Data Structure
Laboratory 03

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1. Create the following functions for a Linked List:
   `insert`: insert *n*, where *n* is the number of elements;
   append *n* numbers into the list
   `show`: show the list in normal order
   `rshow`: show the list in reserve order
   `delete`: delete all the node if its value is equal to *a*
   `END`: terminate

   NULL will be displayed for `show` and `rshow` when the list is empty

   Example
   Input

```
insert
5
1 2 3 4 5
show
insert
2
1 2
delete
1
show
rshow
END
```

   Output

```
1 2 3 4 5
2 3 4 5 2
2 5 4 3 2
```

2. *n* number of persons form a circle. The first person starts to count 1. The next person count 2 and so on. The person who counts *t* will leave the circle. This game will end if no person remains in the circle.

   Write a simple program to output the sequence of persons leaving the circle. The input data contains two lines. The first line stores the value of *t* and the second line stores the value of *n*.

   Example:
   Input:
   ```
   2
   5
   ```

   Output:
   ```
   2 4 1 5 3
   ```

3. Write a problem to trace the customers and the status of the tellers in a bank. The first line of the input stores the number of tellers in the bank. Next lines contain the information of customers as follows:

```
ArrivalTime Name OccupiedTime
```

When a customer arrives, he/she will come to the first teller. If the first teller is busy, he/she will go to next teller and so on. If all tellers are busy, the customer will line up in the waiting queue.

The program should output the status of each teller and waiting queue for each second until all customers have been served.

Be noted that you can assume the information in the input is in order. The last line of input containing the number -1 signals the end of the input.

Example:
Input:

```
3
2 Tom 5
2 Mary 2
4 Ann 2
5 Peter 1
5 Annie 1
5 John 2
5 Rebecca 1
6 May 2
7 Jessica 1
7 Kelvin 1
-1
```

Output:

```
1:
Teller1: NULL
Teller2: NULL
Teller3: NULL
Waiting: NULL

2:
Teller1: Tom
Teller2: Mary
Teller3: NULL
Waiting: NULL

3:
Teller1: Tom
Teller2: Mary
Teller3: NULL
Waiting: NULL

4:
```

```
Teller1: Tom
Teller2: Ann
Teller3: NULL
Waiting: NULL

5:
Teller1: Tom
Teller2: Ann
Teller3: Peter
Waiting: Annie John Rebecca

6:
Teller1: Tom
Teller2: Annie
Teller3: John
Waiting: Rebecca May

7:
Teller1: Rebecca
Teller2: May
Teller3: John
Waiting: Jessica Kelvin

8:
Teller1: Jessica
Teller2: May
Teller3: Kelvin
Waiting: NULL
```