



Recalling Early Days GP with Trees

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Problem

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You are given a [tree](#) with N nodes and each has a value associated with it. You are given Q queries, each of which is either an update or a retrieval operation.

The **update query** is of the format

$$i \ j \ X$$

This means you'd have to add a [GP](#) series to the nodes which lie in the path from node i to node j (both inclusive) with first term of the GP as X on node i and the common ratio as R (given in the input)

The **retrieval query** is of the format

$$i \ j$$

You need to return the sum of the node values (S) lying in the path from node i to node j modulo 100711433.

Input Format

The first line contains two integers (N and R respectively) separated by a space.

In the next $N-1$ lines, the i^{th} line describes the i^{th} edge: a line with two integers $a \ b$ separated by a single space denotes an edge between a, b .

The next line contains 2 space separated integers (U and Q respectively) representing the number of Update and Query operations to follow.

U lines follow. Each of the next U lines contains 3 space separated integers (i, j , and X respectively).

Each of the next Q lines contains 2 space separated integers, i and j respectively.

Output Format

It contains exactly Q lines and each line containing the answer of the i^{th} query.

Constraints

$$2 \leq N \leq 100000$$

$$2 \leq R \leq 10^9$$

$$1 \leq U \leq 100000$$

$$1 \leq Q \leq 100000$$

$$1 \leq X \leq 10$$

$$1 \leq a, b, i, j \leq N$$

Sample Input

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

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

Sample Output

```
31
18
```

Explanation

The node values after the first updation becomes :

```
3 6 0 0 0 12
```

The node values after second updation becomes :

```
3 6 20 10 5 12
```

Answer to Query #1: $12 + 6 + 3 + 10 = 31$

Answer to Query #2: $5 + 10 + 3 = 18$

[f](#) [t](#) [in](#)

Submissions: [117](#)



Max Score: 120



Difficulty: Hard

Rate This Challenge:

☆☆☆☆☆

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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

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