Lucky Numbers

We have a Natural number $N \geq 2$. We call lucky numbers to the ones obtained after doing the following: we create a queue that contains all the numbers from 1 to N; we remove from the queue one number out of 2 (i.e numbers 1, 3, ... take into account that this process is different from the one in the previous exercise); using the new queue, we remove one number out of 3; then one number out of 4; etc. The process ends when we are going to remove one number out of m and the queue has less than m elements. The numbers still in the queue are the lucky numbers.

Design a procedure that receives the value of N and returns a list with the resulting lucky numbers.

(Hint: in order to remove the numbers from the queue, you can extract the element in the front and insert it in the back unless it is the number that has to be removed.)

Input

The input has several test cases in separate lines. Each test case contains the number for which the lucky numbers have to be calculated. The value of this number is $2 \leq N \leq 1.000.000$. The input ends when a 0 is read, for which no output must be written.

Output

For each test case, the output must be the the value of N followed by the character ':', a blank space and the list of lucky numbers in reverse order separated by blank spaces.

Sample input

```
3
10
30
0
```

Sample output

```
3: 2
10: 10 6 4
30: 30 22 18 12 10
```

Notes

This exercise must be understood in the context of the *Data Structures and Algorithms* course, FDI-UCM 2016/2017 (prof. Gonzalo Méndez). Therefore, the only valid solutions are those that use the concepts studied in this course. Additional remarks may be provided in class.