

## The index

Given a sorted sequence of distinct integers  $\{a_1, a_2, \dots, a_n\}$ . Write a **check** function which runs in  $O(\lg n)$  and determines whether there exists an  $i$  index such as  $a_i = i$ .

For example, in  $\{-12, -4, 1, 4, 7, 9, 10, 13\}$ ,  $a_4 = 4$  then **check** function prints “yes”.

But in  $\{3, 5, 7, 9, 11\}$ , there is no such  $i$ , then **check** function prints “no”.

## Input

Contains 2 lines.

The first line of the input is an integer  $N$ . ( $1 \leq N \leq 10^7$ )

The second line contains  $N$  sorted integer, separated by a space.

## Output

Print yes if there exists an  $i$  index such as  $a_i = i$ , otherwise print no.

Print or write your code with comments in English and time complexity analysis.

Adding your name and studentID in top right of your homework.