Card Checking

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You're going to solve a problem related to the poker game "Landlords".

Game Introduction

"Landlords" is a card game where three players take turns playing cards. Let the three players be A, B, and C, respectively. Each player holds some cards in their hand, and the game continues until one player has played all of their cards.

Players A and B belong to the peasant team. If either A or B plays all of their cards, the peasants win. Player C alone forms the landlord team, and if C plays all of their cards, the landlord wins.

Playing Rules

In this problem, each card has an integer in $[1, n]$ written on it, called the rank of the card. The ranks are in increasing order: $1, 2, \ldots, n$.

Only the following two types of card combinations are allowed in this problem:

- Single: Any single card.
- Double: Two cards of the same rank.

Unlike in the usual Landlords game, in this problem, a player may play a single card only if he/she has exactly one card of that rank in hand. In other words, a pair in hand cannot be split into two single cards.

In each round of play, one player will be the starting player of that round. The starting player acts first and can play any legal card combination. Then, starting from the next player, players take turns in order. On each player's turn, they can make one of the following two decisions:

- Play a card combination that is of the same type as the last played cards in the current round and has a strictly higher rank.
- Choose to pass.

After a player plays a combination, if the other two players both choose to pass in succession, the current round ends. At this point, the player who made the last successful play becomes the starting player of the next round. Then a new round starts.

Problem

In this problem, consider the following situation:

- The landlord, C, has only one card left, with rank p_c.
- The hands of the two peasants, A and B, are described by two strings s_a and s_b of length n, consisting only of the characters `0`, `1`, and `2`. Here, the i-th character indicates how many cards of rank i the corresponding player holds.

All players' hands are public information; that is, every player knows the exact cards held by all players when making decisions. Player A is the starting player of the first round, and the three players always take turns in the order A $\to$ B $\to$ C $\to$ A $\to \cdots$. You need to determine whether the peasant team can win, assuming all players adopt optimal strategies.

Input

There are multiple test cases. The first line of the input contains an integer T ($1 \le T \le 10^5$), indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \le n \le 2.5 \times 10^5$).

The second line contains a string s_a of length n, consisting only of `0`, `1`, and `2`, indicating peasant A's hand.

The third line contains a string s_b of length n, consisting only of `0`, `1`, and `2`, indicating peasant B's hand.

The fourth line contains an integer p_c ($1 \le p_c \le n$), indicating the rank of landlord C's only card.

It is guaranteed that each player has at least one card.

It is also guaranteed that the sum of n over all test cases does not exceed 10^6.

Output

For each test case, output one line. If the peasant team can win, output `Yes`; otherwise, output `No`.

Example

standard input	standard output
4 9 001110201 002110211 7 9 110200000 222000000 7 9 222000000 110000000 7 9 111000002 111000210 7	Yes No Yes No

Note

We explain the first sample test case below.

#	**A**	**B**	**C**	**Play**
1	3,4,5,7,7,9	3,3,4,5,7,7,8,9	7	A (3) → B (8) → C (pass) → A (9) → B (pass) → C (pass)
2	4,5,7,7	3,3,4,5,7,7,9	7	A (4) → B (9) → C (pass) → A (pass)
3	5,7,7	3,3,4,5,7,7	7	B (3,3) → C (pass) → A (7,7) → B (pass) → C (pass)
4	5	4,5,7,7	7	A (5)