Problem B
Brickwork

We are attempting to design a wall as a tessellation of 2D rectangular brick shapes, with all of the bricks having exact integer coordinates and exact integer sizes.

Given a description of the brickwork in this 2D wall, determine if the wall is indeed a wall—covering a perfect rectangle with no overlapping bricks and with no empty spaces in between bricks. This means that every non-integer-coordinate inside the region should be covered by exactly one brick.

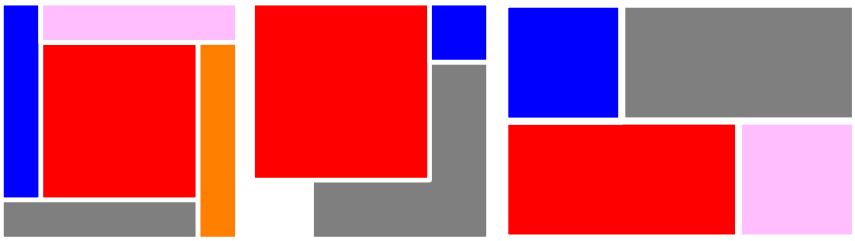


Figure B.1: Brickwork illustrating samples 1, 2, and 3 respectively.

Input

- One line containing the number of bricks, n ($1 \leq n \leq 1,000,000$).
- n further lines, each containing the description of a brick as four integers $xywh$ giving the xy-coordinates, width, and height ($0 \leq x, y \leq 10^8$; $1 \leq w, h \leq 10^8$).

Output

Output `yes` if the bricks constitute a valid wall, `no` otherwise.

Sample Input 1	Sample Output 1
5 0 0 5 1 1 1 4 4 0 1 1 5 1 5 5 1 5 0 1 5	yes

Sample Input 2	Sample Output 2
3 1 0 3 3 0 1 3 3 3 3 1 1	no

Sample Input 3	Sample Output 3
4 1 1 2 1 0 0 2 1 0 1 1 1 2 0 1 1	yes