



Two Dishes

Cook Bitaro is participating in a cooking contest. In this contest, a contestant is required to cook two dishes: IOI Donburi and JOI Curry.

The cooking process of IOI Donburi consists of N steps. The i -th ($1 \leq i \leq N$) step takes exactly A_i minutes. Initially, he can perform only the first step. To perform the i -th ($2 \leq i \leq N$) step, he needs to have finished the $(i - 1)$ -th step.

The cooking process of JOI Curry consists of M steps. The j -th ($1 \leq j \leq M$) step takes exactly B_j minutes. Initially, he can perform only the first step. To perform the j -th ($2 \leq j \leq M$) step, he needs to have finished the $(j - 1)$ -th step.

The steps need concentration, so if he starts performing a step, he cannot perform other steps until he finishes it. Between steps, he may switch from a dish to the other dish. Once the contest starts, he cannot take a rest until he completes two dishes.

By the way, in this contest, a contestant is given **artistic scores** as follows.

- If he finish the i -th ($1 \leq i \leq N$) step of cooking IOI Donburi within S_i minutes from the start of the contest, he is given P_i points. Here, the value of P_i might be negative.
- If he finish the j -th ($1 \leq j \leq M$) step of cooking JOI Curry within T_j minutes from the start of the contest, he is given Q_j points. Here, the value of Q_j might be negative.

Bitaro wants to maximize his total artistic scores.

Write a program which, given the number of steps of cooking, the time they take, and the information of artistic scores, calculates the maximum total artistic scores Bitaro can gain.

Input

Read the following data from the standard input. All the values in the input are integers.

```
 $N$   $M$   
 $A_1$   $S_1$   $P_1$   
⋮  
 $A_N$   $S_N$   $P_N$   
 $B_1$   $T_1$   $Q_1$   
⋮  
 $B_M$   $T_M$   $Q_M$ 
```



Output

Write one line to the standard output. The output should contain the maximum total artistic scores Bitaro can gain.

Constraints

- $1 \leq N \leq 1\,000\,000$.
- $1 \leq M \leq 1\,000\,000$.
- $1 \leq A_i \leq 1\,000\,000\,000$ ($1 \leq i \leq N$).
- $1 \leq B_j \leq 1\,000\,000\,000$ ($1 \leq j \leq M$).
- $1 \leq S_i \leq 2\,000\,000\,000\,000\,000 = 2 \times 10^{15}$ ($1 \leq i \leq N$).
- $1 \leq T_j \leq 2\,000\,000\,000\,000\,000 = 2 \times 10^{15}$ ($1 \leq j \leq M$).
- $-1\,000\,000\,000 \leq P_i \leq 1\,000\,000\,000$ ($1 \leq i \leq N$).
- $-1\,000\,000\,000 \leq Q_j \leq 1\,000\,000\,000$ ($1 \leq j \leq M$).

Subtasks

1. (5 points) $N \leq 200\,000$, $M \leq 200\,000$, $S_1 = \dots = S_N = T_1 = \dots = T_M$.
2. (3 points) $N \leq 12$, $M \leq 12$, $P_i = 1$ ($1 \leq i \leq N$), $Q_j = 1$ ($1 \leq j \leq M$).
3. (7 points) $N \leq 2\,000$, $M \leq 2\,000$, $P_i = 1$ ($1 \leq i \leq N$), $Q_j = 1$ ($1 \leq j \leq M$).
4. (39 points) $N \leq 200\,000$, $M \leq 200\,000$, $P_i = 1$ ($1 \leq i \leq N$), $Q_j = 1$ ($1 \leq j \leq M$).
5. (11 points) $N \leq 200\,000$, $M \leq 200\,000$, $1 \leq P_i$ ($1 \leq i \leq N$), $1 \leq Q_j$ ($1 \leq j \leq M$).
6. (9 points) $1 \leq P_i$ ($1 \leq i \leq N$), $1 \leq Q_j$ ($1 \leq j \leq M$).
7. (17 points) $N \leq 200\,000$, $M \leq 200\,000$.
8. (9 points) No additional constraints.



Sample Input and Output

Sample Input 1	Sample Output 1
4 3 2 1 1 3 8 1 2 13 1 1 13 1 3 6 1 2 11 1 2 15 1	6

This sample input satisfies the constraints for Subtask 2.

In this sample input, Bitaro can perform the steps of cooking as follows, for example:

1. He performs the 1st step of JOI Curry. He finishes it 3 minutes after the contest starts. Since this is within 6 minutes, he gains 1 point.
2. He performs the 1st step of IOI Donburi. He finishes it 5 minutes after the contest starts. Since this is not within 1 minute, he gains no artistic scores.
3. He performs the 2nd step of IOI Donburi. He finishes it 8 minutes after the contest starts. Since this is within 8 minutes, he gains 1 point.
4. He performs the 2nd step of JOI Curry. He finishes it 10 minutes after the contest starts. Since this is within 11 minutes, he gains 1 point.
5. He performs the 3rd step of IOI Donburi. He finishes it 12 minutes after the contest starts. Since this is within 13 minutes, he gains 1 point.
6. He performs the 4th step of IOI Donburi. He finishes it 13 minutes after the contest starts. Since this is within 13 minutes, he gains 1 point.
7. He performs the 3rd step of JOI Curry. He finishes it 15 minutes after the contest starts. Since this is within 15 minutes, he gains 1 point.

Here the total artistic scores are 6 points. He cannot gain more than 6 points, so output 6.



Sample Input 2	Sample Output 2
5 7	63
16 73 16	
17 73 10	
20 73 1	
14 73 16	
18 73 10	
3 73 2	
10 73 7	
16 73 19	
12 73 4	
15 73 15	
20 73 14	
15 73 8	

This sample input satisfies the constraints for Subtask 1.



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Contest Day 2 – Two Dishes

Sample Input 3	Sample Output 3
9 11	99
86 565 58	
41 469 -95	
73 679 28	
91 585 -78	
17 513 -63	
48 878 -66	
66 901 59	
72 983 -70	
68 1432 11	
42 386 -87	
36 895 57	
100 164 10	
96 812 -6	
23 961 -66	
54 193 51	
37 709 82	
62 148 -36	
28 853 22	
15 44 53	
77 660 -19	