Mancunian And Colored Tree

Attempted by: **728** / Accuracy: **92%** / Maximum Score: **20** / 35 Votes

Tag(s): Easy, Trees

After a hectic week at work, Mancunian and Liverbird decide to go on a fun weekend camping trip. As they were passing through a forest, they stumbled upon a unique tree of N nodes. Vertices are numbered from 1 to N.

Each node of the tree is assigned a color (out of C possible colors). Being bored, they decide to work together (for a change) and test their reasoning skills. The tree is rooted at vertex 1. For each node, they want to find its closest ancestor having the same color.

Input format

The first line contains two integers N and C denoting the number of vertices in the tree and the number of possible colors.
The second line contains $N-1$ integers. The $i\ th$ integer denotes the parent of the $i+1\ th$ vertex.
The third line contains N integers, denoting the colors of the vertices. Each color lies between 1 and C inclusive.

Output format

Print N space-separated integers. The ith integer is the vertex number of lowest ancestor of the ith node which has the same color. If there is no such ancestor, print -1 for that node.

Constraints

- $1 \leq N \leq 100,000$
- $1 \leq C \leq 100,000$

SAMPLE INPUT

```
5 4
1 1 3 3
1 4 2 1 2
```

SAMPLE OUTPUT

```
-1 -1 -1 1 3
```

Explanation

Vertices 1, 2 and 3 do not have any ancestors having the same color as them. The nearest required ancestors for vertices 4 and 5 are vertices 1 and 3 respectively.

Time Limit:	2.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Marks are awarded when all the testcases pass.
Allowed Languages:	C, C++, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, R(RScript), Racket, Ruby, Rust, Scala, Scala 2.11.8, Swift, Visual Basic

CODE EDITOR

Enter your code or Upload your code as file. Save C (gcc 4.8.2)

```c
#include <stdio.h>

int main()
{
    printf("Hello World!\n");
    return 0;
}

```

1:1

Provide custom input

COMPILE & TEST SUBMIT

Press Ctrl-space for autocomplete suggestions. POWERED BY code table

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