Consider the problem of selecting a set $T$ of high-speed lines for connecting $N$ computer sites, from a universe of $M$ high-speed lines each connecting a pair of computer sites. Each high-speed line has a given monthly cost, and the objective is to minimize the total cost of connecting the $N$ computer sites, where the total cost is the sum of the cost of each line included in set $T$. Consider further that this problem has been solved earlier for the set of $N$ computer sites and $M$ high-speed lines, but that a few $K$ new high-speed lines have recently become available.

Your objective is to compute the new set $T^{\prime}$ that may yield a cost lower than the original set $T$, due to the additional $K$ new high-speed lines and when $M+K$ high-speed lines are available.

## Input

The input will contain several test cases, each of them as described below. Consecutive test cases are separated by a single blank line.

The input is organized as follows:

- A line containing the number $N$ of computer sites, with $1 \leq N \leq 1000000$, and where each computer site is referred by a number $i, 1 \leq i \leq N$.
- The set $T$ of previously chosen high-speed lines, consisting of $N-1$ lines, each describing a high-speed line, and containing the numbers of the two computer sites the line connects and the monthly cost of using this line. All costs are integers.
- A line containing the number $K$ of new additional lines, $1 \leq K \leq 10$.
- $K$ lines, each describing a new high-speed line, and containing the numbers of the two computer sites the line connects and the monthly cost of using this line. All costs are integers.
- A line containing the number $M$ of originally available high-speed lines, with $N-1 \leq M \leq$ $N(N-1) / 2$.
- $M$ lines, each describing one of the originally available high-speed lines, and containing the numbers of the two computer sites the line connects and the monthly cost of using this line. All costs are integers.


## Output

For each test case, the output must follow the description below. The outputs of two consecutive cases will be separated by a blank line.

The output file must have one line containing the original cost of connecting the $N$ computer sites with $M$ high-speed lines and another line containing the new cost of connecting the $N$ computer sites with $M+K$ high-speed lines. If the new cost equals the original cost, the same value is written twice.

## Sample Input

5
125
135
145
55
1
232
6
125
135
145
155
348
458

## Sample Output

