

# A.Flowwww

Description

Given a graph with  $N$  nodes and  $M$  directed edges with capacity.  
Find the maximum flow from node  $S$  to node  $T$ .

Input format

The first line contains four integers  $N, M, S, T$ .  
For the following  $M$  lines, the  $i^{th}$  line contains three integers  $u_i, v_i, c_i$ , denoting an edge from node  $u_i$  to node  $v_i$  with capacity  $c_i$ .

Output format

Output the maximum flow from node  $S$  to node  $T$ .

Samples

Sample Input

7 14 1 7  
1 2 5  
1 3 6  
1 4 5  
2 3 2  
2 5 3  
3 2 2  
3 4 3  
3 5 3  
3 6 7  
4 6 5  
5 6 1  
6 5 1  
5 7 8  
6 7 7

Sample Output

14

# B. Barefoot Cinderella

Description

And then you ask "Do you wanna dance, my barefoot cinderella?  
Don't need no slippers or party dress, the way you're lookin' right now is what I like the best."

$2N$  students at Turing Class are attending a ball. They are originally separated into  $N$  pairs according to their number, where student **1** and **2** is a pair, student **3** and **4** is a pair, ... student  $2N - 1$  and student  $2N$  is a pair.

Yet the students can choose to dance or not dance with their partner. In a single pair, if either of the two students choose "not to dance", the two students won't dance at the final stage; **And if both choose "dance", they can freely choose to dance or not at the final stage.**

For student  $i$ , the "dance" choice would give him  $c_i$  unhappiness, and "not to dance" choice would give him  $d_i$  unhappiness; And if he chooses "dance" but his partner chooses "not to dance", he would receive  $e_i$  unhappiness.

What's more, an undercurrent is working among the students. There are  $M$  unrequited lovelines which also influence the students' mood. For example, say, if *CC* loves *Lida Pu*, and

- If *CC* fails to dance with his partner at the final stage, but *Lida Pu* chooses "dance", *CC* would receive  $a_i$  unhappiness;
- If *CC* chooses "not to dance", but *Lida Pu* and his partner dance at the final stage, *CC* would receive  $b_i$  unhappiness.

As you see, the situation would be complicated if *CC* and *Lida Pu* are partners originally. But as the students' numbers are distributed by *FluffyBunny*, who is a SVIP in FFF group, cases like this would never happen.

Now you wonder the minimum sum of unhappiness among all possible situations.

**Input format**

The first line contains two integers  $N$  and  $M$ .

The next  $2N$  lines each contain three integers  $c_i, d_i, e_i$ .

The next  $M$  lines each contain four integers  $x, y, a_i, b_i$ , describing a one-way loveline where student  $x$  loves student  $y$  with parameters  $a_i, b_i$ .

**Output format**

Output one integer indicating the answer.

**Samples**

**Sample Input**

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

**Sample Output**

```
14
```

**Limitations & Hints**

For all test cases:

- $1 \leq N \leq 5000$
- $0 \leq M \leq 10000$
- $1 \leq a_i, b_i, c_i, d_i, e_i \leq 10^9$