Problem B. Youber

Time limit 3000 ms
Memory limit 256MB

Problem Description

Youber, a transportation company, provides a platform for people who want to hitchhike within the city.

As the CEO of Youber, your goal is to maximize the company's rating. Specifically, you want to minimize the waiting time for passengers. To achieve this, you must allocate drivers effectively.

To simplify the problem, the city is modeled as a number line, where each location is represented as an integer. There are n drivers, each parked at positions $a_1, a_2, \ldots, a_n$, and m passengers waiting at positions $b_1, b_2, \ldots, b_m$. For the i-th driver, it takes $c_i \times |x - y| + d_i$ minutes to move from location x to y.

As the CEO, you know that each driver can pick up at most one passenger. The task is to determine the minimum time required to pick up all passengers if you assign the tasks to the drivers optimally.

You may assume that all tasks to drivers are assigned and executed simultaneously.

Input format

The first line contains two integers n ($1 \leq n \leq 10^5$) and m ($1 \leq m \leq n$), representing the number of drivers and passengers, respectively.

The next n lines each contain three integers a_i, c_i, and d_i ($-10^9 \leq a_i \leq 10^9; 1 \leq c_i \leq 10^9; 0 \leq d_i \leq 10^9$), which denote the starting location and moving parameters for the i-th driver.

The last line contains m integers $b_1, b_2, \ldots, b_m$ ($-10^9 \leq b_i \leq 10^9$), where b_i indicates the location where the i-th passenger is waiting.

Output format

Output one integer, the minimal time required to pick up all passengers.

Subtask score

Subtask	Score	Additional Constraints
1	10	$n \leq 10$
2	20	$b_i = 0\ \forall i$
3	30	$d_i = 0\ \forall i$
4	40	No constraint

Sample

Sample Input 1

```
4 2
-10 6 2
-8 10 2
-8 10 0
6 9 0
-10 9
```

Sample Output 1

```
27
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Notes