



Hello, 2024101067.

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Bhaskar, the Felicity Coordinator, has successfully collected money for the fest. However, he still has a **pending debt** to pay back to his friend Aayush, who had lent him money earlier. Bhaskar wants to minimize the amount of money he gives back, as he wants to save money for the fest.

Bhaskar has n items numbered 1 to n . Initially, each item i is on position i . Each item i is characterized by two values:

- a_i : the "leftward influence" of the item,
- b_i : the "rightward influence" of the item.

Bhaskar has to pay an amount equal sum of the dissatisfaction of all the items. The dissatisfaction of item i when placed at position j is calculated by the formula:

$$\text{dissatisfaction}_i(j) = a_i \cdot (j - 1) + b_i \cdot (n - j)$$

Where:

- a_i is the leftward influence of the item at position i ,
- b_i is the rightward influence of the item at position i ,
- j is the new position of the item, ranging from 1 to n .
- n is the the total number of items.

Bhaskar can **rearrange** the items in any order to minimize the total amount he has to pay Aayush. Your task is to help Bhaskar find the **minimum total amount** he has to pay back to Aayush.

Input:

- The first line contains a single integer n ($1 \leq n \leq 10^5$) — the number of items.
- The next n lines each contain two integers a_i and b_i ($1 \leq a_i, b_i \leq 10^8$) the characteristic of the item i initially on the position i



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- Output a single integer — the minimum total amount that Bhaskar has to pay Aayush after optimally rearranging the items.

Hint:

Try simplifying the dissatisfaction formula by rewriting the terms. Rewrite the equation in the form of variable + constant and think about how to change the variable according to your needs, in order to minimize the total dissatisfaction.

Example**Input**

```
3
4 2
2 3
6 1
```

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Output

```
12
```

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Explanation:

In the given test case, it is optimal to place the items in the following order: **(3, 1, 2)**. The first item is in the position of 2, then its dissatisfaction will be equal to $4 \cdot 1 + 2 \cdot 1 = 6$. The second item is in the position of 3, its dissatisfaction will be equal to $2 \cdot 2 + 3 \cdot 0 = 4$. The third item is in the position of 1, its dissatisfaction will be equal to $6 \cdot 0 + 1 \cdot 2 = 2$. The total dissatisfaction will be 12

? Clarifications

Request clarification

No clarifications have been made at this time.