Tree

time limit per test

2 seconds

memory limit per test

512 megabytes

You are given a rooted undirected tree consisting of n vertices and an integer k. Each vertice i has an value v[i]. Vertex 1 is the root. Let's call an ordered pair of (x,y)  (x≠y) **valid** if it meets the three conditions below.

* x and y is not an ancestor of the other;
* the simple path from x to y traverses less than k edges.
* define k is the lowest common ancestor of x and y. v[x] + v[y] should be the even number and v[k] should be the middle number of v[x] and v[y].

**Input**

The first line contains two integer n and k (1≤n, k≤1e5)

The second line contains n integers. The ith integer vi means the value of vertice i.

Then third line contains n – 1 integers. The ith integer pi means the father of i + 1.

**Output**

The numer of pairs(x,y) which is vaild. (Two pairs (x1,y1) (x2,y2) are considered different if and only if x1 != x2 or y1 != y2)

**Examples**

**Input**

**output**