



Problem I: Help Me Boss

Time limit: 1s; Memory limit: 512 MB

You lead a team of n employees, each assigned a unique ID from 1 to n , with your ID being 1. Every employee, except you, has exactly one **direct** supervisor whose ID is smaller than theirs.

- If employee i directly supervises employee j , then employee i is considered a supervisor of employee j .
- If employee i supervises employee j , and employee j supervises employee k , then employee i is also considered a supervisor of employee k .

Each employee is assigned exactly one task. Employees can either complete their task or escalate it to one of their supervisors. An employee can handle multiple tasks, but the more tasks they take on, the more stressed they become. Specifically, each employee i has a stress factor f_i . If employee i handles m tasks, their total stress level is $f_i \times m$.

In all possible scenarios, determine how many employees have the potential to become the most stressed, meaning they end up with the highest total stress level among all n employees.

Input

- The first line contains a single positive integer n ($2 \leq n \leq 10^6$) - the number of employees.
- The second line contains $n - 1$ integers a_i ($2 \leq i \leq n$), where a_i represents the direct supervisor of employee i and $1 \leq a_i < i$.
- The third line contains n integers f_i ($1 \leq f_i \leq 10^{12}$), where f_i is the stress factor of employee i .

Output

Output a single integer — the number of employees who have the potential to become the most stressed.



Sample

Input	Output
3 1 1 2 1 1	1
4 1 1 2 1 1 1 1	4
5 1 1 3 3 2 1 1 1 4	3

Explanation for example 2: all employees have the have the potential to become the most stressed, if each employee completes their own task, the stress level for each employee will be equal to 1.

Explanation for example 3: employees 1, 3, 5 have the have the potential to become the most stressed. Here's how employee 3 could become the most stressed:

- Employee 1 completes his own task \rightarrow Employee 1's total stress level $= f_1 \times 1 = 2$.
- Employee 2 completes his own task \rightarrow Employee 2's total stress level $= f_2 \times 1 = 1$.
- Employee 3 completes three tasks: his own task, and task from employees 4 and 5 \rightarrow Employee 3's total stress level $= f_3 \times 3 = 3$.
- Employees 4 and 5 don't handle any task \rightarrow their total stress level $= 0$.