

# CCC '09 S4 - Shop and Ship

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In Doubleclickland, there are  $N$  cities ( $N \leq 5\,000$ ), with each city having various trade routes to other cities. In total, there are  $T$  trade routes ( $0 \leq T \leq 25\,000\,000$ ) in Doubleclickland. For each trade route between two cities  $x$  and  $y$ , there is a transportation cost  $C(x, y)$  to ship between the cities, where  $C(x, y) > 0$ ,  $C(x, y) \leq 10\,000$  and  $C(x, y) = C(y, x)$ . Out of the  $N$  cities,  $K$  ( $1 \leq K \leq N$ ) of these cities have stores with really nice pencils that can be purchased on-line. The price for each pencil in city  $x$  is  $P_x$  ( $0 \leq P_x \leq 10\,000$ ).

Find the minimal price to purchase one pencil on-line and have it shipped to a particular city  $D$  ( $1 \leq D \leq N$ ) using the cheapest possible trade-route sequence. Notice that it is possible to purchase the pencil in city  $D$  and thus require no shipping charges.

## Input Specification

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The first line of input contains  $N$ , the number of cities. You can assume the cities are numbered from 1 to  $N$ . The second line of input contains  $T$ , the number of trade routes. The next  $T$  lines each contain 3 integers,  $x$ ,  $y$ ,  $C(x, y)$ , to denote the cost of using the trade route between cities  $x$  and  $y$  is  $C(x, y)$ . The next line contains the integer  $K$ , the number of cities with a store that sells really nice pencils on-line. The next  $K$  lines contains two integers,  $z$  and  $P_z$ , to denote that the cost of a pencil in city  $z$  is  $P_z$ . The last line contains the integer  $D$ , the destination city.

## Output Specification

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Output the minimal total cost of purchasing a pencil on-line and shipping it to city  $D$ .

## Sample Input

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3
3
1 2 4
2 3 2
1 3 3
3
1 14
2 8
3 3
1
```

## Sample Output

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CCC problem statements in large part from the [PEG OJ](#)