

There is a permutation a of size n that you have to guess interactively.

You are allowed to make queries of the following kind. You output any permutation b of size n . The information given back to you is the length of the longest common subsequence of permutations a and b .

Interaction protocol

First, your program must read from the standard input one line with integer n , the size of the permutation you have to guess.

Your program must then write to the standard output one line with a permutation and wait for a line in the standard input with a response, then write next query and read next response, and so on until you know a .

Once you receive response n (which means you've found a), you're done and your program must exit.

Input

The first line of the standard input contains integer n , the size of the permutation ($1 \leq n \leq 40$).

Each of the next lines of the standard input contains response to your query — the length of the longest common subsequence of the permutation queried by you and the permutation a .

Output

Each line of the standard output should contain a space-separated list of integers that form a permutation you're querying.

Your can make at most $5n^2$ queries.

You must flush the standard output after printing each line. You must not print any lines after you receive the response n , just exit.

Sample Input

```
4
3
2
2
4
```

Sample Output

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