

[PI028] - Permutations Portal

You're stuck inside a magical vault known as the Permutation Portal.

To escape, you must be able to recite the complete list of all permutations from 1 to n — and not just in any order. The portal is very picky. It demands that the permutations be listed in alphabetical (lexicographic) order.

You have no wand. No sword. Just your brain. But luckily, you love permutations.

Task

Given an integer n , print all permutations of the numbers from 1 to n , each on a new line, in lexicographic order.

Input

You're given a line with a single integer n ($1 \leq n \leq 8$).

Ouput

Print $n!$ lines. Each line contains one permutation of the numbers 1 to n , as n space-separated integers. Permutations must be listed in **increasing lexicographic order**.

Example 1

Input

3

Output

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

Example 2

Input

1

Output

1

Example 3

Input

2

Output

```
1 2
2 1
```



