**package** lp3;

**import** java.util.Arrays;

**public** **class** MergeSort {

**public** **static** **void** main(String[] args) {

**int**[] arr = {12, 11, 13, 5, 6, 7};

System.***out***.println("Original array: " + Arrays.*toString*(arr));

*mergeSort*(arr, 0, arr.length - 1);

System.***out***.println("Sorted array: " + Arrays.*toString*(arr));

}

**public** **static** **void** mergeSort(**int**[] arr, **int** left, **int** right) {

**if** (left < right) {

**int** mid = left + (right - left) / 2;

*mergeSort*(arr, left, mid);

*mergeSort*(arr, mid + 1, right);

*merge*(arr, left, mid, right);

}

}

**public** **static** **void** merge(**int**[] arr, **int** left, **int** mid, **int** right) {

**int** n1 = mid - left + 1;

**int** n2 = right - mid;

**int**[] leftArray = **new** **int**[n1];

**int**[] rightArray = **new** **int**[n2];

**for** (**int** i = 0; i < n1; i++) {

leftArray[i] = arr[left + i];

}

**for** (**int** j = 0; j < n2; j++) {

rightArray[j] = arr[mid + 1 + j];

}

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

**while** (i < n1 && j < n2) {

**if** (leftArray[i] <= rightArray[j]) {

arr[k] = leftArray[i];

i++;

} **else** {

arr[k] = rightArray[j];

j++;

}

k++;

}

**while** (i < n1) {

arr[k] = leftArray[i];

i++;

k++;

}

**while** (j < n2) {

arr[k] = rightArray[j];

j++;

k++;

}

}

}