

Problem 1

Citizenship

Time and Memory Limits: 1 second, 32 Mb

After seeing the sights of Rome, Paris and Zurich, you decide it's time to get more out of life. You come to realise that if you had stayed in Rome just a month longer, you could have become a citizen of Italy, allowing you to work as a pizza maker for the local mafia when you are visiting. If you had stayed in Paris for just another year, you would be able to claim free bagels from the local bakery at any time of day or night.

After some investigation, you find that each country has its own rules on gaining citizenship. Nevertheless, all countries obey the same basic principles. For a given country you can gain citizenship if you have been living there continuously for at least p years (where the value of p depends on the particular country). However, even after you have gained citizenship, if you go for q consecutive years without visiting the country then your citizenship will be lost.

You wish to gain simultaneous citizenship of as many countries as you possibly can, so you begin to plan out your travel plans for the rest of your life.

In the grand scheme of things, time spent flying is absolutely insignificant, so you may assume that travelling from any country to any other country takes no measurable time at all. You may also assume that for each country, p will be an even number of years and q will be an odd number of years.

For example, suppose you are interested in the five countries below. For each country, the following table lists the number of years required for acquiring citizenship (p), as well as the number of years that you must stay away from the country in order to lose citizenship (q).

| Country | Years to Gain (p) | Years to Lose (q) |
|--------------|-----------------------|-----------------------|
| Australia | 2 | 15 |
| Burgmanistan | 6 | 3 |
| France | 6 | 11 |
| Italy | 4 | 7 |
| Ursulia | 8 | 5 |

In order to gain simultaneous citizenship of as many different countries as possible, your travel plan might look something like:

- fly to France and remain there for 6 years to gain French citizenship;
- fly to Australia and remain there for 2 years to gain Australian citizenship;
- fly to Italy and remain there for 4 years to gain Italian citizenship;
- zip back to France briefly to maintain your citizenship before your next journey (this takes no measurable time at all);
- fly to Burgmanistan for 6 years to gain citizenship of Burgmanistan.

Note that if you had not revisited France after Italy, you would have lost French citizenship — the 2 + 4 + 6 years spent in Australia, Italy and Burgmanistan would have exceeded the 11 year limit that France imposes.

This result is the best you can achieve — you cannot gain citizenship of Ursulia, as you would lose citizenship of both Burgmanistan and Italy in the process. There are many other possible travel plans that could achieve four simultaneous citizenships, but no more. Thus four citizenships is the best you can do.

Input

The first line of input will consist of a single integer N , the total number of countries ($1 \leq N \leq 100\,000$). Countries are numbered $1, 2, \dots, N$.

The following N lines outline the rules of each country. The i th of these lines will contain two positive integers p_i q_i , separated by a single space, where p_i is the number of years required to gain citizenship of the i th country ($1 \leq p_i \leq 10\,000$), and q_i is the number of years of absence from the i th country that will cause you to lose this citizenship ($1 \leq q_i \leq 10\,000$). You are guaranteed that p_i will be even and q_i will be odd.

For 50% of the available marks, the number of countries will satisfy $N \leq 1\,000$.

Output

Your output should consist of a single integer — the largest number of citizenships you can ever simultaneously hold.

Sample Input

```
5
2 15
6 3
6 11
4 7
8 5
```

Sample Output

```
4
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Scoring

The score for each input file will be 100% if the correct answer is written to the output file, and 0% otherwise.