TRAVELLING DILEMMA

Problem statement:

A graph of a country is given. There are N cities and M number of roads. Each road connect two cities. Now you are given two modes of traveling from one city to another.

-> By using public transportation.

-> By using your own car.(which you can use **only once** between any two cities on your way). You may or maynot use this mode of travel.

The country's map is given as a graph with N nodes (labeled from 1 to N), and the initial station is node S and the destination is node D. There are two undirected edges between each of the given nodes:

-> one denotes the cost of a path using public transportation, r.

-> and the other denotes the cost of a path using your own car, t.

Now you have to find the most optimal way (in terms of time of cost) from S to D with or without using your entitled car ride. Output the minimized cost of your travel from the source to the destination.

Input:

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

For each test case:

The first line contains two space-separated integers, N (the number of cities in the map) and M (the number of roads in the map), respectively.

The next M lines each have four space separated integers c1, c2, r, and t, respectively; c1 and c2 denote two cities connected by a road, r is the cost for using the public transportation, and t is the cost of taking your own car on the road.

The last line has two space-separated integers, S (Starting city) and D (Destination), respectively.

Constraints:

$1 \le T \le 10$

$2 \le N \le 3000$

$1 \le M \le N \times (N-1)$

$1 \le x, y, S, D \le N$

$1 \le r, t \le 500$

Output:

For each test case, print a single line with minimum travel cost. If the destination (D) is unreachable from the source node (S), print –1.

Sample input:

1

4 5

1 2 6 5

1 3 4 5

2 3 6 1

2 4 3 4

3 4 5 7

1 4

Sample output:

8