

Problem E - Exchanging Potion

After one of those disasters with Cataclysmic Polynomials which wiped out town A, Raunak is on the run. He needs to get to his safe haven, town B, as soon as possible. Since most of his possessions got destroyed along with the town, he is running low on potion supplies.

Of course, travelling on the roads means he would need potions to fight monsters. He can accurately estimate the number of potions he needs to travel through each road safely.

As this is an emergency, Raunak called his partner, Jason, for help. Jason is currently in town C and is about to embark on a rescue mission to town D, where a similar disaster happened. Unfortunately, Jason only has so much extra potion to spare so careful planning is required.

Raunak and Jason are willing to meet up at any town along the way (including the start and end), as many times as necessary, and whenever they meet, they can redistribute their potions between them in any way.

Since monsters re-pop fairly quickly, if one travels the same road again later, one has to use the same amount of potion as traveling it the first time.

Input

The first line contains an integer T , denoting the number of test cases.

Each test case begins with a single line containing two integers n and m ($1 \leq n \leq 100,000$, $0 \leq m \leq 100,000$), denoting the number of towns and the number of roads respectively. Towns are labeled from 1 to n .

The next m lines describe the roads. On the i -th line, there are four integers, $1 \leq a_i, b_i \leq n$, $0 \leq c_i, d_i \leq 1000$, representing the towns at each end of the road, the number of potions Raunak needs to consume to travel the road safely, and the number of potions Jason needs to travel the road safely. Roads are bidirectional.

The next line contains four integers, $1 \leq A, B, C, D \leq n$, representing, in order, the start and end towns for Raunak, and the start and end towns for Jason.

The last line contains two integers, $0 \leq P, Q \leq 10^7$, representing the number of potions Raunak and Jason each have to start.

Output

For each test case, output the answer in a single line. If it is possible for both Raunak and Jason to reach their respective destinations without running out of potions at any time while traveling on a road, output the minimum total number of potions consumed. If it is not possible, output the word "impossible".

Sample Input

```
2
8 8
1 2 2 1
2 5 2 1
5 6 3 1
6 7 100 10
2 3 1 1
3 4 1 1
4 8 10 9
8 6 100 10
1 6 4 8
2 100
5 5
1 2 1 10
1 3 10 1
2 4 10 1
3 4 1 10
4 5 1 1
1 5 5 2
1 1
```

Sample Output

```
20
impossible
```
