

D. Serval and Rooted Tree

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Now Serval is a junior high school student in Japari Middle School, and he is still thrilled on math as before.

As a talented boy in mathematics, he likes to play with numbers. This time, he wants to play with numbers on a rooted tree.

A tree is a connected graph without cycles. A rooted tree has a special vertex called the root. A parent of a node v is the last different from v vertex on the path from the root to the vertex v . Children of vertex v are all nodes for which v is the parent. A vertex is a leaf if it has no children.

The rooted tree Serval owns has n nodes, node 1 is the root. Serval will write some numbers into all nodes of the tree. However, there are some restrictions. Each of the nodes except leaves has an operation `max` or `min` written in it, indicating that the number in this node should be equal to the maximum or minimum of all the numbers in its sons, respectively.

Assume that there are k leaves in the tree. Serval wants to put integers $1, 2, \dots, k$ to the k leaves (each number should be used exactly once). He loves large numbers, so he wants to maximize the number in the root. As his best friend, can you help him?

Input

The first line contains an integer n ($2 \leq n \leq 3 \cdot 10^5$), the size of the tree.

The second line contains n integers, the i -th of them represents the operation in the node i . 0 represents `min` and 1 represents `max`. If the node is a leaf, there is still a number of 0 or 1, but you can ignore it.

The third line contains $n - 1$ integers f_2, f_3, \dots, f_n ($1 \leq f_i \leq i - 1$), where f_i represents the parent of the node i .

Output

Output one integer — the maximum possible number in the root of the tree.

Examples

input	Copy
6 1 0 1 1 0 1 1 2 2 2 2	
output	Copy
1	

input	Copy
5 1 0 1 0 1 1 1 1 1	
output	Copy
4	

input	Copy
8 1 0 0 1 0 1 1 0 1 1 2 2 3 3 3	
output	Copy
4	

Codeforces Round #551 (Div. 2)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file:

选择文件

 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Problem tags

binary search

dfs and similar

dp

greedy

trees

*1800

No tag edit access

→ Contest materials

- Announcement (en)

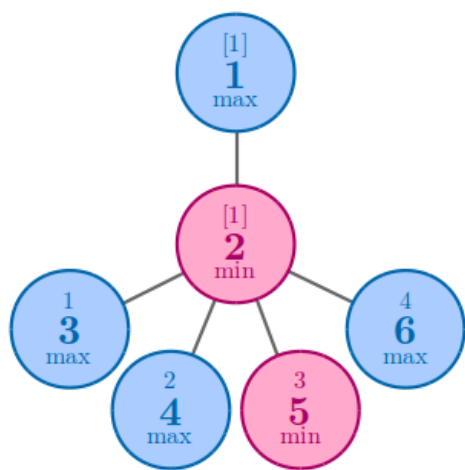
×
- Tutorial (en)

×

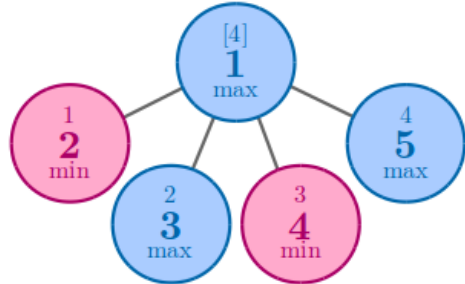
input	<input type="button" value="Copy"/>
9 1 1 0 0 1 0 1 0 1 1 1 2 2 3 3 4 4	
output	<input type="button" value="Copy"/>
5	

Note
Pictures below explain the examples. The numbers written in the middle of the nodes are their indices, and the numbers written on the top are the numbers written in the nodes.

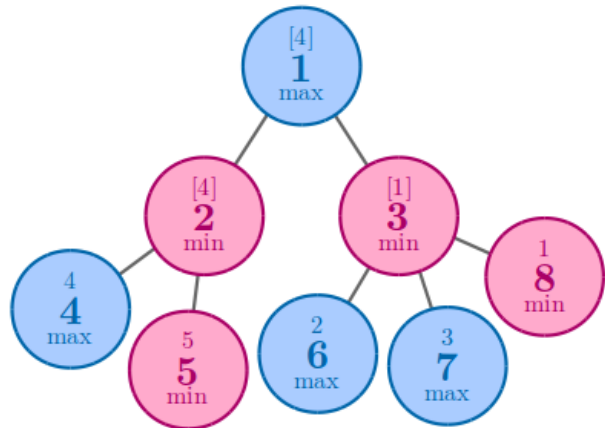
In the first example, no matter how you arrange the numbers, the answer is 1.



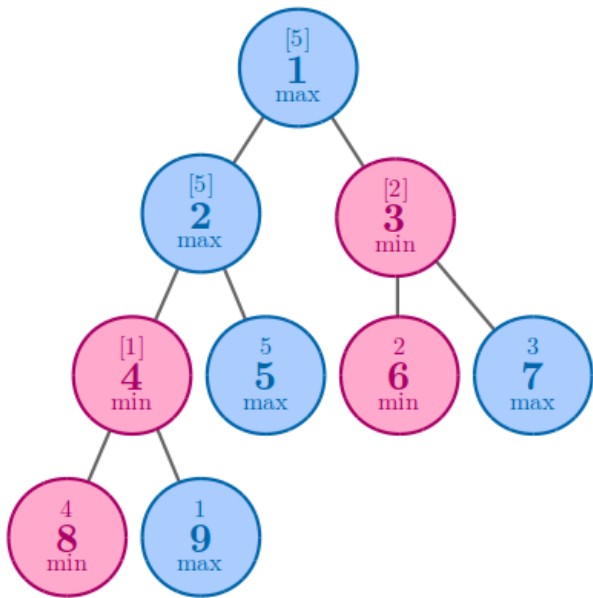
In the second example, no matter how you arrange the numbers, the answer is 4.



In the third example, one of the best solution to achieve 4 is to arrange 4 and 5 to nodes 4 and 5.



In the fourth example, the best solution is to arrange 5 to node 5.



[Codeforces](#) (c) Copyright 2010-2019 Mike Mirzayanov
The only programming contests Web 2.0 platform
Server time: Apr/14/2019 14:27:52^{UTC+8} (f1).
Desktop version, switch to [mobile version](#).
[Privacy Policy](#)

Supported by



ITMO UNIVERSITY