

Delete the Tree

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 1024 megabytes

You are given a graph with n vertices numbered from 1 to n and $n - 1$ edges. It is guaranteed that at the beginning, every pair of points can be reached from each other, meaning this graph is actually a tree. You are such a tree-hater so you decide to delete this tree!

However, you are only allowed to perform the following operation: select some currently existing vertices. These selected vertices must not be connected by any edges. For each selected vertex v , add an edge between any pair current neighbours of v (a vertex u is a neighbour of v if and only if there is an edge between u and v), and then delete the selected vertex and all its incident edges (an edge e is incident to v if and only if v is one of the endpoints of e). It can be proved that the order of performing the above operation on the selected vertices in each operation does not affect the result. Also note that the operation may introduce multiple edges in the graph.

You can perform this operation no more than 10 times. Please output a sequence of operations so that all vertices will be deleted after the operations. If there are multiple possible sequence of operations, output any will be considered correct. It can be proved that there is at least one feasible operation.

Input

The first line contains an integer n ($3 \leq n \leq 500$), denoting the number of vertices in the initial graph.

Then $n - 1$ lines follow, with the i -th line ($1 \leq i \leq n - 1$) containing two integer x_i, y_i ($1 \leq x_i < y_i \leq n$), denoting there is an edge connecting vertex x_i and y_i in the initial graph.

It is guaranteed that for any $1 \leq i < j < n$, $x_i \neq x_j$ or $y_i \neq y_j$.

Output

The first line contains an integer m , denoting the number of operations. You should make sure that $0 \leq m \leq 10$.

Then m lines follow, with the i -th line describing the i -th operation: the first integer k contains the number of vertices selected in this operation, then k distinct integers in the same line separated by spaces denoting the label of vertices selected in this operation.

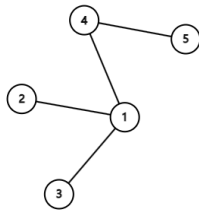
Example

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

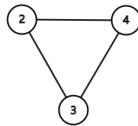
Note

The operations corresponding to the first example's output is shown below.

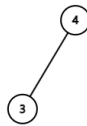
Before the first step, a picture of the graph is shown below:



After the first step, a picture of the graph is shown below:



After the second step, a picture of the graph is shown below:



After the third step, a picture of the graph is shown below:

