



Interstellar Network Disruption

Submit solution

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✓ Points: 100 (partial)② Time limit: 1.0s

Memory limit: 1G

∨ Allowed languages

C, C++

In the interstellar federation, star systems are connected by hyperspace routes that form a minimal network - a tree that guarantees a unique path between every pair of systems. Due to unpredictable cosmic disturbances, some hyperspace routes occasionally become disabled (forever), causing parts of the network to lose connectivity.

You are given ${\cal Q}$ queries.

The Queries of two types:

- ullet In query type R you receive a hyperspace route that got disabled forever.
- In query type Q Your task is to determine the number of unordered pairs of star systems (x,y) (with $(1 \le x < y \le N)$ such that there is no available path between x and y in the network after the disabled routes are removed.

Constraints

Number of test cases < 5.

Number of star systems, $N \leq 20,000$.

Number of queries, $Q \leq 20,000$.

Input

The first line contains T, the number of test cases. Each test case is described as follows:

The first line contains N, the total number of star systems.

The next N-1 lines each contain two integers x and y, indicating that there is a hyperspace route between systems x and y ($1 \le x < y \le N$). The routes are numbered from 1 to N-1.

The following line contains () the total number of queries

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- $[R \ x]$ Disable the hyperspace route numbered x. It is guaranteed that this route is currently active and has not already been disabled.
- $[{\tt Q}]$ Output the total number of unordered pairs (x,y) such that $1 \le x < y \le N$ for which there is no path connecting star systems x and y.

Output

For each test case, output a line for each query of type Q containing the required value.

Print a blank line after the output of each test case.

Example 1

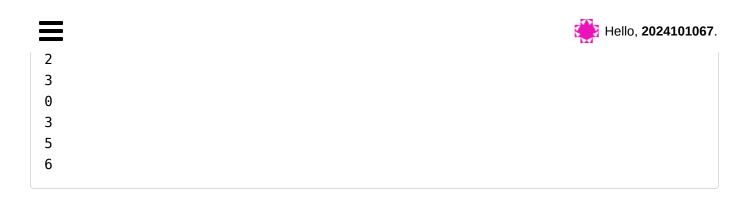
Input

```
Сору
2
3
1 2
1 3
5
Q
R 1
Q
R 2
Q
4
1 2
1 3
1 4
7
Q
R 1
Q
R 2
Q
R 3
Q
```

Output

Copy

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Clarifications

Request clarification

No clarifications have been made at this time.

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