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# Problem A. Colored tree

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            1 second  
Memory limit:          256 megabytes

Consider a rooted tree consisting of  $N$  vertices numbered from 1 to  $N$ , each vertex has a color that can be either black or white.

We want you to find the number of sequences  $[a_1, a_2, \dots, a_k]$ , ( $1 \leq k \leq N$ ,  $k$  is the size of the sequence), where for every  $1 \leq i \leq k - 1$   $a_i$  is the parent of  $a_{i+1}$  and the color of vertex  $a_i$  is different than the color of vertex  $a_{i+1}$ .

The root of the tree is ALWAYS 1.

## Input

The first line contains one integer  $N$  — the number of vertices in the tree ( $1 \leq N \leq 10^5$ ).  
Each of the next  $n$  lines contains two integers  $p_i$  ( $1 \leq i \leq n$ ) — the index of the parent of the  $i$ -th vertex (for the root  $p_i=0$ ), and the color of this vertex (1 means black and 0 means white).  
Vertex 1 is always the root of the tree and parent of vertex 1 is always 0.

## Output

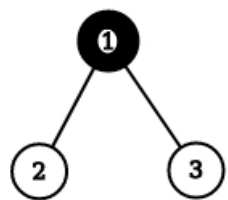
Output a single integer : the number of such sequences.

## Examples

standard input	standard output
3 0 1 1 0 1 0	5
2 0 0 1 1	3

## Note

In the first sample we have a tree of this form:



The first vertex is black, And the other two are white. We can see that we have 3 valid sequences of length 1 : 1, 2, 3. And we have 2 valid sequences of length 2 : 1→2, 1→3. So the answer is 3+2 = 5.