
From one to en (2)

P53046_en

Write a program that prints all the permutations of $\{1, \dots, n\}$ 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 $1 \rightarrow 4 \rightarrow 5 \rightarrow 1$. The other two cycles are $2 \rightarrow 3 \rightarrow 2$ and $6 \rightarrow 7 \rightarrow 6$. The permutation $(3, 2, 1)$ has the two cycles $1 \rightarrow 3 \rightarrow 1$ and $2 \rightarrow 2$. The permutation $(3, 4, 5, 6, 7, 1, 2)$ has only the cycle $1 \rightarrow 3 \rightarrow 5 \rightarrow 7 \rightarrow 2 \rightarrow 4 \rightarrow 6 \rightarrow 1$.

Input

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

Output

Print all the permutations of $\{1, \dots, n\}$ 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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