \leq 5 \times 10^4$ ) – the length of the string and the number of queries.

The second line contains a string  $s$  of length  $n$  consisting only of lowercase English letters.

Each of the next  $m$  lines contains three integers  $l_i$ ,  $r_i$  and  $k_i$  ( $1 \leq l_i \leq r_i \leq n, l_i \leq k_i \leq r_i$ ) denoting a query.

It is guaranteed that neither the sum of  $n$  or the sum of  $m$  of all test cases will exceed  $5 \times 10^4$ .

### Output

For each query output one line containing one integer denoting the answer.

### Example

| standard input      | standard output |
|---------------------|-----------------|
| 2                   | 2               |
| 10 4                | 1               |
| baaabbabba          | 2               |
| 2 8 3               | 3               |
| 1 1 1               | 4               |
| 2 3 2               | 15              |
| 2 5 4               | 3               |
| 20 3                |                 |
| cccbccbadaacbbbccab |                 |
| 14 17 16            |                 |
| 3 20 17             |                 |
| 17 20 18            |                 |