

Cutting Center

A tree $S = (V, E)$ with N vertices is given. That is, S is a connected graph with no cycle. Also it is well known that the tree S has exactly $N-1$ edges.

For each vertex u in the tree S , the cutting number $c(u)$ of u is defined as follows: If the (unique) path between two vertices v and w of S different from u contains u , then the unordered pairs $\{v, w\}$ for the vertex u is considered. For the set O of all the possible unordered pairs $\{v, w\}$ satisfying this condition, the size of O is the cutting number $c(u)$ of the vertex u . In case O is empty, the cutting number is zero.

The set of vertices with the maximum cutting number is called the cutting center of S . For example, in the tree of Figure 1, the unordered pairs of vertices different from the vertex 4 satisfying that the path between them contains the vertex 4 are $\{1, 2\}$, $\{1, 3\}$, $\{1, 5\}$, $\{1, 6\}$, $\{1, 7\}$, $\{2, 3\}$, $\{2, 5\}$, $\{2, 6\}$, $\{2, 7\}$, $\{3, 5\}$, $\{3, 6\}$, $\{3, 7\}$. Thus the cutting number $c(4)$ of the vertex 4 is equal to 12. This is the maximum cutting number of the vertices of S and the cutting center of S is $\{4\}$.

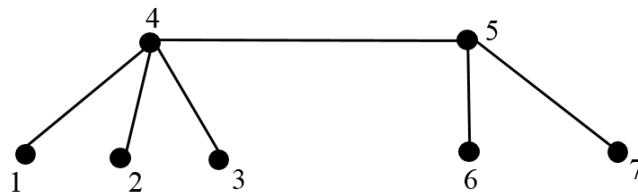


Figure 1.

Given a tree S , write a program to find the cutting center of S and to print the maximum cutting number of the vertices of S .

[입력]

The number of cases T is given in the first line of the input file. Here, $T \leq 20$. In the first line of each case, one integer $N(3 \leq N \leq 100,000)$ is given. This is the number of vertices of the tree. The vertices of the tree are represented as the integers between 1 and N . In each of the following $N-1$ lines, two integers a and b are given, which represents that there is an edge between a and b . Here, $1 \leq a, b \leq N$.

The input is given from the following two sets.

- Set 1: $N \leq 1,000$.
- Set 2: $N \leq 100,000$.

[출력]

In the first line, print, in ascending order, the vertices belonging to the cutting center of the tree. In the second line, print the maximum cutting number of the vertices of the tree.

[I/O Example]

Input

```
3
4
1 2
1 3
1 4
7
4 1
4 2
4 3
4 5
5 6
5 7
14
8 6
8 7
8 9
6 1
6 2
6 3
6 4
6 5
9 10
9 11
9 12
9 13
9 14
```

Output

```
1
3
4
12
6 9
50
```