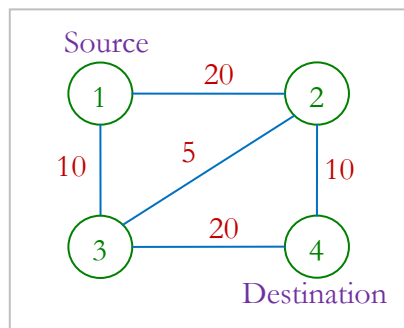


## 1153 - Internet Bandwidth

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

Input starts with an integer  $T$  ( $\leq 30$ ), denoting the number of test cases.

Every description starts with a line containing an 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  $c$  ( $c \leq 5000$ ,  $s \neq t$ ) 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.

## Output

For each case of input, print the case number and the total bandwidth between the source node  $s$  and the destination node  $t$ .

Sample Input	Output for Sample Input
2 4 1 4 5 1 2 20 1 3 10 2 3 5 2 4 10 3 4 20 4 1 4 2 1 4 20 1 4 20	Case 1: 25 Case 2: 40