# CCO '11 P4 - Reorganization

**Time limit:** 1.0s **Memory limit:** 1G

### Canadian Computing Competition: 2011 Stage 2, Day 2, Problem 1

Alice and Bob own a huge company. This company was losing money consistently over the last 30 years, since its owners spent too much time playing games with mathematicians. Alice and Bob decide to make a change.

Alice and Bob start by giving unique employee IDs to each of the $n$ employees $(1 \leq n \leq 100\,000)$, where each ID $I$ is in the range $(1 \leq I \leq 100\,000)$.

Then, Alice and Bob give unique ranks to each employee. Each rank $R$ is an integer such that $1 \leq R \leq 10\,000\,000$. After this, they plan to reorganize the company, by making sure that the employees satisfy the following conditions:

1. There is exactly one director, who has no supervisor;
2. Except for the director, each employee has a supervisor, and this supervisor has a smaller employee ID and a higher rank (the value of rank is smaller); and
3. Each employee can supervise at most 2 people.

Alice and Bob are eager to know whether their company can be reorganized successfully.

## Input Specification

The input is a total of $2$ lines. The first line contains $n$ $(1 \leq n \leq 100\,000)$, indicating the number of employees. The next line contains $n$ distinct integers $R$ $(1 \leq R \leq 10\,000\,000)$, where the $i$th integer indicates the rank of the employee with ID $i$.

## Output Specification

Output `YES` if the company can be reorganized successfully; output `NO` otherwise.

## Sample Input 1

```
6
1 6 5 2 3 4
```

## Sample Output 1

```
NO
```

## Explanation for Sample Output 1

Employee with rank 1 has employee ID 1, and thus, must be the supervisor. Employees 2 and 3 (with ranks 6 and 5) can only be supervised by employee 1 (with rank 1). However, no other employee (4, 5 or 6) can be supervised by employee 2 or employee 3, since ranks of supervisors must be smaller than the employees they supervise.

## Sample Input 2

```
6
1 6 2 3 4 5
```

## Sample Output 2

```
YES
```

## Explanation for Sample Output 2

Employee 1 (rank 1) supervises both employee 2 (rank 6) and employee 3 (rank 2).

Employee 3 (rank 2) supervises employee 4 (rank 3) and employee 5 (rank 4).

Employee 4 (rank 3) supervises employee 6 (rank 5).