A permutation of $n+1$ is a bijective function of the initial $n+1$ natural numbers: $0, 1, \ldots n$. 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
```