



## Task 3: LightningRod

Singapore has anywhere between 171 and 186 lightning days on average a year. Each square kilometer of land in Singapore can be struck up to 16 times annually. This makes Singapore one of the lightning capitals of the world.

Gug the architect surveys  $N$  buildings from left to right, and notices that the top of building  $i$ , from left to right, has coordinates  $(X_i, Y_i)$ . Gug wants to protect all the buildings by planting lightning rods on top of some buildings. A lightning rod protects the building it is planted on, and all buildings that lie on or under the  $45^\circ$  line of depression leftwards and rightwards. In other words, a lightning rod on building  $i$  protects building  $j$  if and only if  $|X_i - X_j| \leq Y_i - Y_j$ .

Help Gug find out the minimum number of lightning rods required to protect all buildings.

### Input format

Your program must read from standard input.

The input starts with a single integer,  $N$ , in a single line.  $N$  denotes the total number of buildings.

$N$  lines will then follow with 2 integers each, the  $i^{\text{th}}$  line will contain  $X_i$  and  $Y_i$ . This indicates that the peak of the  $i^{\text{th}}$  building is at  $(X_i, Y_i)$ . You can assume  $X_i \leq X_{i+1}$ , in other words,  $X_i$  is increasing.

Note: The input size for subtasks 1, 6 and 7 is extremely large, so it is only possible to obtain full credit using C++ fast input. The attachment consists of a template that uses C++ fast input to read from standard input.

### Output format

Your program must print to standard output.

Output a single integer, denoting the minimum number of lightning rods required to protect all buildings.



## Subtasks

The maximum execution time on each instance is 1.0s. Your program will be tested on input instances that satisfy the following restrictions:

Subtask	Marks	$N$	$X_i, Y_i$
1	4	$2 \leq N \leq 10\,000\,000$	$0 \leq X_i \leq 10^9, Y_i = 1$
2	7	$N = 2$	$0 \leq X_i, Y_i \leq 10^9$
3	12	$2 \leq N \leq 20$	$0 \leq X_i, Y_i \leq 10^9$
4	21	$2 \leq N \leq 2\,000$	$0 \leq X_i, Y_i \leq 10^9$
5	26	$2 \leq N \leq 200\,000$	$0 \leq X_i, Y_i \leq 10^9$
6	10	$2 \leq N \leq 10\,000\,000$	$X_i = i, 0 \leq Y_i \leq 1$
7	20	$2 \leq N \leq 10\,000\,000$	$0 \leq X_i, Y_i \leq 10^9$

### Sample Testcase 1

This testcase is valid for all subtasks.

Input	Output
2 1 1 2 1	2

### Sample Testcase 1 Explanation

Both buildings must have lightning rods.

### Sample Testcase 2

This testcase is only valid for subtasks 2 to 7.

Input	Output
2 1 0 2 1	1

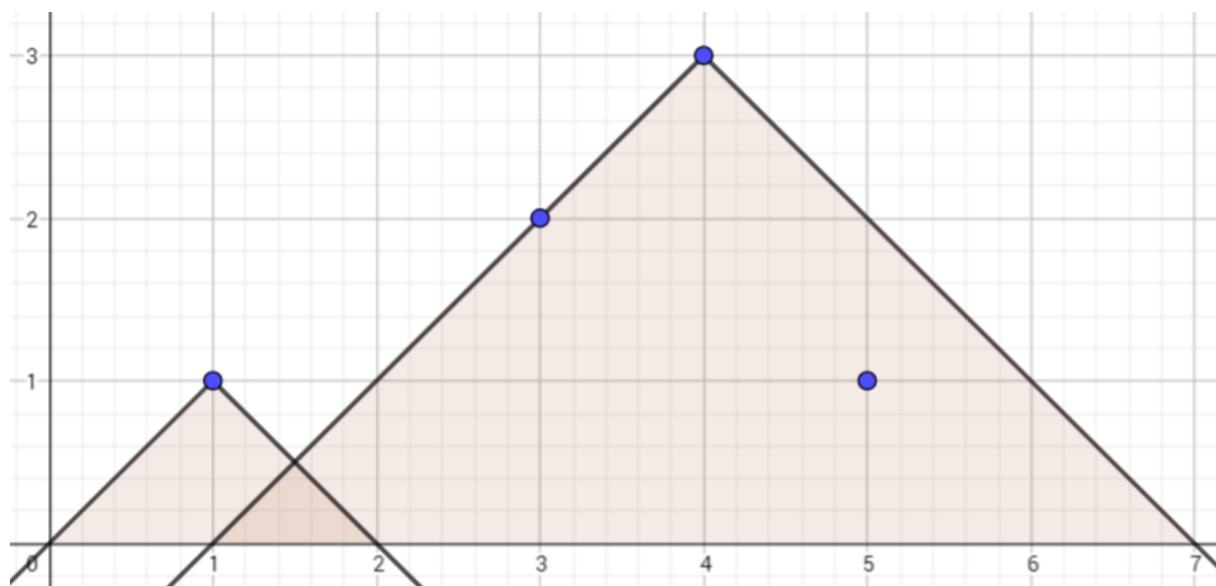


Figure 3: Sample 3, where Gug sees 4 buildings.

## Sample Testcase 2 Explanation

A lightning rod can be planted on building 2.

## Sample Testcase 3

This testcase is only valid for subtasks 3, 4, 5, 7.

Input	Output
4	2
1 1	
3 2	
4 3	
5 1	

## Sample Testcase 3 Explanation

Lightning rods can be planted on buildings 1 and 3 (see Figure 3).