

## K. BUBBLE TEA FANS

Hanh is a great fan of bubble tea – a well-known delicious drink in Asian countries! Consequently, all of his students really enjoy this tasty drink as well.

One day, Hanh holds a bubble tea party, where all of his students are invited.  $n$  students attend this event. At the beginning, Hanh asks them to stand in a row and numbers them from 1 to  $n$ , from left to right.

Each student has exactly one favourite brand of bubble tea – the bubble tea shop which he/she likes best. Then Hanh comes to several students and asks the same question: “How many students are there in this room (including you) sharing the same favourite brand with you?” He just asks only some of them, not everyone. Everyone who is asked tells Hanh the correct number.

After asking questions and receiving answers from students, Hanh wonders: Is it possible to infer the answers of all students who are not asked? He knows pretty sure the following fact about his students: Students who have the same favourite bubble tea brand always stand together. In other words, if the  $i^{\text{th}}$  student and the  $j^{\text{th}}$  student share the same brand, all  $k^{\text{th}}$  students such that  $i \leq k \leq j$  also favour this brand.

Please help Hanh answer this question.

### INPUT

The first line of the input contains an integer  $n$  ( $1 \leq n \leq 100$ ) denoting the number of students attending Hanh’s party.

The second line of the input contains  $n$  integers  $a_1, a_2, \dots, a_n$  ( $0 \leq a_i \leq n$ ) representing the information of these students. If  $a_i = 0$ , the  $i^{\text{th}}$  student is not asked, otherwise,  $a_i$  equals to his answer.

It is guaranteed that the data is consistent. In other words, there exists a scenario where all students’ answers are correct.

### OUTPUT

Print YES if Hanh can infer the answers of all students correctly and uniquely. Print NO otherwise.

Sample Input	Sample Output
7 3 0 0 0 4 0 0	YES
4 1 0 0 1	NO

### EXPLANATION

In the first sample, the first student says that there are 3 students (including him/her) having the same favourite bubble tea brand with him/her. They must be the first, the second and the third one (Recalling that students favouring the same brand always stand together). Hence, 4 students having the same favourite brand with the fifth one must be the ones with numbers from  $4^{\text{th}}$  to  $7^{\text{th}}$ . Therefore, the only possible sequence of answers (If all students are asked) is (3, 3, 3, 4, 4, 4, 4).

In the second sample, the second student must not have the same favourite brand with the first one, and the third student must not have the same favourite brand with the last one. However, Hanh does not know whether the second and the third student share the same brand or not. As a result, there are two possible sequences of answers: (1, 1, 1, 1) and (1, 2, 2, 1).