

5097 Cross the Wall

“Across the Great Wall, we can reach every corner in the world!” Now the citizens of Rectland want to cross the Great Wall.

The Great Wall is a huge wall with infinite width and height, so the only way to cross is to dig holes in it. All people in Rectland can be considered as rectangles with varying width and height, and they can only dig rectangle holes in the wall. A person can pass through a hole, if and only if the person’s width and height is no more than the hole’s width and height both. To dig a hole with width W and height H , the people should pay $W * H$ dollars. Please note that it is only permitted to dig at most K holes for security consideration, and different holes cannot overlap each other in the Great Wall. Remember when they pass through the wall, they must have their feet landed on the ground.

Given all the persons’ width and height, you are requested to find out the minimum cost for digging holes to make all the persons pass through the wall.

Input

There are several test cases. The first line of each case contains two numbers, N ($1 \leq N \leq 50000$) and K ($1 \leq K \leq 100$), indicating the number of people and the maximum holes allowed to dig. Then N lines followed, each contains two integers w_i and h_i ($1 \leq w_i, h_i \leq 1000000$), indicating the width and height of each person.

Output

Output one line for each test case, indicates the minimum cost.

Sample Input

```
2 1
1 100
100 1
2 2
1 100
100 1
```

Sample Output

```
10000
200
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