

002-Josephus Permutation

Difficulty: Medium

Expect Time: 15min

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In computer science and mathematics, the Josephus problem (or Josephus permutation) is a theoretical problem related to a certain counting-out game.

Here's the basic scenario:

1. There are n people (numbered from 1 to n) standing in a circle.
2. Starting from a person numbered 1, count around the circle and eliminate every k -th person from the circle, until only one person remains.

The process can be described as follows:

1. Start with a circle of n people, numbered from 1 to n .
2. Start from numbered 1, counting k people (including the person you start counting from).
3. Eliminate the k -th person from the circle.
4. Continue the process from the next person after the eliminated one.
5. Repeat steps 2-4 until only one person remains.

For example, given $n = 8$ and $k = 2$, because we want to find the number of the last person, a total of 7 eliminations will be performed. The table below shows the people removed in each round.

| Round | Has Not been removed | Removed in this round |
|-------|------------------------|-----------------------|
| 0 | 1, 2, 3, 4, 5, 6, 7, 8 | |
| 1 | 1, 3, 4, 5, 6, 7, 8 | 2 |
| 2 | 1, 3, 5, 6, 7, 8 | 4 |
| 3 | 1, 3, 5, 7, 8 | 6 |
| 4 | 1, 3, 5, 7 | 8 |
| 5 | 1, 5, 7 | 3 |
| 6 | 1, 5 | 7 |
| 7 | 1 | 5 |

After 7 eliminations, the last remaining person is number 1.

Input

1. Please implement the function [permutation](#) in [solution.h](#).
2. The input for the problem will be handled by the provided code.
3. The Online Judge will replace the following files:
 - a) [main.cpp](#)
4. The following files are part of the test cases of Online Judge. Please copy the contents of the following file into [main.cpp](#) for testing.
 - a) [case1.h](#)
 - b) [case2.h](#)
5. Input range
 - a) n - Indicates how many people there are in total
 k - Determine which person to eliminate in each round.
 - b) $100 \leq n \leq 3000$
 - c) $2 \leq k \leq 300$
 - d) $n > k$

Output

1. Please **DON'T** print any data to STDOUT.
2. The output for the problem will be handled by the provided code.
3. The sample output and the corresponding input files are shown below:
 - a) [out001.txt](#) corresponds to [case1.h](#)
 - b) [out002.txt](#) corresponds to [case2.h](#)