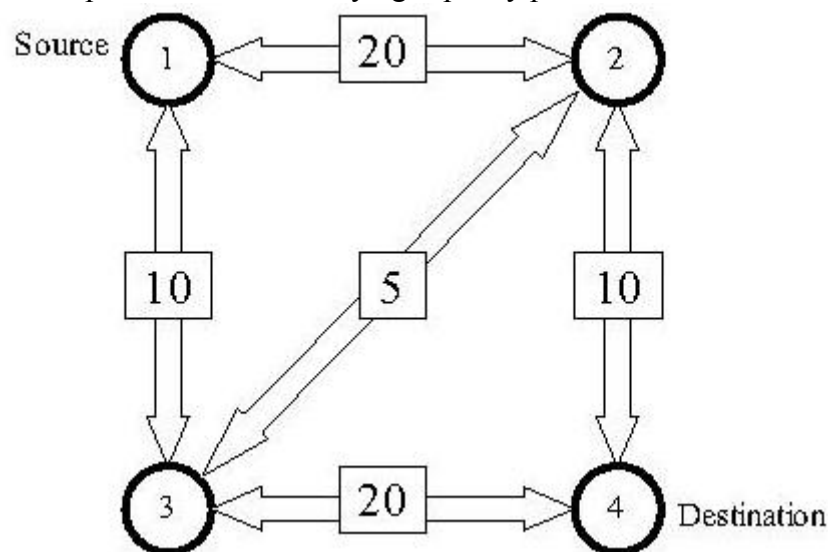


## Internet Bandwidth

On the Internet, machines (nodes) are richly interconnected, and many paths may exist between a given pair of nodes. The total message-carrying capacity (bandwidth) between two given nodes is the maximal amount of data per unit time that can be transmitted from one node to the other. Using a technique called packet switching, this data can be transmitted along several paths at the same time.

For example, the following figure shows a network with four nodes (shown as circles), with a total of five connections among them. Every connection is labeled with a bandwidth that represents its data-carrying capacity per unit time.



In our example, the bandwidth between node 1 and node 4 is 25, which might be thought of as the sum of the bandwidths 10 along the path 1-2-4, 10 along the path 1-3-4, and 5 along the path 1-2-3-4. No other combination of paths between nodes 1 and 4 provides a larger bandwidth.

You must write a program that computes the bandwidth between two given nodes in a network, given the individual bandwidths of all the connections in the network. In this problem, assume that the bandwidth of a connection is always the same in both directions (which is not necessarily true in the real world).

## Input

The input file contains descriptions of several networks. Every description starts with a line containing a single integer  $n$  ( $2 \leq n \leq 100$ ), which is the number of nodes in the network. The nodes are numbered from 1 to  $n$ . The next line contains three numbers  $s$ ,  $t$ , and  $c$ . The numbers  $s$  and  $t$  are the source and destination nodes, and the number  $c$  is the total number of connections in the network. Following this are  $c$  lines describing the connections. Each of these lines contains three integers: the first two are the numbers of the connected nodes, and the third number is the bandwidth of the connection. The bandwidth is a non-negative number not greater than 1000.

There might be more than one connection between a pair of nodes, but a node cannot be connected to itself. All connections are bi-directional, i.e. data can be transmitted in both directions along a connection, but the sum of the amount of data transmitted in both directions must be less than the bandwidth.

A line containing the number 0 follows the last network description, and terminates the input.

## Output

For each network description, first print the number of the network. Then print the total bandwidth between the source node  $s$  and the destination node  $t$ , following the format of the sample output. Print a blank line after each test case.

| Sample Input   | Output for the Sample Input       |
|--|-----------------------------------|
| 4<br>1 4 5<br>1 2 20<br>1 3 10<br>2 3 5<br>2 4 10<br>3 4 20<br>0 | Network 1<br>The bandwidth is 25. |