Ada Lovelace and Babbage Engines
Problem ID: adagears

Ada Lovelace (1815-1852) is widely celebrated as one of the first computer programmers in history. She created programs for a purely mechanical and even theoretical machine called the *Babbage Engine*.

Ada is away on a trip with her parents and left you behind to analyze a particular program she wrote for the machine.

As part of the program, there is a collection of gears, and some pairs of them are connected. When two gears are connected, and one of them is forced to turn clockwise, the other would be forced to turn counterclockwise, and vice-versa. In case a gear is forced to turn in both directions, the machine breaks.

Your job is to predict what will happen if a gear is forced to turn clockwise.

Input

The input starts with a line containing two integers N and M ($1 \leq N \leq 10^5$ and $0 \leq M \leq 10^5$), the number of gears, and the number of connections, respectively. Gears are numbered from 1 to N.

The next M lines will contain two integers each a and b stating that gear a is connected to gear b ($1 \leq a, b \leq N$ and $a \neq b$).

It is guaranteed that the same pair of gears is never connected more than once.

Output

Your output should start with a single line. This will be either "Help me Ada", in case the machine would break when gear 1 is forced to turn clockwise (see the examples below), or "OK", in case the machine would run smoothly.

If the answer is "OK", the following N lines should have one word each, describing what will happen with each of the gears (in order). The descriptions can be either "CW" if the gear will be turning clockwise, "CCW" if the gear will be turning counterclockwise, or "ST" if the gear won't be moving.

Sample Input 1	Sample Output 1
2 1 1 2	OK CW CCW

Sample Input 2	Sample Output 2
3 1 1 2	OK CW CCW ST

Sample Input 3	Sample Output 3
3 3 1 2 2 3 3 1	Help me Ada