J. Anton and Lines

Time limit: 1s Memory limit: 256 MB

The teacher gave Anton a large geometry homework, but he didn't do it (as usual) as he participated in a regular round on Codeforces. In the task he was given a set of n lines defined by the equations $y = k_i \cdot x + b_i$. It was necessary to determine whether there is at least one point of intersection of two of these lines, that lays strictly inside the strip between $x_1 < x_2$. In other words, is it true that there are $1 \le i < j \le n$ and x', y', such that:

- $y' = k_i * x' + b_i$, that is, point (x', y') belongs to the line number i;
- $y' = k_j * x' + b_j$, that is, point (x', y') belongs to the line number j;
- $x_1 < x' < x_2$, that is, point (x', y') lies inside the strip bounded by $x_1 < x_2$.

You can't leave Anton in trouble, can you? Write a program that solves the given task.

Input

The first line of the input contains an integer n ($2 \le n \le 100\,000$) — the number of lines in the task given to Anton. The second line contains integers x_1 and x_2 ($-1\,000\,000 \le x_1 < x_2 \le 1\,000\,000$) defining the strip inside which you need to find a point of intersection of at least two lines.

The following n lines contain integers k_i, b_i ($-1\,000\,000 \le k_i, b_i \le 1\,000\,000$) — the descriptions of the lines. It is guaranteed that all lines are pairwise distinct, that is, for any two $i \ne j$ it is true that either $k_i \ne k_j$, or $b_i \ne b_j$.

Output

Print "Yes" (without quotes), if there is at least one intersection of two distinct lines, located strictly inside the strip. Otherwise print "No" (without quotes).

Examples

input
4 1 2 1 2 1 0 0 1 0 2
output
NO

input
2 1 3 1 0 -1 3
output
YES

input

```
2
1 3
1 0
0 2
```

output

```
YES
```

input

```
2
1 3
1 0
0 3
```

output

```
NO
```

Note

In the first sample there are intersections located on the border of the strip, but there are no intersections located strictly inside it.