

Contest Duration: 2025-08-09(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250809T2100&p1=248>) - 2025-08-09(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250809T2240&p1=248>) (local time) (100 minutes)

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D - XNOR Operation

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 425 points

Problem Statement

This problem is a subproblem of Problem G.

A non-empty string S consisting of 0 and 1 is called a beautiful string when it satisfies the following condition:

- (Condition) You can perform the following sequence of operations until the length of S becomes 1 and make the only character remaining in S be 1.
 1. Choose any integer i satisfying $1 \leq i \leq |S| - 1$.
 2. Define an integer x as follows:
 - If $S_i = 0$ and $S_{i+1} = 0$, let $x = 1$.
 - If $S_i = 0$ and $S_{i+1} = 1$, let $x = 0$.
 - If $S_i = 1$ and $S_{i+1} = 0$, let $x = 0$.
 - If $S_i = 1$ and $S_{i+1} = 1$, let $x = 1$.
 3. Remove S_i and S_{i+1} , and insert the digit corresponding to x in their place.
- For example, if $S = 10101$ and you choose $i = 2$, the string after the operation is 1001.

You are given a string T of length N consisting of 0 and 1.

Find the number of beautiful strings that are substrings of T . Even if two substrings are identical as strings, count them separately if they are taken from different positions.

2025-08-10 02 (Fri)
05:28:18 +11:00

- ▶ What are substrings?

Constraints

- $1 \leq N \leq 2 \times 10^5$
- N is an integer.
- T is a string of length N consisting of 0 and 1.

Input

The input is given from Standard Input in the following format:

```
N  
T
```

Output

Print the number of beautiful strings that are substrings of T .

Sample Input 1

Copy

```
3  
110
```

Copy

Sample Output 1

Copy

```
3
```

Copy

The string 11 obtained by taking the 1st through 2nd characters of T is a beautiful string, because if you choose $i = 1$ and perform the operation, the string becomes 1. The beautiful strings that are substrings of T are the following three strings:

- The string 1 obtained by taking the 1st character of T .
- The string 1 obtained by taking the 2nd character of T .
- The string 11 obtained by taking the 1st through 2nd characters of T .

Sample Input 2

Copy

2026-01-02 (Fri)
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4
0000

Sample Output 2

[Copy](#)

4

[Copy](#)

Sample Input 3

[Copy](#)

30

011011100101110111100010011010

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Sample Output 3

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225

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