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## Smallest lexicographic path

P76480\_en

Divuitè Concurs de Programació de la UPC - Final (2020-10-07)

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Given a DAG  $G$  with  $n$  vertices and  $m$  arcs with *unique* positive integer labels on the arcs, find the smallest lexicographic path (considering the labels on the arcs, not the numbers of the vertices) between 0 and  $n - 1$ .

A DAG (directed acyclic graph) is a directed graph without cycles. Given two sequences of integers  $a_1, \dots, a_k$  and  $b_1, \dots, b_l$ , we say  $a$  is lexicographically smaller than  $b$  when, for the first  $i$  such that  $a_i \neq b_i$ , we have that  $a_i < b_i$ , or when  $k < l$  in case that no such  $i$  exists.

### Input

Input consists of several cases. Every case consists of  $n$  and  $m$ , followed by  $m$  triples  $u, v, w$  meaning that there is an arc from  $u$  to  $v$  with label  $w$ . Assume  $2 \leq n \leq 10^5$ ,  $0 \leq m \leq 5n$ ,  $1 \leq w \leq 10^9$ , that vertices are numbered between 0 and  $n - 1$ ,  $u \neq v$ , and that there is no more than one arc from  $u$  to  $v$ . All  $w$  are distinct in every given case.

### Output

For every case, print the smallest lexicographic path between 0 and  $n - 1$ . Print the labels separated by spaces. If there is no path between 0 and  $n - 1$ , print  $-1$ .

#### Sample input

```
3 3
0 1 100
1 2 300
0 2 200

4 5
2 3 50
1 2 20
0 1 10
1 3 30
0 2 40

2 1
1 0 1000000000
```

#### Sample output

```
100 300
10 20 50
-1
```

### Problem information

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