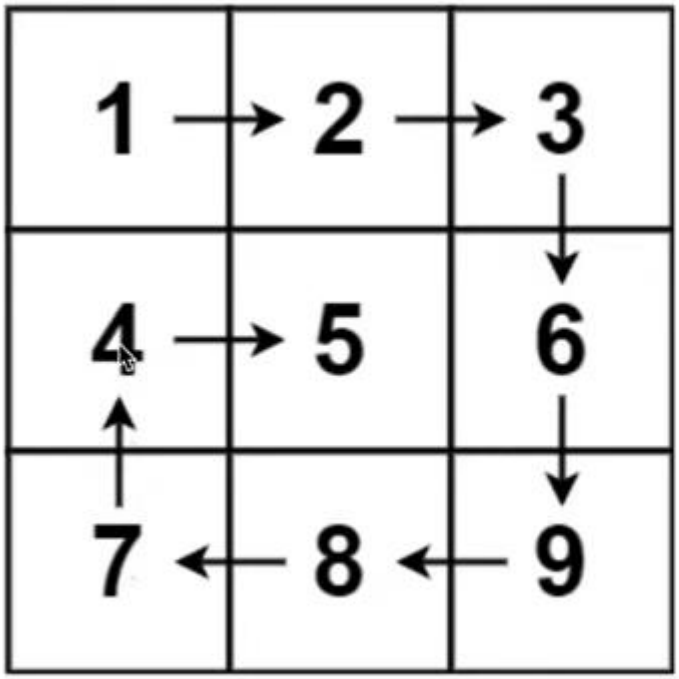
ROUND 2

1. **Given a list of integers, shift all the zeros to the end of the list while maintaining the relative order of the non-zero elements. Modify the list in place.**
   Sample Input and Output
   Input: [0, 1, 0, 3, 12]
   Output: [1, 3, 12, 0, 0]
2. **Given an integer n, generate an n x n matrix filled with elements from 1 to n2n^2n2 in a spiral order. The matrix should be filled in a clockwise direction starting from the top-left corner.**
   Input
   An integer n (1 ≤ n ≤ 20).
   Output
   A 2D list (list of lists) representing the n x n matrix filled with integers in spiral order.

Example 1:




```
Input: matrix = [[1,2,3],[4,5,6],[7,8,9]]
Output: [1,2,3,6,9,8,7,4,5]
```

3. **Problem Statement: Rotate Matrix 90 Degrees Clockwise**

   Description

   Given an n x n matrix, rotate the matrix by 90 degrees clockwise in-place.

   Input

   •An n x n 2D list (list of lists) representing the matrix, where 1≤n≤1001\leq n \leq 1001≤n≤100.

   Output

   •The same 2D list after it has been rotated 90 degrees clockwise.

   Example

   Example 1:

   Input:

   matrix = [

   [1, 2, 3],

   [4, 5, 6],

   [7, 8, 9]]

   Output:

   [

   [7, 4, 1],

   [8, 5, 2],

   [9, 6, 3]

   ]

4. **Given a string, perform basic string compression using the counts of repeated characters. For example, the string "aabcccccaaa" would become "a2b1c5a3". If the "compressed" string would not become smaller than the original string, return the original string. The string should only contain uppercase and lowercase letters (a-z).**
   Sample Input and Output
   Example 1:
   Input: "aabcccccaaa"
   Output: "a2b1c5a3"

5. **Sample Input:** 5

```
1   1
2   2
  3
4   4
5   5
```

6. **Sample Input:** D

```
    A
   BAB
  CBABC
 DCBABCD
```

7. **Excel Sheet Column Number**
   Given a string columnTitle that represents the column title as appears in an Excel sheet, return its corresponding column number.
   For example:
   A -> 1
   B -> 2
   C -> 3
   ...
   Z -> 26
   AA -> 27
   AB -> 28
   ...

   Example 1:
   Input: columnTitle = "A"
   Output: 1
   Example 2:
   Input: columnTitle = "AB"
   Output: 28
   Example 3:
   Input: columnTitle = "ZY"
   Output: 701
   Constraints:
   1 <= columnTitle.length <= 7
   columnTitle consists only of uppercase English letters.
   columnTitle is in the range ["A", "FXSHRXW"].

8. **Write a Program to remove all repeated characters from a given string.**

   Input

   Input string: Programming in C.

   Output

   String after removing duplicate characters: Progamin C.