8.Writing a program in Java implementing the quick sort algorithm

```
public class QuickSort {

    public static void main(String[] args) {
        int[] arr = {9, 3, 2, 8, 5, 1, 7, 4, 6};
        System.out.println("Original array: ");
        printArray(arr);

        quickSort(arr, 0, arr.length - 1);

        System.out.println("Sorted array: ");
        printArray(arr);
    }

    public static void quickSort(int[] arr, int low, int high) {
        if (low < high) {
            int pivotIndex = partition(arr, low, high);
            quickSort(arr, low, pivotIndex - 1);
            quickSort(arr, pivotIndex + 1, high);
        }
    }

    public static int partition(int[] arr, int low, int high) {
        int pivot = arr[high];
        int i = low - 1;

        for (int j = low; j < high; j++) {
            if (arr[j] < pivot) {
                i++;
                swap(arr, i, j);
            }
```

```
        }

        swap(arr, i + 1, high);
        return i + 1;
    }

    public static void swap(int[] arr, int i, int j) {
        int temp = arr[i];
        arr[i] = arr[j];
        arr[j] = temp;
    }

    public static void printArray(int[] arr) {
        for (int num : arr) {
            System.out.print(num + " ");
        }
        System.out.println();
    }
}
```

OUTPUT:

```
Original array: 9 3 2 8 5 1 7 4 6
Sorted array:
1 2 3 4 5 6 7 8 9
```