note @86 157 views

PA2 - 2001 Discussion Thread

Democratic vs Republican

Description

Suppose you are a president of a country who controls n states and these states are connected in the form of an tree with each vertex representing one state.

There are two political parties in your country: the Democratic Party and the Republican Party. After a voter survey, you find that some states support the Republican Party, some states support the Democratic Party, and there are also some swing states wh o support neither. It is guaranteed that there is at least one Republican vertex and at least one Democratic vertex in the tree.

As the president, you have the power to sever the connection between two states u, v by deleting the edge (u, v) from the tre e. Then your country (a tree) will be split into two connected leagues. We define an edge '**peace**' if neither of the two leagues co ntain both Democratic states and Republican states (it means if one league contains Democratic states, then there will be no Re publican states in this league and vice versa, but swing states can exist in either league).

You need to figure out the number of '**peace**' edges in the given tree.

Input

- The first line contains a single integer n ($2 \leq n \leq 3e5$), denoting the number of states(vertices) in the country(tree).
- The second line contains n integers $a_1, a_2, \ldots, a_n (0 \leq a_i \leq 2)$, denoting the Party that the state supports. $a_i = 1$ me ans that state i (vertex i) supports the Republican Party, $a_i = 2$ means that the state i supports the Democratic party and $a_i = 0$ means that the state i is a swing state.
- Then you are given the edges of tree in the next $n - 1$ lines. Each line contains two integers u_i and v_i ($1 \leq u_i, v_i \leq n, u_i! = v_i$), representing that there is an edge between vertex u_i and v_i. It is guaranteed that the given edges form a tre e. It is guaranteed that there is at least one Republican vertex and at least one Democratic vertex in the tree.

Output

Output the number of '**peace**' edges in the given tree.

programming

Updated 1 month ago by Yining She (佘以宁)

followup discussions *for lingering questions and comments*

Resolved Unresolved

Anonymous Atom 1 month ago Can we use std::vector in this assignment or should implement linked list on our own?

helpful! | 1

王书悦 1 month ago Please refer to the announcement on the OJ platform.

good comment | 0

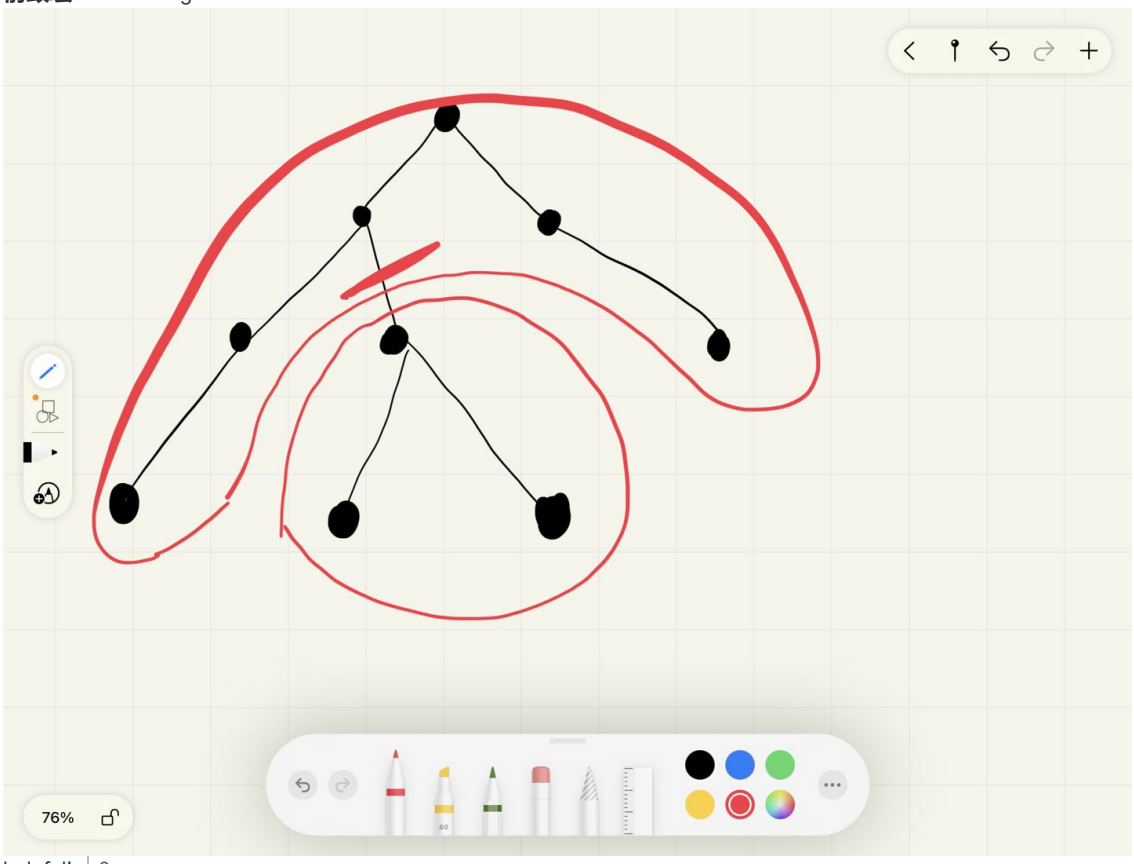
Resolved Unresolved

俞政宏 1 month ago

I'm wondering what is the mean of two collected leagues if I cut one of the edges. Are the two leagues are connected gragh or unconnected gragh. If i understand correctly, after the cut, the two leagues are still connected, then how to configure that the following states are belong to which leagues.

helpful! | 0

俞政宏 1 month ago



helpful! | 0

俞政宏 1 month ago like this if i cut then i comes to 2 unconnected gragh. what's the meaning of "split into two connected leagues"

helpful! | 0

张龙文 1 month ago

The meaning of “two connected leagues” is just two trees.

good comment | 0

Resolved Unresolved

Anonymous Calc 1 month ago

I wonder if the case 9 data is 300000 of statue with same status like all 1 or 0, all 2 or 0.

helpful! | 1

张龙文 1 month ago

statue英 [ˈstætʃuː]美 [ˈstætʃuː]

n.雕像; 雕塑; 塑像(大小通常等于或大于真人或实物);

You could explain your question with Chinese to make it clear.

good comment | 0

Resolved Unresolved

龚 可 1 month ago

As has been observed, it is highly possible that the answer is in $\{0, 1, n-1\}$ when the input data is randomly generated, and in fact all the current testcases on OJ fall in this special case. I'd like to add a hack data:

input:

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

```
3 4
4 5
4 6
```

The output should be 2.

helpful! | 2