

Problem K. Number Line Jumps

OS Linux

You are choreographing a circus show with various animals. For one act, you are given two kangaroos on a number line ready to jump in the positive direction (i.e, toward positive infinity).

- The first kangaroo starts at location $x1$ and moves at a rate of $v1$ meters per jump.
- The second kangaroo starts at location $x2$ and moves at a rate of $v2$ meters per jump.

You have to figure out a way to get both kangaroos at the same location at the same time as part of the show. If it is possible, return **YES** , otherwise return **NO** .

Example

$$x1 = 2$$

$$v1 = 1$$

$$x2 = 1$$

$$v2 = 2$$

After one jump, they are both at $x = 3$, ($x1 + v1 = 2 + 1$, $x2 + v2 = 1 + 2$), so the answer is **YES** .

Function Description

Complete the function *kangaroo* in the editor below.

kangaroo has the following parameter(s):

- *int x1, int v1*: starting position and jump distance for kangaroo 1
- *int x2, int v2*: starting position and jump distance for kangaroo 2

Returns

- *string*: either **YES** or **NO**

Input Format

A single line of four space-separated integers denoting the respective values of $x1$, $v1$, $x2$, and $v2$.

Constraints

- $0 \leq x1 < x2 \leq 10000$
- $1 \leq v1 \leq 10000$

- $1 \leq v_2 \leq 10000$

Sample Input 0

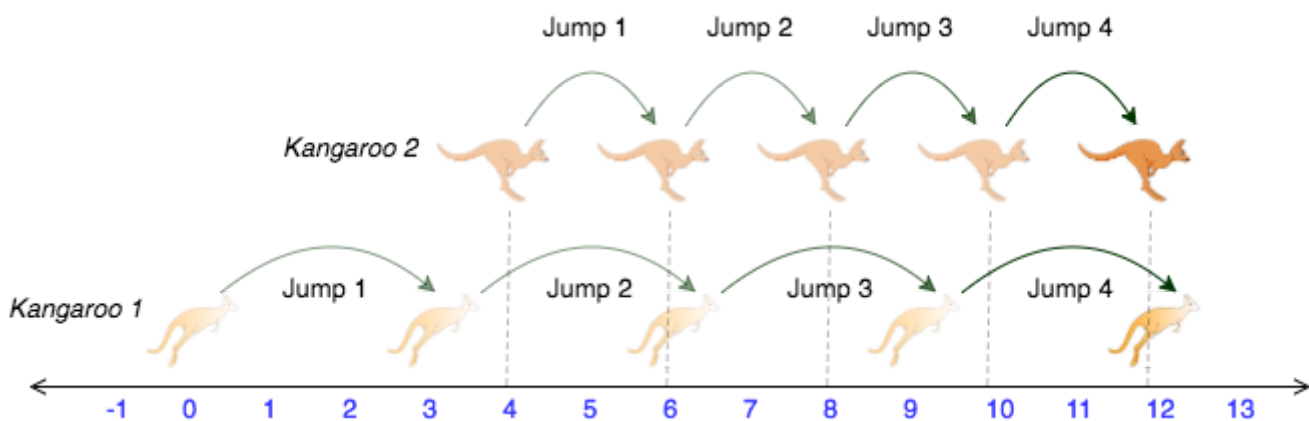
0 3 4 2

Sample Output 0

YES

Explanation 0

The two kangaroos jump through the following sequence of locations:



From the image, it is clear that the kangaroos meet at the same location (number **12** on the number line) after same number of jumps (**4** jumps), and we print **YES**.

Sample Input 1

0 2 5 3

Sample Output 1

NO

Explanation 1

The second kangaroo has a starting location that is ahead (further to the right) of the first kangaroo's starting location (i.e., $x_2 > x_1$). Because the second kangaroo moves at a faster rate (meaning $v_2 > v_1$) and is already ahead of the first kangaroo, the first kangaroo will never be able to catch up. Thus, we print **NO**.