



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° 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^{th} line will contain X_i and Y_i . This indicates that the peak of the i^{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

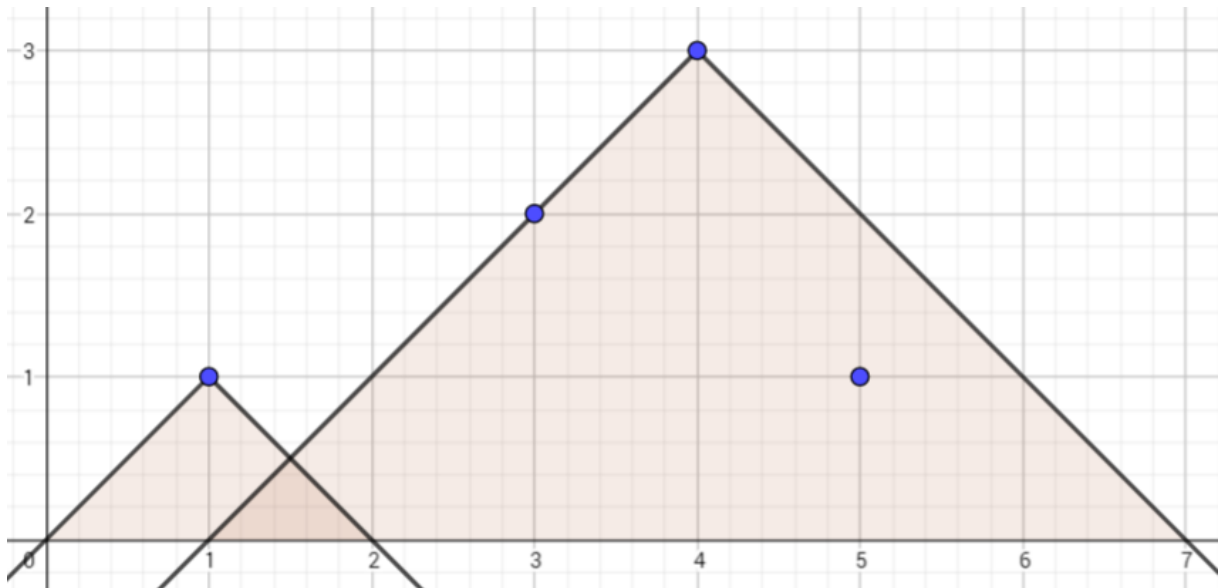


Figure 3: Sample 3, where Gug sees 4 buildings.

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).