Task Name

Minimum Vertical Shots 1

Difficulty

Medium

Problem Description

Each vertical shot destroys every target interval it crosses. Find the minimum number of shots needed.

Problem Statement

You are given `n` horizontal target ranges on a number line. The `i`-th target covers every coordinate from `l[i]` to `r[i]`, inclusive.

You may fire a vertical shot at any real coordinate `x`. A shot destroys every target whose interval contains `x`.

Find the minimum number of shots required to destroy all targets.

Input Format

- The first line contains a single integer `n`.
- Each of the next `n` lines contains two integers `l` and `r`.

Constraints

- `1 <= n <= 10^5`
- `-2^31 <= l < r <= 2^31 - 1`

Output Format

Print one integer: the minimum number of shots required.

Example 1

Input

5 1 4 2 6 7 9 8 10 9 12

Output

2

Explanation

A shot at `4` destroys the first two targets. A shot at `9` destroys the last three targets.

Example 2

Input

4 1 2 3 4 5 6 7 8

Output

4

Explanation

No two targets overlap, so each one needs its own shot.

Tags

Greedy, Sorting, Intervals

Reference Solution Idea

Sort targets by their right endpoint. Then greedily fire a shot at the end of the earliest finishing target that has not yet been destroyed. This shot destroys every target overlapping that point.

Complexity

- Time: `O(n log n)`
- Space: `O(1)` extra space if sorting in place

Suggested testcase roles

- `input00/output00` -> Sample, strength `0`
- `input01/output01` -> Sample, strength `0`
- `input02/output02` -> Hidden, strength `34`
- `input03/output03` -> Hidden, strength `33`
- `input04/output04` -> Hidden, strength `33`