

# Minimum Spanning Tree

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## Input

The input consists of several test cases. Each test case starts with a line with two non-negative integers,  $1 \leq n \leq 20\,000$  and  $0 \leq m \leq 30\,000$ , separated by a single space, where  $n$  is the numbers of nodes in the graph and  $m$  is the number of edges. 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 between  $u$  and  $v$  in the graph with weight  $-20\,000 \leq w \leq 20\,000$ . Edges are undirected.

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

## Output

For every test case, if there is no minimum spanning tree, then output the word `Impossible` on a line of its own. If there is a minimum spanning tree, then you first output a single line with the cost of a minimum spanning tree. On the following lines you output the edges of a minimum spanning tree. Each edge is represented on a separate line as a pair of numbers,  $x$  and  $y$  (the endpoints of the edge) separated by a space. The edges should be output so that  $x < y$  and should be listed in the lexicographic order on pairs of integers.

If there is more than one minimum spanning tree for a given graph, then any one of them will do.

### Sample Input 1

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

### Sample Output 1

```
3
0 1
1 2
2 3
100
0 1
Impossible
```

