

Contest Duration: 2018-04-28(Sat) 20:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20180428T2100&p1=248>) ~ 2018-04-28(Sat) 22:20 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20180428T2320&p1=248>) (local time) (140 minutes)

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F - 01 on Tree

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Time Limit: 2 sec / Memory Limit: 256 MB

Score : 1700 points

Problem Statement

Snuke has a rooted tree with N vertices, numbered 1 through N . Vertex 1 is the root of the tree, and the parent of Vertex i ($2 \leq i \leq N$) is Vertex P_i ($P_i < i$). There is a number, 0 or 1, written on each vertex. The number written on Vertex i is V_i .

Snuke would like to arrange the vertices of this tree in a horizontal row. Here, for every vertex, there should be no ancestor of that vertex to the right of that vertex.

After arranging the vertices, let X be the sequence obtained by reading the numbers written on the vertices from left to right in the arrangement. Snuke would like to minimize the inversion number of X . Find the minimum possible inversion number of X .

Notes

The *inversion number* of a sequence Z whose length N is the number of pairs of integers i and j ($1 \leq i < j \leq N$) such that $Z_i > Z_j$.

Constraints

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq P_i < i$ ($2 \leq i \leq N$)
- $0 \leq V_i \leq 1$ ($1 \leq i \leq N$)

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- All values in input are integers.

Input

Input is given from Standard Input in the following format:

```
 $N$   
 $P_2$   $P_3$   $\dots$   $P_N$   
 $V_1$   $V_2$   $\dots$   $V_N$ 
```

Output

Print the minimum possible inversion number of X .

Sample Input 1

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

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Sample Output 1

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```
4
```

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When the vertices are arranged in the order 1, 3, 5, 6, 2, 4, X will be (0, 1, 0, 0, 1, 0), whose inversion number is 4. It is impossible to have fewer inversions, so the answer is 4.

Sample Input 2

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```
1  
0
```

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Sample Output 2

[Copy](#)

```
0
```

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$X = (0)$, whose inversion number is 0.

Sample Input 3

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```
15
1 2 3 2 5 6 2 2 9 10 1 12 13 12
1 1 1 0 1 1 0 0 1 0 0 1 1 0 0
```

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Sample Output 3

[Copy](#)

```
31
```

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