Pancake Rotation Challenge (pancakes)

Marcella and her friend Rosalba love Saturday mornings, especially because it's their designated pancake breakfast day. They usually gather in Marcella's kitchen and compete to see who can stack the perfect tower of pancakes. Last Saturday, however, things took a twist.

While Rosalba was busy whipping up the pancake batter, Marcella, being a bit clumsy, accidentally dropped the pancakes in a messy, unorganized pile. The pancakes, all of different sizes, were now scattered across the counter. Rosalba looked at the chaotic stack and thought, "If only there was a way to reorder these pancakes without making a bigger mess!" That's when an idea struck her. "What if we could rearrange the pancakes using only specific moves?" Rosalba suggested.

Figure 1: An ordered pile of pancakes.

Rosalba explained, "Let's say we can only perform rotations on groups of three pancakes at a time. We could pick any consecutive pancake trio and rotate them to the left or right. The goal is to see if we can reorder them from smallest to largest using these rotations."

Marcella, intrigued by the challenge added, "The only allowed operations are rotating three consecutive pancakes in a specific way: either shifting them to the left or the right."

Rosalba thought for a moment and added more detail: "Yes, exactly. A left rotation would shift the first pancake in the trio to the last position, while the other two shift forward. A right rotation would take the last pancake in the trio and move it to the front, with the others shifting back."

Help Marcella and Rosalba by writing a program that, given a list of the N pancakes' sizes S_i, checks if it's possible to sort the list using only the described pancake rotations.

Input

The first line contains one integer N, the number of pancakes dropped by Marcella.

The following N lines each contain the size S_i of the i-th pancake.

Output

You need to write a single line containing the uppercase string "YES" if it is possible to order the N pancakes provided as input through such rotation operations, otherwise the uppercase string "NO".

Constraints

- $1 \leq N \leq 10^5$.
- $1 \leq S_i \leq 10^6$.
- You may apply any number of rotation operations.

Examples

input	output
5 31 23 45 29 24	YES
6 50 1 6 13 3 28	NO

Explanation

In the **first sample case**, the following transformations could be applied to obtain the ordered list as output (the triplets to which the rotation has been applied are highlighted in brackets):

- 31 23 45 29 24 → 31 23 (29 24 45)
- 31 23 29 24 45 → (23 29 31) 24 45
- 23 29 31 24 45 → 23 (24 29 31) 45

In the **second sample case**, there is no sequence of operations that can produce an ordered list.