

Seabreak Path

Time Limit: 2.5s
Memory Limit: 1024MB

As you may or may not know, Seabreak Path is a very long path in Pokémon connecting Route 224 and Flower Paradise. It can be described as a row of N flowers, where the i^{th} flower has a color C_i and a beauty value B_i . Over the years some flowers may have lost its beauty due to people trampling the flowers and have a negative beauty value. Shaymin decides that due to all the flowers with negative beauty, it will only keep a contiguous subsequence of flowers where each flower increases (or decreases if it's negative) the beauty of Seabreak path by B_i . Since Shaymin wants to keep a wide variety of colors of flowers, the value of having X different colors is $M \cdot X^2$, where M is the Color Multiplier. In other words, the total beauty value of Seabreak Path, if it keeps the flowers from i to j , is:

$$\text{Beauty Value} = (B_i + B_{i+1} + \dots + B_j) + M \times (\text{Number of unique colors in } C_{i..j})^2$$

Help Shaymin determine the highest beauty value of Seabreak Path out of all the possible contiguous subsequence of flowers it can select. **Note that Shaymin must keep at least 1 flower.**

Input

The first line will consist of 2 integers, N and M , depicting the number of flowers in Seabreak Path currently and the Color Multiplier respectively.

The next N lines will contain 2 integers each, C_i and B_i , depicting the color and beauty value of the i -th flower.

Output

Output a single integer depicting the highest beauty value of Seabreak Path out of all the possible contiguous subsequence of flowers Shaymin can select.

Input Specifications

Subtask	Score	Bounds	Extra Details
1	3	$N \leq 500,000$ $C_i = 1$	In other words, all flowers will have the same color
2	10	$N \leq 100,000$ $C_i = i$	In other words, all flowers will have a different color
3	11	$N \leq 500,000$ $C_i = i$	In other words, all flowers will have a different color
4	35	$N \leq 100,000$	-
5	41	$N \leq 500,000$	-
For all test cases: $1 \leq C_i \leq N$ $1 \leq M \leq 1,000$ $-1,000,000,000 \leq B_i \leq 1,000,000,000$			

Sample Input 1	Sample Output 1
5 3 1 -2 2 4 1 -2 3 -4 4 -1	45

Sample 1 Explanation: If Shaymin selects all flowers from index 1 to 4 (0-indexed), then the beauty value of Seabreak Path will be $(4 + (-2) + (-4) + (-1)) + 3 * (4 \text{ unique colors})^2 = -3 + 48 = 45$. This is the maximum possible beauty value of Seabreak Path out of all possible consecutive subsequences.

Sample Input 2	Sample Output 2
5 3 1 -1000 2 -1000 1 -1000 3 -1000 4 -1000	-997

Sample 2 Explanation: Since Shaymin has to keep at least 1 flower, it can choose to keep any flower for the total beauty value of Seabreak Path to be -997.

Sample Input 3	Sample Output 3
13 6 1 -5 3 -2 8 12 3 -23 3 -29 5 5 4 -100 9 8 5 2 1 4 3 -71 4 -2 3 3	95