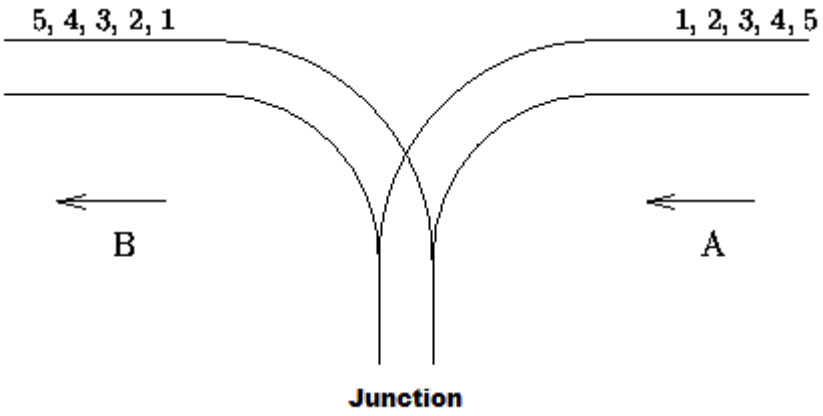
Soldier

Problem Description

A group of soldiers is in the middle of an espionage mission. In order to infiltrate the enemy's building, they went through a secret sewer tunnel. All of a sudden, an enemy who was patrolling inside the sewer found them. A contact happened but the soldiers managed to shot the enemy down. Unfortunately, some of them are injured and they need to rearrange their formation to protect their injured buddies.

The tunnel is very narrow such that the soldier can only move forward. Luckily they found a junction so that they can rearrange their formation (see map below).



The soldiers are moving from the direction A and continuing in the direction B. Assume that there are 1 <= **N** <= 1000 soldiers in the sewer and they have soldier ID numbers from 1,2,...,**N**. Please help John, the commander of the soldiers, to decide whether it is possible to get the new formation using the junction. Assume also that they cannot return back to A once they enter the junction.

Input

The first line contains an integer **N** described above. The next lines describe the alternatives (a permutation of 1,2,...,**N**), terminated by end-of-file.

Output

If the new formation can be formed, it prints "**YES**". Otherwise, it prints "**NO"**.

Sample Input

```
5
5 4 3 2 1
1 2 5 4 3
5 4 1 2 3
```

Sample Output

```
YES
YES
NO
```

Explanation

1. Soldiers will enter the junction in the order of 1, 2, 3, 4, 5. Soldier 5 will come out first, followed by soldier 4, 3, 2, 1.

2. Soldier 1 will enter the junction, but exit immediately, and so will soldier 2. After that soldier 3, 4, and 5 enter the junction, then soldier 5 will continue first, followed by soldier 4 and 3.

3. Soldier 1, 2, 3, 4 and 5 will enter the junction. Soldier 5 will continue first, followed by soldier 4. Now soldier 1 has to continue, but this is not possible because soldier 2 and 3 are in front of him and they have to go out first.

Note

- You may use stack(s) to implement your solution.