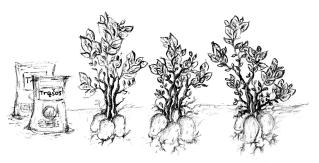


Potatoes and fertilizers

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. $a_1 + \cdots + a_N \ge b_1 + \ldots + b_N$.

However, it costs to transfer fertiliser from one segment to another. To transfer one unit of fertiliser from segment i to segment j costs |i - j|.

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



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Input	Output	Comment
7	6	The fertiliser for four potatoes is trans-
2 0		ferred from neighbouring segments, while
2 0		for the remaining potato it is delivered from
2 0		further located segment.
05		
2 0		
2 0		
2 0		

Subtasks. Valid for all tests: $1 \le N \le 500\,000$ ir $0 \le a_i, b_i \le 1000\,000$.

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

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 $A, B \leq 30000$		
4	10	$N \leq 3000$		
5	36	No additional constraints		