Generating Random Trees

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	1024 mebibytes

Suppose that you need to generate a uniformly distributed random tree from the set of all labeled trees on n vertices. Consider the following algorithm: while the graph is still not connected, pick two uniformly random different vertices from the graph and, if they are not in the same connected component, add an edge between them.

Performing the above process is a rather simple task, requiring only a simple DSU (disjoint set union) data structure. Unfortunately, it turns out that this process does not generate uniformly random labeled trees! Your task is to discern the trees generated by the above procedure from the uniformly random labeled trees.

More precisely, you are given $2k$ labeled trees with n vertices. Exactly k of said trees were uniformly chosen from the set of all labeled trees on n vertices, and exactly k of them were generated by the above procedure. The order in which $2k$ trees are given is also chosen uniformly at random. All random choices are independent from each other.

For each of the $2k$ trees, you need to say whether it was chosen uniformly at random or generated by the above procedure. **However, you are allowed to make some mistakes.** On each test, your solution will be accepted if and only if it has an accuracy of 80% or more. While it is guaranteed that exactly k trees in the input were generated in one way and exactly k trees were generated the other way, there **are no restrictions** on the number of trees that you can identify as truly uniform.

There are exactly 6 tests in this problem: one sample and five main tests. In all main tests, $n = 10^4$ and $k = 50$. In the sample, $n = 4$ and $k = 2$. The sample is here to clarify the input and output formats. **Any answer that satisfies the output format will be accepted for the sample**. It is guaranteed that the sample is the first test in the testing system.

Input

The first line contains two integers n and k ($n = 4$ and $k = 2$ in the sample; $n = 10^4$ and $k = 50$ in the five main tests).

Each of the next $n - 1$ lines contains two integers u and v ($1 \le u, v \le n$; $u \ne v$): the vertices connected by an edge in the first given tree.

The remaining $(2k - 1)(n - 1)$ lines describe the remaining $2k - 1$ trees in the same format.

Output

Output $2k$ lines: the i-th line should be "`DSU`" or "`Uniform`" depending on whether your solution thinks that the i-th tree was generated by the procedure given in the statement or was chosen uniformly at random from the set of all labeled trees on n vertices. For the sample, any answer that satisfies the output format will be accepted; for the main tests, you are allowed to make at most 20 mistakes.

Example

standard input	*standard output*
4 2 3 2 1 4 1 3 2 1 3 2 4 1 4 1 3 2 2 4 1 4 3 1 2 1	DSU Uniform DSU Uniform