Problem A. All-Star

Time limit: 1 second
Memory limit: 512 megabytes

Somebody once told me...

Shrek has n outhouses in his swamp, indexed from 1 to n. These outhouses are connected by $n-1$ bidirectional roads, such that it is possible to get from any outhouse to any other by a series of roads.

In one move, Shrek may choose three distinct outhouses x, y, z such that there is a road from y to both x and z but no road from x to z, and replace the road connecting y to z with a road connecting x to z.

It is well-known that Shrek can only be described as an "all-star", so he wants his swamp to resemble a star. More precisely, he wants to make some number of moves such that there exists an outhouse that is connected to every other one by a road. Help him find a way to do so in the smallest number of moves.

Input

The first line contains a single integer n — the number of outhouses in Shrek's swamp.

The following $n-1$ lines each contain two integers u, v detailing that there exists a road connecting outhouses u and v.

Constraints

$3 \leq n \leq 10^3$.

It is guaranteed that there always exists a solution using at most 10^6 moves.

Output

In the first line, print a single integer m — the smallest number of moves needed to turn Shrek's swamp into a star.

In the following m lines print three integers x, y and z; denoting that Shrek should preform the described move to outhouses x, y and z.

If several possible sequences of moves exist, you can print any of them.

Example

standard input	standard output
5 1 2 2 3 3 4 4 5	2 3 2 1 3 4 5

Note

In the sample case, after the first move, outhouse 3 will be connected by road to outhouses 1, 2 and 4, and outhouse 5 will be connected by road to outhouse 4. After the second move, outhouse 3 will have roads connecting it to all other outhouses, and so the swamp will be a star. It is impossible to make the swamp a star after just one move, so the above answer is correct.