

PROBLEM 2

IGM

Time and memory limits: 1 second, 256 MB

Delegates from across the universe have gathered for the annual Intergalactic Meeting (IGM), hosted this year on Earth. The N delegates, numbered from 1 to N , are seated around a huge circular table in clockwise order: delegate 1, delegate 2, $\dots$, delegate N . Delegate i has a distinct importance value A_i .

As the chairperson, to begin the meeting you must choose a delegate to speak first. The remaining delegates then speak one at a time, proceeding clockwise around the table until everyone has spoken.

Due to intergalactic tradition, every delegate (other than the first speaker) may speak only if their importance is strictly greater than that of the previous speaker. If any delegate cannot speak because of this rule, the meeting is immediately deemed a failure.

Determine whether it is possible to choose a starting speaker so that every delegate can speak.

Subtasks and Constraints

Your program will be graded using many secret tests. Every test follows some rules:

- $3 \leq N \leq 200\,000$.
- $1 \leq A_i \leq 1\,000\,000\,000$ for all i .
- The A_i are distinct. That is, $A_i \neq A_j$ for all $i \neq j$.

The secret tests are divided into subtasks. Your program must correctly solve **every test** within a subtask to earn the marks for that subtask:

- For Subtask 1 (30 points), $N = 3$.
- For Subtask 2 (30 points), $N \leq 1000$.
- For Subtask 3 (40 points), no special rules apply.

Input

Your solution must read input and print output. We recommend using the solution templates (which you can find on the competition website) to help you with input and output.

The input follows a specific format:

- The 1st line contains the integer N .
- The 2nd line contains N integers $A_1, A_2, \dots, A_N$, where A_i is the importance of delegate i .

Output

Your program must output YES if it is possible to choose a starting speaker so that every delegate can speak, and NO otherwise.

Sample Input 1

5
8 16 1 2 4

Sample Output 1

YES

Sample Input 2

3
10 30 20

Sample Output 2

NO

Sample Input 3

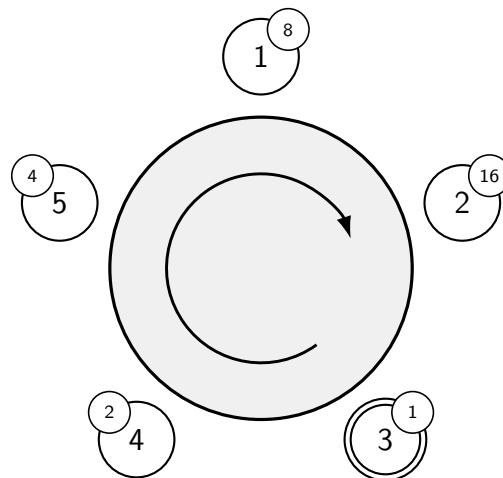
5
8 16 2 4 1

Sample Output 3

NO

Explanation

- In the 1st sample case, you can start at delegate 3 (with importance 1). The delegates then speak clockwise in the order 3, 4, 5, 1, 2, with importance values 1, 2, 4, 8, 16.



Since every speaker other than the first is more important than the previous speaker, the meeting can succeed.

- In the 2nd sample case, starting at each of the delegates yields the following meetings:

Starting delegate	Speaking order	Importance values
1	1, 2, 3	10, 30, 20
2	2, 3, 1	30, 20, 10
3	3, 1, 2	20, 10, 30

None of these possible meetings can succeed. Hence, you cannot start with any delegate.

- In the 3rd sample case, it can be shown that you cannot start with any delegate.