Lost One's Weeping

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Brian Xiao the literal child is doing Dec Course tutorials.

There are N labs in Dec Course. For lab i, the confusion level of their first tutorial session with Brian Xiao is a_i. As Brian Xiao is a very confusing person, for each subsequent tutorial session with the same lab, the confusion level of that session will increase by b_i. In other words, the xth tutorial session in lab i will have confusion level $a_i + (x - 1) \times b_i$.

Brian Xiao will do K tutorials in total. To make himself look like a good tutor, Brian Xiao wants to minimise the sum of all confusion levels of the sessions that he tutors. Please help him find this value!

Input

The first line contains 2 integers N, K.

This is followed by N lines, the ith of which contains the 2 integers a_i, b_i.

Output

Output a single integer, the minimum sum of confusion levels of the K tutorial sessions taught by Brian Xiao.

Scoring

For all testcases, it is guaranteed that

- $1 \leq N, K \leq 10^5$

- $1 \leq a_i \leq 10^9$

- $0 \leq b_i \leq 10^9$

Subtask	Score	Additional constraints
1	10	$b_i = 0$
2	20	$1 \leq N, K \leq 500$
3	30	$1 \leq N, K \leq 5000$
4	40	No additional restrictions
5	0	Sample testcases

Examples

standard input	standard output
3 3 1 3 2 0 3 4	5
10 100000 22 59 26 60 72 72 47 3 97 16 75 41 82 77 17 97 32 32 28 7	7521307799
1 100000 1000000000 1000000000	5000050000000000000

Note

For the first example, Brian Xiao will teach the first lab once with confusion level 1. Then he will teach the second lab twice with confusion levels 2 and $2 + 0 = 2$. The sum of confusion levels is 5, which is the minimum achievable.