Problem D - Dan and Linton

It's politics time at PokeCity as we approach the PokeGov annual elections. As usual, PokeCity residents are finding themselves divided between two local candidates, Dan and Linton. The major issue in PokeCity this year is that of transportation, as residents are finding the roads flooded due to the excessive amount of traffic from Uber and Lyft. Dan, a local businessman, argues that the only way to address the traffic issue is to ban public use of cars and give Uber exclusive use of the roads. Linton, on the other hand, wishes to restructure the road system of PokeCity entirely, and improve traffic so that everyone can use the road fairly.

The core of Linton's plan involves finding problematic roads in PokeCity and renovating them first. To be precise, PokeCity has n intersections labelled from 1 to n, where roads of PokeCity run between the intersections. The roads are directed, and roads from intersection u to v does not guarantee a road going from v to u. Recent research have found that traffic congestion originate from two particular intersections of PokeCity: intersections x and y (given in input). In order to address the traffic problem with the smallest amount of resources possible, Linton wants to find a set S of roads in PokeCity such that:

1. x is reachable from y on roads in S.
2. y is reachable from x on roads in S.
3. The size of S is as small as possible.

Since you are an aide on Linton's campaign, please help Linton find this set of roads! To make things easier, only the size of the set S is required as output.

Input

The first line will have an integer T, denoting the number of test cases. The first line of each test case will contain four integers n, m, x, and y ($1 \leq n \leq 100$, $1 \leq m \leq n(n-1)$, $1 \leq x, y \leq n$). m lines follow, where each line has two integers u and v, indicating that the graph G has the directed edge (u, v).

Output

The number of edges in S, or -1 if no such S exists.

Sample Input

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1
4 5 1 3
1 2
2 3
1 4
4 3
3 1
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Sample Output

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3
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