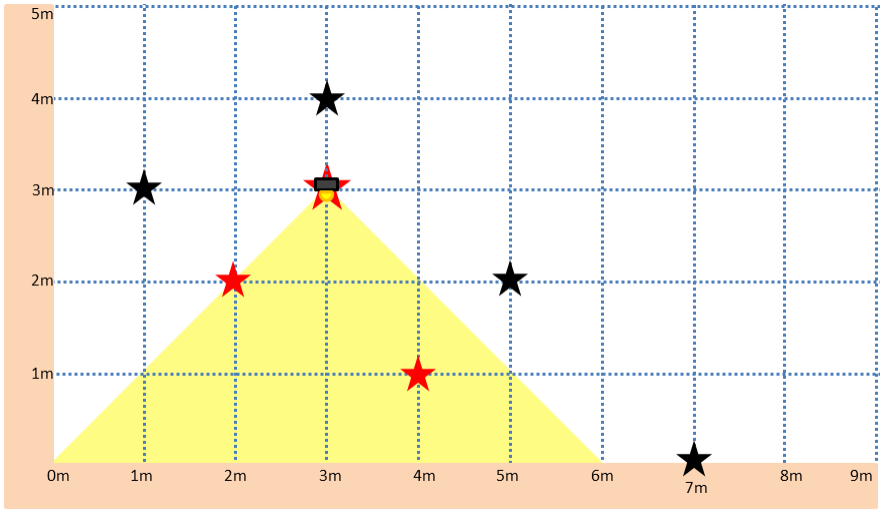
Spotlights

This question is graded for 1%!

Statement

Fluffy the Hamster is preparing for a performance. He is currently setting up some spotlights on the stage.

There are N points of interest on the stage. The ith point of interest is D_i metres from the left of the stage, and H_i metres above the ground. Fluffy wants to ensure that all these points of interest are illuminated by at least one spotlight. Fluffy is also only allowed to install spotlights at these points of interest. If a spotlight is installed at a particular point of interest, then it is able to illuminate that point of interest, and all points of interest in the region where the light forms a 45 degree angle. For example, in the figure below, if a spotlight is installed as shown, then all the red points of interest (red ★) will be illuminated, but the black points of interest (black ★) will not.



Help Fluffy determine what is the minimum number of spotlights he must install to illuminate all the points of interest.

Constraints

- $1 \leq N \leq 10^7$
- $0 \leq D_i, H_i \leq 10^9$.

Input

The first line of the input contains a single integers N.

The next N lines contain two space separated integers each, D_i and H_i. **You may additionally assume that $D_i \leq D_{i+1}$ (i.e. the input will be given in sorted order according to D_i).**

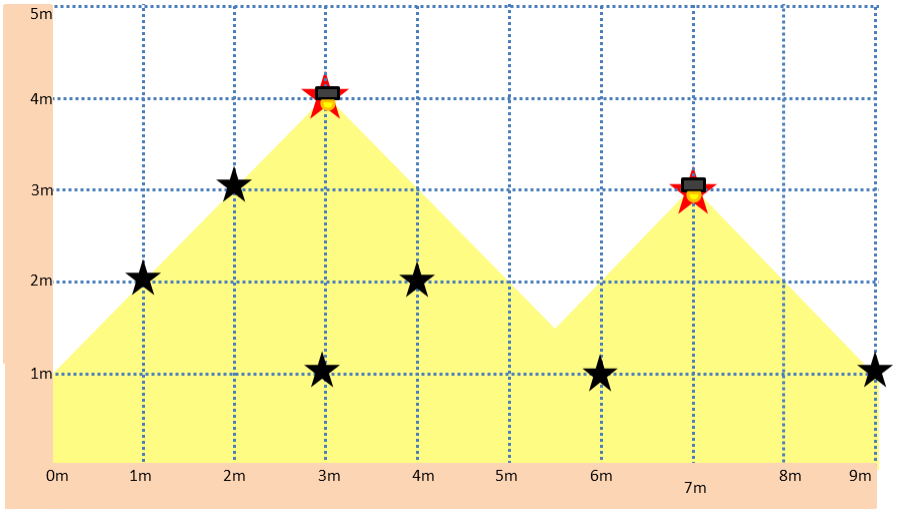
Output

Print a single integer, the minimum number of spotlights required.

Examples

Sample Input	Expected Output
8 1 2 2 3 3 1 3 4 4 2 6 1 7 3 9 1	2

Using 2 spotlights positioned as shown below, we can illuminate all the points of interest.



Notes

1. A skeleton file has been given to help you. You should not create a new file or rename the file provided. You should develop your program using this skeleton file.
2. You are free to define your own helper methods and classes (or remove existing ones) if it is suitable but you must put all the new classes, if any, in the same skeleton file provided.

Skeleton File

You are given the skeleton file `Spotlights.java`. You should see the following contents when you open the file:

```
/**
 * Name          :
 * Matric. No    :
*/

import java.util.*;

public class Spotlights {
    private void run() {
        // implement your "main" method here
    }

    public static void main(String args[]) {
        Spotlights runner = new Spotlights();
        runner.run();
    }
}
```