1.Rotate a Square Matrix 90 Degree Clockwise

Input:

1 2 3
4 5 6
7 8 9

Output:

7 4 1
8 5 2
9 6 3

code:

```
:#include <stdio.h>
#define N 3
void rotateMatrix(int matrix[N][N]) {
        for (int i = 0; i < N; i++) {
        for (int j = i; j < N; j++) {

            int temp = matrix[i][j];
            matrix[i][j] = matrix[j][i];
            matrix[j][i] = temp;
        }
    }
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < N / 2; j++) {
                        int temp = matrix[i][j];
            matrix[i][j] = matrix[i][N - j - 1];
            matrix[i][N - j - 1] = temp;
        }
    }
}
void printMatrix(int matrix[N][N]) {
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d ", matrix[i][j]);
        }
        printf("\n");
    }
}

int main() {
    // Input matrix
    int matrix[N][N] = {
        {1, 2, 3},
        {4, 5, 6},
        {7, 8, 9}
    };
```

```
    printf("Original Matrix:\n");
    printMatrix(matrix);
    rotateMatrix(matrix);
    printf("\nMatrix after rotation by 90 degrees clockwise:\n");
    printMatrix(matrix);
    return 0;
}
```

2.Print a given matrix in spiral form
Given a matrix mat[][] of size m x n, the task is to print all elements of the matrix in spiral form.

Examples:

Input: mat[][] = [[1, 2, 3, 4],
[5, 6, 7, 8],
[9, 10, 11, 12],
[13, 14, 15, 16]]
Output: [1, 2, 3, 4, 8, 12, 16, 15, 14, 13, 9, 5, 6, 7, 11, 10]

Code:

```
#include <stdio.h>
#define M4
#define N4
void printSpiral(int mat[M][N]) {
    int top = 0, left = 0;
    int bottom = M - 1, right = N - 1;
    while (top <= bottom && left <= right) {
        // Print the top row
        for (int i = left; i <= right; i++) {
            printf("%d ", mat[top][i]);
        }
        top++;
        for (int i = top; i <= bottom; i++) {
            printf("%d ", mat[i][right]);
        }
        right--;
        if (top <= bottom) {
            for (int i = right; i >= left; i--) {
                printf("%d ", mat[bottom][i]);
            }
            bottom--;
        }
        if (left <= right) {
            for (int i = bottom; i >= top; i--) {
            printf("%d ", mat[i][left]);
```

```
            }
            left++;
        }
    }
}

int main() {
    int mat[M][N] = {
        {1, 2, 3, 4},
        {5, 6, 7, 8},
        {9, 10, 11, 12},
        {13, 14, 15, 16}
    };
    printf("Spiral Order of the Matrix:\n");
    printSpiral(mat);
    return 0;
}
```