

# Problem I

## Disjoint uni-color paths

Input File: *pi.in*

Time Limit: *2 Seconds*

A *social network* is a graph  $G = (V, E)$  in which each node represents an actor and there is a link between two nodes if they have some kind of relation. For a *multi-relations social network*, there are different kinds of relations, and it can be described by an edge-colored graph. That is, each edge is labeled by a color number—a nonnegative integer at most  $c - 1$ . Note that there may be **several edges of the same or different colors between a pair of nodes**.

It is an important issue to compute the maximum number of disjoint paths between two nodes when analyzing a social network. Let  $s, t \in V$ . A path with endpoints  $s, t$  is called an *st*-path. Two *st*-paths are *disjoint* if they have no common internal node, and a set of *st*-paths are disjoint if they are mutually disjoint. A path is of uni-color if all the edges of the path have the same color. The length of a path is the number of edges in the path. For social networks, short paths are much more important, and therefore only paths of length at most three will be considered in this problem. Formally, your task is to write a program to solve the following problem.

Given an edge-colored graph  $G$  and two nodes  $s, t$ , find the maximum number of disjoint uni-color *st*-paths of length at most three.

## Technical Specification

In this problem, graphs are undirected. For each instance:

1. the node set  $V = \{i | 0 \leq i \leq n - 1\}$  and  $2 \leq n \leq 500$ ;
2.  $s = 0$  and  $t = n - 1$ ;
3. the number of color is at most 10; and
4. the number of edges  $m$  is at most 50000.

## Input File Format

The first line of the input file contains an integer, denoting the number of test cases to follow. For each test case, the first line contains two integers  $n$  and  $m$ . In the next  $m$  lines, each line contains three integers separated by a space, which are the two endpoints and the color of an edge (in this order).

## Output Format

For each test case, output the solution in one line.

## Sample Input

2  
5 10  
0 4 0  
4 0 0  
0 4 0  
0 4 1  
0 1 2  
4 1 2  
2 0 3  
0 3 2  
2 3 3  
3 4 3  
6 11  
0 1 1  
1 2 1  
2 3 1  
3 5 1  
0 3 2  
3 4 2  
4 5 2  
2 5 7  
5 2 7  
2 5 7  
3 4 8

### Output for the Sample Input

6  
1