Problem 5

Distance Between Towns

In this problem, a salesperson wishes to travel between two towns. Towns are joined together by roads. Roads have a certain distance. Not all towns are connected directly to the other towns. It may be necessary to travel through other towns to get to a desired town. The salesperson wishes to travel the shortest distance between the two towns.

A map of the towns can be depicted as follows:
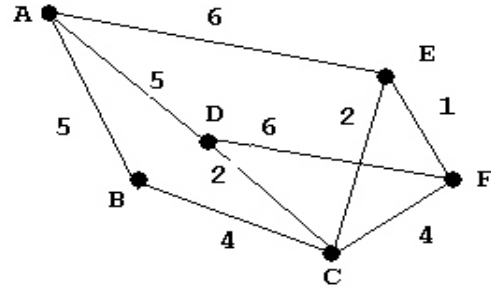
The input file (**DATA51.txt** for the first submission and **DATA52.txt** for the second submission) will contain information about the map of the towns and then information about the towns the salesperson wishes to travel to. The first line of the file will contain N, the number of roads on the map, $1 <= N <= 30$. The next N lines will contain information about the roads, the starting town letter *(A - M)*, the ending town letter *(A - M)*, a space and then D, an integer, the distance between these towns, $1 <= D <= 50$. The ending town letter will never be the same as the starting town letter. After these lines there will be five lines of data about the towns the salesperson wishes to travel to. Each of these five lines contains two letters, the starting town and the ending town.

The output file (**OUT51.txt** for the first submission and **OUT52.txt** for the second submission) will contain the shortest distance between the five sets of towns the salesperson wishes to travel to.

Sample Input	Sample Output
9	7
AB 5	7
AD 5	6
EA 6	4
BC 4	7
CD 2	
EC 2	
CF 4	
DF 6	
EF 1	
AC	
FB	
BD	
ED	
AF	