import java.util.Arrays;

// Merge sort in Java

class Main {

// Divide the array into two sub arrays, sort them and merge them

void mergeSort(int[] a, int n)

{

if (n < 2)

{

return;

}

int mid = n / 2;

int[] l = new int[mid];

int[] r = new int[n - mid];

for (int i = 0; i < mid; i++) {

l[i] = a[i];

}

for (int i = mid; i < n; i++) {

r[i - mid] = a[i];

}

mergeSort(l, mid);

mergeSort(r, n - mid);

merge(a, l, r, mid, n - mid);

}

// Merge two sub arrays L and M into array

void merge(int[] a, int[] l, int[] r, int left, int right) {

int i = 0, j = 0, k = 0;

while (i < left && j < right) {

if (l[i] <= r[j]) {

a[k++] = l[i++];

}

else {

a[k++] = r[j++];

}

}

while (i < left) {

a[k++] = l[i++];

}

while (j < right) {

a[k++] = r[j++];

}

}

public static void main(String args[]) {

// created an unsorted array

int[] array = { 6, 5, 12, 10, 9, 1 };

Main ob = new Main();

// call the method mergeSort()

// pass argument: array, length

ob.mergeSort(array, array.length);

System.out.println("Sorted Array:");

System.out.println(Arrays.toString(array));

}

}