

Travelling Cost

The government of **Spoj_land** has selected number of locations in the city for road construction and numbered those locations as $0, 1, 2, 3, \dots, 5000, 1, 2, 3, \dots, 500$. Now, they want to construct roads between various pairs of location (say AA and BB) and have fixed the cost for travelling between those pair of locations from either end as WW unit.

Now, Rohit being a curious boy wants to find the minimum cost for travelling from location UU (source) to QQ number of other locations (destination).

Input Format

- First line contains NN , the number of roads that government constructed.
- Next NN line contains three integers AA , BB and WW . AA and BB represent the locations between which the road was constructed and WW is the fixed cost for travelling from AA to BB or from BB to AA .
- Next line contains an integer UU from where Rohit wants to travel to other locations.
- Next line contains QQ , the number of queries (finding cost) that he wants to perform.
- Next QQ lines contain an integer VV (destination) for which minimum cost is to be found from UU .

Constraints

- $1 \leq N \leq 5001 \leq N \leq 500$
- $0 \leq A, B \leq 5000 \leq A, B \leq 500$
- $1 \leq W \leq 1001 \leq W \leq 100$
- $0 \leq U, V \leq 5000 \leq U, V \leq 500$
- $1 \leq Q \leq 5001 \leq Q \leq 500$

Output Format

- Print the required answer in each line.
- If he can't travel from location UU to VV by any means then, print '**NO PATH**' without quotes.

Sample test

inputcopy

7 0 1 4 0 3 8 1 4 1 1 2 2 4 2 3 2 5 3 3 4 2 0 4 1 4 5 7

outputcopy

4 5 9 NO PATH

Explanation for sample test

Query #1.

- $0 \rightarrow 1$: cost = 4

Query #2.

- $0 \rightarrow 4 = 0 \rightarrow 1 \rightarrow 4$: cost = $4 + 1 = 5$

Query #3.

- $0 \rightarrow 5 = 0 \rightarrow 1 \rightarrow 2 \rightarrow 5$: cost = $4 + 2 + 3 = 9$

Query #4.

- $0 \rightarrow 7$ = no path exists between 0 and 7