MALD Contest 1 P5 - Scratch Cat and Desktop Backgrounds

Time limit: 1.0s **Memory limit:** 512M
Java: 3.0s

The Scratch Cat wants to be a cool coder. He searches for some coding desktop backgrounds, which naturally always contain `1`s and `0`s. The Scratch Cat prefers specifically balanced text consisting of `1`s and `0`s. He defines the *imbalance* function of string S as $I(S) = \frac{|f_1 - f_0|}{|S|} \times 100$, where f_1 is the frequency of `1`s, f_0 is the frequency of `0`s, and $|S|$ is the length of string S. The function $I(S)$ represents the percentage of S that is extraneous.

The Scratch Cat determines the "coolness" of a background's text T by the number of substrings of T that have an *imbalance* between b_l and b_r, inclusive. The Scratch Cat asks you for help because you are the true cool coder.

Who wears sunglasses in a dark room?

Constraints

$1 \leq |T| \leq 10^6$

$0 \leq b_l \leq b_r \leq 100$

Each character of T is either `1` or `0`.

Subtask 1 [10%]

$1 \leq |T| \leq 10^3$

Subtask 2 [40%]

$1 \leq |T| \leq 10^5$

Subtask 3 [50%]

No additional constraints.

Input Specification

The first line will contain two space-separated integers b_l and b_r, the minimum and maximum *imbalance*.

The second line will contain the string T, the text in a desktop background. T only consists of `1` or `0`.

Output Specification

Output the number of **non-empty** substrings with an *imbalance* in the range $[b_l, b_r]$. Two substrings are distinct if they are from different segments of T, even if the substrings themselves are identical.

Do not round the function $I(S)$.

Sample Input

```
33 100
1001
```

Sample Output

```
7
```

Explanation

Below are the *imbalances* for all substrings of `1001`:

- $[1, 1]$: $I($ `1` $) = 100$
- $[1, 2]$: $I($ `10` $) = 0$
- $[2, 2]$: $I($ `0` $) = 100$
- $[1, 3]$: $I($ `100` $) = 33.33...$
- $[2, 3]$: $I($ `00` $) = 100$
- $[3, 3]$: $I($ `0` $) = 100$
- $[1, 4]$: $I($ `1001` $) = 0$
- $[2, 4]$: $I($ `001` $) = 33.33...$
- $[3, 4]$: $I($ `01` $) = 0$
- $[4, 4]$: $I($ `1` $) = 100$

7 substrings have an *imbalance* between 33 and 100.