ETH Zurich
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HS 2014
Exercise Sheet 8

ACM Programming Challenges Lab

Exercise 1 – *Backcountry Skiing*

Description Winter is coming and Paul wants to go backcountry skiing with his friends. However, not all of his friends have the same skill-level, so somehow Paul has to tell them in advance how difficult the tour will be. Paul has a map, with lodges, (unique, undirected) paths between them and the difficulty of each path. Moreover, he knows the lodge where they want to start and the destination lodge. A tour is a sequence of lodges, such that consecutive lodges are connected by a path. The difficulty of a tour is the maxium of the difficulties of the paths it contains. Paul wants to compute the difficulty of the easiest tour from start to end and asks You to help him.

Input The first line of the input contains c ($1 \leq c \leq 100$), the number of test cases. Each test case starts with one line containing two numbers n ($1 \leq n \leq 1K$), the number of lodges and m ($n - 1 \leq m$), the number of paths. The lodges are identified by nonnegative integers and every lodge is reachable from every lodge. The next line contains two integers s, t ($0 \leq s, t < n$) representing the start lodge and the end lodge. The subsequent m lines contain three integers a_i, b_i, c_i ($0 \leq a_i, b_i < n$ and $0 \leq c_i \leq 1M$), indicating that lodge a_i is connected to lodge b_i with a path of difficulty c_i.

Output For each test case you should output a line containing the minimum difficulty of all tours from s to t.

Sample input

```
2
2 1
0 1
0 1 2
6 7
0 3
0 1 3
0 5 1
1 2 0
1 3 2
2 3 6
3 4 4
3 5 4
```

Sample output

```
2
3
```