From one to en (2) P53046_en

Write a program that prints all the permutations of $\{1, \ldots, n\}$ with exactly one cycle, for a given n. Assume that the content of the position i of a permutation indicates "the next position to visit".

For instance, consider the permutation $(4, 3, 2, 5, 1, 7, 6)$. The position 1 has a 4, the position 4 has a 5, and the position 5 has a 1. Therefore, one of the cycles of this permutation is $1 \to 4 \to 5 \to 1$. The other two cycles are $2 \to 3 \to 2$ and $6 \to 7 \to 6$. The permutation $(3, 2, 1)$ has the two cycles $1 \to 3 \to 1$ and $2 \to 2$. The permutation $(3, 4, 5, 6, 7, 1, 2)$ has only the cycle $1 \to 3 \to 5 \to 7 \to 2 \to 4 \to 6 \to 1$.

Input

Input consists of a natural number $n > 0$.

Output

Print all the permutations of $\{1, \ldots, n\}$ with only one cycle.

Information about the checker

You can print the solutions to this exercise in any order.

Hint

The judge may accept a program that generates all the permutations and, for each one, checks if it only has one cycle. However, this is not the right solution for this problem.

Sample input 1

```
3
```

Sample output 1

```
(2,3,1)
(3,1,2)
```

Sample input 2

```
4
```

Sample output 2

```
(2,3,4,1)
(2,4,1,3)
(3,4,2,1)
(3,1,4,2)
(4,3,1,2)
(4,1,2,3)
```

Problem information

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