F Funny Car Racing

Input: Standard Input
Output: Standard Output

There is a funny car racing in a city with *n* junctions and *m* directed roads.

The funny part is: each road is open and closed periodically. Each road is associate with two integers (*a*, *b*), that means the road will be open for *a* seconds, then closed for *b* seconds, then open for *a* seconds... All these start from the beginning of the race. You must enter a road when it's open, and leave it before it's closed again.

Your goal is to drive from junction *s* and arrive at junction *t* as early as possible. Note that you can wait at a junction even if all its adjacent roads are closed.

Input

There will be at most 30 test cases. The first line of each case contains four integers n, m, s, t (1<=n<=300, 1<=m<=50,000, 1<=s,t<=n). Each of the next m lines contains five integers u, v, a, b, t (1<=u,v<=n, 1<=a,b,t<=10^5), that means there is a road starting from junction u ending with junction v. It's open for a seconds, then closed for b seconds (and so on). The time needed to pass this road, by your car, is t. No road connects the same junction, but a pair of junctions could be connected by more than one road.

Output

For each test case, print the shortest time, in seconds. It's always possible to arrive at t from s.

Sample Input	Output for Sample Input
3 2 1 3 1 2 5 6 3 2 3 7 7 6 3 2 1 3 1 2 5 6 3 2 3 9 5 6	Case 1: 20 Case 2: 9

Problemsetter: Rujia Liu, Special Thanks: Md. Mahbubul Hasan