



KnightL on a Chessboard

by bayleef

Problem

Submissions

Leaderboard

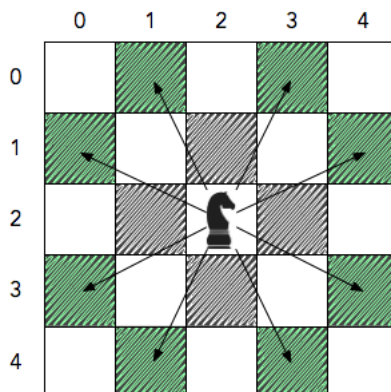
Discussions

Editorial

KnightL is a chess piece that moves in an L shape. We define the possible moves of **KnightL**(a, b) as any movement from some position (x_1, y_1) to some (x_2, y_2) satisfying either of the following:

- $x_2 = x_1 \pm a$ and $y_2 = y_1 \pm b$, or
- $x_2 = x_1 \pm b$ and $y_2 = y_1 \pm a$

Note that (a, b) and (b, a) allow for the same exact set of movements. For example, the diagram below depicts the possible locations that **KnightL**(1, 2) or **KnightL**(2, 1) can move to from its current location at the center of a 5×5 chessboard:



Observe that for each possible movement, the Knight moves **2** units in one direction (i.e., horizontal or vertical) and **1** unit in the perpendicular direction.

Given the value of n for an $n \times n$ chessboard, answer the following question for each (a, b) pair where $1 \leq a, b < n$:

- What is the minimum number of moves it takes for **KnightL**(a, b) to get from position $(0, 0)$ to position $(n - 1, n - 1)$? If it's not possible for the Knight to reach that destination, the answer is -1 instead.

Then print the answer for each **KnightL**(a, b) according to the *Output Format* specified below.

Input Format

A single integer denoting n .

Constraints

- $5 \leq n \leq 25$

Output Format

Print exactly $n - 1$ lines of output in which each line i (where $1 \leq i < n$) contains $n - 1$ space-separated integers describing the minimum number of moves **KnightL**(i, j) must make for each respective j (where $1 \leq j < n$). If some **KnightL**(i, j) cannot reach position $(n - 1, n - 1)$, print -1 instead.

For example, if $n = 3$, we organize the answers for all the (i, j) pairs in our output like this:

(1,1) (1,2)
(2,1) (2,2)

Sample Input 0

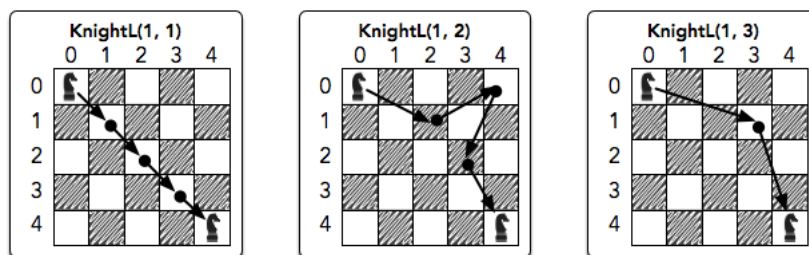
5

Sample Output 0

```
4 4 2 8
4 2 4 4
2 4 -1 -1
8 4 -1 1
```

Explanation 0

The diagram below depicts possible minimal paths for *KnightL*(1, 1), *KnightL*(1, 2), and *KnightL*(1, 3):



One minimal path for *KnightL*(1, 4) is:

$(0, 0) \rightarrow (1, 4) \rightarrow (2, 0) \rightarrow (3, 4) \rightarrow (4, 0) \rightarrow (0, 1) \rightarrow (4, 2) \rightarrow (0, 3) \rightarrow (4, 4)$

We then print 4 4 2 8 as our first line of output because *KnightL*(1, 1) took 4 moves, *KnightL*(1, 2) took 4 moves, *KnightL*(1, 3) took 2 moves, and *KnightL*(1, 4) took 8 moves.

In some of the later rows of output, it's impossible for *KnightL*(*i*, *j*) to reach position (4, 4). For example, *KnightL*(3, 3) can only move back and forth between (0, 0) and (3, 3) so it will never reach (4, 4).

f t in

Submissions: 1752

Max Score: 35

Difficulty: Medium

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☆☆☆☆☆

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Current Buffer (saved locally, editable)

Java 7

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         Scanner in = new Scanner(System.in);
11         int n = in.nextInt();
12         // your code goes here
13     }
14 }
```

15

Line: 1 Col: 1

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