Problem C. Flippy Sequence

DreamGrid has just found two binary sequences $s_1, s_2, \ldots, s_n$ and $t_1, t_2, \ldots, t_n$ ($s_i, t_i \in \{0, 1\}$ for all $1 \leq i \leq n$) from his virtual machine! He would like to perform the operation described below exactly twice, so that $s_i = t_i$ holds for all $1 \leq i \leq n$ after the two operations.

The operation is: Select two integers l and r ($1 \leq l \leq r \leq n$), change s_i to $(1 - s_i)$ for all $l \leq i \leq r$.

DreamGrid would like to know the number of ways to do so.

We use the following rules to determine whether two ways are different:

- Let $A = (a_1, a_2, a_3, a_4)$, where $1 \leq a_1 \leq a_2 \leq n, 1 \leq a_3 \leq a_4 \leq n$, be a valid operation pair denoting that DreamGrid selects integers a_1 and a_2 for the first operation and integers a_3 and a_4 for the second operation;
- Let $B = (b_1, b_2, b_3, b_4)$, where $1 \leq b_1 \leq b_2 \leq n, 1 \leq b_3 \leq b_4 \leq n$, be another valid operation pair denoting that DreamGrid selects integers b_1 and b_2 for the first operation and integers b_3 and b_4 for the second operation.
- A and B are considered different, if there exists an integer k ($1 \leq k \leq 4$) such that $a_k \neq b_k$.

Input

There are multiple test cases. The first line of the input contains an integer T, indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \leq n \leq 10^6$), indicating the length of two binary sequences.

The second line contains a string $s_1 s_2 \ldots s_n$ ($s_i \in \{\text{'0'}, \text{'1'}\}$) of length n, indicating the first binary sequence.

The third line contains a string $t_1 t_2 \ldots t_n$ ($t_i \in \{\text{'0'}, \text{'1'}\}$) of length n, indicating the second binary sequence.

It's guaranteed that the sum of n in all test cases will not exceed 10^7.

Output

For each test case, output an integer denoting the answer.

Example

standard input	standard output
3 1 1 0 2 00 11 5 01010 00111	0 2 6

Note

For the second sample test case, there are two valid operation pairs: $(1, 1, 2, 2)$ and $(2, 2, 1, 1)$.

For the third sample test case, there are six valid operation pairs: $(2, 3, 5, 5)$, $(5, 5, 2, 3)$, $(2, 5, 4, 4)$, $(4, 4, 2, 5)$, $(2, 4, 4, 5)$ and $(4, 5, 2, 4)$.