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KnightL on a Chessboard ☆

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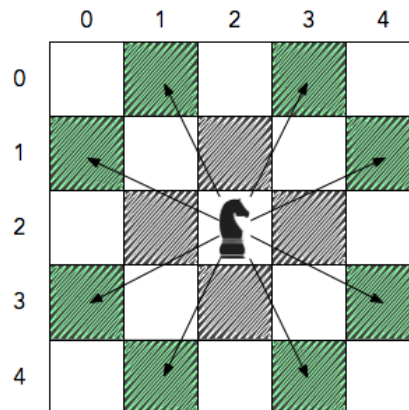
Observe that for each possible movement, the Knight moves 2 units in one direction (i.e., horizontal or vertical) and 1 unit in the perpendicular direction.

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

- 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

- $5 \le n \le 25$

Output Format