INOI, Iranian National Olympiad in Informatics
Online Contest, April 2008
Second Exam

Odd Cycle

Time limit for each test: 4000 miliseconds
Memory limit: 64 megabytes

A simple weighted undirected graph G is given with n vertices and e edges. You must find the least-weighted cycle with an odd length. A weight of a cycle is defined to be the sum of the weights of each of its consisting edges. The length of a cycle is defined to be the number of its edges. Notice that such a cycle is not necessarily unique; in case of multiple solutions, any of them would be acceptable.

Problem

Write a program that

- Reads the specifications of the graph from the *Standard Input*,
- Finds the least weighted cycle with an odd length
- Prints such a cycle in the *Standard Output*.

Input Sepcification

In the first line of the input, two integers, n and e, are given. In each of the next e lines three positive integers are given describing an edge; the first two being the numbers of the endpoints and the third being the length.

Output Specification

In the first line output, two integers should be written. The first should be the weight of the cycle found and the second should be its length. In the second line, the cycle's vertices should be written in the order they occur in the cycle[1]. If no solution exists (no cycle with an odd length can be found) you must write -1 in the first and only line of the output.

Restrictions

- $1 \leq n \leq 1000$
- $1 \leq e \leq 20,000$
- The weight of an edge doesn't exceed $1,000,000$.
- The grade of the tests of this problem can differ.
- At least 50% of the grade is related to tests where n doesn't exceed 300.

[1] The first vertex and the direction of iteration is not important.

Example

Standard Input	Standard Output
4 5 1 2 2 2 3 2 3 4 2 4 1 2 2 4 1	5 3 2 4 1