



Hello, 2024101067.

Longest Path

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C, C++

You are given a Directed Acyclic Graph (DAG). For every node from 0 to $n - 1$ you must find the length of the longest path originating from that node.

Input Format:

- The first line contains two integers n and m , representing the number of nodes and the number of edges respectively.
- Then m lines follow with each line containing two integers u and v indicating there is an edge from u to v .

Output Format:

- Output n integers in a single line where the i^{th} integer represents the length of the longest path originating from node i .

Constraints

- $1 \leq n \leq 2 \times 10^5$
- $0 \leq m \leq \min(5 \times 10^5, \frac{n \times (n-1)}{2})$

Example 1

Input

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```
0 1
4 3
4 1
0 2
3 1
0 3
2 1
2 3
```

Output

```
3 0 2 1 2
```

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Example 2

Input

```
4 6
0 1
2 3
2 1
3 1
0 3
2 0
```

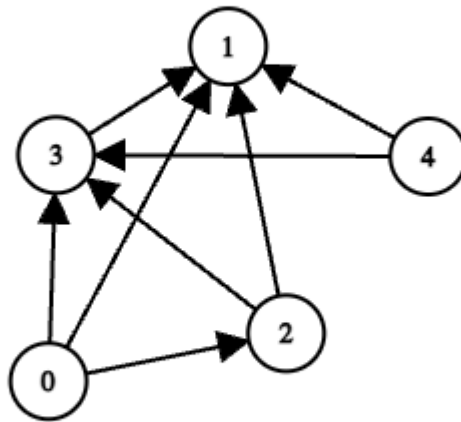
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Output

```
2 0 3 1
```

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Graph for Example 1

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? Clarifications

[Request clarification](#)

No clarifications have been made at this time.