Shortest path P81453_en

Write a program that, given a directed graph with n vertices (numbered from 0 to $n-1$) and m arcs, prints the shortest way to go from 0 to $n-1$.

Input

Input consists of several cases. Every case begins with n and m. Follow m pairs x y to indicate an arc from x to y. There are no repeated arcs nor of the kind x x. There is always a path between 0 and $n-1$. You can assume $2 \leq n \leq 10^4$ and $1 \leq m \leq 5n$.

Output

For every case, print the vertices of the shortest path between 0 and $n-1$ separated by spaces. If there is more than one shortest path, print the smallest in lexicographical order.

Sample input

```
10 11
8 2  0 1  4 0  1 4  3 9  4 6
6 9  0 8  2 9  0 7  7 3

2 2
1 0  0 1
```

Sample output

```
0 7 3 9
0 1
```

Problem information

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