All Pairs Shortest Path

Problem ID: allpairspath
CPU Time limit: 2 seconds
Memory limit: 1024 MB
Difficulty: 5.4

Author: Per Austrin
Source: KTH CSC Popup 2005

Input

The input consists of several test cases. Each test case starts with a line with three non-negative integers, $1 \leq n \leq 150$, $0 \leq m \leq 5000$ and $1 \leq q \leq 1000$, separated by single single spaces, where n is the numbers of nodes in the graph, m the number of edges and q the number of queries. Nodes are numbered from 0 to $n-1$. Then follow m lines, each line consisting of three (space-separated) integers u, v and w indicating that there is an edge from u to v in the graph with weight $-1000 \leq w \leq 1000$. Then follow q lines of queries, each consisting of two node numbers u and v (separated by a space), asking for the minimum distance from node u to node v.

Input will be terminated by a line containing `0 0 0`, this line should *not* be processed.

Output

For each query, output a single line containing the minimum distance from node u to v, or the word `Impossible` if there is no path from u to v, or `-Infinity` if there are arbitrarily short paths from u to v. Print a blank line after each test case.

Sample Input 1

```
4 3 4
0 1 2
1 2 2
3 3 1
0 2
1 2
3 0
3 3
2 1 2
0 1 100
0 1
1 0
0 0 0
```

Sample Output 1

```
4
2
Impossible
0

100
Impossible
```