```java
package sortAlgorithm;

class HeapSort {

    public static void heapSort(int[] nums) {

        if ( nums == null || nums.length <= 1 ) {
            return;
        }

        int numsLength = nums.length;
        for ( int i = numsLength / 2 - 1; i >= 0; i-- ) {
            adjustToMaxHeap(nums, i, numsLength - 1);
        }

        for ( int i = numsLength - 1; i > 0; i-- ) {

            int temp = nums[i];
            nums[i] = nums[0];
            nums[0] = temp;

            adjustToMaxHeap( nums, 0, i - 1);
        }
    }


    private static void adjustToMaxHeap(int[] nums, int holeIndex, int maxAdjustIndexRange) {

        int leftChildIndex = holeIndex * 2 + 1;
        int rightChildIndex = holeIndex * 2 + 2;

        if ( leftChildIndex > maxAdjustIndexRange ) {
            return;
        }

        int targetIndex;
        if ( rightChildIndex <= maxAdjustIndexRange
        && nums[rightChildIndex] > nums[leftChildIndex] ) {
            targetIndex = rightChildIndex;
        } else {
            targetIndex = leftChildIndex;
        }

        if ( nums[targetIndex] > nums[holeIndex] ) {
            int temp = nums[targetIndex];
            nums[targetIndex] = nums[holeIndex];
            nums[holeIndex] = temp;

            adjustToMaxHeap(nums, targetIndex, maxAdjustIndexRange);
        }
    }


    public static void main(String[] args) {

        int[] nums = {2, 7, 4, 2, 3, 9, -1, 9, 18};

        heapSort(nums);

        System.out.println("haha");
    }
}
```