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package datastructure.Sort;

public class HeapSort {

    private static int N;

    public static void sort(int[] arr) {
        heapify(arr);
        for (int i = N; i > 0; i--) {
            swap(arr, 0, i);
            N = N - 1;
            maxheap(arr, 0);
        }
    }

    public static void heapify(int[] arr) {
        N = arr.length - 1;
        for (int i = N / 2; i >= 0; i--)
            maxheap(arr, i);
    }

    // 0, 1, 2, 3, 4, 5
    // 6, 11, 4, 1, 3, 7

    public static void maxheap(int[] arr, int i) {
        int left = 2 * i;
        int right = 2 * i + 1;
        int max = i;
        if (left <= N && arr[left] > arr[i])

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        max = left;
    if (right <= N && arr[right] > arr[max])
        max = right;

    if (max != i) {
        swap(arr, i, max);
        maxheap(arr, max);
    }
}

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

public static void main(String[] args) {
    int arr[] = { 6, 11, 4, 1, 3, 7 };
    sort(arr);
    /* Print sorted Array */
    System.out.println("\nElements after sorting ");
    for (int i = 0; i < arr.length; i++)
        System.out.print(arr[i] + " ");
    System.out.println();
}
}

```