Subtrees And Paths

by indy256

Given a rooted tree of N nodes, where each node is uniquely numbered in between *[1..N]*. The node 1 is the root of the tree. Each node has an integer value which is initially 0.

You need to perform the following two kinds of queries on the tree:

- *add t value*: Add value to all nodes in subtree rooted at *t*
- *max a b*: Report maximum value on the path from *a* to *b*

Input Format

First line contains *N*, number of nodes in the tree. Next *N-1* lines contain two space separated integers *x* and *y* which denote that there is an edge between node *x* and node *y*.
Next line contains *Q*, the number of queries to process.
Next *Q* lines follow with either *add* or *max* query per line.

Constraints
$1 \leq N \leq 10^5$
$1 \leq Q \leq 10^5$
$1 \leq t, a, b, x, y \leq N$
$x \neq y$
$-10^4 \leq value \leq 10^4$

Output Format

For each *max* query output the answer in a separate line.

Sample Input

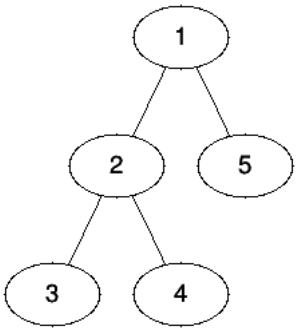
```
5
1 2
2 3
2 4
5 1
6
add 4 30
add 5 20
max 4 5
add 2 -20
max 4 5
max 3 4
```

Sample Output

```
30
20
10
```

Explanation

In the test case we have the following tree:



Initially all node values are zero.
Queries are performed in the following way:

add 4 30 // add 30 to node 4
add 5 20 // add 20 to node 5
max 4 5 // maximum of nodes 4,2,1,5 is 30
add 2 -20 // subtract 20 from nodes 2,3,4
max 4 5 // maximum of nodes 4,2,1,5 is 20
max 3 4 // maximum of nodes 3,2,4 is 10

Submissions:182
Max Score:120
Difficulty: Advanced

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Current Buffer (saved locally, editable) Java 7

```
1  import java.io.*;
2  import java.util.*;
3  import java.text.*;
4  import java.math.*;
5  import java.util.regex.*;
6
7  public class Solution {
8
9      public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code