| 9	2

16. Circular linked list

Please implement a program which creates a **circular linked list** and displays the elements in the list. Next, use it to solve the Josephus problem. The illustration of the processing about Josephus problem is the following figure. Assume there are eight people. Each number represents a person. k is used as a specified number of people to be skipped. Therefore, in the first round, #2 is killed. The procedure is repeated with the remaining people, starting with the next person who is not dead, going in the **same direction** and skipping the same number of people, until only one person remains, and is survived. The default direction is **clockwise**. The input file contains a list of names separated by commas. The second line is the k value. Please output the sequence of the people who are killed during the process.
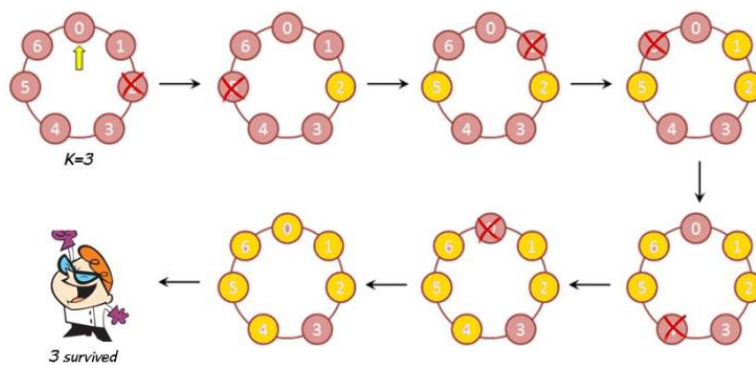
An Illustration of the Josephus Problem.

Note: You must use linked lists; otherwise, no points will be given.

Test Case

Please test your program with Input, and then check the answers with Output.

Listing 16: Circular linked list

1	Input：
2	Jay,Tom,Wayne,Kevin,Helen,Jim,Kile,Ruby,Nick,Patty,Mike,Kurt
3	2
4	
5	Output：
6	Tom is killed.
7	Kevin is killed.
8	Jim is killed.

9	Ruby is killed.
10	Patty is killed.
11	Kurt is killed.
12	Wayne is killed.
13	Kile is killed.
14	Mike is killed.
15	Helen is killed.
16	Jay is killed.
17	Nick is survived.

17. Tower of Hanoi

The **Tower of Hanoi** is a mathematical game or puzzle. It consists of three rods and a number of disks of different sizes, which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, the smallest at the top, thus making a conical shape. Tower of Hanoi puzzle with n disks can be solved in minimum 2^n-1 steps. The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:

　　1. Only one disk can be moved at a time.

　　2. Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack.

　　3. No disk may be placed on top of a smaller disk.
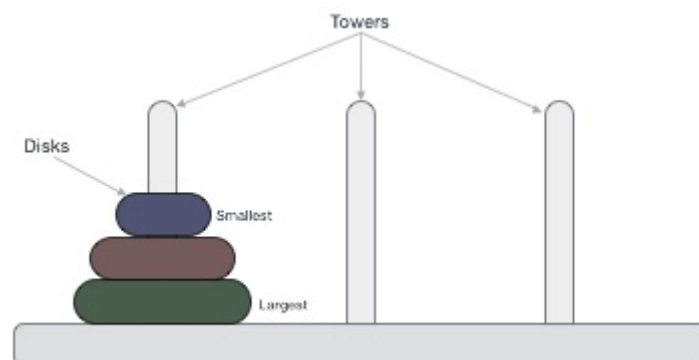
The input is a positive integer that represents the number of disks you have, and the output should contain the minimum of steps and its moving processes.

Test Case

Please test your program with Input, and then check the answer with Output.

Listing 17: Tower of Hanoi

1	Input：