Problem 2624: Snail Traversal

Problem Information

Difficulty: Medium
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Write code that enhances all arrays such that you can call the

snail(rowsCount, colsCount)

method that transforms the 1D array into a 2D array organised in the pattern known as

snail traversal order

. Invalid input values should output an empty array. If

rowsCount * colsCount !== nums.length

, the input is considered invalid.

Snail traversal order

starts at the top left cell with the first value of the current array. It then moves through the entire first column from top to bottom, followed by moving to the next column on the right and traversing it from bottom to top. This pattern continues, alternating the direction of traversal with each column, until the entire current array is covered. For example, when given the input array

[19, 10, 3, 7, 9, 8, 5, 2, 1, 17, 16, 14, 12, 18, 6, 13, 11, 20, 4, 15]

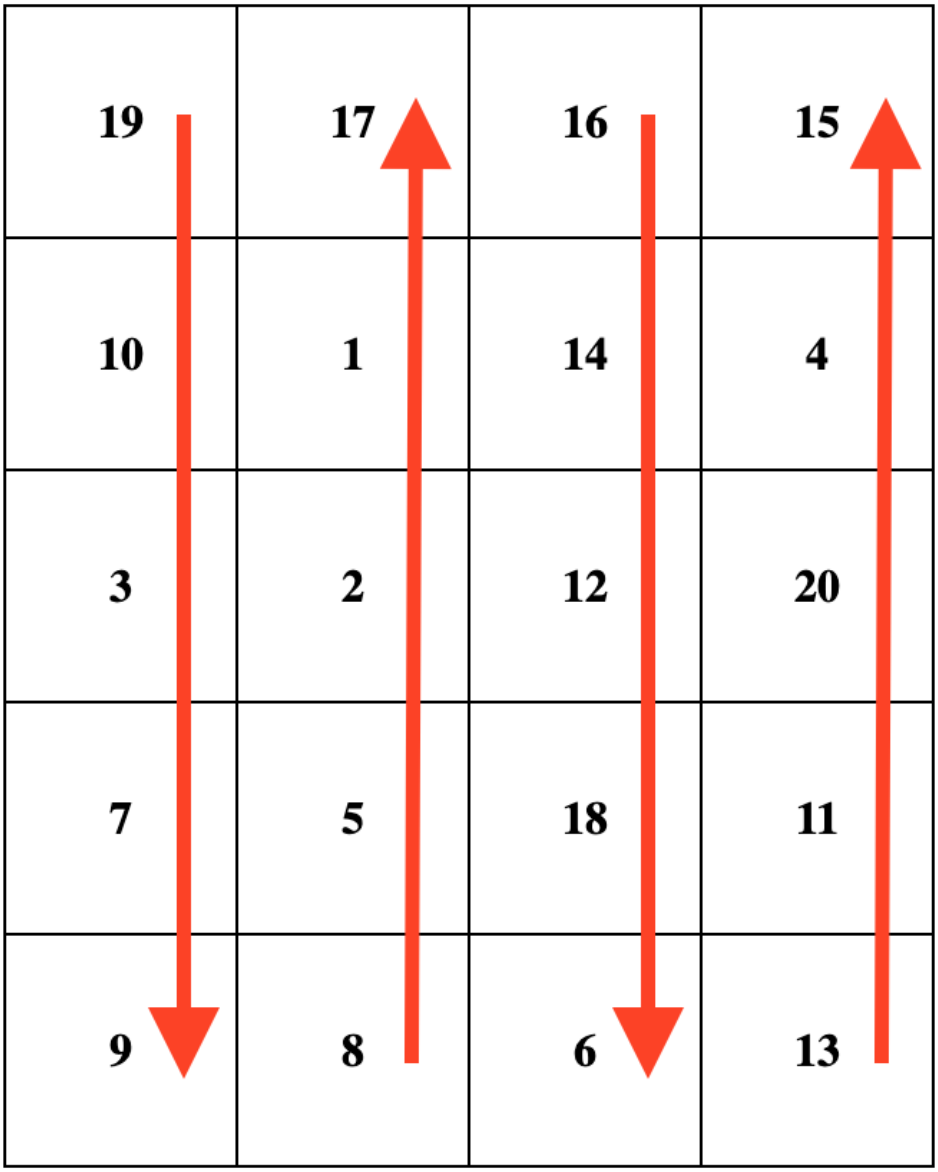
with

rowsCount = 5

and

colsCount = 4

, the desired output matrix is shown below. Note that iterating the matrix following the arrows corresponds to the order of numbers in the original array.



Example 1:

Input:

nums = [19, 10, 3, 7, 9, 8, 5, 2, 1, 17, 16, 14, 12, 18, 6, 13, 11, 20, 4, 15] rowsCount = 5 colsCount = 4

Output:

[[19,17,16,15], [10,1,14,4], [3,2,12,20], [7,5,18,11], [9,8,6,13]]

Example 2:

Input:

nums = [1,2,3,4] rowsCount = 1 colsCount = 4

Output:

[[1, 2, 3, 4]]

Example 3:

Input:

nums = [1,3] rowsCount = 2 colsCount = 2

Output:

[]

Explanation:

2 multiplied by 2 is 4, and the original array [1,3] has a length of 2; therefore, the input is invalid.

Constraints:

0 <= nums.length <= 250

1 <= nums[i] <= 1000

1 <= rowsCount <= 250

1 <= colsCount <= 250

Code Snippets

JavaScript:

```
/**
* @param {number} rowsCount
* @param {number} colsCount
* @return {Array<Array<number>>}
*/
Array.prototype.snail = function(rowsCount, colsCount) {

}

/**
* const arr = [1,2,3,4];
* arr.snail(1,4); // [[1,2,3,4]]
*/
```

TypeScript:

```
interface Array<T> {
snail(rowsCount: number, colsCount: number): number[][];
}


Array.prototype.snail = function(rowsCount: number, colsCount: number):
number[][] {

}

/**
* const arr = [1,2,3,4];
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```

Solutions

JavaScript Solution:

```
/**
* Problem: Snail Traversal
* Difficulty: Medium
* Tags: array
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(1) to O(n) depending on approach
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