De-MOSS

Submit solution

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✔ **Points:** 100 (partial)
🕐 **Time limit:** 1.0s
🗒 **Memory limit:** 977M

❮ **Allowed languages**
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You can safely skip the following paragraph.

Your TA was asked to come up with a problem for the lab exam. He "referred" to an online resource, "discussed the logic" with his friends and came up with the following novel problem. Profs are convinced that he has copied the problem. He claims it's just a coincidence. You be the judge and help your profs arrive at the truth.

Suppose LeetCodeforces will start its IPO soon. In order to sell a good price of its shares to Venture Capital, LeetCodeforces would like to work on some projects to increase its capital before the IPO. Since it has limited resources, it can only finish at most k distinct projects before the IPO. Help LeetCodeforces design the best way to maximize its total capital after finishing at most k distinct projects.

You are given n projects where the ith project has a pure profit $\text{profits}[i]$ and a minimum capital of $\text{capital}[i]$ is needed to start it.

Initially, you have w capital. When you finish a project, you will obtain its pure profit and the profit will be added to your total capital.

Pick a list of at most k distinct projects from given projects to maximize your final capital, and return the final maximized capital.

The answer is guaranteed to fit in a 32-bit signed integer.

Input format

First line contains three integers $n, k,$ and w.

Next n lines contain a pair of space-separated integers $\text{profits}[i]$ and $\text{capital}[i]$, on each line.

Output format

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$1 \leq k \leq 10^5$

$0 \leq w \leq 10^9$

$n == \text{profits.length}$

$n == \text{capital.length}$

$1 \leq n \leq 10^5$

$0 \leq \text{profits}[i] \leq 10^4$

$0 \leq \text{capital}[i] \leq 10^9$

Subtasks

Subtask 1(10 points): $n \leq 10$

Subtask 2(20 points): $n \leq 1000$

Subtask 3(170 points): Original constraints

Example 1

Input

Copy

```
3 2 0
1 0
2 1
3 1
```

Output

Copy

```
4
```

Explanation

Since your initial capital is 0, you can only start the project indexed 0. After finishing it you will obtain profit 1 and your capital becomes 1. With capital 1, you can either start the project indexed 1 or the project indexed 2. Since you can choose at most 2 projects, you need to finish the project indexed 2 to get the maximum capital. Therefore, output the final maximized capital, which is $0 + 1 + 3 = 4$.

Example 2

Input

Copy

```
3 3 0
1 0
2 1
3 2
```

Output

6
Copy

? Clarifications

Request clarification

No clarifications have been made at this time.