Regions (`regions`)

Difficoltà D = 1 (tempo limite 8 sec).

Descrizione del problema

The United Nations Regional Development Agency (UNRDA) has a very well defined organizational structure. It employs a total of N people, each of them coming from one of R geographically distinct regions of the world. The employees are numbered from 1 to N inclusive in order of seniority, with employee number 1, the Chair, being the most senior. The regions are numbered from 1 to R inclusive in no particular order. Every employee except for the Chair has a single supervisor. A supervisor is always more senior then the employee she or he supervises. We say that an employee A is a manager of employee B if and only if A is B's supervisor or A is a manager of B's supervisor. Thus, fort example, the Chair is a manager of every other empoloyee. Also, clearlo no two employees can ba each other's manager. Unfortunately, the United Nations Bureau of Investigations (UNBI) recently received a number of complaints that the UNRDA has an imbalanced organizational structure that favors some regions of the worls more than others. In order to investigate the accusations, the UNBI would like to build a comper system that would be given the supervision structure of the UNRDA and would then be able to answer questions of the form: given two different regions $r1$ and $r2$, how many pairs of employee $e1$ and $e2$ exist in the agency, such that employee $e1$ comes from region $r1$, employee $e2$ comes from region $r2$ and $e1$ is a manager of $e2$. Every query has two parameters: the regions $r1$ and $r2$; and its result is a singles integer: the number of different pairs $e1$ and $e2$ that satisfy the above-mentioned conditions. Write a program that, given the home regions of all of the agency's employees, as well as data on who is supervised by whom, answers queries as described above.

Dati di input

The first line contains the integers N, R and Q, in order, separated by single spaces. The next N lines describe the N employees of the agency in order of seniority. The k-th of these N lines describes employee number k. The first of these lines (i.e., the one describing the Chair) contains a single integer: the home region $H1$ of the Chair. Each of the other $N-1$ lines contains two integers separated by a single space: employee k's supervisor Sk, and employee k's home region Hk. Lines from $N+2$ to $N+Q+1$ contain each two different integers separated by a single space: line $N+1+k$ contains two regions $r1k$ and $r2k$.

Dati di output

Output file must consist of Q lines, each of them containing a single integer: line k must contain the number of pairs of UNRDA employees $e1k$ and $e2k$ such that $e1k$'s home region is $r1k$, $e2k$'s home region is $r2k$ and $e1k$ is a manager of $e2k$. NOTE: The test data will be such that the correct answer to any query will always be less than 1000000000.

Assunzioni

- $1 \leq N \leq 200000$
- $1 \leq R \leq 25000$
- $1 \leq Q \leq 200000$
- $1 \leq Hk \leq R$
- $1 \leq Sk \leq k$
- $1 \leq r1 \leq R$
- $1 \leq r2 \leq R$

Esempi di input/output

File `input.txt`	**File** `output.txt`

`6 3 4`
`1`
`1 2`
`1 3`
`2 3`
`2 3`
`5 1`
`1 2`
`1 3`
`2 3`
`3 1`
	`1`
	`3`
	`2`
	`1`

Nota/e

- For a number of tests, worth a total of 30 points, R will not exceed 500.
- For a number of tests, worth a total of 55 points, no region will have more than 500 employees.
- The tests where both of the above conditions hold are worth 15 points.
- The tests where at least one of the two conditions holds are worth 70 points.