

# 2664. The Knight's Tour

## Description

Given two positive integers `m` and `n` which are the height and width of a **0-indexed** 2D-array `board`, a pair of positive integers `(r, c)` which is the starting position of the knight on the board.

Your task is to find an order of movements for the knight, in a manner that every cell of the `board` gets visited **exactly** once (the starting cell is considered visited and you **shouldn't** visit it again).

Return *the array `board` in which the cells' values show the order of visiting the cell starting from 0 (the initial place of the knight).*

Note that a **knight** can **move** from cell `(r1, c1)` to cell `(r2, c2)` if  $0 \leq r2 \leq m - 1$  and  $0 \leq c2 \leq n - 1$  and  $\min(\text{abs}(r1 - r2), \text{abs}(c1 - c2)) = 1$  and  $\max(\text{abs}(r1 - r2), \text{abs}(c1 - c2)) = 2$ .

### Example 1:

**Input:** `m = 1, n = 1, r = 0, c = 0`

**Output:** `[[0]]`

**Explanation:** There is only 1 cell and the knight is initially on it so there is only a 0 inside the 1x1 grid.

### Example 2:

**Input:** `m = 3, n = 4, r = 0, c = 0`

**Output:** `[[0,3,6,9],[11,8,1,4],[2,5,10,7]]`

**Explanation:** By the following order of movements we can visit the entire board.

`(0,0)→(1,2)→(2,0)→(0,1)→(1,3)→(2,1)→(0,2)→(2,3)→(1,1)→(0,3)→(2,2)→(1,0)`

### Constraints:

- $1 \leq m, n \leq 5$
- $0 \leq r \leq m - 1$
- $0 \leq c \leq n - 1$
- The inputs will be generated such that there exists at least one possible order of movements with the given condition

