02 : 46 : 10
HRS MIN SEC

March Easy '17

LIVE

Mar 01, 2017, 09:30 PM IST - Mar 02, 2017, 12:30 AM IST

6 LIVE EVENTS

INSTRUCTIONS PROBLEMS SUBMISSIONS LEADERBOARD ANALYTICS JUDGE

← Problems / Micro and Lucky Tree

Micro and Lucky Tree

Max. Marks: 100

Micro purchased a tree having N nodes numbered from 1 to N. It is rooted at node numbered 1. But unfortunately that tree turned out to be bad luck. After he purchased that tree, he lost his job and girlfriend. So he went to his astrologer friend Mike for help.

Mike told him to assign a value in the range 1 to M (inclusive) to each node making sure that luck factor of all leaf nodes is 1. Luck factor of a leaf node v is defined as gcd of values of all nodes lying in path from root to v (inclusive). Now Micro wants to know how many ways are there to make his tree lucky. That's where Mike failed, so he asked for your help.

Input:
First line consists of a single integer denoting N and M.
Each of the following $N-1$ lines consists of two space separated integers X and Y denoting there is an edge between nodes numbered X and Y.

Output:
Print the number of ways to make the tree lucky. Since the answer can be large, print it modulo 10^9+7.

Constraints:
$1 \leq N \leq 10^5$
$1 \leq M \leq 20$
$1 \leq X, Y \leq N$

SAMPLE INPUT

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

SAMPLE OUTPUT

5

6

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Explanation

Following are the 5 valid ways:
$val[1] = 2,\ val[2] = 1,\ val[3] = 1$
$val[1] = 1,\ val[2] = 1,\ val[3] = 2$
$val[1] = 1,\ val[2] = 2,\ val[3] = 2$
$val[1] = 1,\ val[2] = 1,\ val[3] = 1$
$val[1] = 1,\ val[2] = 2,\ val[3] = 1$

Time Limit:	1.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Marks are awarded if any testcase passes.
Allowed Languages:	C, C++, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, R(RScript), Racket, Ruby, Rust, Scala, Swift, Visual Basic

CODE EDITOR

Enter your code or Upload your code as file. Save C (gcc 4.8.2)

```c
#include <stdio.h>

int main()
{
    printf("Hello World!\n");
    return 0;
}

```

1:1
6

Provide custom input

COMPILE & TEST SUBMIT

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*Press Ctrl-space for autocomplete suggestions.*r4 POWERED BY code table

Tip: You can submit any number of times you want. Your best submission is considered for computing total score.

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