

Problem I. Minimum Diameter Spanning Tree

Input file: *standard input*
Output file: *standard output*
Time limit: 5 seconds
Memory limit: 1024 mebibytes

You are given a simple connected undirected weighted graph G with N nodes and M edges. Each node is numbered 1 through N .

A spanning tree of G is a subgraph of G , which is a tree and connects all the vertices of G . The diameter of a tree is the length of the longest path among the paths between any two nodes in the tree. A minimum diameter spanning tree of G is a spanning tree of G that has a minimum diameter.

Write a program that finds any minimum diameter spanning tree.

Input

The first line of the input contains two integers N ($2 \leq N \leq 500$) and M ($N - 1 \leq M \leq \frac{N(N-1)}{2}$).

Then M lines follow: The i ($1 \leq i \leq M$)-th line contains three space-separated integers u_i , v_i and l_i ($1 \leq u_i, v_i \leq N$, $1 \leq l_i \leq 10^9$); it describes a bidirectional edge connecting vertex u_i and vertex v_i with length l_i .

It is guaranteed that the given graph doesn't have any loops or multiple edges, and the graph is connected.

Output

In the first line, print the diameter of the minimum diameter spanning tree of G .

In the next $N - 1$ lines, print the description of the edges in the minimum diameter spanning tree of G . The j ($1 \leq j \leq N - 1$)-th line should contain two space-separated integers x_j and y_j ($1 \leq x_j, y_j \leq N$); it describes a bidirectional edge connecting vertex x_j and y_j .

If there are several possible answers, print any one of them.

Examples

standard input	standard output
3 3 1 2 1 2 3 1 3 1 1	2 1 2 3 1
6 7 1 2 10 2 3 20 1 3 30 3 4 1000 4 5 30 5 6 20 4 6 10	1060 3 4 6 4 5 6 2 3 1 2