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# B. Fun Game

time limit per test: 1 second memory limit per test: 256 megabytes

Vova really loves the XOR operation (denoted as ⊕). Recently, when he was going to sleep, he came up with a fun game.

At the beginning of the game, Vova chooses two binary sequences s and t of length n and gives them to Vanya. A binary sequence is a sequence consisting only of the numbers 0 and 1. Vanya can choose integers l,r such that  $1 \le l \le r \le n$ , and for all  $l \le i \le r$ **simultaneously** replace  $s_i$  with  $s_i \oplus s_{i-l+1}$  , where  $s_i$  is the i-th element of the sequence s.

In order for the game to be interesting, there must be a possibility to win. Vanya wins if, with an unlimited number of actions, he can obtain the sequence t from the sequence s. Determine if the game will be *interesting* for the sequences s and t.

Each test consists of multiple test cases. The first line contains an integer q ( $1 \le q \le 10^4$ ) — the number of test cases. Then follows the description of the test cases.

The first line of each test case contains a single integer n ( $1 \le n \le 2 \cdot 10^5$ ) — the length of the sequences s and t.

The second line of each test case contains a binary sequence s of length n.

The third line of each test case contains a binary sequence t of length n.

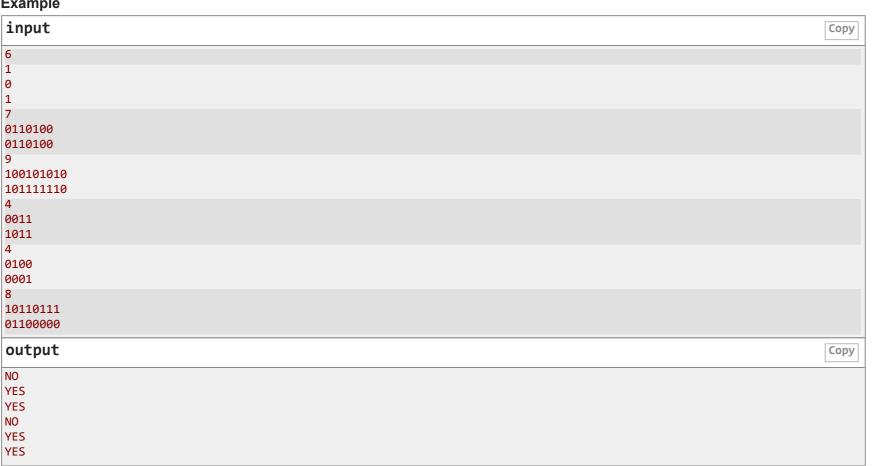
It is guaranteed that the sum of n over all test cases does not exceed  $2 \cdot 10^5$ .

#### Output

For each test case, output "Yes" if the game will be *interesting*, otherwise output "No".

You can output each letter in any case (for example, the strings "yEs", "yes", "yes", and "yEs" will be recognized as a positive answer).

## **Example**



# Note

In the first test case, Vanya will not be able to change the sequence s with the only possible action of choosing l=r=1.

In the second test case, the sequences s and t are already equal.

In the third test case, Vanya can act as follows:

- 1. Choose l=3 and r=5, then s will become 101101010.
- 2. Choose l=5 and r=6, then s will become 101111010.
- 3. Choose l=7 and r=7, then s will become 101111110.

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# **Finished**

#### → Practice?

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Register for practice

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Start virtual contest

#### → Problem tags

bitmasks constructive algorithms greedy math \*1100

No tag edit access

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# → Contest materials

- Announcement
- Video Tutorial (en)
- · Editorial (en)

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