E. Maximum Questions

Vasya wrote down two strings s of length n and t of length m consisting of small English letters 'a' and 'b'. What is more, he knows that string t has a form "`abab...`", namely there are letters 'a' on odd positions and letters 'b' on even positions.

Suddenly in the morning, Vasya found that somebody spoiled his string. Some letters of the string s were replaced by character '?'.

Let's call a sequence of positions $i, i+1, ..., i+m-1$ as *occurrence* of string t in s, if $1 \leq i \leq n - m + 1$ and $t_1 = s_i, t_2 = s_{i+1}, ..., t_m = s_{i+m-1}$.

The boy defines the *beauty* of the string s as maximum number of disjoint occurrences of string t in s. Vasya can replace some letters '?' with 'a' or 'b' (letters on different positions can be replaced with different letter). Vasya wants to make some replacements in such a way that beauty of string s is maximum possible. From all such options, he wants to choose one with the minimum number of replacements. Find the number of replacements he should make.

Input

The first line contains a single integer n ($1 \leq n \leq 10^5$) — the length of s.

The second line contains the string s of length n. It contains small English letters 'a', 'b' and characters '?' only.

The third line contains a single integer m ($1 \leq m \leq 10^5$) — the length of t. The string t contains letters 'a' on odd positions and 'b' on even positions.

Output

Print the only integer — the minimum number of replacements Vasya has to perform to make the beauty of string s the maximum possible.

Examples

input

```
5
bb?a?
1
```

output

```
2
```

input

```
9
ab??ab???
3
```

output

```
2
```

Note

In the first sample string t has a form 'a'. The only optimal option is to replace all characters '?' by 'a'.

In the second sample using two replacements we can make string equal to "**aba**?**aba**??". It is impossible to get more than two occurrences.