

H. Tiles Placement

time limit per test: 3 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

The new pedestrian zone in Moscow city center consists of n squares connected with each other by $n - 1$ footpaths. We define a *simple path* as a sequence of squares such that no square appears in this sequence twice and any two adjacent squares in this sequence are directly connected with a footpath. The size of a simple path is the number of squares in it. The footpaths are designed in a such a way that there is exactly one simple path between any pair of different squares.

During preparations for Moscow City Day the city council decided to renew ground tiles on all n squares. There are k tile types of different colors, numbered from 1 to k . For each square exactly one tile type must be selected and then used to cover this square surface. To make walking through the city center more fascinating, it was decided to select tiles types for each square in such a way that any possible simple path of size exactly k contains squares with all k possible tile colors.

You need to find out whether it is possible to place the tiles this way or not.

Input

The first line contains two integers n, k ($2 \leq k \leq n \leq 200\,000$) — the number of squares in the new pedestrian zone, the number of different tile colors.

Each of the following $n - 1$ lines contains two integers v_i and u_i ($1 \leq v_i, u_i \leq n$) — numbers of the squares connected by the corresponding road.

It's guaranteed, that it's possible to go from any square to any other square, moreover there is exactly one such simple path.

Output

Print "Yes" if it is possible to assign tile colors this way and "No" otherwise.

In case your answer is "Yes", print n integers from 1 to k each, the color of the tile for every square.

Examples

input	Copy
7 4 1 3 2 3 3 4 4 5 5 6 5 7	
output	Copy
Yes 1 1 2 3 4 1 1	

input	Copy
7 3 1 3 2 3 3 4 4 5 5 6 5 7	
output	Copy
No	

Codeforces Round #583 (Div. 1 + Div. 2, based on Olympiad of Metropolises)

Finished

Practice

Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

Problem tags

constructive algorithms dfs and similar trees

*2700

No tag edit access

Contest materials

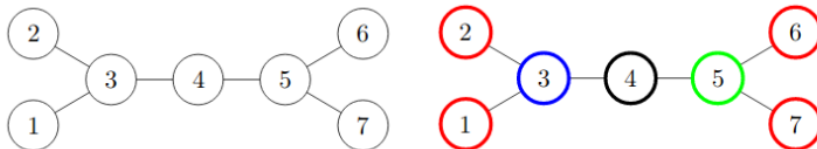
Announcement #1 (en)

Announcement #2 (ru)

Tutorial (en)

Note

The following pictures illustrate the pedestrian zone in first and second examples. The second picture also shows one possible distribution of colors among the squares for $k = 4$.



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