



Lonely Island

Attempted by: 338 / Accuracy: 52% / Maximum Score: 20 ★☆☆☆☆ 1 Vote

Tag(s): Algorithms, Easy, Graph, Graphs, Topological Sort

PROBLEM

EDITORIAL

MY SUBMISSIONS

ANALYTICS

There are many islands that are connected by one-way bridges, that is, if a bridge connects islands a and b , then you can only use the bridge to go from a to b but you cannot travel back by using the same. If you are on island a , then you select (uniformly and randomly) one of the islands that are directly reachable from a through the one-way bridge and move to that island. You are stuck on an island if you cannot move any further. It is guaranteed that after leaving any island it is not possible to come back to that island.

Find the island that you are most likely to get stuck on. Two islands are considered equally likely if the absolute difference of the probabilities of ending up on them is $\leq 10^{-9}$.

Input format

- First line: Three integers n (the number of islands), m (the number of one-way bridges), and r (the index of the island you are initially on)
- Next m lines: Two integers u_i and v_i representing a one-way bridge from island u_i to v_i .

Output format

Print the index of the island that you are most likely to get stuck on. If there are multiple islands, then print them in the increasing order of indices (space separated values in a single line).

Input Constraints

$$1 \leq n \leq 200000$$

$$1 \leq m \leq 500000$$

$$1 \leq u_i, v_i, r \leq n$$

SAMPLE INPUT

```
5 7 1
1 2
1 3
1 4
1 5
2 4
2 5
3 4
```

SAMPLE OUTPUT

```
4
```

Explanation

There are two islands on which you could get stuck- 4 and 5 with 4 being more probable.

Time Limit: 1.0 sec(s) for each input file.

Memory Limit: 256 MB

Source Limit: 1024 KB

Marking Scheme: Marks are awarded when all the testcases pass.

Allowed Languages: Bash, C, C++, C++14, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, R(RScript), Racket, Ruby, Rust, Scala, Swift, Swift-4.1, Visual Basic



BEST SUBMISSIONS

LANGUAGE: **Bash**

There is no solution for this language

[VIEW ALL SUBMISSION](#)

CONTRIBUTOR



AUTHOR

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TESTER

Shubham

THIS PROBLEM WAS ASKED IN



CHALLENGE NAME

November Easy' 18

SOCIAL SHARE



CODE EDITOR

Enter your code or [Upload your code](#) as file.[Save](#)

Bash (GNU bash, version 4.3)



```
1 # Sample bash code
2
```



1:1

Press Ctrl/Command+Spacebar for autocomplete suggestions (accuracy dependent on connection stability).


[Provide custom input](#)

COMPILE & TEST

SUBMIT

Your Rating: ★★★★★

COMMENTS (26)



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Micro And Coins
Attempted By: 251 / Accuracy: 67
★★★★★ 0 Votes

Micro And Permutations
Attempted By: 198 / Accuracy: 72
★★★★★ 1 Vote

Bishu And His Girlfriend
Attempted By: 2638 / Accuracy: 58
★★★★☆ 33 Votes

