B. Hamming Distance Sum

time limit per test: 2 seconds
memory limit per test: 256 megabytes

Genos needs your help. He was asked to solve the following programming problem by Saitama:

The length of some string s is denoted $|s|$. The Hamming distance between two strings s and t of equal length is defined as $\sum_{i=1}^{|s|} |s_i - t_i|$, where s_i is the i-th character of s and t_i is the i-th character of t. For example, the Hamming distance between string "0011" and string "0110" is $|0 - 0| + |0 - 1| + |1 - 1| + |1 - 0| = 0 + 1 + 0 + 1 = 2$.

Given two binary strings a and b, find the sum of the Hamming distances between a and all contiguous substrings of b of length $|a|$.

Input

The first line of the input contains binary string a ($1 \le |a| \le 200\,000$).

The second line of the input contains binary string b ($|a| \le |b| \le 200\,000$).

Both strings are guaranteed to consist of characters '0' and '1' only.

Output

Print a single integer — the sum of Hamming distances between a and all contiguous substrings of b of length $|a|$.

Examples

input	Copy
01 00111	

output	Copy
3	

input	Copy
0011 0110	

output	Copy
2	

Note

For the first sample case, there are four contiguous substrings of b of length $|a|$: "00", "01", "11", and "11". The distance between "01" and "00" is $|0 - 0| + |1 - 0| = 1$. The distance between "01" and "01" is $|0 - 0| + |1 - 1| = 0$. The distance between "01" and "11" is $|0 - 1| + |1 - 1| = 1$. Last distance counts twice, as there are two occurrences of string "11". The sum of these edit distances is $1 + 0 + 1 + 1 = 3$.

The second sample case is described in the statement.

Codeforces Round 336 (Div. 2)
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
324577461	Jun/16/2025 03:00	Accepted
324577449	Jun/16/2025 02:59	Runtime error on test 1
324577428	Jun/16/2025 02:58	Accepted

→ Problem tags

combinatorics strings *1500

No tag edit access

→ Contest materials

- Announcement (en)
- Tutorial (en)