



Potatoes and fertilizers

Farmer Gumbauskas is growing potatoes. He planted potatoes in one long furrow and placed bags with fertilisers next to the furrow.



Assume that the furrow consists of N segments of the same length. The segments are numbered from 1 to N from left to right. In segment i there are a_i fertilisers and were planted b_i potatoes. One fertiliser unit is required to fertilise one planted potato. There is enough fertiliser for all the potatoes, i.e. $a_1 + \dots + a_N \geq b_1 + \dots + b_N$.

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Task. Find the cheapest way to fertilise all the potatoes.

Input. The length of the furrow N is given in the first line.

Each of the remaining N lines contain two integers a_i or b_i – the amount of fertiliser unit and the amount of potatoes planted in segment i . The segments are given in the increasing order of i .

Output. Output the smallest possible cost of fertilising all the planted potatoes.

Examples.

Input	Output	Comment
6 1 2 0 0 2 0 0 0 0 0 0 1	5	The cheapest way to fertilise all the potatoes (fertiliser is indicated above the horizontal line, potatoes are below the line): Adding the distances we get: $0 + 2 + 3 = 5$.



Input	Output	Comment
7 2 0 2 0 2 0 0 5 2 0 2 0 2 0	6	The fertiliser for four potatoes is transferred from neighbouring segments, while for the remaining potato it is delivered from further located segment.

Subtasks. Valid for all tests: $1 \leq N \leq 500\,000$ ir $0 \leq a_i, b_i \leq 1\,000\,000$.

Further the following notation will be used: $A = a_1 + \dots + a_N$ ir $B = b_1 + \dots + b_N$.

No.	Points	Additional constraints
1	24	The same amount of fertiliser and potatoes: $A = B$
2	10	$A = B$ or $A = B + 1$
3	20	$N \leq 3000$ and $A, B \leq 30\,000$
4	10	$N \leq 3000$
5	36	No additional constraints