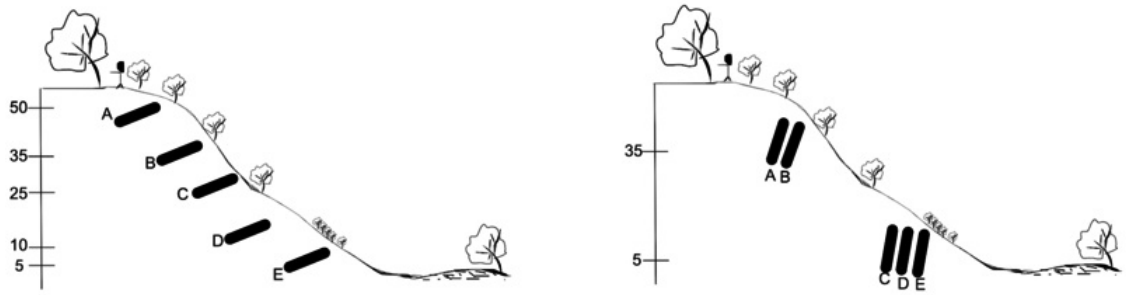
Poles

Kevin was thinking about telephone poles and came up with an idea for a fun programming challenge. There are n telephone poles ascending a mountain and each pole has a weight and a unique altitude. Our program must move the poles into k number of stacks, but we can only rearrange the poles according to certain criteria:

- Poles can only be moved from higher altitudes to lower altitudes.
- Stacks can only be formed at the initial pole altitudes.
- A stack must consist of at least one pole.

The image below shows how poles can be moved into 2 stacks at altitudes 35 and 5.



Moving the poles down the mountain also costs money. Moving a pole with weight w_i and altitude x_i to an altitude of x_j where $(x_i > x_j)$ costs $w_i \times (x_i - x_j)$.

Write a program to determine the least amount of money needed to rearrange the poles into k stacks.

Input Format

The first line of input contains two integers n (the number of poles) and k (the number of stacks needed).

Each of the next n lines include two integers x_i indicating the i^{th} pole's altitude and w_i indicating the i^{th} pole's weight. The poles will always be listed from lowest to highest altitude.

Constraints

- $1 \leq k < n \leq 5000$
- $1 \leq w_i, x_i \leq 10^6$

Output Format

Print the minimum cost of rearranging the poles into k stacks.

Sample Input 0

```
3 1
20 1
30 1
40 1
```

Sample Output 0

```
30
```

Explanation 0

This test case has 3 poles and needs 1 stack. We cannot move the bottom pole to the altitudes above it so we'll need to move the other poles to the bottom. The cost to move the highest pole to the bottom is $1 \times (40 - 20) = 20$ and the cost to move the middle pole to the bottom is $1 \times (30 - 20) = 10$. This makes our total cost 30.

Sample Input 1

```
6 2
10 15
12 17
16 18
18 13
30 10
32 1
```

Sample Output 1

```
216
```

Explanation 1

The optimal rearrangement for this test case is to create a stack at altitude 16 and another at altitude 10. Our final cost will therefore be:

$$[1 \times (32 - 16)] + [10 \times (30 - 16)] + [13 \times (18 - 16)] + [17 \times (12 - 10)]$$

$$16 + 140 + 26 + 34$$

$$216$$