

## Problem F. Factoring a Polynomial

Input file: `factor.in`  
Output file: `factor.out`  
Time limit: 2 seconds  
Memory limit: 64 megabytes

Recently Georgie has learned about polynomials. A polynomial in one variable can be viewed as a formal sum  $a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0$ , where  $x$  is the formal variable and  $a_i$  are the coefficients of the polynomial. The greatest  $i$  such that  $a_i \neq 0$  is called the *degree* of the polynomial. If  $a_i = 0$  for all  $i$ , the degree of the polynomial is considered to be  $-\infty$ . If the degree of the polynomial is zero or  $-\infty$ , it is called *trivial*, otherwise it is called *non-trivial*.

What really impressed Georgie while studying polynomials was the fact that in some cases one can apply different algorithms and techniques developed for integer numbers to polynomials. For example, given two polynomials, one may sum them up, multiply them, or even divide one of them by the other.

The most interesting property of polynomials, at Georgie's point of view, was the fact that a polynomial, just like an integer number, can be factorized. We say that the polynomial is *irreducible* if it cannot be represented as the product of two or more non-trivial polynomials with real coefficients. Otherwise the polynomial is called *reducible*. For example, the polynomial  $x^2 - 2x + 1$  is reducible because it can be represented as  $(x - 1)(x - 1)$ , while the polynomial  $x^2 + 1$  is not. It is well known that any polynomial can be represented as the product of one or more irreducible polynomials.

Given a polynomial with integer coefficients, Georgie would like to know whether it is irreducible. Of course, he would also like to know its factorization, but such problem seems to be too difficult for him now, so he just wants to know about reducibility.

### Input

The first line of the input file contains  $n$  — the degree of the polynomial ( $0 \leq n \leq 20$ ). Next line contains  $n + 1$  integer numbers,  $a_n, a_{n-1}, \dots, a_1, a_0$  — polynomial coefficients ( $-1000 \leq a_i \leq 1000$ ,  $a_n \neq 0$ ).

### Output

Output YES if the polynomial given in the input file is irreducible and NO in the other case.

### Example

<code>factor.in</code>	<code>factor.out</code>
2 1 -2 1	NO
2 1 0 1	YES