

## E. Gerald and Path

time limit per test: 4 seconds  
 memory limit per test: 256 megabytes  
 input: standard input  
 output: standard output

The main walking trail in Geraldion is absolutely straight, and it passes strictly from the north to the south, it is so long that no one has ever reached its ends in either of the two directions. The Geraldionians love to walk on this path at any time, so the mayor of the city asked the Herald to illuminate this path with a few spotlights. The spotlights have already been delivered to certain places and Gerald will not be able to move them. Each spotlight illuminates a specific segment of the path of the given length, one end of the segment is the location of the spotlight, and it can be directed so that it covers the segment to the south or to the north of spotlight.

The trail contains a monument to the mayor of the island, and although you can walk in either directions from the monument, no spotlight is south of the monument.

You are given the positions of the spotlights and their power. Help Gerald direct all the spotlights so that the total length of the illuminated part of the path is as much as possible.

### Input

The first line contains integer  $n$  ( $1 \leq n \leq 100$ ) — the number of spotlights. Each of the  $n$  lines contains two space-separated integers,  $a_i$  and  $l_i$  ( $0 \leq a_i \leq 10^8$ ,  $1 \leq l_i \leq 10^8$ ). Number  $a_i$  shows how much further the  $i$ -th spotlight to the north, and number  $l_i$  shows the length of the segment it illuminates.

It is guaranteed that all the  $a_i$ 's are distinct.

### Output

Print a single integer — the maximum total length of the illuminated part of the path.

### Examples

<b>input</b>	<a href="#">Copy</a>
3	
1 1	
2 2	
3 3	
<b>output</b>	<a href="#">Copy</a>
5	

  

<b>input</b>	<a href="#">Copy</a>
4	
1 2	
3 3	
4 3	
6 2	
<b>output</b>	<a href="#">Copy</a>
9	

### Codeforces Round #313 (Div. 1)

Finished

Practice



### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest](#)

### → Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

### → Clone Contest to Mashup

You can clone this contest to a mashup.

[Clone Contest](#)

### → Submit?

Language: GNU G++11 5.1.0

Choose file: [选择文件](#) 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit](#)

### → Problem tags

[dp](#) [sortings](#) [\\*2900](#)

No tag edit access

### → Contest materials

- Announcement #1 (en) [×](#)
- Announcement #2 (ru) [×](#)

- [Announcement #3 \(en\)](#) ☐
- [Tutorial #1 \(en\)](#) ☐
- [Tutorial #2 \(ru\)](#) ☐

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