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

Water Pipes

Time limit for each test: 2500 miliseconds
Memory limit: 400 megabytes

There are n cities in a country, and there are some pipes between the cities. Each pipe has a given length. There are two cities s and t each with a big tank of water. There are x and y liters of water in the tanks of cities s and t respectively. We know that the structure of the pipes is such that the water of each tank can be delivered to every city. The i-th city in this country needs f_i liters of water (this includes cities s and t which need f_s and f_t respectively). We also know

$$\sum_{i=1}^{n} f_i = x + y$$

We want to pump the water through the pipes such that each city receives the water that it needs (note that some pipes may be left free). We know that the cost of pumping one liter of water through a pipe is equal to the length of that pipe.

Problem

Write a program that

- reads the information of the country from the *Standard Input*,
- finds a minimum cost way of pumping to deliver required amount of water to each city,
- writes the minimum cost and a way to do that in the *Standard Output*.

Input Sepcification

The first line of input contains n, e (number of pipes), s, x, t and y.

The second line contains n numbers $f_1, f_2, \ldots, f_n$.

On each of the next e lines, there are three numbers u, v and c indicating that there is a pipe with length c between cities u and v.

Numbers on each line are separated by space.

Output Specification

The first line of output contains the minimum cost for delivering required water to all cities.

In each of the following lines, write a pipe that carries nonzero amount of flow; if l liters of water is carried by a pipe from city u to v, you must write u, v and l in order in one line. You can write the pipes that carry nonzero amount of flow in any order you want.

Restrictions

- $2 \leq n \leq 5000$.
- $n - 1 \leq e \leq 400000$.
- $0 \leq f_i \leq 100000$.
- Length of each pipe is at least 1 and at most 100000.

- All the pipes can be used in both directions!
- There exists at most one pipe between any two cities.
- All the numbers in the input are nonnegative integers.

Example

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