Problem F. Weight of Line

Time limit 3000 ms
Memory limit 256MB

Problem Description

There are n lines . The slope and y-intercept of i-th line is a_i and b_i, respectively. Moreover, each line has a weight c_i.

In this problem, we need to compute the score for some Xs. For a fixed X, The score is calculated as follow:

1. Substitute X into all the lines to obtain the corresponding y-values.
2. Sort all lines by y-values. If two y-values is the same, the line with the smaller slope should be placed before the one with the larger slope. If the slopes are also the same, the line with the larger y-intercept should be placed before the one with the smaller y-intercept
3. The score for this X is the sum of the index times the weight of each line. That is, $Score(X) = \sum_{i=1}^{n} i \times c_j$, where $L_1, L_2, \ldots, L_j, \ldots, L_n$ is the order after sorting.

For example, there are 2 line: $2x-5=y$ with weight 1 and $4x+3=y$ with weight 2. The score for $X=4$ is $1\times 1+2\times 2=5$ since $2\times 4-5=3,\ 4\times 4+3=19$ and then $3<19$; The score for $X=-10$ is $1\times 2+2\times 1$ since $2\times(-10)-5=-25,\ 4\times(-10)+3=-37$ and then $-25>-37$.

There are m values of X for which you need to calculate the score.

Input format

The first line contains two integer n ($1 \le n \le 3000$) and m ($1 \le m \le 10^6$), the number of lines and the number for Xs you need to calculate.

For the following n lines, the i-th line contains the slope a_i, the y-intercept b_i, and the weight c_i in one line ($-10^6 \le a_i, b_i, c_i \le 10^6$).

The for the following m lines, there is one single integer X ($-10^9 \le X \le 10^9$) in each line.

We guarantee there are no $\{i, j\}$ such that $\{a_i, b_i\} = \{a_j, b_j\}$

Output format

For each X, output a integer $Score(X)$. Remember that you need to answer the score following the input order.

Subtask score

Subtask	Score	Additional Constraints
1	60	$n \le 100;\ m \le 1000$
2	30	a_i is distinct for all i
3	10	No constraints

Sample

Sample Input 1

```
2 2
2 -5 1
4 3 2
4
-10
```

Sample Output 1

```
5
4
```

Sample Input 2

```
4 5
8 5 7
-6 -3 6
-2 4 2
4 -10 2
-2
1
-1
-1
-3
```

Sample Output 2

```
46
44
42
42
46
```

Notes