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PT07X - Vertex Cover

#tree (/problems/tag/tree)

You are given an unweighted, undirected tree. Write a program to find a vertex set of minimum size in this tree such that each edge has at least one of its end-points in that set.

Input

The first line of the input file contains one integer N --- number of nodes in the tree ($0 < N \leq 100000$). Next $N-1$ lines contain $N-1$ edges of that tree --- Each line contains a pair (u, v) means there is an edge between node u and node v ($1 \leq u, v \leq N$).

Output

Print number of nodes in the satisfied vertex set on one line.

Example 1

Input:
 3
 1 2
 1 3
Output:
 1
Explanation:
 The set can be {1}

Example 2

Input:
 3
 1 2
 2 3
Output:
 1
Explanation:
 The set can be {2}

[Submit solution! \(/submit/PT07X/\)](/submit/PT07X/)

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abhi6991 (/users/abhi6991): 2017-09-23 05:40:13

In Cpp not passing graph as a reference resulted in 2 WA.



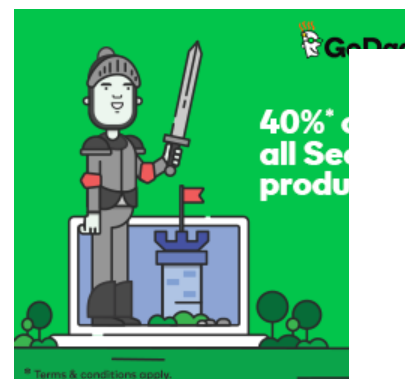
mamnoonsiam (/users/mamnoonsiam): 2017-07-25 13:07:30

AC in one go :)

easy tree dp... dfs

[Submit solution! \(/submit/PT07X/\)](/submit/PT07X/)

Added by: Thanh-Vy Hua (/users/thanhvy)
 Date: 2007-03-28
 Time limit: 0.194s-1.254s
 Source limit: 50000B
 Memory limit: 1536MB
 Cluster: Cube (Intel G860) (/cluster:
 All except: ERL JS-RHINO
 Languages: NODEJS PERL6 VB.NET
 Resource: Co-author Amber



Evaluate this problem

Nobody has rated this problem yet, may you'll be the first?

Concept difficulty

easy normal hard extreme

Implementation difficulty

easy normal hard extreme

[Recommend!](#)



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Own tags



d_skyhawk (/users/d_skyhawk): 2017-04-01 06:45:04
DP+Tree=AC in a go



rishi_07 (/users/rishi_07): 2017-03-31 15:48:01
Finally AC! Nice DP.



cake_is_a_lie (/users/cake_is_a_lie): 2017-03-05 14:44:08
For some reason I understood each vertex needed one neighbour in the output set. That cost me SO many WAs.



siddharth9820 (/users/siddharth9820): 2017-02-19 09:27:54
Isn't it a straight divide and conquer problem?



sina_ss (/users/sina_ss): 2017-02-14 18:03:23
it is so badihi

Last edit: 2017-02-14 18:53:24



vengatesh15 (/users/vengatesh15): 2016-12-23 06:50:41
AC in 1 go :-)

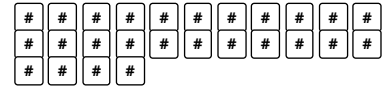


lvee_singh (/users/lvee_singh): 2016-11-27 14:51:55
Greedy is failing in very particular cases, while DP is awesome! :D

Last edit: 2016-11-27 14:52:50



kartikay singh (/users/kart123): 2016-06-30 18:05:47
Tried with dp, greedy and maximum matching ... :-D



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Notes:

1. Don't post any source code here.
2. Please be careful, leave short comments only. Don't spam here.
3. For more discussion (hints, ideas, solutions) please visit our forum (/forum).
4. Authors of the problems are allowed to delete the post and use html code here (e.g. to provide some useful links).

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