The very short but true story of how the wedding of the beautiful but not so well-off princess Pauperella and as much beautiful but quite richer prince Goldteeth took place in the kingdom of Ragland

Submit:	`cakes.c` / `cakes.cpp` / `cakes.pas`	Time limit:	on the order of seconds
Input:	`cakes.in`	Memory limit:	32 MB
Output:	`cakes.out`	Points:	100

Once upon a time, in the poor poor kingdom of Ragland, there lived a king and a queen (of beggars). They had only one daughter, charming Pauperella, who was to be married to beautiful and astonishingly rich prince Goldteeth. Although the young princess protested, her parents insisted that the wedding should take place in their castle. They asked their excellent cook to prepare the wedding cakes – the famous wedding cakes of Ragland. But because they are not so well-off as one may expect (considering they are a royal couple), they only have this one cook and only one small oven, in which all the cakes have to be baked.

The cook has to prepare N different cakes. Preparation of a cake consists of two phases: In the first phase the cook prepares the dough for the cake and puts it into a form. In the second phase the cake bakes in the oven. Preparing the dough for the i-th cake takes a_i seconds. After the dough is ready, the cake needs to be baked for b_i seconds. (Note that it doesn't have to be baked *immediately* after it is ready, the dough may sit in its form for a while.) The cook is able to prepare only one dough at a time. At any moment at most one cake may be baking in the oven. The cook may prepare and bake the cakes in arbitrary order.

Task: Your task is to find out the minimum time which is needed to prepare all the cakes. You may suppose that manipulations with the oven (i.e., inserting a cake and removing a baked cake from the oven) can be accomplished in zero time.

Input: On the first line of the input file `cakes.in` there is a positive integer $N \leq 1\,000\,000$ – the number of cakes, which have to be made. Each of the following N lines contains two positive integers $a_i, b_i \leq 2\,000\,000\,000$, where a_i is the time needed to prepare the dough of the i-th cake and b_i the time needed to bake it.

Output: The output file `cakes.out` shall contain one line with the minimum time, in which all the cakes can be made. You may assume that the answer won't exceed 2 000 000 000.

Example:

`cakes.in`
```
5
1 10
7 1
5 4
15 15
30 1
```

`cakes.out`
```
59
```

Explanation: One possible way how to prepare all the given cakes in optimal time:

```
time | action
-----+---------------------------------------------
0    | preparing of cake #1 started
1    | #1 prepared, baking of #1 started, preparing of #2 started
8    | #2 prepared, preparing of #3 started
11   | #1 done
13   | #3 prepared, preparing of #4 started
14   | baking of #3 started
18   | #3 done, baking of #2 started
19   | #2 done
28   | #4 prepared, baking of #4 started, preparing of #5 started
43   | #4 done
58   | #5 prepared, baking of #5 started
59   | #5 done
```