



Heavy Light 2 White Falcon

by ikbalkazar

Problem

Submissions

Leaderboard

Discussions

White Falcon was amazed by what she can do with heavy-light decomposition on trees. As a result, she wants to improve her expertise on heavy-light decomposition. Her teacher gave her another assignment which requires path updates. As always, White Falcon needs your help with the assignment.

You are given a tree with N nodes and each node's value val_i is initially 0.

Let's denote the path from node u to node v like this: $p_1, p_2, p_3, \dots, p_k$, where $p_1 = u$ and $p_k = v$, and p_i and p_{i+1} are connected.

The problem asks you to operate the following two types of queries on the tree:

- "1 u v x" Add x to val_{p_1} , $2x$ to val_{p_2} , $3x$ to val_{p_3} , ..., kx to val_{p_k} .
- "2 u v" print the sum of the nodes' values on the path between u and v at modulo $10^9 + 7$.

Input Format

First line consists of two integers N and Q separated by a space.

Following $N - 1$ lines contains two integers which denote the undirectional edges of the tree.

Following Q lines contains one of the query types described above.

Note: Nodes are numbered by using 0-based indexing.

Constraints

$$1 \leq N, Q \leq 50000$$

$$0 \leq x < 10^9 + 7$$

Output Format

For every query of second type print a single integer.

Sample Input

```
3 2
0 1
1 2
1 0 2 1
2 1 2
```

Sample Output

```
5
```

Explanation


After the first type of query, $val_0 = 1$, $val_1 = 2$, $val_2 = 3$. Hence the answer of the second query is $2 + 3 = 5$.

Submissions:70

Max Score:100

Difficulty: Hard

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```
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

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Run Code

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