Vasya and Little Bear

Problem Code: **VLB**

Submit (/submit/VLB)

Given a colorful tree consisting of **N** nodes. Each node **u** has a color **C(u)** and a positive integer **H(u)**.
Vasya loves drawing and decides to connect nodes of same color with her drawing pencils. Being lazy, she first chooses two different nodes **u** and **v** and then decides to connect nodes **v1** and **v2** iff

- They exist in the path from **u** to **v**
- Both nodes have the same color ie **C(v1) = C(v2)**
- They are successive nodes of same color on path from **u** to **v**.

The color required for connecting two nodes **a** and **b** is given by function **P(a, b) = (H(a) - H(b)) ^{2}** . She will repeat this exercise with every color possible to enhance her drawing skills. **Except the color of the LCA (https://en.wikipedia.org/wiki/Lowest_common_ancestor) of u and v**.

Little bear has a crush on Vasya and wants to chat with her but this is not possible until her work gets over. So little bear has decided to help her.

There are **Q** queries.For each query of form **u** and **v**, he needs to calculate the amount of color she will require to accomplish her task. Remember the quickly the little bear answers the query, the earlier she will be free and more time he can chat with her.

Input

- First line of Input contains Number of Nodes **N**
- 2nd line contains **N** integers contain color of **N** nodes
- 3rd line contains **N** integers denoting the Value of the nodes i.e **H(i)**
- Next **N-1** lines contain description of the tree. Each of these lines contains **u** and **v** showing the connectivity between node **u** and node **v**
- Next line contains single integer **Q** denoting number of queries
- Each query contains **u** and **v** denoting the pair of nodes for which we have to answer the query

Output

- For each query output the value of the function

Constraints

- **1 ≤ N ≤ 10^5**
- **1 ≤ Distinct colors ≤ 10**
- **1≤ Q ≤ 10^4**
- **1 ≤ H(u) ≤ 10^5**

My Submissions (/status/VLB,suri429)
All Submissions (/status/VLB)

Successful Submissions +

Example

```
Input:
9
1 2 3 3 4 3 1 4 3
1 2 3 4 5 6 7 8 9
1 2
1 4
2 3
2 5
5 7
7 9
4 6
6 8
2
9 8
3 6
Output:
38
5
```

Explanation

Image for the sample test case is provided above.

Query 1: The value of the function is calculated as $(9 - 4)^2 + (4 - 6)^2 + (5 - 8)^2 = 38$. 1 and 7 are not connected as they have color of LCA

Query 2: The value is calculated as $(4 - 6)^2 + (4 - 3)^2 = 5$.

All submissions for this problem are available.

Author:	5★ dragonslayerx (/users/dragonslayerx)
Tags:	dragonslayerx (/tags/problems/dragonslayerx)
Date Added:	23-03-2016
Time Limit:	2 - 3 secs
Source Limit:	50000 Bytes
Languages:	C, CPP14, JAVA, PYTH, PYTH 3.6, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, SCALA, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, PERL6, TEXT, SCM chicken, PYP3, CLOJ, FS

Submit (/submit/VLB)

Comments

CodeChef was created as a platform to help programmers make it big in the world of **algorithms**, **computer programming**, and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and two smaller programming challenges at the middle and end of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section (/problems/easy) - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in the language of your choice. Our **programming contest** judge accepts solutions in over 55+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete (/contests) - Monthly Programming Contests, Cook-off and Lunchtime

Here is where you can show off your **computer programming skills**. Take part in our 10 days long monthly coding contest and the shorter format Cook-off and Lunchtime **coding contests**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), $700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools

Online IDE (/ide)
Upcoming Coding Contests (/contests)
Contest Hosting (/hostyourcontest)
Problem Setting (/problemsetting)
CodeChef Tutorials (/wiki/tutorials)
CodeChef Wiki (/wiki)

Practice Problems

Easy (/problems/easy)
Medium (/problems/medium)
Hard (/problems/hard)
Challenge
Peer (/problemsetterchallenge)
School (/problems/school)
FAQ's (/wiki/faq)

Initiatives

Go for Gold (/goforgold)
CodeChef for Schools (/school)
Campus Chapters
CodeChef for Business (/corporates)

Policy

Terms of Service (/terms)
Privacy Policy (/privacy-policy)
Refund Policy (/refund-policy)
Code of Conduct (/codeofconduct)
Bug Bounty Program (/bug-bounty-program)

/