

## 11129 An antiarithmetic permutation

A permutation of  $n + 1$  is a bijective function of the initial  $n + 1$  natural numbers:  $0, 1, \dots, n$ . A permutation  $p$  is called antiarithmetic if there is no subsequence of it forming an arithmetic progression of length bigger than 2, i.e. there are no three indices  $0 \leq i < j < k < n$  such that  $(p_i, p_j, p_k)$  forms an arithmetic progression.



For example, the sequence  $(2, 0, 1, 4, 3)$  is an antiarithmetic permutation of 5. The sequence  $(0, 5, 4, 3, 1, 2)$  is not an antiarithmetic permutation of 6 as its first, fifth and sixth term  $(0, 1, 2)$  form an arithmetic progression; and so do its second, fourth and fifth term  $(5, 3, 1)$ .

Your task is to generate an antiarithmetic permutation of  $n$ .

### Input

Each line of the input file contains a natural number  $3 \leq n \leq 10000$ . The last line of input contains '0' marking the end of input.

### Output

For each  $n$  from input, produce one line of output containing an (any will do) antiarithmetic permutation of  $n$  in the format shown below.

### Sample Input

```
3
5
6
0
```

### Sample Output

```
3: 0 2 1
5: 2 0 1 4 3
6: 2 4 3 5 0 1
```