Smallest lexicographic path **P76480_en**

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

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 $a_1, \ldots, a_k$ and $b_1, \ldots, b_l$, 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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Generation : 2024-05-02 23:20:23