K-Goodness String (5pts, 7pts) ▾

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PROBLEM   ANALYSIS

Problem

Charles defines the goodness score of a string as the number of indices i such that $S_i \neq S_{N-i+1}$ where $1 \leq i \leq N/2$ (1-indexed). For example, the string CABABC has a goodness score of 2 since $S_2 \neq S_5$ and $S_3 \neq S_4$.

Charles gave Ada a string **S** of length **N**, consisting of uppercase letters and asked her to convert it into a string with a goodness score of **K**. In one operation, Ada can change any character in the string to any uppercase letter. Could you help Ada find the *minimum* number of operations required to transform the given string into a string with goodness score equal to **K**?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow.

The first line of each test case contains two integers **N** and **K**. The second line of each test case contains a string **S** of length **N**, consisting of uppercase letters.

Output

For each test case, output one line containing Case #x: y, where x is the test case number (starting from 1) and y is the minimum number of operations required to transform the given string **S** into a string with goodness score equal to **K**.

Limits

Memory limit: 1 GB.
$1 \leq T \leq 100$.
$0 \leq K \leq N/2$.

Test Set 1

Time limit: 20 seconds.
$1 \leq N \leq 100$.

Test Set 2

Time limit: 40 seconds.
$1 \leq N \leq 2 \times 10^5$ for at most 10 test cases.
For the remaining cases, $1 \leq N \leq 100$.

Sample

Sample Input	Sample Output
2 5 1 ABCAA 4 2 ABAA	Case #1: 0 Case #2: 1

In Sample Case #1, the given string already has a goodness score of 1. Therefore the minimum number of operations required is 0.

In Sample Case #2, one option is to change the character at index 1 to B in order to have a goodness score of 2. Therefore, the minimum number of operations required is 1.