Colorful Tree

locked

Problem Submissions

Time Limit : $C/C++$ $(2s)$, $Java$ $(4s)$
Memory Limit : $512\ MB$

You are given an undirected rooted tree with n nodes where each node v has color c_v. You are also given a binary string s of length n consisting of only 0 and 1. The color of node v in the tree is determined as follows:

- if $s_v = 1$, then $c_v = v$
- if $s_v = 0$, then $c_v = c_p$ where p is the parent node of v

The root of the tree is node 1 and it is guaranteed that $s_1 = 1$

You need to answer q queries of the following type:

- Given nodes x and y, answer how many unique colors are on the simple path between them.

A simple path is a path that visits each vertex at most once. Also find the definition of a rooted tree here.

Input Format

The first line of input contains an integer t denoting the number of test cases. Then t testcases follow.

The first line of each test case contains two integers n and q — the number of nodes and the number of queries.

The second line contains $n-1$ integers where the i^{th} integer denotes the parent of node $i+1$.

The third line contains a binary string s of length n consisting of only 0 and 1.

Then q lines follow each describing a query with two integers x and y.

Constraints

$1 \leq t, n, q \leq 5 * 10^5$

$1 \leq x, y \leq n$

Sum of n and q over all testcases do not exceed $5 * 10^5$

Output Format

For each testcase print q integers, the answer to the queries in separate lines.

Sample Input 0

```
2
3 1
1 1
110
2 3
5 3
1 1 2 2
10101
2 2
```

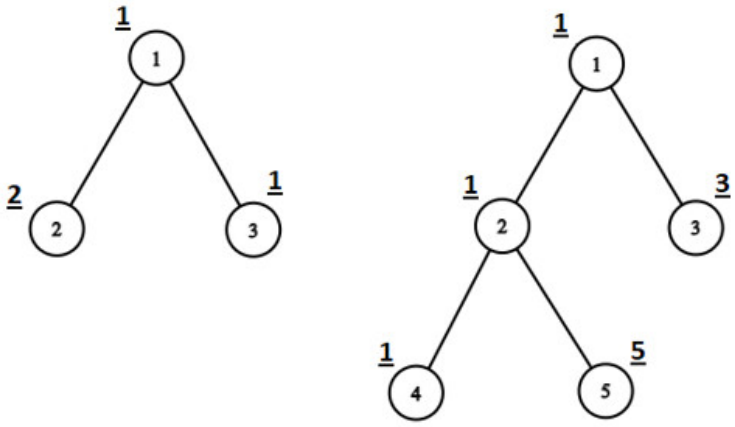
```
4 5
5 3
```

Sample Output 0

```
2
1
2
3
```

Explanation 0

The trees from sample testcases. Color of each node is marked underlined near it.



Submissions: 77
Max Score: 1

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C

```c
#include <math.h>
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <assert.h>
#include <limits.h>
#include <stdbool.h>

int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}
```

Line: 1 Col: 1

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