Problem K. Twin Spanning Trees

tarjen is playing a game of combining two trees into one graph.

He took two trees on n vertices and combined them into an undirected unweighted graph $G = (V, E)$ with n vertices and $m = 2n - 2$ edges.

But now he cannot decompose the graph back into two trees — please help him!

Formally, partition all edges into exactly two sets T and $E \setminus T$ such that both T and $E \setminus T$ form spanning trees of G.

You may output any valid partition. It is guaranteed that a valid partition exists.

The graph may contain parallel edges but no self-loops.

Input

The first line contains an integer t ($1 \le t \le 5000$) — the number of test cases.

For each test case:

The first line contains an integer n ($2 \le n \le 5000$) — the number of vertices.

The next $2n - 2$ lines each contain two integers u, v ($1 \le u, v \le n$, $u \ne v$), describing an edge. Edges are numbered from 1 to $2n - 2$ in input order.

The sum of n over all test cases does not exceed 10000.

Output

For each test case, output $n - 1$ integers in ascending order — the edge indices included in the first spanning tree. The remaining $n - 1$ edges must also form a spanning tree.

Example

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

Note

First test case: edges $\{1, 2\}$ correspond to $\{(1, 2), (2, 3)\}$, forming a spanning tree. The remaining edges $\{3, 4\}$ correspond to $\{(1, 3), (1, 2)\}$, also forming a spanning tree.

Second test case: edges $\{1, 2, 3\}$ correspond to $\{(1, 2), (2, 3), (3, 4)\}$, forming a spanning tree. The remaining edges $\{4, 5, 6\}$ correspond to $\{(1, 4), (1, 3), (2, 4)\}$, also forming a spanning tree.