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Count Substrings

Problem code: STRSUB

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You are given a string **S** of length **N** consisting only of **0**s and **1**s. You are also given an integer **K**.

You have to answer **Q** queries. In the **i**th query, two integers L_i and R_i are given. Then you should print the number of substrings of **S[L, R]** which contain at most **K 0**s and at most **K 1**s where **S[L, R]** denotes the substring from **L**th to **R**th characters of the string **S**.

In other words, you have to count number of pairs **(i, j)** of integers such that **L ≤ i ≤ j ≤ R** such that no character in substring **S[i, j]** occurs more than **K** times.

Input

The first line of input contains an integer **T**, denoting the number of test cases. Then **T** test cases follow.

The first line of each test case contains three space-separated integers **N**, **K** and **Q** as described in the problem. The second line contains a string **S** of length **N**. Then the next **Q** lines describe the query, where the **i**th line of them contains two space-separated integers L_i and R_i.

Output

For each query, print the required answer in a single line.

Constraints and Subtasks

- $1 \le T \le 10^5$
- $1 \le K \le N \le 10^5$
- $1 \le Q \le 10^5$
- $1 \le L_i \le R_i \le N$
- Sum of **N** over all test cases in one test file does not exceed 10^5
- Sum of **Q** over all test cases in one test file does not exceed 10^5
- **S** consists only of **0**s and **1**s.

Subtask 1: 10 points
- Sum of **N** over all test cases ine one tset file does not exceed **100**

Subtask 2: 10 points
- Q = 1
- $1 \le K \le min(5, N)$

Subtask 3: 20 points
- $1 \le Q \le 10$

Subtask 4: 60 points
- Original constraints.

Example

Input:
```
1
8 2 3
01110000
1 4
2 4
5 8
```

Output:
```
8
5
7
```

Explanation

Query 1: Consider substring **P = S[1, 4] = "0111"**.
Out of **10** total substrings of **P**, substrings **P[1, 4]** and **P[2, 4]** are not valid because both contain more than two **1**s.
Other substrings contains at most two **0**s and at most two **1**s, thus the answer is **8**.

Query 2: Consider substring **P = S[2, 4] = "111"**.

Out of **6** total substrings of **P**, substrings **P[1, 3]** is not valid because it contains more than two 1s.

Query 3: Consider substring **P = S[5, 8] = "0000"**.

Out of **10** total substrings of **P**, substrings **P[1, 3]**, **P[1, 4]** and **P[2, 4]** are not valid because all contain more than two **0**s.

Author:	darkshadows
Date Added:	18-04-2014
Time Limit:	1 sec
Source Limit:	50000 Bytes
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