|

CODEFORCES
Sponsored by **TON**

HOME   TOP   CATALOG   CONTESTS   GYM   PROBLEMSET   GROUPS   RATING   EDU   API   CALENDAR   HELP   RAYAN 🏆

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   ROOM   STANDINGS   CUSTOM INVOCATION

B. Lady Bug

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

As soon as Dasha Purova crossed the border of France, the villain Markaron kidnapped her and placed her in a prison under his large castle. Fortunately, the wonderful Lady Bug, upon hearing the news about Dasha, immediately ran to save her in Markaron's castle. However, to get there, she needs to crack a complex password.

The password consists of two bit strings a and b, each of which has a length of n. In one operation, Lady Bug can choose any index $2 \leq i \leq n$ and perform one of the following actions:

1. swap(a_i, b_{i-1}) (swap the values of a_i and b_{i-1}), or
2. swap(b_i, a_{i-1}) (swap the values of b_i and a_{i-1}).

Lady Bug can perform any number of operations. The password is considered cracked if she can ensure that the first string consists only of zeros. Help her understand whether or not she will be able to save the unfortunate Dasha.

Input

Each test consists of several test cases. The first line of the input data contains one integer t ($1 \leq t \leq 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains one integer n ($2 \leq n \leq 2 \cdot 10^5$) — the length of the bit strings of the password.

The next two lines contain the bit strings of length n, a and b, which represent the password. Each of the strings contains only the characters 0 and '1'.

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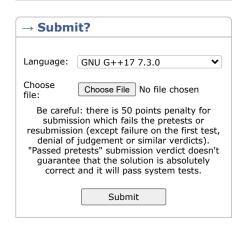
Output

For each test case, output "YES" if Lady Bug can crack the password after any number of operations; otherwise, output "NO".

You can output each letter in any case (lowercase or uppercase). For example, the strings "yEs", "yes", "Yes", and "YES" will be accepted as a positive answer.

Example

input	Copy

```
4
3
000
000
6
010001
010111
5
10000
01010
2
11
00
```

output	Copy

```
YES
YES
```

Codeforces Round 1014 (Div. 2)

Contest is running

00:00:00

Contestant

⭐

→ Submit?

Language: GNU G++17 7.3.0   ▼

Choose file: Choose File   No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Last submissions

Submission	Time	Verdict
313026092	Mar/29/2025 19:31	Wrong answer on pretest 1

→ Score table

	Score
Problem A	266
Problem B	399
Problem C	665
Problem D	931
Problem E	1197
Problem F	1596
Successful hack	100
Unsuccessful hack	-50
Unsuccessful submission	-50
Resubmission	-50

* If you solve problem on 01:57 from the first attempt

NO
YES

Note

In the first test case, the string a immediately consists only of zeros.

In the second test case, a possible sequence of operations is:

1. swap(a_2, b_1)

   010001

   010111

2. swap(b_5, a_4)

   000001

   110111

3. swap(a_4, b_3)

   000101

   110101

4. swap(a_5, b_4)

   000001

   111101