

TC2017 Análisis y Diseño de Algoritmos

Momento 2H – Floyd : City of Blinding Lights (hackerrank)

Ing. Luis Humberto González G / Ing. Román Martínez M.

Forma de Trabajo: Individual.

Forma de Entrega: Subir a Blackboard el código de tu solución y un archivo con la pantalla de Aceptado en la plataforma de hackerrank

*El presente problema pertenece a hackerrank Online Judge (<https://www.hackerrank.com/>)*

## Floyd : City of Blinding Lights

URL: <https://www.hackerrank.com/challenges/floyd-city-of-blinding-lights>

Given a directed, weighted graph, consisting of  $N$  nodes and there are edges, of specified length between some of them in the graph.

Given  $Q$  questions, inquiring the shortest distance between a queried pair of nodes in the graph.

Answer all these questions as quickly as possible!

### Input Format

First line has two integers  $N$ , denoting the number of nodes in the graph and  $M$ , denoting the number of edges in the graph.

The next  $M$  lines each consist of three space separated integers  $x\ y\ r$ , where  $x$  and  $y$  denote the two nodes between which the *directed* edge ( $x \rightarrow y$ ) exists,  $r$  denotes the length of the edge between the corresponding edges.

The next line contains a single integer  $Q$ , denoting number of queries.

The next  $Q$  lines each, contain two space separated integers  $a$  and  $b$ , denoting the node numbers specified according to the question.

### Constraints

$$2 \leq N \leq 400$$

$$1 \leq M \leq \frac{N \times (N-1)}{2}$$

$$1 \leq Q \leq 10^5$$

$$1 \leq x, y \leq N$$

$$1 \leq r \leq 350$$

**If there are edges between the same pair of nodes with different weights, the last one (most recent) is to be considered as the only edge between them.**

### Output format

Print **Q** lines, each containing a single integer, specifying the shortest distance between the nodes specified for that query in the input.  
If the distance between a pair of nodes is infinite (not reachable), then print **-1** as the shortest distance.

### Sample Input

```
4 5
1 2 5
1 4 24
2 4 6
3 4 4
3 2 7
3
1 2
3 1
1 4
```

### Sample Input

```
5
-1
11
```