B. Case of Fake Numbers

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Andrewid the Android is a galaxy-famous detective. He is now investigating a case of frauds who make fake copies of the famous Stolp's gears, puzzles that are as famous as the Rubik's cube once was.

Its most important components are a button and a line of n similar gears. Each gear has n teeth containing all numbers from 0 to n - 1 in the counter-clockwise order. When you push a button, the first gear rotates *clockwise*, then the second gear rotates *counter-clockwise*, the the third gear rotates *clockwise* an so on.

Besides, each gear has exactly one active tooth. When a gear turns, a new active tooth is the one following after the current active tooth according to the direction of the rotation. For example, if $n = 5$, and the active tooth is the one containing number 0, then clockwise rotation makes the tooth with number 1 active, or the counter-clockwise rotating makes the tooth number 4 active.

Andrewid remembers that the real puzzle has the following property: you can push the button multiple times in such a way that in the end the numbers on the active teeth of the gears from first to last form sequence $0, 1, 2, ..., n$ - 1. Write a program that determines whether the given puzzle is real or fake.

Input

The first line contains integer n $(1 \le n \le 1000)$ — the number of gears.

The second line contains n digits $a_1, a_2, ..., a_n$ $(0 \le a_i \le n$ - $1)$ — the sequence of active teeth: the active tooth of the i-th gear contains number a_i.

Output

In a single line print "Yes" (without the quotes), if the given Stolp's gears puzzle is real, and "No" (without the quotes) otherwise.

Examples

input
3 1 0 0
output
Yes

input
5 4 2 1 4 3
output
Yes

input
4 0 2 3 1
output
No

Note

In the first sample test when you push the button for the first time, the sequence of active teeth will be `2 2 1`, when you push it for the second time, you get `0 1 2`.