Quantum Schmovements

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

After seeing their rivalry, Timothy has challenged Thomas and Waymo into the hardest team bonding activity eve. Rules are as follows:

1. The game is to be played on a graph with N nodes and M edges.

2. On each node there exists exactly one coin which can be picked up by reaching that node.

3. Each edge connects two nodes u_i and v_i and has a label l_i.

4. The i'th edge can only be crossed (in either direction) by a person if another person is standing on node l_i. So imagine a pressure plate on node l_i that must be stood on for the entire time a person is trying to cross.

If Thomas starts on node t and Waymo starts on node w, what is the maximum number of coins they can obtain after any finite amount of moves?

Input

You will have to answer multiple testcases. The first line contains an integer T, denoting the number of testcases ($1 \leq T \leq 10^4$).

The first line of each testcase contains two integers N and M, ($1 \leq N \leq 2 \cdot 10^5$), ($0 \leq M \leq 5 \cdot 10^5$)

The following line contains two integers t and w ($1 \leq t, w \leq N$), denoting the nodes that Thomas and Waymo start on respectively.

The next M lines each contain 3 integers u, v, and l ($1 \leq u \neq v, l, \leq N$) denoting an edge connected nodes u and v with label l.

It is guaranteed the graph does not have any multiedges.

It is also guaranteed the sum of N does not exceed $2 \cdot 10^5$ and the sum of M does not exceed $5 \cdot 10^5$.

For tests $1 - 3$, ($1 \leq N \leq 16$) and the sum of N will not exceed 50.

For tests $4 - 10$, the sum of N will not exceed 3366.

The remaining test cases do not satisfy any additional constraints.

Output

For each testcase, output 1 integer per line, the maximum number of coins Thomas and Waymo can collect by moving zero or more times.

Example

standard input	standard output
2	3
5 5	2
1 2	
1 2 2	
3 2 1	
1 3 2	
2 4 4	
4 5 5	
5 5	
4 5	
1 2 2	
3 2 1	
1 3 2	
2 4 4	
4 5 5	

Note

In the first test case, Thomas can collect the coin on node 1 and Waymo can collect the coin on node 2. Then Thomas can move from node $1 \to 3$ and collect the coin on node 3. It is impossible to collect any more coins, so the answer is 3.

In the second test case, Thomas can collect the coin on node 4 and Waymo can collect the coin on node 5. Note that Thomas cannot move from node 4 to node 2, since Waymo is not on node 4 to satisfy the $l = 4$ constraint. By the same logic, Waymo cannot move to node 4. Thomas also has the choice to move to node 5, but there is nothing gained from such a move. The final answer is 2.

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Idea: Timothy

Preparation: Timothy, 3366

Occurrences: Novice 11, Intermediate 9, Advanced 5