

## #H1021. Dream and the Multiverse REMATCH

ID: 162

传统题

12000ms

512MiB

尝试: 17

已通过: 1

难度: 10

上传者: 2b7e151628ae

English

简体中文

## 题目背景

[Link](#)

*I have gone over the scenarios in my head,  
and there are 6.96969 billion outcomes, and only one of them -  
- do I win.*

## 题目描述

Dream abstracts the fabric of spacetime as a directed rooted tree (arborescence) with  $N$  nodes (numbered  $1$  through  $N$ ). Node  $1$  is the root and for each  $i (1 \leq i \leq N - 1)$ , the parent of node  $i + 1$  is  $f_i$ . All edges of this tree are directed away from the root.

Then, Dream employs a magical superpower and adds  $M$  directed edges to this tree in such a way that the resulting directed graph remains acyclic (a DAG).

Let's call a node of this DAG an *event* and further call a simple path on this DAG an *era*. Dream considers a pair of events  $(i, j)$  to be *plausible* if there is an era whose first event is  $i$  and last event is  $j$ . Note that  $i < j$  does not have to hold for a plausible pair.

Dream now wants you to answer  $Q$  queries. In each query, he gives you two positive integers  $l$  and  $r$ , where  $l \leq r$ , and he wishes to know the number of plausible pairs of events  $(i, j)$  such that  $l \leq i < j \leq r$ .

## 输入格式

The first line of the input contains two space-separated integers  $N$  and  $M$ .

The second line contains  $N - 1$  space-separated integers  $f_1, f_2, \dots, f_{N-1}$ .

$M$  lines follow. Each of these lines contains two space-separated integers  $u$  and  $v$  describing an additional edge from node  $u$  to node  $v$ .

The following line contains a single integer  $Q$ .

$Q$  lines follow. Each of these lines contains two space-separated integers  $l$  and  $r$  describing a query.

## 输出格式

For each query, print a single line containing one integer — the number of plausible pairs  $(i, j)$  such that  $l \leq i < j \leq r$ .

## 输入输出样例

输入 #1

```
8 2
1 2 5 1 4 3 3
2 4
4 7
3
4 6
5 7
1 8
```

输出 #1

```
2
2
18
```

## 说明/提示

- $2 \leq N \leq 7 \cdot 10^5$
- $1 \leq Q \leq 7 \cdot 10^5$
- $0 \leq M \leq 20$
- $1 \leq f_i \leq N$  for each valid  $i$

- $1 \leq u, v \leq N$
- the graph described on the input is acyclic
- $1 \leq l \leq r \leq N$

Subtasks

Subtask #1 (17 points):  $N, Q \leq 3 \cdot 10^5$

Subtask #2 (83 points): original constraints

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Language

兼容模式

主题

Worker 2 in 931ms

Hydro v4.19.1 Professional