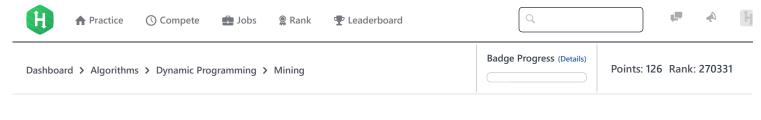
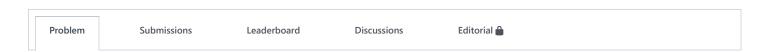
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There are n gold mines along a river, and each mine i produces w_i tons of gold. In order to collect the mined gold, we want to redistribute and consolidate it amongst exactly k mines where it can be picked up by trucks. We do this according to the following rules:

- You can move gold between any pair of mines (i.e., i and j, where $1 \le i < j \le n$).
- All the gold at some pickup mine i must either stay at mine i or be completely moved to some other mine, j.
- Move w tons of gold between the mine at location x_i and the mine at location x_j at a cost of $|x_i-x_j| imes w$.

Given n, k, and the amount of gold produced at each mine, find and print the minimum cost of consolidating the gold into k pickup locations according to the above conditions.

Input Format

The first line contains two space-separated integers describing the respective values of n (the number of mines) and k (the number of pickup locations). Each line i of the n subsequent lines contains two space-separated integers describing the respective values of x_i (the mine's distance from the mouth of the river) and w_i (the amount of gold produced in tons) for mine i.

Note: It is guaranteed that the mines are will be given in order of ascending location.

Constraints

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

Output Format

Print a single line with the minimum cost of consolidating the mined gold amongst k different pickup sites according to the rules stated above.

Sample Input 0

- 3 1
- 20 1 30 1
- 40 1

Sample Output 0

20

Explanation 0

We need to consolidate the gold from n=3 mines into a single pickup location (because k=1). The mines are all equidistant and they all produce the same amount of gold, so we just move the gold from the mines at locations x=20 and x=40 to the mine at x=30 for a minimal cost of x=20.

Sample Input 1

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```
3 1
11 3
12 2
13 1
```

Sample Input 1

4

Explanation 1

We need to consolidate the gold from n=3 mines into a single pickup location (because k=1). We can achieve a minimum cost of 4 by moving the gold from mines x=12 and x=13 to the mine at x=11.

Sample Input 2

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

Sample Output 2

182

Explanation 2

We need to consolidate the gold from n=6 mines into k=2 pickup locations. We can minimize the cost of doing this by doing the following:

- 1. Move the gold from the mines at locations x=10, x=16, and x=18 to the mine at x=12.
- 2. Move the gold from the mine at location $m{x}=32$ to the mine at $m{x}=30$.

```
f y in
Submissions:<u>111</u>
Max Score:75
Difficulty: Advanced
Rate This Challenge:
☆☆☆☆☆
```

```
Java 7
 Current Buffer (saved locally, editable) &
                                                                                                                          Ö
1 ▼ import java.io.*;
2 import java.util.*;
3 import java.text.*;
   import java.math.*;
5
   import java.util.regex.*;
6
7 ▼ public class Solution {
8
9 ▼
        public static void main(String[] args) {
10 ▼
            /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11
        }
12 }
                                                                                                                  Line: 1 Col: 1
```

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