```java
//to sort non-boundary elements
import java.util.Scanner;
import java.util.Arrays;

public class NonBoundarySort
{                                                       //class starts
    public static void main()
{                                                      //main starts
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of rows (p): ");
        int p = scanner.nextInt();
        System.out.print("Enter the number of columns (q): ");
        int q = scanner.nextInt();

        int[][] matrix = new int[p][q];

        // Input matrix elements
        System.out.println("Enter"+p*q+"  elements of the
matrix:");                          //to enter elements of the array
        for (int i = 0; i < p; i++) {
            for (int j = 0; j < q; j++) {
                matrix[i][j] = scanner.nextInt();
            }
        }

        // Display original matrix
        System.out.println("Original Matrix:");
        displayMatrix(matrix);

        // Sort non-boundary elements
        sortNonBoundary(matrix);

        // Display sorted matrix
        System.out.println("Matrix with Non-Boundary Elements Sorted:");
        displayMatrix(matrix);

        scanner.close();
    }                                                                   //main
ends

    public static void sortNonBoundary(int[][] matrix) {
        int rows = matrix.length;
        int cols = matrix[0].length;

        // Sort only non-boundary elements
        for (int i = 1; i < rows - 1; i++) {
            for (int j = 1; j < cols - 1; j++) {
                for (int k = 1; k < rows - 1; k++) {
                    for (int l = 1; l < cols - 1; l++) {
                        if (matrix[k][l] > matrix[i][j]) {
                            int temp = matrix[k][l];
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                            matrix[k][l] = matrix[i][j];
                            matrix[i][j] = temp;
                        }
                    }
                }
            }
        }
    }

    public static void displayMatrix(int[][] matrix) {
        for (int[] row : matrix) {
            for (int cell : row) {
                System.out.print(cell + "\t");
            }
            System.out.println();
        }
    }
}
            //class ends

```